San Joaquin Valley BU
Chevron North America Exploration
and Production Company
(a Chevron U.S.A. Inc. division)
1546 China Grade Loop
Bakersfield, CA 93308

VIA EMAIL AND U.S. MAIL

June 17, 2016

Ron Holcomb
Central Valley Regional Water Quality Control Water Board
1685 E Street
Fresno, California 93706

RE: Order Pursuant to California Water Code Section 13267, issued to Chevron U.S.A. Inc. ("Chevron"), dated April 27, 2016 ("Order")

Dear Mr. Holcomb:

The above-referenced Order issued by the Central Valley Regional Water Quality Control Board ("Regional Board") requires Chevron to submit a technical report containing (1) the volume of produced water provided for irrigation since January 1, 2014, and (2) "a list of all chemicals and additives used in petroleum production, treatment, and transportation processes that generate produced water that is used for irrigation of crops (i.e. all chemicals 'used in the field')." As to the second item, the Regional Board has also requested information on the purpose and how each chemical is used, the frequency of use, and the volumes used on a quarterly basis since January 1, 2014. This letter and the enclosed documentation constitute the technical report.

The Order contained a due date of June 13, 2016. However, as indicated in the attached email, Clay Rodgers, Assistant Executive Officer for the Regional Board, agreed to extend the deadline for Chevron's submittal until June 17, 2016 in part to allow Chevron to accommodate a June 13, 2016 facility tour requested by Regional Board staff.

Volume of Produced Water Provided to Cawelo Water District for Irrigation

The enclosed table contains the volumes of produced water provided to the Cawelo Water District ("Cawelo") that is used for agricultural irrigation from Chevron's operations at Kern River Field on a quarterly basis from January 1, 2014 through March 31, 2016. This volume data is from the same data source used to populate the required volume submittals (monthly maximums and averages) under the Waste Discharge Requirements Order R5-2012-0058. The volumes are provided in barrels and also converted to acre-feet and gallons for ease of reference.

Chemical Data

On August 11, 2015, Chevron voluntarily provided information to the Regional Board regarding chemical usage within the Kern River Field in response to a verbal request from Mr. Rodgers. Information clarifying some minor differences in the enclosed summary tables from Chevron's prior submittal is contained in notations on each summary table and relate primarily to the fact that the previous submittal was a snapshot in time that included items approved for use but that

were not actually used during the specified time period contained in the Order or what Chevron understood to be the scope of Mr. Rodgers' verbal request that was clarified in the Order. In addition, a new summary table has been added based on the expanded and clarified scope of information requested by the Order.

Enclosed are five separate summary tables: (1) Water Treatment Facility, (2) Satellite Facilities, (3) Kern River Drilling, (4) Production Operations, and (5) Underground Injection Control ("UIC") Testing. Each Summary Table identifies the product name, product number (if available), supplier, product purpose, product use, frequency of use, units of measure, and volumes/quantities used on a quarterly basis from January 1, 2014 through March 31, 2016 for that chemical. The volumes/quantities are rounded to whole numbers given the scale involved. The Safety Data Sheets for each chemical listed in the summary tables are also enclosed. Additional information regarding each of these summary tables is provided below.

Water Treatment Facility

The water treatment facility (Station 36) is where the oil and water produced within the Kern River Field are physically separated and produced water is treated prior to it being reused in the field or provided to Cawelo. As indicated on the Water Treatment Facility Summary Table, there were 10 chemicals used during the time period of January 1, 2014 through March 31, 2016 in the process of separating the oil from the water.

Satellite Facilities

Within the 20 square miles that constitute the Kern River Field, there are multiple satellite facilities utilized to measure produced fluids during the journey of the fluids from the individual wells to the water treatment facility. The Satellite Facilities Summary Table contains a list of the 9 chemicals that were used at these facilities from January 1, 2014 to March 31, 2016 to aid in the transportation of the produced fluids within the field.

Kern River Drilling

The Kern River Drilling Summary Table contains a list of the 16 products actually used in the process of drilling wells in the Kern River Field during the time period of January 1, 2014 to March 31, 2016. In contrast, the Drilling Summary Table submitted by Chevron to the Regional Board on August 11, 2015 included 58 chemicals approved for use as needed at that time for drilling wells in the Kern River Field, whether or not such chemicals were actually used.

This list of products collectively constitutes what is referred to as "drilling mud". The drilling mud is made up of various combinations of the products listed in the summary table as needed to address conditions encountered in each well drilled. Drilling mud is generally recaptured as part of the drilling process and reused as part of the drilling of subsequent wells and therefore is not part of the produced fluids.

During drilling, the drilling mud is continuously circulated into the wellbore. On occasion, conditions encountered while drilling may cause the drilling mud to flow into the formation.

This is referred to as "lost circulation". Lost circulation is not generally recaptured as part of the drilling process and may be produced once the well is put on production.

In this summary table, the drilling mud quantities are approximated based on incidents of lost circulation during the time period of January 1, 2014 through March 31, 2016. Only the estimated quantity of drilling mud lost to the formation has been included in the summary table.

It is important to note that the product quantities on this summary table are the total dry quantities of these products in pounds. When these products are used, they are diluted with water thereby significantly reducing the concentration of the chemicals in the drilling mud. The exact dilution ratio varies depending on the needs of the well.

Over the time period of January 1, 2014 through March 31, 2016, there were a total of 201 instances of lost circulation in the Kern River Field. During that same time period, 812 wells were drilled or re-drilled in the Kern River Field.

Production Operations

The Production Operations Summary Table contains a list of the 12 chemicals that were used in maintenance operations on wells within the Kern River Field or to address flow issues in production gathering lines during the time period from January 1, 2014 to March 31, 2016.

Underground Injection Control Testing

The Order includes the following clarifying statement:

> "As clarification, any chemicals used in enhanced oil recovery wells (i.e., such as water flood or steam injection wells) that could be captured by oil recovery wells that supply produced water for irrigation must also be reported."

This clarifying language is what led to the inclusion of the UIC Testing Summary Table. As part of the UIC program administered by the Division of Oil, Gas and Geothermal Resources, mechanical integrity testing is required to demonstrate confinement of injection fluids to the injection zone. *See* 14 California Code of Regulations §1724.10(j). Tracer surveys are a testing method approved by the DOGGR to demonstrate confinement. *See* 14 California Code of Regulations §1954. In the Kern River Field, tracers are used to demonstrate confinement/containment in injection wells. Data regarding the 3 tracers used is contained in the UIC Testing Summary Table.

Volume Comparison

Submittal of this data does not mean that the chemicals listed are actually present in the blended produced water distributed to Cawelo and ultimately used by farmers for irrigation from Cawelo. This data does not account for (1) constituents that are removed from the water; (2) constituents that remain with non-water portions of the produced fluids; (3) constituents that may be retained in the formation; and (4) the blending with surface and ground water that occurs in Cawelo's

facilities before the water is delivered for use in irrigation. Further, taken alone, this raw data does not account for the dilution provided by the total produced water volumes from the Kern River Field. For illustration and as an extremely conservative assumption, even if the total volume of chemicals used (1,078,871 gallons) over the requested timeframe was assumed to be 100% contained in produced water (which it is not), this equates to only six hundred-thousandths (0.00006) of the total water (17,593,158,062 gallons) produced from the Kern River Field over the time period from January 1, 2014 to March 31, 2016. The total quantity of drilling mud lost to the formation (10,192,897 pounds) equates to only seven hundred-thousandths (0.00007) of the total water produced (17,593,158,062 gallons equals 146,823,281,721 pounds). Even using these overly conservative assumptions, the chemical use within the field is extremely small compared to the overall volume of water produced.

If you need any additional information, please contact Abby Auffant at (661) 392-2869.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,
Chevron U.S.A. Inc.

By: _____
Gary Piron
Kern River Field Area Manager

Enclosures:

- 6/3/2016 email
- Summary Tables
- Safety Data Sheets

Cc with enclosures:

- Julie Macedo, Office of Enforcement, State Water Resources Control Board, Sacramento
- David Ansolabehere, Cawelo Water District

Auffant, Abigale M.

From: Auffant, Abigale M.
Sent: Friday, June 03, 2016 3:22 PM
To: Rodgers, Clay@Waterboards
Subject: Deadline for response to 13267 Order for chemical usage data from Kern River Field

Clay,

This email is a follow up to our telephone conversation this afternoon regarding the deadline to respond to the 13267 order issued to Chevron for chemical usage information from Chevron's operations at Kern River Field. The current deadline for the response to the 13267 order is June 13, 2016. As discussed, this is the same date set for the field tour for the members of the Food Safety Panel that I will be conducting. In our conversation, you agreed to allow Chevron an extension of time to respond to the 13267 order to June 17, 2016.

Thank you for your consideration in this matter.

Sincerely,
Abby Auffant
UIC / Water Regulatory Coordinator
San Joaquin Valley Business Unit
Chevron North America Exploration and Production Company
(a Chevron U.S.A. Inc. division)
1546 China Grade Loop, D14
Bakersfield, CA 93308
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Order Pursuant to California Water Code 13267, Issued to Chevron U.S.A. Inc., dated 4/27/2016
Item 1: Volumes of Produced Water Provided to Cawelo Water District for Irrigation
Chevron U.S.A. Inc. - Kern River Field Operations

Time Period	Volumes (barrels)	Volumes (acre-feet)	Volumes (gallons)
Q1 2014	44,995,181	5,800	1,889,797,621
Q2 2014	46,720,979	6,022	1,962,281,118
Q3 2014	49,408,331	6,368	2,075,149,902
Q4 2014	46,716,724	6,021	1,962,102,408
Q1 2015	46,042,558	5,935	1,933,787,436
Q2 2015	45,726,160	5,894	1,920,498,720
Q3 2015	46,558,616	6,001	1,955,461,885
Q4 2015	45,950,848	5,923	1,929,935,616
Q1 2016	46,765,318	6,028	1,964,143,356
Total:	**418,884,716**	**53,991**	**17,593,158,062**

Order Pursuant to California Water Code 13267, Issued to Chevron U.S.A. Inc., dated 4/27/2016
Item 2: Chemical List and Volume Data
Water Treatment Facility
Summary Table

#	Product Name	Product Number	Supplier	Product Purpose	Product Use	Frequency of Use	Units of Measure	VOLUMES								
								1Q 2014	2Q 2014	3Q 2014	4Q 2014	1Q 2015	2Q 2015	3Q 2015	4Q 2015	1Q 2016
1	BPB 59480	BPB59480	Baker Petrolite A Baker Hughes Company	Prevent corrosion of internal heat exchange equipment within oil holding tanks	Boiler Water Treatment. Neutralizing agent.	Continuous	Gallons	860	1,190	265	6	365	228	1,035	375	32
2	CLO64 CLEANER	CLO64	Baker Petrolite A Baker Hughes Company	Remove oil coating on softener resin to improve performance of water softeners. Used during softener backwash process.	Cleaner	Batch	Gallons	805	915	960	960	1,057	406	664	1,019	1,361
3	CLW3075 CLEANER *	CLW3075	Baker Petrolite A Baker Hughes Company	Remove oil coating on softener resin to improve performance of water softeners. Used occasionally during softener backwash process as needed.	Cleaner	Batch	Gallons	5	185	80	160	291	25	80	172	165
4	OSW5200 OXYGEN SCAVENGER	OSW5200	Baker Petrolite A Baker Hughes Company	Remove dissolved oxygen from lease water. Protects piping against corrosion.	Oxygen Scavenger	Continuous	Gallons	2,115	2,110	935	1,200	1,641	1,755	2,232	1,833	1,690
5	TECHNI-HIB 3743 **	CRW3743	Baker Petrolite A Baker Hughes Company	Prevent corrosion of carbon steel piping	Corrosion Inhibitor	Continuous	Gallons	6,851	5,624	7,317	7,740	6,762	7,200	6,431	4,628	3,636
6	TRETOLITE™ FLW163 FLOTATION AID	FLW163	Baker Petrolite A Baker Hughes Company	Improves water quality by removing oil and suspended solids from water	Flotation Aid	Continuous	Gallons	2,795	2,850	2,855	3,390	2,928	3,372	2,228	2,827	2,052
7	TRETOLITE™ RBW517 WATER CLARIFIER	RBW517	Baker Petrolite A Baker Hughes Company	Improves water quality by removing oil from water	Water Clarifier	Continuous	Gallons	9	N/A	N/A	N/A	1	N/A	5	N/A	N/A
8	TRETOLITE™ RBW611 WATER CLARIFIER	RBW611	Baker Petrolite A Baker Hughes Company	Improves water quality by removing oil from water	Water Clarifier	Continuous	Gallons	80	45	10	40	26	9	6	N/A	N/A
9	TRETOLITE™ RBW777W WATER CLARIFIER	RBW777W	Baker Petrolite A Baker Hughes Company	Improves water quality by removing oil from water	Water Clarifier	Continuous	Gallons	105	55	135	360	129	500	30	N/A	59
10	WAW4000 WETTING AGENT	WAW4000	Baker Petrolite A Baker Hughes Company	Allows continuous water contact on the surface of highly sensitive light detectors to allow equipment to function as designed to measure oil and water for monitoring of water quality specifications	Wetting Agent	Continuous	Gallons	2,405	2,345	2,075	2,100	2,043	2,533	2,312	1,757	2,071

* CLW3075 was included in the 8/11/2015 submittal in the summary table for the Satellite Facilities. It should have been included in the summary table for the Water Treatment Facility.

** CRW3743 was included in the 8/11/2015 submittal in the summary table for the Satellite Facilities. However, this product is also used at the Water Treatment Facility and is now identified on both summary tables.

Order Pursuant to California Water Code 13267, Issued to Chevron U.S.A. Inc., dated 4/27/2016
Item 2: Chemical List and Volume Data
Satellite Facilities
Summary Table

#	Product Name	Product Number	Supplier	Product Purpose	Product Use	Frequency of Use	Units of Measure	VOLUMES								
								1Q 2014	2Q 2014	3Q 2014	4Q 2014	1Q 2015	2Q 2015	3Q 2015	4Q 2015	1Q 2016
1	DFO91 DEFOAMER	DFO91	Baker Petrolite A Baker Hughes Company	Water Treatment Facility to prevent liquid carryover into vapor recovery system	Defoamer	Continuous	Gallons	4,238	4,490	4,395	4,835	4,904	5,055	5,194	3,855	3,934
2	PAO3857Y PARAFFIN DISPERSANT *	PAO3857Y	Baker Petrolite A Baker Hughes Company	Disperse oil in water to prevent plugging in pipelines	Paraffin Dispersant	Continuous	Gallons	N/A	N/A	N/A	N/A	N/A	N/A	N/A	100	N/A
3	PAW4HF ASPHALTIC CRUDE EMULSIFIER	PAW4HF	Baker Petrolite A Baker Hughes Company	Disperse oil in water to prevent plugging in pipelines	Emulsifier	Continuous	Gallons	6,472	5,914	6,640	6,419	5,852	6,106	5,097	4,122	3,942
4	RE8869DMO DEMULSIFIER	RE8869DMO	Baker Petrolite A Baker Hughes Company	Improves oil quality by removing water from oil	Demulsifier	Continuous	Gallons	3,578	4,709	4,929	4,438	3,574	3,573	2,564	2,316	2,547
5	TECHNI-HIB 3743	CRW3743	Baker Petrolite A Baker Hughes Company	Prevent corrosion of carbon steel piping	Corrosion Inhibitor	Continuous	Gallons	7,508	8,366	8,952	8,806	8,376	9,219	7,119	4,278	3,376
6	TRETOLITE™ RBW213 WATER CLARIFIER	RBW213	Baker Petrolite A Baker Hughes Company	Improves water quality by removing oil from water	Water Clarifier	Continuous	Gallons	100	15	N/A	N/A	31	396	N/A	N/A	N/A
7	TRETOLITE™ RBW301X WATER CLARIFIER	RBW301X	Baker Petrolite A Baker Hughes Company	Improves water quality by removing oil from water	Water clarifier	Continuous	Gallons	14,782	14,808	14,985	14,102	13,490	12,474	10,968	8,178	8,338
8	WCW3003 COMBINATION INHIBITOR	WCW3003	Baker Petrolite A Baker Hughes Company	Serves two purposes: (1) disperses oil in water to prevent plugging in pipelines, and (2) prevents corrosion of carbon steel piping	Emulsifier. Corrosion inhibitor.	Continuous	Gallons	N/A	475	350	N/A	59	240	439	235	242
9	WCW4527 COMBINATION ASPHALTIC OIL EMULSIFIER/CORROSION INHIBITOR *	WCW4527	Baker Petrolite A Baker Hughes Company	Serves two purposes: (1) disperses oil in water to prevent plugging in pipelines, and (2) prevents corrosion of carbon steel piping	Emulsifier. Corrosion inhibitor.	Continuous	Gallons	380	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

* PAO3857Y and WCW4527 were not included in 8/11/2015 submittal because there products were not in use at that time.

Order Pursuant to California Water Code 13267, Issued to Chevron U.S.A. Inc., dated 4/27/2016
Item 2: Chemical List and Volume Data
Kern River Drilling *
Summary Table

#	Product Name	Product Number	Supplier	Product Purpose	Product Use	Frequency of Use	Units of Measure	QUANTITIES								
								1Q 2014	2Q 2014	3Q 2014	4Q 2014	1Q 2015	2Q 2015	3Q 2015	4Q 2015	1Q 2016
1	Cottonseed Hull Pellets	N/A	Producers Cotton Oil Co.	Oil well drilling fluid additive	Lost circulation material used during drilling operations. When circulating fluids are not being returned to the surface, the material is used as a plugging agent to seal off the formation in attempts to regain fluid circulation.	As needed during drilling	Lbs	8,800	10,800	8,300	10,000	12,400	9,600	8,400	6,400	7,200
2	DUAL-FLO **	N/A	M-I SWACO - Supplied by: (M-I L.L.C.)	Oil well drilling fluid additive	Provides fluid loss reduction by creating a temporary barrier to prevent flow into the reservoir	As needed during drilling	Lbs	41,600	71,664	23,840	N/A	N/A	N/A	N/A	N/A	N/A
3	DUO-VIS	N/A	Mi SWACO - Supplied by: (M-I L.L.C.)	Oil well drilling fluid additive	Thickening agent that increases viscosity and provides material suspension	As needed during drilling	Lbs	7,736	7,327	1,458	N/A	N/A	N/A	N/A	N/A	N/A
4	MAGMA FIBER	N/A	Supplied by a business unit of : (M-I L.L.C.)	Oil well drilling fluid additive	Lost circulation material used during drilling operations. When circulating fluids are not being returned to the surface, the material is used as a plugging agent to seal off the formation in attempts to regain fluid circulation.	As needed during drilling	Lbs	13,200	16,200	12,450	15,000	18,600	14,400	12,600	9,600	10,800
5	M-I GEL	N/A	M-I SWACO - Supplied by: (M-I L.L.C.)	Oil well drilling fluid additive	Thickening agent that increases viscosity, provides material suspension and creates a temporary barrier to prevent flow into the reservoir	As needed during drilling	Lbs	541,485	512,908	105,350	N/A	N/A	N/A	N/A	N/A	N/A
6	M-I SEAL	N/A	Mi SWACO - Supplied by: (M-I L.L.C.)	Oil well drilling fluid additive	Lost circulation material used during drilling operations. When circulating fluids are not being returned to the surface, the material is used as a plugging agent to seal off the formation in attempts to regain fluid circulation.	As needed during drilling	Lbs	14,960	18,360	14,110	17,000	21,080	16,320	14,280	10,880	12,240
7	M-I-X II	N/A	Mi SWACO - Supplied by: (M-I L.L.C.)	Oil well drilling fluid additive	Lost circulation material used during drilling operations. When circulating fluids are not being returned to the surface, the material is used as a plugging agent to seal off the formation in attempts to regain fluid circulation.	As needed during drilling	Lbs	13,200	16,200	12,450	15,000	18,600	14,400	12,600	9,600	10,800
8	POLYPAC UL	N/A	Mi SWACO - Supplied by: (M-I L.L.C.)	Oil well drilling fluid additive	Provides fluid loss reduction by creating a temporary barrier to prevent flow into the reservoir	As needed during drilling	Lbs	15,471	14,655	4,093	13,717	10,892	8,042	11,405	11,812	1,380
9	Potassium Chloride (Potash)	N/A	MOAB POTASH	Oil well drilling fluid additive	Prevents compacted formation clays from absorbing water from the drilling fluids and consequently swelling the formation clays which jeopardizes the stability of the formation and wellbore	As needed during drilling	Lbs	114,400	197,076	97,460	113,289	322,652	223,465	192,643	17,622	471,350
10	POWERVIS	N/A	Mi SWACO - Supplied by: (M-I L.L.C.)	Oil well drilling fluid additive	Thickening agent that increases viscosity and provides material suspension	As needed during drilling	Lbs	10,400	17,916	9,760	30,110	44,873	27,299	30,242	18,919	34,208
11	SAFE-CARB 20 ***	N/A	M-I SWACO - Supplied by: (M-I L.L.C.)	Oil well drilling fluid additive	Creates a temporary barrier to prevent flow of drilling fluids (water) into the reservoir	As needed during drilling	Lbs	112,800	189,960	91,100	111,712	316,776	172,120	148,504	19,216	350,000
11	SAFE-CARB 250 ***	N/A	M-I SWACO - Supplied by: (M-I L.L.C.)	Oil well drilling fluid additive	Creates a temporary barrier to prevent flow of drilling fluids (water) into the reservoir	As needed during drilling	Lbs	60,800	100,380	38,100	10,000	12,400	9,600	8,400	6,400	7,200
11	SAFE-CARB 40 ***	N/A	M-I SWACO - Supplied by: (M-I L.L.C.)	Oil well drilling fluid additive	Creates a temporary barrier to prevent flow of drilling fluids (water) into the reservoir	As needed during drilling	Lbs	112,800	189,960	91,100	111,712	316,776	172,120	148,504	19,216	350,000
12	Soda Ash	N/A	BHS Marketing / Western Briquette	Oil well drilling fluid additive	Also known as sodium carbonate; component of drilling fluids to control pH and reduce calcium in drilling fluids	As needed during drilling	Lbs	5,200	8,958	4,430	6,357	19,024	10,158	8,757	801	21,425
13	SP-101	N/A	M-I SWACO - Supplied by: (M-I L.L.C.)	Oil well drilling fluid additive	Provides fluid loss reduction by creating a temporary barrier to prevent flow into the reservoir	As needed during drilling	Lbs	61,884	58,618	16,372	54,866	43,566	32,168	45,620	47,246	5,520
14	THRUCARB	N/A	M-I SWACO - Supplied by: (M-I L.L.C.)	Oil well drilling fluid additive	Creates a temporary barrier to prevent flow of drilling fluids (water) into the reservoir	As needed during drilling	Lbs	N/A	N/A	29,000	127,140	380,470	203,150	175,130	16,020	428,500
15	THRUTROL	N/A	M-I SWACO - Supplied by: (M-I L.L.C.)	Oil well drilling fluid additive	Provides fluid loss reduction by creating a temporary barrier to prevent flow into the reservoir	As needed during drilling	Lbs	N/A	N/A	23,200	101,712	304,376	162,520	140,104	12,816	342,800
16	WALNUT NUT PLUG ®	N/A	MI L.L.C. A Smith/Schlumberger Company	Oil well drilling fluid additive	Lost circulation material used during drilling operations. When circulating fluids are not being returned to the surface, the material is used as a plugging agent to seal off the formation in attempts to regain fluid circulation.	As needed during drilling	Lbs	18,480	22,680	17,430	21,000	26,040	20,160	17,640	13,440	15,120

* This list represents all of the products that were actually used during the time period of 1/1/2014 to 3/31/2016. The list submitted on 8/11/2015 represented products approved for use as needed in the process of drilling new wells at that time.

** DUAL-FLO and M-I GEL were not included in the 8/11/2015 submittal because the products were not in use at that time.

*** SAFE-CARB is a calcium carbonate based material. Calcium carbonate was disclosed in the 8/11/2015 submittal, but SAFE-CARB was not explicitly identified. SAFE-CARB has three different particle sizes used in drilling operations. The different particle sizes are identified by the number after SAFE-CARB in lines 11, 12 and 13. However, the composition of the product is the same and only one Safety Data Sheet is provided.

Order Pursuant to California Water Code 13267, Issued to Chevron U.S.A. Inc., dated 4/27/2016
Item 2: Chemical List and Volume Data
Production Operations
Summary Table

#	Product Name	Product Number	Supplier	Product Purpose	Product Use	Frequency of Use	Units of Measure	VOLUMES								
								1Q 2014	2Q 2014	3Q 2014	4Q 2014	1Q 2015	2Q 2015	3Q 2015	4Q 2015	1Q 2016
1	Defoamer 40 AQXS	40AQXS	Argo Chemical, Inc.	Prevents wellwork operations foam returns from overfilling the return tank (sprayed onto the foam in the return tanks to dissipate foam)	Foam Control Agent	Individual Treatment	Gallons	641	714	679	574	557	490	697	700	417
2	DF-10 Defoamer	DF-10 Defoamer	CHEMEX CHEMICALS, INC.	Prevents wellwork operations foam returns from overfilling the return tank (sprayed onto the foam in the return tanks to dissipate foam)	Anti-Foam Emulsion	Individual Treatment	Gallons	1,925	2,132	2,037	1,729	1,670	1,470	2,093	2,104	1,246
3	EnovaSB FA	SB-0830	Enova Solutions Inc.	Consolidates sand to prevent fine sand from entering wellbore which can restrict flow	Sand Control	Individual Treatment	Gallons	484	92	306	100	340	1,184	194	310	N/A
4	EnovaSB SCS	SB-1113	Enova Solutions Inc.	Consolidates sand to prevent fine sand from entering wellbore which can restrict flow	Sand Control	Individual Treatment	Gallons	806	178	519	170	570	1,996	331	525	N/A
5	F-603 Foam Soap	F-603 Foam Soap	CHEMEX CHEMICALS, INC.	Carrying agent to remove sand from the wellbore (pumped downhole mixed with water and air to produce a foam to carry sand particles out of the wellbore)	Washing, Scouring, Cleaning Compound	Individual Treatment	Gallons	8,820	9,744	9,312	7,908	7,644	6,708	9,564	9,612	5,676
6	PAW4HF ASPHALTIC CRUDE EMULSIFIER	PAW4HF	Baker Petrolite A Baker Hughes Company	Disperse oil in water to prevent plugging in pipelines	Emulsifier	Continuous	Gallons	23,565	34,856	18,827	37,958	27,700	10,962	37	10,754	12,368
7	PETROSWEET™ HSW700 SCAVENGER ™ a trademark of Baker Hughes, Inc.	HSW700	Baker Petrolite A Baker Hughes Company	Mixed with water and periodically used during wellwork operations to absorb excess H2S in casing gas	Hydrogen Sulfide Scavenger	Individual Treatment	Gallons	121	133	127	108	105	92	131	132	337
8	SURF-SOL	RJ 62000 D	Enova Solutions Inc.	Prevents downhole flow restrictions due to solids deposition from oil	Work-Over Fluid	Individual Treatment	Gallons	2,890	2,420	3,630	160	1,680	3,710	1,370	30	N/A
9	TECHNI-CHEK 3658	CRW3658	Baker Petrolite A Baker Hughes Company	Prevent corrosion of carbon steel piping	Corrosion Inhibitor	Continuous	Gallons	N/A	N/A	N/A	N/A	N/A	4,502	23,446	21,020	23,183
10	TECHNI-HIB 3743	CRW3743	Baker Petrolite A Baker Hughes Company	Prevent corrosion of carbon steel piping	Corrosion Inhibitor	Continuous	Gallons	21,746	30,904	33,749	25,477	18,300	25,038	4,946	N/A	N/A
11	WCW3003 COMBINATION INHIBITOR	WCW3003	Baker Petrolite A Baker Hughes Company	Disperse oil in water to prevent plugging in pipelines. Also prevents corrosion of carbon steel piping.	Emulsifier. Corrosion inhibitor.	Continuous	Gallons	N/A	4,937	14,504	12,026	12,112	15,380	8,258	7,416	3,135
12	WCW4527 COMBINATION INHIBITOR *	WCW4527	Baker Petrolite A Baker Hughes Company	Disperse oil in water to prevent plugging in pipelines. Also prevents corrosion of carbon steel piping.	Emulsifier. Corrosion inhibitor.	Continuous	Gallons	10,553	11,751	5,680	1,566	1,539	1,471	281	N/A	N/A

* WCW4527 was not included in the 8/11/2015 submittal because it was not in use at that time.

** DMO146, DMW8900X, and PEP2 were included in the 8/11/2015 submittal but are not included here as these products were not actually used from 1/1/2014 to 3/31/2016.

Order Pursuant to California Water Code 13267, Issued to Chevron U.S.A. Inc., dated 4/27/2016
Item 2: Chemical List and Volume Data
Underground Injection Control Testing
Summary Table

#	Product Name	Product Number	Supplier	Product Purpose	Product Use	Frequency of Use	Units of Measure	VOLUMES								
								1Q 2014	2Q 2014	3Q 2014	4Q 2014	1Q 2015	2Q 2015	3Q 2015	4Q 2015	1Q 2016
1	Sodium Iodide Iodine 131 Solution (I-131)	N/A	Nordion	Tracer to confirm how steam is distributed to oil-bearing zone(s) in steam injectors and to identify potential leaks	Injected into steam injectors; adheres to liquid phase of steam	As needed for compliance testing	Millicurie (mCi)	98	357	308	98	203	175	203	28	42
2	Xenon-133 (Xe-133)	N/A	Nordion	Tracer to confirm how steam is distributed to oil-bearing zone(s) in steam injectors and to identify potential leaks	Injected into steam injectors; adheres to vapor phase of steam	As needed for compliance testing	Millicurie (mCi)	5,450	18,350	15,750	4,100	8,800	8,700	11,000	1,500	2,100
3	Krypton-85 (Kr-85)	N/A	Varies	Tracer to confirm how steam is distributed to oil-bearing zone(s) in steam injectors and to identify potential leaks	Injected into steam injectors; adheres to vapor phase of steam	As needed for compliance testing	Millicurie (mCi)	2,400	5,200	4,800	1,950	6,050	5,100	3,800	800	700

Kern River Drilling Summary Table: #1

OSHA Material Safety Data Sheet

Material Safety Data Sheet
May be used to comply with
OSHA's Hazard Communication Standard,
29 CFR 1910.1200. Standard must be
consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

IDENTITY (As Used on Label and List)
Cottonseed Hull Pellets

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I

Manufacturer's Name
Producers Cotton Oil Co.

Address (Number, Street, City, State, and ZIP Code)
P.O. Box 1832
Fresno, CA 93717

Emergency Telephone Number
(209) 487-7920

Telephone Number for Information
(209) 487-7915

Date Prepared
August 14, 2000

Signature of Preparer (optional)

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
N/A	(15 mg/m³ total)*			
	(5 mg/m³ respirable)*			

*This is the OSHA PEL for "particulates not otherwise regulated" as found in Table 21 of 29 CFR 1910.1000.

Section III — Physical/Chemical Characteristics

Boiling Point	N/A	Specific Gravity (H_2O = 1)	1.2-1.6
Vapor Pressure (mm Hg.)	N/A	Melting Point	N/A
Vapor Density (AIR = 1)	N/A	Evaporation Rate (Butyl Acetate = 1)	N/A

Solubility in Water
insoluble

Appearance and Odor
White fibers (amorphous solid), lignin seed hull

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used)	Flammable Limits	LEL	UEL
N/A	N/A	55gm/m³	unknown

Extinguishing Media
Use water; carbon dioxide, foam or dry chemical.

Special Fire Fighting Procedures
Do not use direct hose stream if dust can be dispersed into air.

Unusual Fire and Explosion Hazards
Dust dispersed by water stream in the presence of an ignition source could cause an explosion.
If improperly handled, stored and/or exposed to an ignition source, this mat may burn. Airborne dust in sufficient concentrations, when confined and exp to a sufficient ignition source, can explode.

Stability	Unstable		Conditions to Avoid N/A
	Stable	X	

Incompatibility (Materials to Avoid)
N/A

Hazardous Decomposition or Byproducts
Carbon Monoxide formed on combustion as in all combustion.

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	

Section VI — Health Hazard Data

Route(s) of Entry: Inhalation? Yes Skin? No Ingestion? No

Health Hazards (Acute and Chronic)
Excessive inhalation may affect the respiratory system. Smokers have an increased risk to respiratory effects. Contact may cause irritation to ey

Carcinogenicity: NTP? No IARC Monographs? No OSHA Regulated? No

Signs and Symptoms of Exposure
Some persons may occasionally experience airway irritation and coughing.

Medical Conditions Generally Aggravated by Exposure
Allergies and respiratory ailments.

Emergency and First Aid Procedures
Remove from exposure. Seek medical attention if needed
Flush eyes with water.

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken In Case Material Is Released or Spilled
Normal housekeeping adequate. Respiratory protection recommended where levels cannot be controlled below PEL.

Waste Disposal Method
No restrictions - dispose with other general plant non-toxic solid waste.

Precautions to Be Taken In Handling and Storing
Maintain dry storage, avoid dispersion in air, and avoid exposure to to potential ignition sources.

Other Precautions
N/A

Section VIII — Control Measures

Respiratory Protection (Specify Type)
Air purifying dust respirators approved by NIOSH or MSHA where needed.

Ventilation	Local Exhaust	Where needed.	Special	N/A
	Mechanical (General)	Where needed.	Other	N/A

Protective Gloves N/A Eye Protection Goggles if needed.

Other Protective Clothing or Equipment
N/A

Work/Hygienic Practices
Remove from skin by washing with soap and water.

MATERIAL SAFETY DATA SHEET

MSDS NO. 10674 **Trade Name:** DUAL-FLO* **Revision Date:** 05/25/2007

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Trade Name: DUAL-FLO*
Chemical Family: Polysaccharide
Product Use: Oil well drilling fluid additive.
Emergency Telephone (24 hr.): 281-561-1600

Supplied by: M-I L.L.C.
P.O. Box 42842
Houston, TX 77242
www.miswaco.com
Telephone Number: 281-561-1512
Prepared by: Product Safety Group

Revision Number: 4

HMIS Rating

Health: 1 **Flammability:** 1 **Physical Hazard:** 0 **PPE:** E

HMIS Key: 4=Severe, 3=Serious, 2=Moderate, 1=Slight, 0=Minimal Hazard. *Chronic effects - See Section 11. See Section 8 for Personal Protective Equipment recommendations.

2. HAZARDS IDENTIFICATION

Emergency Overview: Caution! May cause mechanical irritation of eyes, skin and respiratory tract. Long term inhalation of particulates may cause lung damage.

Canadian Classification:
UN PIN No: Not regulated. **WHMIS Class:** Not a controlled product.

Physical State: Powder, dust. **Odor:** Slight **Color:** Off-white

Potential Health Effects:

Acute Effects

Eye Contact: May cause mechanical irritation.
Skin Contact: May cause mechanical irritation.
Inhalation: May cause mechanical irritation.
Ingestion: May cause gastric distress, nausea and vomiting if ingested.

Carcinogenicity & Chronic Effects: See Section 11 - Toxicological Information.
Routes of Exposure: Eyes. Dermal (skin) contact. Inhalation.
Target Organs/Medical Conditions Aggravated by Overexposure: Eyes. Skin. Respiratory System.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS No.	Wt. %	Comments:
Polysaccharide		100	No comments.

4. FIRST AID MEASURES

Eye Contact: Promptly wash eyes with lots of water while lifting eye lids. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

Skin Contact: Wash skin thoroughly with soap and water. Remove contaminated clothing and launder before reuse. Get medical attention if any discomfort continues.

Inhalation: Move person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Dilute with 2 - 3 glasses of water or milk, if conscious. Never give anything by mouth to an unconscious person. If signs of irritation or toxicity occur seek medical attention.

General notes: Persons seeking medical attention should carry a copy of this MSDS with them.

5. FIRE FIGHTING MEASURES

Flammable Properties

Flash Point: F (C): NA
Flammable Limits in Air - Lower (%): ND
Flammable Limits in Air - Upper (%): ND
Autoignition Temperature: F (C): ND
Flammability Class: NA
Other Flammable Properties: Particulate may accumulate static electricity. Dusts at sufficient concentrations can form explosive mixtures with air.
Extinguishing Media: Use extinguishing media appropriate for surrounding fire.

Protection Of Fire-Fighters:

Special Fire-Fighting Procedures: Do not enter fire area without proper personal protective equipment, including NIOSH/MSHA approved self-contained breathing apparatus. Evacuate area and fight fire from a safe distance. Water spray may be used to keep fire-exposed containers cool. Keep water run off out of sewers and waterways.

Hazardous Combustion Products: Oxides of: Carbon.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Use personal protective equipment identified in Section 8.

Spill Procedures: Evacuate surrounding area, if necessary. Wet product may create a slipping hazard. Contain spilled material. Avoid the generation of dust. Sweep, vacuum, or shovel and place into closable container for disposal.

Environmental Precautions: Do not allow to enter sewer or surface and subsurface waters. Waste must be disposed of in accordance with federal, state and local laws.

7. HANDLING AND STORAGE

Handling: Put on appropriate personal protective equipment. Avoid contact with skin and eyes. Avoid generating or breathing dust. Product is slippery if wet. Use only with adequate ventilation. Wash thoroughly after handling.

Storage: Store in dry, well-ventilated area. Keep container closed. Store away from incompatibles. Follow safe warehousing practices regarding palletizing, banding, shrink-wrapping and/or stacking.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits (TLV & PEL - 8H TWA):

Ingredient	CAS No.	Wt. %	ACGIH TLV	OSHA PEL	Other	Notes
Polysaccharide		100	NA	NA	NA	(1)

Notes
(1) Control as an ACGIH particulate not otherwise specified (PNOS): 10 mg/m^3 (Inhalable); 3 mg/m^3 (Respirable) and an OSHA particulate not otherwise regulated (PNOR): 15 mg/m^3 (Total); 5 mg/m^3 (Respirable).

Engineering Controls: Use appropriate engineering controls such as, exhaust ventilation and process enclosure, to ensure air contamination and keep workers exposure below the applicable limits.

Personal Protection Equipment

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazards present and the risk of exposure to those hazards. The PPE recommendations below are based on our assessment of the chemical hazards associated with this product. The risk of exposure and need for respiratory protection will vary from workplace to workplace and should be assessed by the user.

Eye/Face Protection: Dust resistant safety goggles.

Skin Protection: Not normally necessary. If needed to minimize irritation: Wear appropriate clothing to prevent repeated or prolonged skin contact. Wear chemical resistant gloves such as: Nitrile. Neoprene.

Respiratory Protection: All respiratory protection equipment should be used within a comprehensive respiratory protection program that meets the requirements of 29 CFR 1910.134 (U.S. OSHA Respiratory Protection Standard) or local equivalent.

If exposed to airborne particles of this product use at least a NIOSH-approved N95 half-mask disposable or re-useable particulate respirator. In work environments containing oil mist/aerosol use at least a NIOSH-approved P95 half-mask disposable or re-useable particulate respirator.

General Hygiene Considerations: Work clothes should be washed separately at the end of each work day. Disposable clothing should be discarded, if contaminated with product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color: Off-white
Odor: Slight
Physical State: Powder, dust.
pH: 8.0 - 10.45 (4% solution)
Specific Gravity (H2O = 1): 1.5 - 1.6 at 68 F (20 C)
Solubility (Water): Soluble
Flash Point: F (C): NA
Melting/Freezing Point: ND
Boiling Point: ND
Viscosity: 150 - 250 (2% solution)
Vapor Pressure: NA
Vapor Density (Air=1): NA
Evaporation Rate: NA
Odor Threshold(s): ND

10. STABILITY AND REACTIVITY

Chemical Stability: Stable
Conditions to Avoid: Keep away from heat, sparks and flame.
Materials to Avoid: Oxidizers.
Hazardous Decomposition Products: For thermal decomposition products, see Section 5.
Hazardous Polymerization: Will not occur

11. TOXICOLOGICAL INFORMATION

Component Toxicological Data: Any adverse component toxicological effects are listed below. If no effects are listed, no such data were found.

Product Toxicological Information:
Long term inhalation of particulate can cause irritation, inflammation and/or permanent injury to the lungs. Illnesses such as pneumoconiosis ("dusty lung"), pulmonary fibrosis, chronic bronchitis, emphysema and bronchial asthma may develop.

12. ECOLOGICAL INFORMATION

Product Ecotoxicity Data: Contact M-I Environmental Affairs Department for available product ecotoxicity data.

Biodegration: ND
Bioaccumulation: ND
Octanol/Water Partition Coefficient: ND

13. DISPOSAL CONSIDERATIONS

Waste Classification: ND

Waste Management: Under U.S. Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA), it is the responsibility of the user to determine at the time of disposal, whether the product meets RCRA criteria for the hazardous waste. This is because product uses, transformations, mixtures, processes, etc., may render the resulting materials hazardous. Empty containers retain residues. All labeled precautions must be observed.

Disposal Method: Recover and reclaim or recycle, if practical. Should this product become a waste, dispose of in a permitted industrial landfill. Ensure that the containers are empty by the RCRA criteria prior to disposal in a permitted industrial landfill.

14. TRANSPORT INFORMATION

U.S. DOT Shipping Description: Not regulated for transportation by DOT, TDG, IMDG, ICAO/IATA.

Canada TDG Shipping Description: Not regulated.
UN PIN No: Not regulated.

IMDG Shipping Description: Not regulated.

ICAO/IATA Shipping Description: Not regulated.

15. REGULATORY INFORMATION

U.S. Federal and State Regulations

SARA 311/312 Hazard Catagories: Not a SARA 311/312 hazard.

SARA 302/304, 313; CERCLA RQ, California Proposition 65: Note: If no components are listed below, this product is not subject to the referenced SARA and CERCLA regulations and is not known to contain a Proposition 65 listed chemical at a level that is expected to pose a significant risk under anticipated use conditions.

International Chemical Inventories

Australia AICS - Components are listed or exempt from listing.
Canada DSL - Components are listed or exempt from listing.
China Inventory - Components are listed or exempt from listing.
European Union EINECS/ELINCS - Components are listed or exempt from listing.
Japan METI ENCS - Components are listed or exempt from listing.
Korea TCCL ECL - Components are listed or exempt from listing.
Philippine PICCS - Components are listed or exempt from listing.
U.S. TSCA - Components are listed or exempt from listing.
U.S. TSCA - No components are subject to TSCA 12(b) export notification requirements.

Canadian Classification:

Controlled Products Regulations Statement: This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS Class: Not a controlled product.

16. OTHER INFORMATION

The following sections have been revised: 1, 2, 3, 9, 16

NA - Not Applicable, ND - Not Determined.

*A mark of M-I L.L.C.

Disclaimer:

MSDS furnished independent of product sale. While every effort has been made to accurately describe this product, some of the data are obtained from sources beyond our direct supervision. We can not make any assertions as to its reliability or completeness; therefore, user may rely on it only at user´s risk. We have made no effort to censor or conceal deleterious aspects of this product. Since we cannot anticipate or control the conditions under which this information and product may be used, we make no guartantee that the precautions we have suggested will be adequate for all individuals and/or situations. It is the obligation of each user of this product to comply with the requirements of all applicable laws regarding use and disposal of this product. Additional information will be furnished upon request to assist the user; however, no warranty, either expressed or implied, nor liability of any nature with respect to this product or to the data herein is made or incurred hereunder.

A Schlumberger Company

MATERIAL SAFETY DATA SHEET

MSDS No. 12250 **Trade Name:** DUO-VIS* L **Revision Date:** 04/02/2011

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Trade Name: DUO-VIS* L

Chemical Family: Mixture
Product Use: Drilling fluid additive.

Supplied by: M-I L.L.C.
P.O. Box 42842
Houston, TX 77242
www.miswaco.slb.com
Telephone Number: 281-561-1512
Emergency Telephone (24 hr.): 281-561-1600
Prepared by: Product Safety Group

Revision No. 3

HMIS Rating
Health: 1 **Flammability:** 1 **Physical Hazard:** 0 **PPE:** J

4=Severe, 3=Serious, 2=Moderate, 1=Slight, 0=Minimal Hazard. *Chronic effects - See Section 11. See Section 8 for Personal Protective Equipment recommendations.

2. HAZARDS IDENTIFICATION

Emergency Overview: Caution! May cause eye irritation. May be harmful if absorbed through skin.

Canadian Classification:
UN PIN No: Not regulated. **WHMIS Class:** D2B

Physical State: Liquid **Color:** Cream **Odor:** Ether.

Potential Health Effects:
Acute Effects

Eye Contact: May irritate eyes.
Skin Contact: May be harmful if absorbed through skin. Not expected to cause skin irritation under anticipated workplace exposures.
Inhalation: Not expected to be an inhalation hazard under anticipated workplace exposures. Overexposure to vapors and mists which may be released at high temperatures may cause central nervous system (CNS) effects and respiratory tract irritation.
Ingestion: May cause gastric distress, nausea and vomiting if ingested. Aspiration can be a hazard if this material is swallowed.

Carcinogenicity & Chronic Effects: See Section 11 - Toxicological Information.
Routes of Exposure: Eyes. Dermal (skin) contact. Dermal (skin) absorption. Inhalation.
Target Organs/Medical Conditions Aggravated by Overexposure: Eyes. Skin. Respiratory System. Central Nervous System (CNS).

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS No.	Wt. %	Comments:
Dipropylene glycol methyl ether	34590-94-8	30 - 60	No comments.
Xanthan gum	11138-66-2	30 - 60	No comments.

Composition Comments: Component LD50 and LC50 values are provided in Section 11, if available.

4. FIRST AID MEASURES

Eye Contact: Promptly wash eyes with lots of water while lifting eye lids. Look for and remove contact lenses. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

Skin Contact: Wash skin thoroughly with soap and water. Remove contaminated clothing and launder before reuse. Get medical attention if any discomfort continues.

Inhalation: Move person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Do not induce vomiting. Dilute with 2 - 3 glasses of water or milk, if conscious. Never give anything by mouth to an unconscious person. Get immediate medical attention.

General notes: Persons seeking medical attention should carry a copy of this MSDS with them.

Notes To Physician: Aspiration may cause severe lung damage. Evacuate stomach in a way which avoids aspiration.

5. FIRE FIGHTING MEASURES

Flammable Properties

Flash Point: F (C): 211F (99C)
Flash Point Method: PMCC
Flammable Limits in Air - Lower (%): ND
Flammable Limits in Air - Upper (%): ND
Autoignition Temperature: F (C): ND
Explosion Data - Sensitivity to Mechanical Impact: NA
Explosion Data - Sensitivity to Static Discharge: If applicable, information is provided in Section 5 Special Fire-Fighting Procedures, Other Flammable Properties and Section 6 Spill Procedures.
Flammability Class: IIIB
Extinguishing Media: Water fog, carbon dioxide, foam, dry chemical.

Protection Of Fire-Fighters:

Special Fire-Fighting Procedures: Do not enter fire area without proper personal protective equipment, including NIOSH/MSHA approved self-contained breathing apparatus. Evacuate area and fight fire from a safe distance. Water spray may be used to keep fire-exposed containers cool. Keep water run off out of sewers and waterways.

Hazardous Combustion Products: Oxides of: Carbon.

Conditions of Flammability: Products are classified as flammable/combustible based on flash point as defined in the Health Canada Controlled Products Regulations, U.S. Occupational Health and Safety Administration Hazard Communication Standard and transportation regulations. See Sections 1, 2, 5, 14 and 15 for flammable/combustible classification information. Flammable/combustible materials may ignite and burn if exposed to a flame or other sources of ignition.
Other Flammable Properties: ND

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Use personal protective equipment identified in Section 8.

Spill Procedures: Evacuate the spill area with the exception of the spill response team. Keep personnel removed and upwind of spill. Extinguish all ignition sources. Avoid sparks, flames, heat and smoking. Shut off leak if it can be done safely. Contain spilled material. Do not allow spilled material to enter sewers, storm drains or surface waters. Absorb in vermiculite, dry sand or earth. Place into containers for disposal.

Environmental Precautions: Waste must be disposed of in accordance with federal, state and local laws. In the U.S., for products with reportable quanitity (RQ) components - if the RQ is exceeded, report to National Spill Response Office at 1 800 424 8802.

7. HANDLING AND STORAGE

Handling: Put on appropriate personal protective equipment. Avoid contact with skin and eyes. Avoid breathing vapors or spray mists. Use only in a well ventilated area. Ground and bond containers when transferring material. Wash thoroughly after handling.

Storage: Store in dry, well-ventilated area. Keep container closed. Keep away from heat, sparks and flames. Store away from incompatibles.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits (TLV & PEL - 8H TWA):

Ingredient	CAS No.	Wt. %	ACGIH TLV	OSHA PEL	Other	Notes
Dipropylene glycol methyl ether	34590-94-8	30 - 60	100 ppm	100 ppm	150 ppm STEL (NIOSH)	(skin)
Xanthan gum	11138-66-2	30 - 60	NA	NA	NA	(1)

Notes
(1) Control as an ACGIH particulate not otherwise specified (PNOS): 10 mg/m^3 (Inhalable); 3 mg/m^3 (Respirable) and an OSHA particulate not otherwise regulated (PNOR): 15 mg/m^3 (Total); 5 mg/m^3 (Respirable).
(skin) Potential for cutaneous absorption.

Engineering Controls: Local exhaust ventilation as necessary to maintain exposures to within applicable limits.

Personal Protection Equipment

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazards present and the risk of exposure to those hazards. The PPE recommendations below are based on our assessment of the chemical hazards associated with this product. The risk of exposure and need for respiratory protection will vary from workplace to workplace and should be assessed by the user.

Eye/Face Protection: Wear chemical safety goggles.

Skin Protection: Wear appropriate clothing to prevent repeated or prolonged skin contact. Wear chemical resistant gloves such as nitrile or neoprene.

Respiratory Protection: All respiratory protection equipment should be used within a comprehensive respiratory protection program that meets the requirements of 29 CFR 1910.134 (U.S. OSHA Respiratory Protection Standard) or local equivalent.

If exposed to airborne mist/aerosol of this product, use at least a NIOSH-approved N95 half-mask disposable or re-usable particulate respirator. In work environments containing oil mist/aerosol, use at least a NIOSH-approved P95 half-mask disposable or reuseable particulate respirator.

If exposed to vapors from this product use a NIOSH/MSHA-approved respirator with an Organic Vapor cartridge.

General Hygiene Considerations: Work clothes should be washed separately at the end of each work day. Disposable clothing should be discarded, if contaminated with product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	Cream
Odor:	Ether.
Physical State:	Liquid
pH:	7.0 (1% solution)
Specific Gravity (H2O = 1):	1.1
Solubility (Water):	Soluble
Flash Point: F (C):	211F (99C)
Melting/Freezing Point:	<-100C (-73C)
Boiling Point:	>300F (149C)
Vapor Pressure:	0.4 mm Hg at 77F (25C)
Vapor Density (Air=1):	5.1
Evaporation Rate:	ND
Octanol/Water Partition Coefficient:	ND
Odor Threshold(s):	ND

10. STABILITY AND REACTIVITY

Chemical Stability:	Stable
Conditions to Avoid:	Keep away from heat, sparks and flame.
Materials to Avoid:	Oxidizers.
Conditions of Reactivity:	See Conditions and Materials to Avoid, if applicable.
Hazardous Decomposition Products:	For thermal decomposition products, see Section 5.
Hazardous Polymerization	Will not occur

11. TOXICOLOGICAL INFORMATION

Acute Exposure Effects, Irritation and Sensitization: See Section 2.
Chronic, Carcinogenicity, Reproductive Toxicity, Teratogenicity, Embryotoxicity, Mutagenicity Effects: See Component Toxicological Summary and Product Toxicological Information, if available.
Synergistic Products/Effects: ND

Component Toxicological Data: Any adverse component toxicological effects and acute toxicity values (LD50s, LC50s) are listed below. If no effects or acute values are listed for components, no such data were identified.

Ingredient	CAS No.	Acute Data
Dipropylene glycol methyl ether	34590-94-8	Oral LD50 5.4 g/kg (rat); Dermal LD50 5.1 g/kg (rabbit); Inhalation LC50 >400 ppm/7H (rat)
Xanthan gum	11138-66-2	Oral LD50: > 5,000 mg/kg (rat)

Product Toxicological Information: No toxicological data is available for this product.

12. ECOLOGICAL INFORMATION

Component Ecotoxicity Data: Component ecotoxicity data are listed below. If no data are listed, none were found in the component review.

Ingredient	CAS No.	Data
Dipropylene glycol methyl ether	34590-94-8	LC50 96H: 10,000 mg/l (fathead minnow); EC50 48H: 5000 mg/l (Daphnia)
Xanthan gum	11138-66-2	LC50 96H: 490 mg/l (rainbow trout); LC50 48H: 980 mg/l (Daphnia magna)

Product Ecotoxicity Data: Contact M-I Environmental Affairs Department for available product ecotoxicity data.
Biodegration: ND
Bioaccumulation: ND

13. DISPOSAL CONSIDERATIONS

Waste Classification: ND

Waste Management: Under U.S. Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA), it is the responsibility of the user to determine at the time of disposal, whether the product meets RCRA criteria for the hazardous waste. This is because product uses, transformations, mixtures, processes, etc., may render the resulting materials hazardous. Empty containers retain residues. All labeled precautions must be observed.

Disposal Method: Recover and reclaim or recycle, if practical. Should this product become a waste, dispose of in a permitted industrial landfill. Ensure that the containers are empty by the RCRA criteria prior to disposal in a permitted industrial landfill.

14. TRANSPORT INFORMATION

U.S. DOT

Shipping Description:	Not regulated for transportation by DOT, TDG, IMDG, ICAO/IATA.
Canada TDG Shipping Description:	Not regulated.
UN PIN No:	Not regulated.
IMDG Shipping Description:	Not regulated.
ICAO/IATA Shipping Description:	Not regulated.

15. REGULATORY INFORMATION

U.S. Federal and State Regulations

SARA 311/312 Hazard Catagories: Immediate (acute) health hazard.

SARA 302/304, 313; CERCLA RQ, California Proposition 65: Note: If no components are listed below, this product is not subject to the referenced SARA and CERCLA regulations and is not known to contain a Proposition 65 listed chemical at a level that is expected to pose a significant risk under anticipated use conditions.

International Chemical Inventories

Australia AICS - Components are listed or exempt from listing.
Canada DSL - Components are listed or exempt from listing.
China Inventory - Components are listed or exempt from listing.
European Union EINECS/ELINCS - Components are listed or exempt from listing.
Japan METI ENCS - Components are listed or exempt from listing.
Korea TCCL ECL - Components are listed or exempt from listing.
New Zealand - Components are listed or exempt from listing.
Philippine PICCS - Components are listed or exempt from listing.
U.S. TSCA - Components are listed or exempt from listing.
U.S. TSCA - No components are subject to TSCA 12(b) export notification requirements.

Canadian Classification:

Controlled Products Regulations Statement: This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS Class: D2B

16. OTHER INFORMATION

The following sections have been revised: 1, 2, 6, 9, 14, 15, 16. Format changes.

NA - Not Applicable, ND - Not Determined.

*A mark of M-I L.L.C.

Disclaimer:

MSDS furnished independent of product sale. While every effort has been made to accurately describe this product, some of the data are obtained from sources beyond our direct supervision. We can not make any assertions as to its reliability or completeness; therefore, user may rely on it only at user´s risk. We have made no effort to censor or conceal deleterious aspects of this product. Since we cannot anticipate or control the conditions under which this information and product may be used, we make no guartantee that the precautions we have suggested will be adequate for all individuals and/or situations. It is the obligation of each user of this product to comply with the requirements of all applicable laws regarding use and disposal of this product. Additional information will be furnished upon request to assist the user; however, no warranty, either expressed or implied, nor liability of any nature with respect to this product or to the data herein is made or incurred hereunder.

MATERIAL SAFETY DATA SHEET

MSDS NO. 10034 **Trade Name:** DUO-VIS* **Revision Date:** 06/20/2007

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Trade Name: DUO-VIS*
Chemical Family: Mixture
Product Use: Oil well drilling fluid additive.
Emergency Telephone (24 hr.): 281-561-1600

Supplied by: M-I L.L.C.
P.O. Box 42842
Houston, TX 77242
www.miswaco.com
Telephone Number: 281-561-1512
Prepared by: Product Safety Group

Revision Number: 4

HMIS Rating
Health: 2 **Flammability:** 1 **Physical Hazard:** 0 **PPE:** E

HMIS Key: 4=Severe, 3=Serious, 2=Moderate, 1=Slight, 0=Minimal Hazard. *Chronic effects - See Section 11. See Section 8 for Personal Protective Equipment recommendations.

2. HAZARDS IDENTIFICATION

Emergency Overview: Warning! May cause eye, skin, and respiratory tract irritation. May cause skin sensitization, an allergic reaction, on repeated exposure. Long term inhalation of particulates may cause lung damage.

Canadian Classification:
UN PIN No: Not regulated. **WHMIS Class:** D2B

Physical State: Powder. **Odor:** Slight **Color:** White to Tan

Potential Health Effects:

Acute Effects

Eye Contact: May irritate eyes.
Skin Contact: May be irritating to the skin. May cause skin sensitization, an allergic reaction, on repeated exposure.
Inhalation: May be irritating to the respiratory tract. Long term inhalation of particulate may cause lung damage.
Ingestion: May cause gastric distress, nausea and vomiting if ingested.

Carcinogenicity & Chronic Effects: See Section 11 - Toxicological Information.
Routes of Exposure: Eyes. Dermal (skin) contact. Inhalation.
Target Organs/Medical Conditions Aggravated by Overexposure: Eyes. Skin. Respiratory System.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS No.	Wt. %	Comments:
Xanthan gum	11138-66-2	99 - 99.9	No comments.
Glyoxal	107-22-2	0.1 - 1	No comments.

4. FIRST AID MEASURES

Eye Contact: Promptly wash eyes with lots of water while lifting eye lids. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

Skin Contact: Wash skin thoroughly with soap and water. Remove contaminated clothing and launder before reuse. Get medical attention if any discomfort continues.

Inhalation: Move person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Dilute with 2 - 3 glasses of water or milk, if conscious. Never give anything by mouth to an unconscious person. If signs of irritation or toxicity occur seek medical attention.

General notes: Persons seeking medical attention should carry a copy of this MSDS with them.

5. FIRE FIGHTING MEASURES

Flammable Properties

Flash Point: F (C): NA
Flammable Limits in Air - Lower (%): ND
Flammable Limits in Air - Upper (%): ND
Autoignition Temperature: F (C): ND
Flammability Class: ND
Other Flammable Properties: Particulate may accumulate static electricity. Dusts at sufficient concentrations can form explosive mixtures with air.
Extinguishing Media: Use extinguishing media appropriate for surrounding fire.

Protection Of Fire-Fighters:

Special Fire-Fighting Procedures: Do not enter fire area without proper personal protective equipment, including NIOSH/MSHA approved self-contained breathing apparatus. Evacuate area and fight fire from a safe distance. Water spray may be used to keep fire-exposed containers cool. Keep water run off out of sewers and waterways.

Hazardous Combustion Products: Oxides of: Carbon.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Use personal protective equipment identified in Section 8.

Spill Procedures: Evacuate surrounding area, if necessary. Contain spilled material. Avoid the generation of dust. Sweep, vacuum, or shovel and place into closable container for disposal.

Environmental Precautions: Do not allow to enter sewer or surface and subsurface waters. Waste must be disposed of in accordance with federal, state and local laws.

7. HANDLING AND STORAGE

Handling: Put on appropriate personal protective equipment. Avoid contact with skin and eyes. Avoid generating or breathing dust. Product is slippery if wet. Use only with adequate ventilation. Wash thoroughly after handling.

Storage: Store at room temperature in dry, well ventilated area. Keep in original container. Keep container closed. Store away from incompatibles.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits (TLV & PEL - 8H TWA):

Ingredient	CAS No.	Wt. %	ACGIH TLV	OSHA PEL	Other	Notes
Xanthan gum	11138-66-2	99 - 99.9	NA	NA	NA	(1)
Glyoxal	107-22-2	0.1 - 1	0.1 mg/m^3 (Sens)	NA	NA	None

Notes
(1) Control as an ACGIH particulate not otherwise specified (PNOS): 10 mg/m^3 (Inhalable); 3 mg/m^3 (Respirable) and an OSHA particulate not otherwise regulated (PNOR): 15 mg/m^3 (Total); 5 mg/m^3 (Respirable).

Engineering Controls: Use appropriate engineering controls such as, exhaust ventilation and process enclosure, to ensure air contamination and keep workers exposure below the applicable limits.

Personal Protection Equipment

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazards present and the risk of exposure to those hazards. The PPE recommendations below are based on our assessment of the chemical hazards associated with this product. The risk of exposure and need for respiratory protection will vary from workplace to workplace and should be assessed by the user.

Eye/Face Protection: Dust resistant safety goggles.

Skin Protection: Wear appropriate clothing to prevent repeated or prolonged skin contact. Chemical resistant gloves recommended for prolonged or repeated contact. Use protective gloves made of: Neoprene. Nitrile.

Respiratory Protection: All respiratory protection equipment should be used within a comprehensive respiratory protection program that meets the requirements of 29 CFR 1910.134 (U.S. OSHA Respiratory Protection Standard) or local equivalent.

If exposed to airborne particles of this product use at least a NIOSH-approved N95 half-mask disposable or re-useable particulate respirator. In work environments containing oil mist/aerosol use at least a NIOSH-approved P95 half-mask disposable or re-useable particulate respirator.

General Hygiene Considerations: Wash promptly with soap and water if skin becomes contaminated. Change work clothing daily if there is any possibility of contamination.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color: White to Tan
Odor: Slight
Physical State: Powder.
pH: 5.4 - 8.6
Specific Gravity (H2O = 1): 1.5 g/cc
Solubility (Water): Soluble
Melting/Freezing Point: ND
Boiling Point: ND
Vapor Pressure: NA
Vapor Density (Air=1): NA
Evaporation Rate: ND
Odor Threshold(s): ND

10. STABILITY AND REACTIVITY

Chemical Stability: Stable
Conditions to Avoid: Keep away from heat, sparks and flame.
Materials to Avoid: Strong oxidizing agents.
Hazardous Decomposition Products: For thermal decomposition products, see Section 5.
Hazardous Polymerization: Will not occur

11. TOXICOLOGICAL INFORMATION

Component Toxicological Data: Any adverse component toxicological effects are listed below. If no effects are listed, no such data were found.

Ingredient	CAS No.	Acute Data
Xanthan gum	11138-66-2	Oral LD50: > 5,000 mg/kg (rat)
Glyoxal	107-22-2	Oral LD50: 200 mg/kg (rat); Dermal LD50: 10 ml/kg (rabbit)

Product Toxicological Information:
No toxicological data is available for this product.

12. ECOLOGICAL INFORMATION

Ingredient	CAS No.	Data
Xanthan gum	11138-66-2	LC50 96H: 490 mg/l (rainbow trout); LC50 48H: 980 mg/l (Daphnia magna)
Glyoxal	107-22-2	LC50 96H static: 215,000 ug/l (Pimephales promelas (fathead minnow)); EC50 96H static: 66,480 - 148,960 ug/l (Selenastrum capricornutum (green algae))

Product Ecotoxicity Data: Contact M-I Environmental Affairs Department for available product ecotoxicity data.

Biodegration: ND
Bioaccumulation: ND
Octanol/Water Partition Coefficient: ND

13. DISPOSAL CONSIDERATIONS

Waste Classification: This product does not meet the criteria of a hazardous waste if discarded in its purchased form.

Waste Management: Under U.S. Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA), it is the responsibility of the user to determine at the time of disposal, whether the product meets RCRA criteria for the hazardous waste. This is because product uses, transformations, mixtures, processes, etc., may render the resulting materials hazardous. Empty containers retain residues. All labeled precautions must be observed.

Disposal Method: Recover and reclaim or recycle, if practical. Should this product become a waste, dispose of in a permitted industrial landfill. Ensure that the containers are empty by the RCRA criteria prior to disposal in a permitted industrial landfill.

14. TRANSPORT INFORMATION

14. TRANSPORT INFORMATION

U.S. DOT Shipping Description: Not regulated for transportation by DOT, TDG, IMDG, ICAO/IATA.

Canada TDG Shipping Description: Not regulated.

UN PIN No: Not regulated.

IMDG Shipping Description: Not regulated.

ICAO/IATA Shipping Description: Not regulated.

15. REGULATORY INFORMATION

U.S. Federal and State Regulations

SARA 311/312 Hazard Catagories: Immediate (acute) health hazard.

SARA 302/304, 313; CERCLA RQ, California Proposition 65: Note: If no components are listed below, this product is not subject to the referenced SARA and CERCLA regulations and is not known to contain a Proposition 65 listed chemical at a level that is expected to pose a significant risk under anticipated use conditions.

International Chemical Inventories

Australia AICS - Components are listed or exempt from listing.
Canada DSL - Components are listed or exempt from listing.
China Inventory - Components are listed or exempt from listing.
European Union EINECS/ELINCS - Components are listed or exempt from listing.
Japan METI ENCS - Components are listed or exempt from listing.
Korea TCCL ECL - Components are listed or exempt from listing.
Philippine PICCS - Components are listed or exempt from listing.
U.S. TSCA - Components are listed or exempt from listing.
U.S. TSCA - No components are subject to TSCA 12(b) export notification requirements.

Canadian Classification:

Controlled Products Regulations Statement: This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS Class: D2B

16. OTHER INFORMATION

The following sections have been revised: 1, 2, 3, 8, 16

NA - Not Applicable, ND - Not Determined.

*A mark of M-I L.L.C.

Disclaimer:

MATERIAL SAFETY DATA SHEET

Product ID: 10341
Revision Date: 06/04/2002

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Trade Name: MAGMA FIBER
Chemical Family: Mixture
Product Use: Oil well drilling fluid additive.
Emergency Telephone (24 hr.): 281-561-1600

Supplied by a Business Unit of: M-I L.L.C.
5950 North Course Dr.
Houston, TX 77072
Telephone: 281-561-1511
Fax: 281-561-7240
Contact Person: Catherine Miller, Occupational Health

Revision Number: 1

WHMIS Class: D2A
UN PIN No: Not regulated

HMIS Rating
Health: 1* **Flammability:** 0 **Physical Hazard:** 0 **PPE:** E

HMIS Key: 4=Severe, 3=Serious, 2=Moderate, 1=Slight, 0=Minimal Hazard. *Chronic effects - See Section 11.

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS NO:	Wt. %	Ingredient Comments:
Mineral fiber	NONE	60 - 100	No comments.
Silica, crystalline, quartz	14808-60-7	1 - 5	No comments.

3. HAZARDS IDENTIFICATION

Emergency Overview: Caution! May cause eye, skin, and respiratory tract irritation. Potential cancer hazard. Contains crystalline silica which may cause lung cancer. IARC Group I carcinogen. Risk of cancer depends on duration and level of exposure.

Potential Health Effects:

Acute Effects

Eye Contact: May irritate eyes.
Skin Contact: May be irritating to the skin.
Inhalation: May be irritating to the respiratory tract if inhaled.
Ingestion: May cause gastric distress, nausea and vomiting if ingested.

Chronic Effects

Carcinogenicity:

Ingredient Silica, crystalline, quartz 14808-60-7
IARC: Listed
OSHA: Listed
NTP: Listed

Cancer Comments: IARC Monographs, Vol. 68, 1997, concludes that there is sufficient evidence that inhaled crystalline silica in the form of quartz or cristobalite from occupational sources causes cancer in humans. IARC Classification Group I. Contains a component that is IARC 2B - Possibly carcinogenic to humans. Risk of cancer depends on duration and level of exposure. See Section 11 for additional information.

Routes of Exposure: Inhalation. Dermal (skin) contact. Eyes.
Target Organs: Respiratory System. Lungs. Skin. Eyes.
Medical Conditions Aggravated By Exposure: Respiratory and skin conditions.

4. FIRST AID MEASURES

Eye Contact: Promptly wash eyes with lots of water while lifting eye lids. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

Skin Contact: Wash skin thoroughly with soap and water. Remove contaminated clothing and launder before reuse. Get medical attention if any discomfort continues.

Inhalation: Move person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Dilute with 2 - 3 glasses of water or milk, if conscious. Never give anything by mouth to an unconscious person. If signs of irritation or toxicity occur seek medical attention.

General Notes: Persons seeking medical attention should carry a copy of this MSDS with them.

Notes To Physician: None known.

5. FIRE FIGHTING MEASURES

Flammable Properties

Flash Point: °F Not applicable
Flash Point: °C Not applicable
Flash Point Method: Not applicable

Flammable Limits in Air - Lower (%): Not applicable
Flammable Limits in Air - Upper (%): Not applicable

Autoignition Temperature: °F Not applicable
Autoignition Temperature: °C Not applicable

Flammability Class: Not applicable
Other Flammable Properties: Not determined.
Extinguishing Media: Use extinguishing media appropriate for surrounding fire. This material is not combustible.

Protection Of Fire-Fighters:

Special Fire-Fighting Procedures: Do not enter fire area without proper personal protective equipment, including NIOSH/MSHA approved self-contained breathing apparatus. Evacuate area and fight fire from a safe distance. Water spray may be used to keep fire-exposed containers cool. Keep water run off out of sewers and waterways.

Hazardous Combustion Products: Not combustible

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Use personal protective equipment identified in Section 8.

Spill Procedures: Evacuate surrounding area, if necessary. Contain spilled material. Avoid the generation of dust. Sweep, vacuum, or shovel and place into closable container for disposal.

Environmental Precautions: Do not allow to enter sewer or surface and subsurface waters. Waste must be disposed of in accordance with federal, state and local laws.

7. HANDLING AND STORAGE

Handling: Put on appropriate personal protective equipment. Avoid contact with skin and eyes. Avoid generating or breathing dust. Use only in a well ventilated area. Wash thoroughly after handling.

Storage: Store at room temperature in dry, well ventilated area. Keep in original container. Keep container closed. Store away from incompatibles.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits

Ingredient	CAS NO:	Wt. %	ACGIH TLV TWA	OSHA PEL TWA	Other	Notes
Mineral fiber	NONE	60 - 100	Inhalable - 10 mg/m^3; Respirable - 3 mg/m^3	Total - 15 mg/m^3; Respirable - 5 mg/m^3		None
Silica, crystalline, quartz	14808-60-7	1 - 5	0.05 mg/m^3	see Table Z-3		(R)

Notes:
(R) Respirable fraction (ACGIH);
Table Z-3: PEL for Mineral Dusts containing crystalline silica are 10 mg/m^3 / (%SiO2+2) for quartz and 1/2 the calculated quartz value for cristobalite and tridymite.

Engineering Controls: Use appropriate engineering controls such as, exhaust ventilation and process enclosure, to ensure air contamination and keep workers exposure below the applicable limits.

Personal Protection Equipment

Eye/Face Protection: Dust resistant safety goggles.

Skin Protection: Wear appropriate clothing to prevent repeated or prolonged skin contact. Wear chemical resistant gloves such as nitrile neoprene natural rubber

Respiratory Protection: Use at least a NIOSH-approved N95 half-mask disposable or reuseable particulate respirator. In work environments containing oil mist/aerosol, use at least NIOSH-approved P95 half-mask disposable or reuseable particulate respirator. For exposure exceeding 10 x PEL use a NIOSH-approved N100 Particulate Respirator.

General Hygiene Considerations: Work clothes should be washed separately at the end of each work day. Disposable clothing should be discarded, if contaminated with product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color: tan to grey

Odor:	Odorless
Physical State:	Powder
pH Value, Conc. Sol.:	Not determined
pH Value Diluted Sol.:	Not determined.
Vapor Pressure:	Not applicable
Vapor Density (Air=1):	Not determined
Boiling Point:	Not determined
Melting/Freezing Point:	2401F (1316C)
Solubility Description:	In water
Solubility:	Insoluble
Density/Specific Gravity:	2.6 g/cm3 (68F(20C))
Evaporation Rate:	Not applicable
Odor Threshold Lower:	Not determined
Odor Threshold Upper:	Not determined

10. STABILITY AND REACTIVITY

Chemical Stability:	Stable
Conditions to Avoid:	Not determined.
Materials to Avoid:	Contact with acids.
Hazardous Decomposition Products:	Contact with some acids may release hydrogen sulfide.
Hazardous Polymerization:	Will not occur

11. TOXICOLOGICAL INFORMATION

Component Toxicological Data

Ingredient	Component Toxicological Summary
Mineral fiber	Mineral fibers can release airborne respirable fibers during their use. The International Agency for Research on Cancer (IARC) has classified man-made mineral fibers such as glass wool, rock wool, slag wool and ceramic fibers as Group 2b carcinogens (possibly carcinogenic to humans based on animal sufficient data, insufficient data in humans).
Silica, crystalline, quartz	Crystalline silica is the most widely occurring of all minerals. The most common form of silica is sand. One form of crystalline silica, respirable crystalline silica (RCS), is known to be a human carcinogen. This finding is based on sufficient evidence of carcinogenicity from studies in humans indicating a causal relationship between exposure to RCS and increased lung cancer rates in exposed workers (International Agency for Research on Cancer (IARC), 1997)). According to IARC, the overall relative risk associated risk of developing cancer due to exposure to RCS is 1.3 to 1.5. This risk may be influenced by level and length of exposure. Long term inhalation of crystalline silica can also result in the lung disease, silicosis. Symptoms of this disease include coughing and shortness of breath. (NJ HSFS, January 1996)

Product Toxicological Information:

- No toxicological data is available for this product.

12. ECOLOGICAL INFORMATION

Component Ecotoxicity Data

Ingredient	CAS NO:	Data
Mineral fiber	NONE	Not determined
Silica, crystalline, quartz	14808-60-7	Not determined

Product Exotoxicity Data

Product Data: No ecotoxicity testing has been done on this product.

Chemical Fate Data

Biodegration: Not determined
Bioaccumulation: Not determined
Octanol/Water Partition Coefficient: Not determined

13. DISPOSAL CONSIDERATIONS

Waste Classification: Not determined.

Waste Management: Under RCRA, it is the responsibility of the user to determine at the time of disposal, whether the product meets RCRA criteria for the hazardous waste. This is because product uses, transformations, mixtures, processes, etc., may render the resulting materials hazardous. Empty container retain residues. All labeled precautions must be observed.

Disposal Method: Recover and reclaim or recycle, if practical. Should this product become a waste, dispose of in a permitted industrial landfill. Ensure that the containers are empty by the RCRA criteria prior to disposal in a permitted industrial landfill.

14. TRANSPORT INFORMATION

U.S. DOT
Shipping Description: Not regulated

TDG (Canada):
Shipping Description: Not regulated
UN PIN No: Not regulated

IMDG:
Shipping Description: Not regulated

ICAO/IATA:
Shipping Description: Not regulated

15. REGULATORY INFORMATION

US Regulations

SARA 311/312:

SARA 311/312 Hazard Catagories: Delayed (chronic) health hazard;

Ingredient	SARA 313	CERCLA	SARA 302 / TPQs	CA 65 Cancer	CA 65 Dev. Tox.	CA 65 Repro. F	CA 65 Repro. M
Mineral fiber	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed
Silica, crystalline, quartz	Not Listed	Not Listed	Not Listed	carcinogen (airborne particles of respirable size); initial date 10/1/88	Not Listed	Not Listed	Not Listed

State Regulations

State Comments: Proposition 65: This product contains chemical(s) considered by the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 as causing cancer or reproductive toxicity, which warnings are now required and are marked as "listed" above.

International Inventories

Ingredient	CAS NO:	TSCA	DSL	NDSL	EINECS	AICS
Mineral fiber	NONE	Listed	Listed	Not Listed	Listed	Listed
Silica, crystalline, quartz	14808-60-7	Listed	Listed	Not Listed	Listed	Listed

Canadian Regulations

Controlled Products Regulations Statement: This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS Class: D2A

16. OTHER INFORMATION

The following has been revised since the last issue of this MSDS:
All sections.

Disclaimer:
MSDS furnished independent of product sale. While every effort has been made to accurately describe this product, some of the data are obtained from sources beyond our direct supervision. We can not make any assertions as to its reliability or completeness; therefore, user may rely on it only at user's risk. We have made no effort to censor or conceal deleterious aspects of this product. Since we cannot anticipate or control the conditions under which this information and product may be used, we make no guartantee that the precautions we have suggested will be adequate for all individuals and/or situations. It is the obligation of each user of this product to comply with the requirements of all applicable laws regarding use and disposal of this product. Additional information will be furnished upon request to assist the user; however, no warranty, either expressed or implied, nor liability of any nature with respect to this product or to the data herein is made or incurred hereunder.

MATERIAL SAFETY DATA SHEET

MSDS No. 12412 **Trade Name:** M-I GEL* **Revision Date:** 05/18/2012

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Trade Name: M-I GEL*

Chemical Family: Mixture
Product Use: Drilling fluid additive.

Supplied by: M-I L.L.C.
P.O. Box 42842
Houston, TX 77242
www.miswaco.slb.com
Telephone Number: 281-561-1509
Emergency Telephone (24 hr.): 281-561-1600
Prepared by: Product Safety Group

Revision No. 7

HMIS Rating
Health: 1* **Flammability:** 0 **Physical Hazard:** 0 **PPE:** E

4=Severe, 3=Serious, 2=Moderate, 1=Slight, 0=Minimal Hazard. *Chronic effects - See Section 11. See Section 8 for Personal Protective Equipment recommendations.

2. HAZARDS IDENTIFICATION

Emergency Overview: Caution! May cause mechanical irritation of eyes, skin and respiratory tract. Long term inhalation of particulates may cause lung damage. Cancer hazard. Contains crystalline silica which may cause cancer.

Canadian Classification:
UN PIN No: Not regulated. **WHMIS Class:** D2A

Physical State: Powder **Color:** Tan to grey **Odor:** Odorless

Potential Health Effects:
Acute Effects
Eye Contact: May cause mechanical irritation
Skin Contact: May cause mechanical irritation. Long term contact can cause skin dryness.
Inhalation: May cause mechanical irritation.
Ingestion: May cause gastric distress, nausea and vomiting if ingested.

Carcinogenicity & Chronic Effects: See Section 11 - Toxicological Information.
Routes of Exposure: Eyes. Dermal (skin) contact. Inhalation.
Target Organs/Medical Conditions Aggravated by Overexposure: Eyes. Skin. Respiratory System.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS No.	Wt. %	Comments:
Bentonite	1302-78-9	80 - 95	No comments.
Silica, crystalline, quartz	14808-60-7	2 - 15	No comments.
Silica, crystalline, Tridymite	15468-32-3	0 - 1	No comments.
Gypsum (Calcium sulfate)	13397-24-5	0 - 1	CAS 7778-18-9 also applies.

Composition Comments: Component LD50 and LC50 values are provided in Section 11, if available.

4. FIRST AID MEASURES

Eye Contact: Promptly wash eyes with lots of water while lifting eye lids. Look for and remove contact lenses. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

Skin Contact: Wash skin thoroughly with soap and water. Remove contaminated clothing and launder before reuse. Get medical attention if any discomfort continues.

Inhalation: Move person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Dilute with 2 - 3 glasses of water or milk, if conscious. Never give anything by mouth to an unconscious person. If signs of irritation or toxicity occur seek medical attention.

General notes: Persons seeking medical attention should carry a copy of this MSDS with them.

5. FIRE FIGHTING MEASURES

Flammable Properties

Flash Point: F (C): NA
Flammable Limits in Air - Lower (%): NA
Flammable Limits in Air - Upper (%): NA
Autoignition Temperature: F (C): NA
Explosion Data - Sensitivity to Mechanical Impact: NA
Explosion Data - Sensitivity to Static Discharge: If applicable, information is provided in Section 5 Special Fire-Fighting Procedures, Other Flammable Properties and Section 6 Spill Procedures.
Flammability Class: NA
Extinguishing Media: This material is not combustible. Use extinguishing media appropriate for surrounding fire.

Protection Of Fire-Fighters:

Special Fire-Fighting Procedures: Do not enter fire area without proper personal protective equipment, including NIOSH/MSHA approved self-contained breathing apparatus. Evacuate area and fight fire from a safe distance. Water spray may be used to keep fire-exposed containers cool. Keep water run off out of sewers and waterways.

Hazardous Combustion Products: Not determined.

Conditions of Flammability: Products are classified as flammable/combustible based on flash point as defined in the Health Canada Controlled Products Regulations, U.S. Occupational Health and Safety Administration Hazard Communication Standard and transportation regulations. See Sections 1, 2, 5, 14 and 15 for flammable/combustible classification information. Flammable/combustible materials may ignite and burn if exposed to a flame or other sources of ignition.
Other Flammable Properties: ND

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Use personal protective equipment identified in Section 8.

Spill Procedures: Evacuate the spill area with the exception of the spill response team. Wet product may create a slipping hazard. Contain spilled material. Do not allow spilled material to enter sewers, storm drains or surface waters. Avoid the generation of dust. Sweep, vacuum, or shovel and place into closable container for disposal.

Environmental Precautions: Waste must be disposed of in accordance with federal, state and local laws.

7. HANDLING AND STORAGE

Handling: Put on appropriate personal protective equipment. Avoid contact with skin and eyes. Avoid generating or breathing dust. Product is slippery if wet. Use only in a well ventilated area. Wash thoroughly after handling.

Storage: Store in dry, well-ventilated area. Keep container closed. Store away from incompatibles. Follow safe warehousing practices regarding palletizing, banding, shrink-wrapping and/or stacking.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits (TLV & PEL - 8H TWA):

Ingredient	CAS No.	Wt. %	ACGIH TLV	OSHA PEL	Other	Notes
Bentonite	1302-78-9	80 - 95	NA	NA	NA	(1)
Silica, crystalline, quartz	14808-60-7	2 - 15	0.025 mg/m^3	see Table Z-3	50 mg/m^3 IDLH (NIOSH)	(R)
Silica, crystalline, Tridymite	15468-32-3	0 - 1	0.025 mg/m^3	see Table Z-3	NA	(R)
Gypsum (Calcium sulfate)	13397-24-5	0 - 1	10 mg/m^3	15 mg/m^3 (total); 5 mg/m^3 (respirable)	NA	None

Notes
(1) Control as an ACGIH particulate not otherwise specified (PNOS): 10 mg/m^3 (Inhalable); 3 mg/m^3 (Respirable) and an OSHA particulate not otherwise regulated (PNOR): 15 mg/m^3 (Total); 5 mg/m^3 (Respirable).
(R) Respirable fraction.
Table Z-3: PEL for Mineral Dusts containing crystalline silica are 10 mg/m^3 / (%SiO2+2) for quartz and 1/2 the calculated quartz value for cristobalite and tridymite. 29 CFR 1910.1000.

Engineering Controls: Use appropriate engineering controls such as, exhaust ventilation and process enclosure, to ensure air contamination and keep workers exposure below the applicable limits.

Personal Protection Equipment

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

Eye/Face Protection: Dust resistant safety goggles.

Skin Protection: Wear appropriate clothing to prevent repeated or prolonged skin contact. Chemical resistant gloves recommended for prolonged or repeated contact. Use protective gloves made of: Nitrile. Neoprene.

Respiratory Protection: All respiratory protection equipment should be used within a comprehensive respiratory protection program that meets the requirements of 29 CFR 1910.134 (U.S. OSHA Respiratory Protection Standard) or local equivalent.

If exposed to airborne particles of this product use at least a NIOSH-approved N95 half-mask disposable or re-useable particulate respirator. In work environments containing oil mist/aerosol use at least a NIOSH-approved P95 half-mask disposable or re-useable particulate respirator.

General Hygiene Considerations: Work clothes should be washed separately at the end of each work day. Disposable clothing should be discarded, if contaminated with product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	Tan to grey
Odor:	Odorless
Physical State:	Powder
pH:	ND
Specific Gravity (H2O = 1):	2.3 - 2.6
Solubility (Water):	Insoluble.
Melting/Freezing Point:	ND
Boiling Point:	ND
Vapor Pressure:	NA
Vapor Density (Air=1):	NA
Evaporation Rate:	NA
Octanol/Water Partition Coefficient:	ND
Odor Threshold(s):	ND

10. STABILITY AND REACTIVITY

Chemical Stability:	Stable
Conditions to Avoid:	Keep away from heat, sparks and flame.
Materials to Avoid:	None known.
Conditions of Reactivity:	See Conditions and Materials to Avoid, if applicable.
Hazardous Decomposition Products:	For thermal decomposition products, see Section 5.
Hazardous Polymerization	Will not occur

11. TOXICOLOGICAL INFORMATION

Acute Exposure Effects, Irritation and Sensitization: See Section 2.
Chronic, Carcinogenicity, Reproductive Toxicity, Teratogenicity, Embryotoxicity, Mutagenicity Effects: See Component Toxicological Summary and Product Toxicological Information, if available.
Synergistic Products/Effects: ND

Component Toxicological Data: Any adverse component toxicological effects and acute toxicity values (LD50s, LC50s) are listed below. If no effects or acute values are listed for components, no such data were identified.

Ingredient	Component Toxicological Summary
Silica, crystalline, quartz	Crystalline silica is the most widely occurring of all minerals. The most common form of silica is sand. The International Agency for Research on Cancer (IARC) has designated crystalline silica in the form of quartz or cristobalite a Group 1 (carcinogenic to humans). This designation was based on an increased risk of lung cancer among crystalline silica exposed workers. IARC did note that carcinogenicity of crystalline silica in humans was not detected in all industrial circumstances studied. Further, carcinogenicity of crystalline silica may be dependent on inherent characteristics of the crystalline silica or external factors affecting its biological activity or distribution of polymorphs. (IARC Vol. 68, 1997, p. 41). The National Toxicology Program (NTP) classifies crystalline silica as "reasonably anticipated to cause cancer in humans" (6th Annual Report on Carcinogens, 1991). Long term inhalation of crystalline silica can also result in the lung disease, silicosis. Symptoms of this disease include coughing and shortness of breath. (NJ HSFS, January 1996)

Product Toxicological Information: Long term inhalation of particulate can cause irritation, inflammation and/or permanent injury to the lungs. Illnesses such as pneumoconiosis ("dusty lung"), pulmonary fibrosis, chronic bronchitis, emphysema and bronchial asthma may develop.

12. ECOLOGICAL INFORMATION

Component Ecotoxicity Data: Component ecotoxicity data are listed below. If no data are listed, none were found in the component review.

Product Ecotoxicity Data: Contact M-I Environmental Affairs Department for available product ecotoxicity data.
Biodegration: ND
Bioaccumulation: ND

13. DISPOSAL CONSIDERATIONS

Waste Classification: ND

Waste Management: Under U.S. Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA), it is the responsibility of the user to determine at the time of disposal, whether the product meets RCRA criteria for the hazardous waste. This is because product uses, transformations, mixtures, processes, etc., may render the resulting materials hazardous. Empty containers retain residues. All labeled precautions must be observed.

Disposal Method: Recover and reclaim or recycle, if practical. Should this product become a waste, dispose of in a permitted industrial landfill. Ensure that the containers are empty by the RCRA criteria prior to disposal in a permitted industrial landfill.

14. TRANSPORT INFORMATION

U.S. DOT
Shipping Description: Not regulated for transportation by DOT, TDG, IMDG, ICAO/IATA.

Canada TDG Shipping Description: Not regulated.
UN PIN No: Not regulated.
IMDG Shipping Description: Not regulated.
ICAO/IATA Shipping Description: Not regulated.

15. REGULATORY INFORMATION

U.S. Federal and State Regulations

SARA 311/312 Hazard Catagories: Delayed (chronic) health hazard.

SARA 302/304, 313; CERCLA RQ, California Proposition 65: Note: If no components are listed below, this product is not subject to the referenced SARA and CERCLA regulations and is not known to contain a Proposition 65 listed chemical at a level that is expected to pose a significant risk under anticipated use conditions.

Ingredient	SARA 302 / TPQs	SARA 313	CERCLA RQ	CA 65 Cancer	CA 65 Dev. Tox.	CA 65 Repro. F	CA 65 Repro. M
Silica, crystalline, quartz	---	---	---	X	---	---	---
Silica, crystalline, Tridymite	---	---	---	X	---	---	---

State Comments: Proposition 65: This product contains chemical(s) considered by the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 to cause cancer and/or reproductive toxicity. See table under U.S. Federal and State Regulations for the specific chemicals.

International Chemical Inventories

Australia AICS - Components are listed or exempt from listing.
Canada DSL - Components are listed or exempt from listing.
China Inventory - Components are listed or exempt from listing.
European Union EINECS/ELINCS - Components are listed or exempt from listing.
Japan METI ENCS - Components are listed or exempt from listing.
Korea TCCL ECL - Components are listed or exempt from listing.
New Zealand - Components are listed or exempt from listing.
Philippine PICCS - Components are listed or exempt from listing.
U.S. TSCA - Components are listed or exempt from listing.
U.S. TSCA - No components are subject to TSCA 12(b) export notification requirements.

Canadian Classification:

Controlled Products Regulations Statement: This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS Class: D2A

16. OTHER INFORMATION

The following sections have been revised: 1, 2, 3, 8, 15, 16.

NA - Not Applicable, ND - Not Determined.

*A mark of M-I L.L.C.

Disclaimer:

MSDS furnished independent of product sale. While every effort has been made to accurately describe this product, some of the data are obtained from sources beyond our direct supervision. We can not make any assertions as to its reliability or completeness; therefore, user may rely on it only at user´s risk. We have made no effort to censor or conceal deleterious aspects of this product. Since we cannot anticipate or control the conditions under which this information and product may be used, we make no guartantee that the precautions we have suggested will be adequate for all individuals and/or situations. It is the obligation of each user of this product to comply with the requirements of all applicable laws regarding use and disposal of this product. Additional information will be furnished upon request to assist the user; however, no warranty, either expressed or implied, nor liability of any nature with respect to this product or to the data herein is made or incurred hereunder.

A Schlumberger Company

MATERIAL SAFETY DATA SHEET

MSDS No. 10059 **Trade Name:** M-I SEAL* **Revision Date:** 03/15/2011

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Trade Name: M-I SEAL*

Chemical Family: Vegetable, polymer fiber blend.
Product Use: Oil well drilling fluid additive. Lost circulation material. MSDS covers all grades.

Supplied by: M-I L.L.C.
P.O. Box 42842
Houston, TX 77242
www.miswaco.slb.com
Telephone Number: 281-561-1512
Emergency Telephone (24 hr.): 281-561-1600
Prepared by: Product Safety Group

Revision No. 5

HMIS Rating
Health: 2* **Flammability:** 1 **Physical Hazard:** 0 **PPE:** E

4=Severe, 3=Serious, 2=Moderate, 1=Slight, 0=Minimal Hazard. *Chronic effects - See Section 11. See Section 8 for Personal Protective Equipment recommendations.

2. HAZARDS IDENTIFICATION

Emergency Overview: Caution! May cause eye, skin, and respiratory tract irritation. Long term inhalation of particulates may cause lung damage. May cause skin and respiratory sensitization (allergic reaction) on repeated exposure. Cancer hazard. Contains wood dust which may cause respiratory tract cancer.

Canadian Classification:
UN PIN No: Not regulated. **WHMIS Class:** D2A D2B

Physical State: Blend of flake, fibrous and granular materials. **Color:** Yellow to Brown **Odor:** Woody

Potential Health Effects:
Acute Effects
Eye Contact: Dust may cause irritation and inflammation.
Skin Contact: Dust may cause skin irritation. May cause skin sensitization, an allergic reaction, on repeated exposure. Prolonged or repeated contact may cause defatting of the skin and/or dermatitis (inflammation).
Inhalation: Dust may be irritating to the respiratory tract. May cause respiratory sensitization, an allergic reaction, on repeated exposure.
Ingestion: May cause gastric distress, nausea and vomiting if ingested.

Carcinogenicity & Chronic Effects: See Section 11 - Toxicological Information.
Routes of Exposure: Eyes. Dermal (skin) contact. Inhalation.

Target Organs/Medical Conditions Aggravated by Overexposure: Eyes. Skin. Respiratory System.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS No.	Wt. %	Comments:
Wood dust, hard wood		45 - 65	No comments.
Blend of cellulose fibers		35 - 55	No comments.

Composition Comments: Component LD50 and LC50 values are provided in Section 11, if available.

4. FIRST AID MEASURES

Eye Contact: Promptly wash eyes with lots of water while lifting eye lids. Look for and remove contact lenses. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

Skin Contact: Wash skin thoroughly with soap and water. Remove contaminated clothing and launder before reuse. Get medical attention if any discomfort continues.

Inhalation: Move person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Dilute with 2 - 3 glasses of water or milk, if conscious. Never give anything by mouth to an unconscious person. If signs of irritation or toxicity occur seek medical attention.

General notes: Persons seeking medical attention should carry a copy of this MSDS with them.

5. FIRE FIGHTING MEASURES

Flammable Properties

Flash Point: F (C): NA
Flammable Limits in Air - Lower (%): ND
Flammable Limits in Air - Upper (%): ND
Autoignition Temperature: F (C): ND
Explosion Data - Sensitivity to Mechanical Impact: NA
Explosion Data - Sensitivity to Static Discharge: If applicable, information is provided in Section 5 Special Fire-Fighting Procedures, Other Flammable Properties and Section 6 Spill Procedures.
Flammability Class: NA
Extinguishing Media: Water fog, carbon dioxide, foam, dry chemical.

Protection Of Fire-Fighters:

Special Fire-Fighting Procedures: Do not enter fire area without proper personal protective equipment, including NIOSH/MSHA approved self-contained breathing apparatus. Evacuate area and fight fire from a safe distance. Water spray may be used to keep fire-exposed containers cool. Keep water run off out of sewers and waterways.

Hazardous Combustion Products: Oxides of: Carbon. Aldehydes. Organic acids.

Conditions of Flammability: Products are classified as flammable/combustible based on flash point as defined in the Health Canada Controlled Products Regulations, U.S. Occupational Health and Safety Administration Hazard Communication Standard and transportation regulations. See Sections 1, 2, 5, 14 and 15 for flammable/combustible classification information. Flammable/combustible materials may ignite and burn if exposed to a flame or other sources of ignition.
Other Flammable Properties: Particulate may accumulate static electricity. Dusts at sufficient concentrations can form explosive mixtures with air.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Use personal protective equipment identified in Section 8.

Spill Procedures: Evacuate the spill area with the exception of the spill response team. Contain spilled material. Do not allow spilled material to enter sewers, storm drains or surface waters. Keep incompatible materials away from spill. Avoid the generation of dust. Wet product may create a slipping hazard. Sweep, vacuum, or shovel and place into closable container for disposal.

Environmental Precautions: Waste must be disposed of in accordance with federal, state and local laws. In the U.S., for products with reportable quanitity (RQ) components - if the RQ is exceeded, report to National Spill Response Office at 1 800 424 8802.

7. HANDLING AND STORAGE

Handling: Put on appropriate personal protective equipment. Avoid contact with skin and eyes. Avoid generating or breathing dust. Product is slippery if wet. Use only with adequate ventilation. Wash thoroughly after handling.

Storage: Store in well ventilated area. Keep container closed. Store away from incompatibles. Follow safe warehousing practices regarding palletizing, banding, shrink-wrapping and/or stacking.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits (TLV & PEL - 8H TWA):

Ingredient	CAS No.	Wt. %	ACGIH TLV	OSHA PEL	Other	Notes
Wood dust, hard wood		45 - 65	1 mg/m^3 (hardwoods such as beech, oak); 5 mg/m^3 (softwoods)	15 mg/m^3 (total); 5 mg/m^3 (respirable)	1 mg/m^3 (NIOSH)	A1
Blend of cellulose fibers		35 - 55	NA	NA	NA	(1)

Notes
(1) Control as an ACGIH particulate not otherwise specified (PNOS): 10 mg/m^3 (Inhalable); 3 mg/m^3 (Respirable) and an OSHA particulate not otherwise regulated (PNOR): 15 mg/m^3 (Total); 5 mg/m^3 (Respirable).
ACGIH A1 - Confirmed Human Carcinogen.

Engineering Controls: Local exhaust ventilation as necessary to maintain exposures to within applicable limits.

Personal Protection Equipment

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazards present and the risk of exposure to those hazards. The PPE recommendations below are based on our assessment of the chemical hazards associated with this product. The risk of exposure and need for respiratory protection will vary from workplace to workplace and should be assessed by the user.

Eye/Face Protection: Dust resistant safety goggles.

Skin Protection: Wear appropriate clothing to prevent repeated or prolonged skin contact. Wear chemical resistant gloves such as: Neoprene. Nitrile.

Respiratory Protection: All respiratory protection equipment should be used within a comprehensive respiratory protection program that meets the requirements of 29 CFR 1910.134 (U.S. OSHA Respiratory Protection Standard) or local equivalent.

If exposed to airborne particles of this product use at least a NIOSH-approved N95 half-mask disposable or re-useable particulate respirator. In work environments containing oil mist/aerosol use at least a NIOSH-approved P95 half-mask disposable or re-useable particulate respirator.

General Hygiene Considerations: Work clothes should be washed separately at the end of each work day. Disposable clothing should be discarded, if contaminated with product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	Yellow to Brown
Odor:	Woody
Physical State:	Blend of flake, fibrous and granular materials.
pH:	NA
Specific Gravity (H2O = 1):	0.9 - 1.2 (68F)
Solubility (Water):	Insoluble.
Melting/Freezing Point:	NA
Boiling Point:	NA
Vapor Pressure:	NA
Vapor Density (Air=1):	NA
Evaporation Rate:	NA
Octanol/Water Partition Coefficient:	ND
Odor Threshold(s):	ND

10. STABILITY AND REACTIVITY

Chemical Stability:	Stable
Conditions to Avoid:	Keep away from heat, sparks and flame.
Materials to Avoid:	Oxidizers. Drying oils.
Conditions of Reactivity:	See Conditions and Materials to Avoid, if applicable.
Hazardous Decomposition Products:	For thermal decomposition products, see Section 5.
Hazardous Polymerization	Will not occur

11. TOXICOLOGICAL INFORMATION

Acute Exposure Effects, Irritation and Sensitization: See Section 2.
Chronic, Carcinogenicity, Reproductive Toxicity, Teratogenicity, Embryotoxicity, Mutagenicity Effects: See Component Toxicological Summary and Product Toxicological Information, if available.
Synergistic Products/Effects: ND

Component Toxicological Data: Any adverse component toxicological effects and acute toxicity values (LD50s, LC50s) are listed below. If no effects or acute values are listed for components, no such data were identified.

Ingredient	Component Toxicological Summary
Wood dust, hard wood	This component has been classified by the International Agency for Research on Cancer (IARC) as a Group 1 carcinogen (sufficent evidence of causing cancer in humans). Studies of woodworkers suggested that occupational exposure to wood dust may increase the risk of cancer of the respiratory tract, particularly the nasal cavities and paranasal sinuses. The National Toxicology Program (NTP) has classified wood dust as known to be a human carcinogen (Report on Carcinogens 11th edition). The U.S. Occupational Safety and Health Administration (OSHA) reported an increased incidence of lung, nasal and stomach cancers; leukemia and Hodgkin's disease in workers exposed to wood dust (OSHA comments from the January 19, 1989 Final Rule on Air Contaminants Project).

Product Toxicological Information: Long term inhalation of particulate can cause irritation, inflammation and/or permanent injury to the lungs. Illnesses such as pneumoconiosis ("dusty lung"), pulmonary fibrosis, chronic bronchitis, emphysema and bronchial asthma may develop.

12. ECOLOGICAL INFORMATION

Component Ecotoxicity Data: Component ecotoxicity data are listed below. If no data are listed, none were found in the component review.

Product Ecotoxicity Data: Contact M-I Environmental Affairs Department for available product ecotoxicity data.
Biodegration: ND
Bioaccumulation: ND

13. DISPOSAL CONSIDERATIONS

Waste Classification: ND

Waste Management: Under U.S. Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA), it is the responsibility of the user to determine at the time of disposal, whether the product meets RCRA criteria for the hazardous waste. This is because product uses, transformations, mixtures, processes, etc., may render the resulting materials hazardous. Empty containers retain residues. All labeled precautions must be observed.

Disposal Method: Recover and reclaim or recycle, if practical. Should this product become a waste, dispose of in a permitted industrial landfill. Ensure that the containers are empty by the RCRA criteria prior to disposal in a permitted industrial landfill.

14. TRANSPORT INFORMATION

U.S. DOT

Shipping Description:	Not regulated for transportation by DOT, TDG, IMDG, ICAO/IATA.
Canada TDG Shipping Description:	Not regulated.
UN PIN No:	Not regulated.
IMDG Shipping Description:	Not regulated.
ICAO/IATA Shipping Description:	Not regulated.

15. REGULATORY INFORMATION

U.S. Federal and State Regulations

SARA 311/312 Hazard Catagories: Immediate (acute) health hazard. Delayed (chronic) health hazard.

SARA 302/304, 313; CERCLA RQ, California Proposition 65: Note: If no components are listed below, this product is not subject to the referenced SARA and CERCLA regulations and is not known to contain a Proposition 65 listed chemical at a level that is expected to pose a significant risk under anticipated use conditions.

International Chemical Inventories

Australia AICS - Components are listed or exempt from listing.
Canada DSL - Components are listed or exempt from listing.
China Inventory - Contains a component that is not listed.
European Union EINECS/ELINCS - Components are listed or exempt from listing.
Japan METI ENCS - Contains a component that is not listed.
Korea TCCL ECL - Contains a component that is not listed.
New Zealand - Components are listed or exempt from listing.
Philippine PICCS - Contains a component that is not listed.
U.S. TSCA - Components are listed or exempt from listing.
U.S. TSCA - No components are subject to TSCA 12(b) export notification requirements.

Canadian Classification:

Controlled Products Regulations Statement: This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS Class: D2A D2B

16. OTHER INFORMATION

The following sections have been revised: 1, 4, 6, 8, 11, 15, 16.

NA - Not Applicable, ND - Not Determined.

*A mark of M-I L.L.C.

Disclaimer:

MSDS furnished independent of product sale. While every effort has been made to accurately describe this product, some of the data are obtained from sources beyond our direct supervision. We can not make any assertions as to its reliability or completeness; therefore, user may rely on it only at user´s risk. We have made no effort to censor or conceal deleterious aspects of this product. Since we cannot anticipate or control the conditions under which this information and product may be used, we make no guartantee that the precautions we have suggested will be adequate for all individuals and/or situations. It is the obligation of each user of this product to comply with the requirements of all applicable laws regarding use and disposal of this product. Additional information will be furnished upon request to assist the user; however, no warranty, either expressed or implied, nor liability of any nature with respect to this product or to the data herein is made or incurred hereunder.

MATERIAL SAFETY DATA SHEET

MSDS NO. 10038 **Trade Name:** M-I-X* II **Revision Date:** 01/30/2008

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Trade Name: M-I-X* II
Chemical Family: Cellulose
Product Use: Oil well drilling fluid additive. Lost circulation material.
Emergency Telephone (24 hr.): 281-561-1600

Supplied by: M-I L.L.C.
P.O. Box 42842
Houston, TX 77242
www.miswaco.com
Telephone Number: 281-561-1511
Prepared by: Product Safety Group

Revision Number: 7

HMIS Rating
Health: 1* **Flammability:** 1 **Physical Hazard:** 0 **PPE:** E

HMIS Key: 4=Severe, 3=Serious, 2=Moderate, 1=Slight, 0=Minimal Hazard. *Chronic effects - See Section 11. See Section 8 for Personal Protective Equipment recommendations.

2. HAZARDS IDENTIFICATION

Emergency Overview: Caution! May cause eye, skin and respiratory tract irritation. Long term inhalation of particulates may cause lung damage. Cancer hazard. Contains crystalline silica which may cause cancer.

Canadian Classification:
UN PIN No: Not regulated. **WHMIS Class:** D2A

Physical State: Powder, dust. **Odor** Mild (or faint) **Color:** Tan

Potential Health Effects:

Acute Effects

Eye Contact: May cause mechanical irritation
Skin Contact: May cause mechanical irritation. Long term contact can cause skin dryness.
Inhalation: May cause mechanical irritation.
Ingestion: May cause gastric distress, nausea and vomiting if ingested.

Carcinogenicity & Chronic Effects: See Section 11 - Toxicological Information.
Routes of Exposure: Eyes. Dermal (skin) contact. Inhalation.
Target Organs/Medical Conditions Aggravated by Overexposure: Respiratory System. Skin. Eyes.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS No.	Wt. %	Comments:
Cellulose	9004-34-6	99 - 100	No comments.
Silica, crystalline, quartz	14808-60-7	0.5 - 1.5	No comments.

4. FIRST AID MEASURES

Eye Contact: Promptly wash eyes with lots of water while lifting eye lids. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

Skin Contact: Wash skin thoroughly with soap and water. Remove contaminated clothing and launder before reuse. Get medical attention if any discomfort continues.

Inhalation: Move person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Dilute with 2 - 3 glasses of water or milk, if conscious. Never give anything by mouth to an unconscious person. If signs of irritation or toxicity occur seek medical attention.

General notes: Persons seeking medical attention should carry a copy of this MSDS with them.

5. FIRE FIGHTING MEASURES

Flammable Properties

Flash Point: F (C): NA
Flammable Limits in Air - Lower (%): ND
Flammable Limits in Air - Upper (%): ND
Autoignition Temperature: F (C): ND
Flammability Class: NA
Other Flammable Properties: Particulate may accumulate static electricity. Dusts at sufficient concentrations can form explosive mixtures with air. Palleted bags of some fine cellulosic materials have been reported to smolder under certain conditions. See Section 7 Handling and Storage.
Extinguishing Media: Use extinguishing media appropriate for surrounding fire.

Protection Of Fire-Fighters:

Special Fire-Fighting Procedures: Do not enter fire area without proper personal protective equipment, including NIOSH/MSHA approved self-contained breathing apparatus. Evacuate area and fight fire from a safe distance. Water spray may be used to keep fire-exposed containers cool. Keep water run off out of sewers and waterways.

Hazardous Combustion Products: Oxides of: Carbon.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Use personal protective equipment identified in Section 8.

Spill Procedures: Evacuate surrounding area, if necessary. Wet product may create a slipping hazard. Contain spilled material. Avoid the generation of dust. Sweep, vacuum, or shovel and place into closable container for disposal.

Environmental Precautions: Do not allow to enter sewer or surface and subsurface waters. Waste must be disposed of in accordance with federal, state and local laws.

7. HANDLING AND STORAGE

Handling: Put on appropriate personal protective equipment. Avoid contact with skin and eyes. Avoid generating or breathing dust. Product is slippery if wet. Use only in a well ventilated area. Wash thoroughly after handling.

Storage: Store in dry, well-ventilated area. Keep container closed. Store away from incompatibles. Follow safe warehousing practices regarding palletizing, banding, shrink-wrapping and/or stacking.
Palleted bags of some fine cellulosic materials have been reported to smolder. To minimize the risk of smoldering: 1. Minimize fines in the product. 2. Minimize moisture. 3. If shrink wrapped: a. Minimize dust on bags as being stacked prior to shrink wrapping. b. Allow to sit for at least 24 hours before loading. Observe for smoldering. c. Practice care if heat gun is used to seal shrink wrap. Avoid generation of sparks.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits (TLV & PEL - 8H TWA):

Ingredient	CAS No.	Wt. %	ACGIH TLV	OSHA PEL	Other	Notes
Cellulose	9004-34-6	99 - 100	10 mg/m^3	15 mg/m^3 (Total); 5 mg/m^3 (Respirable)	NA	None
Silica, crystalline, quartz	14808-60-7	0.5 - 1.5	0.025 mg/m^3	see Table Z-3	NIOSH: 0.05 mg/m^3 TWA (10H day/40H wk)	(R)

Notes
(R) Respirable fraction (ACGIH);
Table Z-3: PEL for Mineral Dusts containing crystalline silica are 10 mg/m^3 / (%SiO2+2) for quartz and 1/2 the calculated quartz value for cristobalite and tridymite.

Engineering Controls: Use appropriate engineering controls such as, exhaust ventilation and process enclosure, to ensure air contamination and keep workers exposure below the applicable limits.

Personal Protection Equipment

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazards present and the risk of exposure to those hazards. The PPE recommendations below are based on our assessment of the chemical hazards associated with this product. The risk of exposure and need for respiratory protection will vary from workplace to workplace and should be assessed by the user.

Eye/Face Protection: Dust resistant safety goggles.

Skin Protection: Wear appropriate clothing to prevent repeated or prolonged skin contact. Chemical resistant gloves recommended for prolonged or repeated contact. Use protective gloves made of: Neoprene. Nitrile.

Respiratory Protection: All respiratory protection equipment should be used within a comprehensive respiratory protection program that meets the requirements of 29 CFR 1910.134 (U.S. OSHA Respiratory Protection Standard) or local equivalent.

If exposed to airborne particles of this product use at least a NIOSH-approved N95 half-mask disposable or re-useable particulate respirator. In work environments containing oil mist/aerosol use at least a NIOSH-approved P95 half-mask disposable or re-useable particulate respirator.

General Hygiene Considerations: Work clothes should be washed separately at the end of each work day. Disposable clothing should be discarded, if contaminated with product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	Tan
Odor	Mild (or faint)
Physical State:	Powder, dust.
pH:	ND
Specific Gravity (H2O = 1):	1.4 - 1.65 at 68 F (20 C)
Solubility (Water):	Insoluble
Flash Point: F (C):	NA
Melting/Freezing Point:	ND
Boiling Point:	ND
Vapor Pressure:	NA
Vapor Density (Air=1):	NA
Evaporation Rate:	NA
Odor Threshold(s):	ND

10. STABILITY AND REACTIVITY

Chemical Stability:	Stable
Conditions to Avoid:	Keep away from heat, sparks and flame. See Section 7 also.
Materials to Avoid:	Oxidizers.
Hazardous Decomposition Products:	For thermal decomposition products, see Section 5.
Hazardous Polymerization:	Will not occur

11. TOXICOLOGICAL INFORMATION

Component Toxicological Data: Any adverse component toxicological effects are listed below. If no effects are listed, no such data were found.

Ingredient	CAS No.	Acute Data
Cellulose	9004-34-6	Oral LD50: >5000 mg/kg (rat); Dermal LD50: >2000 mg/kg (rabbit); Inhalation LC50: >5800 mg/m³/4H (rat)

Ingredient	Component Toxicological Summary
Cellulose	Long term inhalation exposure to this particulate may cause a benign pneumoconiosis (irritation caused by dust inhalation which may lead to fibrosis (formation of fibrous tissue)). (NIOSH, HazardText)
Silica, crystalline, quartz	Crystalline silica is the most widely occurring of all minerals. The most common form of silica is sand. The International Agency for Research on Cancer (IARC) has designated crystalline silica in the form of quartz or cristobalite a Group 1 (carcinogenic to humans). This designation was based on an increased risk of lung cancer among crystalline silica exposed workers. IARC did note that carcinogenicity of crystalline silica in humans was not detected in all industrial circumstances studied. Further, carcinogenicity of crystalline silica may be dependent on inherent characteristics of the crystalline silica or external factors affecting its biological activity or distribution of polymorphs. (IARC Vol. 68, 1997, p. 41). The National Toxicology Program (NTP) classifies crystalline silica as "reasonably anticipated to cause cancer in humans" (6th Annual Report on Carcinogens, 1991). Long term inhalation of crystalline silica can also result in the lung disease, silicosis. Symptoms of this disease include coughing and shortness of breath. (NJ HSFS, January 1996)

Product Toxicological Information:

Long term inhalation of particulate can cause irritation, inflammation and/or permanent injury to the lungs. Illnesses such as pneumoconiosis ("dusty lung"), pulmonary fibrosis, chronic bronchitis, emphysema and bronchial asthma may develop.

12. ECOLOGICAL INFORMATION

Component Ecotoxicity Data: No data available.

Product Ecotoxicity Data: Contact M-I Environmental Affairs Department for available product ecotoxicity data.

Biodegration: ND
Bioaccumulation: ND
Octanol/Water Partition Coefficient: ND

13. DISPOSAL CONSIDERATIONS

Waste Classification: ND

Waste Management: Under U.S. Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA), it is the responsibility of the user to determine at the time of disposal, whether the product meets RCRA criteria for the hazardous waste. This is because product uses, transformations, mixtures, processes, etc., may render the resulting materials hazardous. Empty containers retain residues. All labeled precautions must be observed.

Disposal Method: Recover and reclaim or recycle, if practical. Should this product become a waste, dispose of in a permitted industrial landfill. Ensure that the containers are empty by the RCRA criteria prior to disposal in a permitted industrial landfill.

14. TRANSPORT INFORMATION

U.S. DOT Shipping Description: Not regulated for transportation by DOT, TDG, IMDG, ICAO/IATA.

Canada TDG Shipping Description: Not regulated.
UN PIN No: Not regulated.

IMDG Shipping Description: Not regulated.

ICAO/IATA Shipping Description: Not regulated.

15. REGULATORY INFORMATION

U.S. Federal and State Regulations

SARA 311/312 Hazard Catagories: Delayed (chronic) health hazard.

SARA 302/304, 313; CERCLA RQ, California Proposition 65: Note: If no components are listed below, this product is not subject to the referenced SARA and CERCLA regulations and is not known to contain a Proposition 65 listed chemical at a level that is expected to pose a significant risk under anticipated use conditions.

Ingredient	SARA 302 / TPQs	SARA 313	CERCLA RQ	CA 65 Cancer	CA 65 Dev. Tox.	CA 65 Repro. F	CA 65 Repro. M
Silica, crystalline, quartz	---	---	---	X	---	---	---

International Chemical Inventories

Australia AICS - Components are listed or exempt from listing.
Canada DSL - Components are listed or exempt from listing.
China Inventory - Components are listed or exempt from listing.
European Union EINECS/ELINCS - Components are listed or exempt from listing.
Japan METI ENCS - Components are listed or exempt from listing.
Korea TCCL ECL - Components are listed or exempt from listing.
Philippine PICCS - Components are listed or exempt from listing.
U.S. TSCA - Components are listed or exempt from listing.
U.S. TSCA - No components are subject to TSCA 12(b) export notification requirements.

Canadian Classification:

Controlled Products Regulations Statement: This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS Class: D2A

16. OTHER INFORMATION

The following sections have been revised: 1, 3, 16

NA - Not Applicable, ND - Not Determined.

*A mark of M-I L.L.C.

Disclaimer:
MSDS furnished independent of product sale. While every effort has been made to accurately describe this product, some of the data are obtained from sources beyond our direct supervision. We can not make any assertions as to its reliability or completeness; therefore, user may rely on it only at user´s risk. We have made no effort to censor or conceal deleterious aspects of this product. Since we cannot anticipate or control the conditions under which this information and product may be used, we make no guartantee that the precautions we have suggested will be adequate for all individuals and/or situations. It is the obligation of each user of this product to comply with the requirements of all applicable laws regarding use and disposal of this product. Additional information will be furnished upon request to assist the user; however, no warranty, either expressed or implied, nor liability of any nature with respect to this product or to the data herein is made or incurred hereunder.

MATERIAL SAFETY DATA SHEET

MSDS NO. 10070 **Trade Name:** POLYPAC* UL **Revision Date:** 06/20/2007

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Trade Name: POLYPAC* UL
Chemical Family: Polysaccharide
Product Use: Oil well drilling fluid additive. Fluid loss reducer.
Emergency Telephone (24 hr.): 281-561-1600

Supplied by: M-I L.L.C.
P.O. Box 42842
Houston, TX 77242
www.miswaco.com
Telephone Number: 281-561-1512
Prepared by: Product Safety Group

Revision Number: 5

HMIS Rating

Health: 1 **Flammability:** 1 **Physical Hazard:** 0 **PPE:** E

HMIS Key: 4=Severe, 3=Serious, 2=Moderate, 1=Slight, 0=Minimal Hazard. *Chronic effects - See Section 11. See Section 8 for Personal Protective Equipment recommendations.

2. HAZARDS IDENTIFICATION

Emergency Overview: Caution! May cause mechanical irritation of eyes, skin and respiratory tract. Long term inhalation of particulates may cause lung damage.

Canadian Classification:
UN PIN No: Not regulated. **WHMIS Class:** Not a controlled product.

Physical State: Powder, dust. **Odor:** Odorless or no characteristic odor. **Color:** White

Potential Health Effects:

Acute Effects

Eye Contact: May cause mechanical irritation
Skin Contact: May cause mechanical irritation.
Inhalation: May cause mechanical irritation.
Ingestion: May cause gastric distress, nausea and vomiting if ingested.

Carcinogenicity & Chronic Effects: See Section 11 - Toxicological Information.
Routes of Exposure: Eyes. Dermal (skin) contact. Inhalation.
Target Organs/Medical Conditions Aggravated by Overexposure: Eyes. Skin. Respiratory System.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS No.	Wt. %	Comments:
Carboxymethylcellulose sodium salt	9004-32-4	100	No comments.

4. FIRST AID MEASURES

Eye Contact: Promptly wash eyes with lots of water while lifting eye lids. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

Skin Contact: Wash skin thoroughly with soap and water. Remove contaminated clothing and launder before reuse. Get medical attention if any discomfort continues.

Inhalation: Move person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Dilute with 2 - 3 glasses of water or milk, if conscious. Never give anything by mouth to an unconscious person. If signs of irritation or toxicity occur seek medical attention.

General notes: Persons seeking medical attention should carry a copy of this MSDS with them.

5. FIRE FIGHTING MEASURES

Flammable Properties

Flash Point: F (C): NA
Flammable Limits in Air - Lower (%): ND
Flammable Limits in Air - Upper (%): ND
Autoignition Temperature: F (C): ND
Flammability Class: NA
Other Flammable Properties: Particulate may accumulate static electricity. Dusts at sufficient concentrations can form explosive mixtures with air.
Extinguishing Media: Use extinguishing media appropriate for surrounding fire.

Protection Of Fire-Fighters:

Special Fire-Fighting Procedures: Do not enter fire area without proper personal protective equipment, including NIOSH/MSHA approved self-contained breathing apparatus. Evacuate area and fight fire from a safe distance. Water spray may be used to keep fire-exposed containers cool. Keep water run off out of sewers and waterways.

Hazardous Combustion Products: Oxides of: Carbon.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Use personal protective equipment identified in Section 8.

Spill Procedures: Evacuate surrounding area, if necessary. Wet product may create a slipping hazard. Contain spilled material. Avoid the generation of dust. Sweep, vacuum, or shovel and place into closable container for disposal.

Environmental Precautions: Do not allow to enter sewer or surface and subsurface waters. Waste must be disposed of in accordance with federal, state and local laws.

7. HANDLING AND STORAGE

Handling: Put on appropriate personal protective equipment. Avoid contact with skin and eyes. Avoid generating or breathing dust. Product is slippery if wet. Use only with adequate ventilation. Wash thoroughly after handling.

Storage: Store in dry, well-ventilated area. Keep container closed. Store away from incompatibles. Follow safe warehousing practices regarding palletizing, banding, shrink-wrapping and/or stacking.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits (TLV & PEL - 8H TWA):

Ingredient	CAS No.	Wt. %	ACGIH TLV	OSHA PEL	Other	Notes
Carboxymethylcellulose sodium salt	9004-32-4	100	NA	NA	NA	(1)

Notes
(1) Control as an ACGIH particulate not otherwise specified (PNOS): 10 mg/m^3 (Inhalable); 3 mg/m^3 (Respirable) and an OSHA particulate not otherwise regulated (PNOR): 15 mg/m^3 (Total); 5 mg/m^3 (Respirable).

Engineering Controls: Use appropriate engineering controls such as, exhaust ventilation and process enclosure, to ensure air contamination and keep workers exposure below the applicable limits.

Personal Protection Equipment

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazards present and the risk of exposure to those hazards. The PPE recommendations below are based on our assessment of the chemical hazards associated with this product. The risk of exposure and need for respiratory protection will vary from workplace to workplace and should be assessed by the user.

Eye/Face Protection: Dust resistant safety goggles.

Skin Protection: Not normally necessary. If needed to minimize irritation: Wear appropriate clothing to prevent repeated or prolonged skin contact. Wear chemical resistant gloves such as: Nitrile. Neoprene.

Respiratory Protection: All respiratory protection equipment should be used within a comprehensive respiratory protection program that meets the requirements of 29 CFR 1910.134 (U.S. OSHA Respiratory Protection Standard) or local equivalent.

If exposed to airborne mist/aerosol of this product, use at least a NIOSH-approved N95 half-mask disposable or re-usable particulate respirator. In work environments containing oil mist/aerosol, use at least a NIOSH-approved P95 half-mask disposable or reuseable particulate respirator.

If exposed to vapors from this product use a NIOSH/MSHA-approved respirator with an Organic Vapor cartridge.

General Hygiene Considerations: Work clothes should be washed separately at the end of each work day. Disposable clothing should be discarded, if contaminated with product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color: White
Odor: Odorless or no characteristic odor.
Physical State: Powder, dust.
pH: 6.5-8.0 at (1% solution)
Specific Gravity (H2O = 1): 1.5-1.6 at 68 F (20 F)
Solubility (Water): Soluble
Flash Point: F (C): NA
Melting/Freezing Point: ND
Boiling Point: ND

9. PHYSICAL AND CHEMICAL PROPERTIES

Vapor Pressure: NA
Vapor Density (Air=1): NA
Evaporation Rate: NA
Odor Threshold(s): ND

10. STABILITY AND REACTIVITY

Chemical Stability: Stable
Conditions to Avoid: Keep away from heat, sparks and flame.
Materials to Avoid: Oxidizers.
Hazardous Decomposition Products: For thermal decomposition products, see Section 5.
Hazardous Polymerization: Will not occur

11. TOXICOLOGICAL INFORMATION

Component Toxicological Data: Any adverse component toxicological effects are listed below. If no effects are listed, no such data were found.

Ingredient	CAS No.	Acute Data
Carboxymethylcellulose sodium salt	9004-32-4	Oral LD50: 27000 mg/kg (rat); Dermal LD50: >2000 mg/kg (rabbit); LC50: >5800 mg/m^3/4H (rat)

Ingredient	Component Toxicological Summary
Carboxymethylcellulose sodium salt	Rats fed diets containing 2.5, 5 and 10% of this component for 3 months demonstrated some kidney effects. Effects were believed to be related to high sodium content of diet. (Food Chem. Toxicol.)

Product Toxicological Information:
Long term inhalation of particulate can cause irritation, inflammation and/or permanent injury to the lungs. Illnesses such as pneumoconiosis ("dusty lung"), pulmonary fibrosis, chronic bronchitis, emphysema and bronchial asthma may develop.

12. ECOLOGICAL INFORMATION

Product Ecotoxicity Data: Contact M-I Environmental Affairs Department for available product ecotoxicity data.

Biodegration: ND
Bioaccumulation: ND
Octanol/Water Partition Coefficient: ND

13. DISPOSAL CONSIDERATIONS

Waste Classification: ND

Waste Management: Under U.S. Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA), it is the responsibility of the user to determine at the time of disposal, whether the product meets RCRA criteria for the hazardous waste. This is because product uses, transformations, mixtures, processes, etc., may render the resulting materials hazardous. Empty containers retain residues. All labeled precautions must be observed.

Disposal Method: Recover and reclaim or recycle, if practical. Should this product become a waste, dispose of in a permitted industrial landfill. Ensure that the containers are empty by the RCRA criteria prior to disposal in a permitted industrial landfill.

14. TRANSPORT INFORMATION

U.S. DOT Shipping Description: Not regulated for transportation by DOT, TDG, IMDG, ICAO/IATA.

Canada TDG Shipping Description: Not regulated.
UN PIN No: Not regulated.

IMDG Shipping Description: Not regulated.

ICAO/IATA Shipping Description: Not regulated.

15. REGULATORY INFORMATION

U.S. Federal and State Regulations

SARA 311/312 Hazard Catagories: Not a SARA 311/312 hazard.

SARA 302/304, 313; CERCLA RQ, California Proposition 65: Note: If no components are listed below, this product is not subject to the referenced SARA and CERCLA regulations and is not known to contain a Proposition 65 listed chemical at a level that is expected to pose a significant risk under anticipated use conditions.

International Chemical Inventories

Australia AICS - Components are listed or exempt from listing.
Canada DSL - Components are listed or exempt from listing.
China Inventory - Components are listed or exempt from listing.
European Union EINECS/ELINCS - Components are listed or exempt from listing.
Japan METI ENCS - Components are listed or exempt from listing.
Korea TCCL ECL - Components are listed or exempt from listing.
Philippine PICCS - Components are listed or exempt from listing.
U.S. TSCA - Components are listed or exempt from listing.
U.S. TSCA - No components are subject to TSCA 12(b) export notification requirements.

Canadian Classification:

Controlled Products Regulations Statement: This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS Class: Not a controlled product.

16. OTHER INFORMATION

The following sections have been revised: 1, 2, 3, 8, 16

NA - Not Applicable, ND - Not Determined.

*A mark of M-I L.L.C.

Disclaimer:

MSDS furnished independent of product sale. While every effort has been made to accurately describe this product, some of the data are obtained from sources beyond our direct supervision. We can not make any assertions as to its reliability or completeness; therefore, user may rely on it only at user´s risk. We have made no effort to censor or conceal deleterious aspects of this product. Since we cannot anticipate or control the conditions under which this information and product may be used, we make no guartantee that the precautions we have suggested will be adequate for all individuals and/or situations. It is the obligation of each user of this product to comply with the requirements of all applicable laws regarding use and disposal of this product. Additional information will be furnished upon request to assist the user; however, no warranty, either expressed or implied, nor liability of any nature with respect to this product or to the data herein is made or incurred hereunder.

Kern River Drilling Summary Table: #9

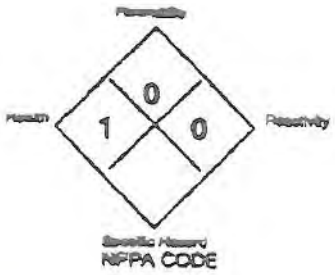
MATERIAL SAFETY DATA SHEET – POTASH

Revision Issued: April 30, 2002

SECTION I – PRODUCT AND COMPANY IDENTIFICATION

P.O. Box 1208
Moab, Utah 84532
Office 435-259-7171
Fax 435-259-7100

EMERGENCIES: CALL [illegible]
HEALTH EMERGENCIES: CONTACT YOUR LOCAL POISON CENTER



Common name: Potash Formula: KCl Synonym: Muriate of Potash Use: Fertilizer

SECTION II – COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name(s)	CAS No.	Exposure Limits								% by Weight
		OSHA PEL		TLV - TWA		STEL		CEIL		
		mg/m³	ppm	mg/m³	ppm	mg/m³	ppm	mg/m³	ppm	
Potassium Chloride	7447-40-7			10*						95-99.5
Sodium Chloride	7647-14-5			10*						0.1-4

May contain up to 0.25% base lubrication oil and/or 0.03% neutralized primary aliphatic amines.
*Based on ACGIH nuisance dust limits.

SECTION III – HAZARD IDENTIFICATION

Potential Acute Health Effects: May cause irritation.

Eyes and Skin: Mild irritation, especially in open wounds.

Inhalation: Exposure to high dust concentrations may cause irritation of mucous membranes.

Ingestion: A large body load may cause vomiting, diarrhea, cramps, tingling in hands and feet, weak pulse, and circulatory disturbances.

Potential Chronic Health Effects: Lung Symptoms

Carcinogenicity Lists: IARC Monograph No NTP: No OSHA: No

SECTION IV – FIRST AID MEASURES

Eyes: Flush with water, including under upper & lower lids, for at least 15 minutes. Get medical attention if pain and irritation persists.

Skin: Wash thoroughly with water. Obtain advise if rash develope.

Ingestion: Administer water if patient is conscious. Ingesting potash will usually cause purging of the stomach by vomiting. Get Medical attention.

Inhalation: Remove to fresh air. If discomfort persists, get medical attention.

SECTION V – FIRE FIGHTING MEASURES

Flash Point: None **Auto-Ignition Temperature:** Not Applicable

Lower Explosive Limit: Not Applicable **Upper Explosive Limit:** Not Applicable

Unusual Fire and Explosion Hazards: When subjected to extremely high temperatures, it may release small quantities of chlorine gas.

Extinguishing Media: As required for surrounding fire. Potash is non-flammable and does not support combustion.

Special Firefighting Procedures and Equipment: Wear full protective clothing and self-contained breathing apparatus.

SECTION VI – ACCIDENTAL RELEASE MEASURES

Small Spill:	Sweep up and use as fertilizer if non-contaminated.
Large Spill:	Collect with appropriate equipment. If on a hard surface, sweep up residue with brooms. If on soil, remove and collect the top 5 cm of soil.
Release Noise:	Potash is highly soluble and can be quickly diluted below the toxic level by relatively large amounts of water. Potash which has entered a small non-permanent pond should be removed by pumping the pond dry. If spill could potentially enter any waterway, including intermittent dry creeks, contact the local authorities. If in the U.S., contact the US COAST GUARD NATIONAL RESPONSE CENTER toll free number, 800-424-8802. In case of accident or road spill notify: CHEMTREC IN USA AT 800-424-9300; CANUTEC in Canada at 613-996-6666 CHEMTREC in other countries at (international code)+1-703-527-3887.
Comments:	See Section XIII for disposal information and Section XV for regulatory requirements. Large and small spills may have a broad Definition depending on the user's handling system. Therefore, the spill category must be defined at the point of release by technically qualified personnel.

SECTION VII – HANDLING AND STORAGE

Ventilation:	Local exhaust to reduce dust concentrations below recommended levels.
Handling:	Avoid generating dust by excessive or unnecessary movement.
Storage:.	Store in a dry location. Avoid contact with aluminum or carbon steel to minimize corrosion

SECTION VIII – EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:	May be necessary to minimize dust levels.
Personal Protection:	
Eye Protection:	Use tight-fitting safety goggles in areas of high dust concentration.
Protective Clothing:	Gloves, long sleeve shirts and long pants. Launder work clothing regularly
Respiratory Protection:	NIOSH approved dust respirators until engineering controls are implemented.
Other Protective Clothing or Equipment:	Optional

SECTION IX – PHYSICAL AND CHEMICAL PROPERTIES

Appearance/Color/Odor:	White to red solid, fine to 4mm size, granules which may have a slight oily odor.		
Melting Point/Range:	77°C	Boiling Point:	1500°C(sublimates)
Solubility in Water:	357 g/L at 26°C	Boiling Point/Range:	1420 - 1500°C
Specific Gravity:	2.0 (H_2O = 1)	Vapor Pressure (mmHg):	Not Applicable
Vapor Density:	Not Applicable	Molecular Weight:	74
Bulk Density:	1.08 g/ml	% Volatiles:	< 0.5
pH:	8 – 9 (solution)	Evaporation Rate:	Not Applicable
Viscosity:	Not applicable		

SECTION X – STABILITY AND REACTIVITY

Stability:	Stable
Hazardous Polymerization:	Will not occur
Conditions to Avoid:	None
Materials to Avoid (Incompatibilities):	Contact with strong acid may produce hydrogen chlorine gas; contact with hot nitric acid may produce toxic nitrosyl chloride.
Hazardous Decomposition Products:	None

SECTION XI TOXICOLOGICAL INFORMATION

Significant Routes of Exposure:	Eyes, skin, inhalation, ingestion
Toxicity to Animals:	Oral LD_{50} (mouse, rat): 1600 – 2600 mg/kg
Special Remarks On Toxicity to animals:	Based on toxicity data for another salt compound (i.e. potassium nitrate). Not expected to be toxic by dermal exposure as defined by OSHA
Other Effects on Humans:	None known.
Special Remarks: On Chronic Effects On Humans:	Not reported to be carcinogenic mutagenic, teralogenic or allergenic.
Special Remarks On other Effects on Humans:	None

SECTION XII – ECOLOGICAL INFORMATION

Ecotoxicity:	96 hour LC50 (rainbow trout) 2010mg/L 12 hour TLm (aquatic plants) 1337 mg/L NEOL (aquatic plants) 0.6 g/L 48 hour TLm (daphnia) 337 mg/L 72 hour EC50 (aquatic plants) 2500 mg/L
Environmental Fate:	Dissolves in water and dissociates into K and Cl ions. Will remain in solution until solubility product (350 g/L)reached. Ions may be absorbed by plants or by animals ingesting water containing potash.
Toxicity:	Non-toxic to aquatic organisms as defined by USEPA
Degradation	Chloride and potassium ions.

SECTION XIII – DISPOSAL CONSIDERATIONS

Product Disposal:	Uncontaminated product may be used as fertilizer. Otherwise, dispose according to Federal State or Provincial regulations in a landfill approved to receive potash.
General Comments:	Because of its solubility, potash should not be disposed of in a location where run-off will escape.

SECTION XIV – TRANSPORTATION INFORMATION

	USDOT	TDG - Canada
Proper Shipping Name:	Not Regulated	Not Regulated
Hazard Class:		
Identification Number:		
Packing Group (Technical Name)		
Labeling/Placarding:		

Authorized Packaging:

Notes:

European Transportation:

SECTION XV – REGULATORY INFORMATION

UNITED STATES:

SARA Hazard Category: This product has been reviewed according to the EPA Hazard Categories promulgated under Section 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Fire: No Pressure Generating: No Reactivity: No Acute: No Chronic: No

40 CFR Part 355 – Extremely Hazardous Substances:
40 CFR Part 370 – Hazardous Chemical Reporting:
All intentional ingredients listed on the TSCA Inventory.

SARA Title III Information: This product contains the following substances subject to the reporting requirements of Title III(EPCRA) of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

Chemical	CAS No.	Percent by Weight	CERCLA RQ (lbs.)	SARA (1986) Reporting		
				311	312	313
Potassium Chloride	7447-40-7	95-99.8	NA	No	No	No
Sodium Chloride	7647-14-5	0.1-4	NA	No	No	No

CERCLA/Superfund, 40 CFR Parts 117,302: If this product contains components subject to substances designated a CERCLA Reportable Quantity (RQ) Substances, it will be designated in the above table with the RQ value in pounds. If there is a release of RQ Substance to the environment, notification to the National Response Center, Washington D.C. (1-800-424-8802) is required.

CANADA:

WHMIS Hazard Symbol and Classification: Not controlled
Ingredient Disclosure List: This product does not contain ingredient(s) on this list.
Environmental Protection: All intentional ingredients are listed on the DSL (Domestic Substance List).

SECTION XVI – OTHER INFORMATION

NFPA Hazard Rating: Health 1 Fire 0 Reactivity 0 Special Hazards

0 = Insignificant 1 = Slight 2 = Moderate 3 = High 4 = Extreme

Comments: None

Section(s) changed since last revision: All, New Format and new ecotoxicity information.

MATERIAL SAFETY DATA SHEET

MSDS No. 13793 **Trade Name:** POWERVIS* L **Revision Date:** 05/14/2012

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Trade Name: POWERVIS* L

Chemical Family: Mixture
Product Use: Completion fluid additive. Viscosifier.

Supplied by: M-I L.L.C.
P.O. Box 42842
Houston, TX 77242
www.miswaco.slb.com
Telephone Number: 281-561-1509
Emergency Telephone (24 hr.): 281-561-1600
Prepared by: Product Safety Group

Revision No. 1

HMIS Rating
Health: 1 **Flammability:** 2 **Physical Hazard:** 0 **PPE:** J

4=Severe, 3=Serious, 2=Moderate, 1=Slight, 0=Minimal Hazard. *Chronic effects - See Section 11. See Section 8 for Personal Protective Equipment recommendations.

2. HAZARDS IDENTIFICATION

Emergency Overview: Caution! Combustible liquid and vapor. May cause eye irritation. May be harmful if absorbed through skin.

Canadian Classification:
UN PIN No: Not regulated. **WHMIS Class:** B3 D2B

Physical State: Slurry Liquid **Color:** White to tan **Odor:** Ether.

Potential Health Effects:
Acute Effects
Eye Contact: May irritate eyes.
Skin Contact: May be harmful if absorbed through skin. Not expected to cause skin irritation under anticipated workplace exposures.
Inhalation: Not expected to be an inhalation hazard under anticipated workplace exposures. Overexposure to vapors and mists which may be released at high temperatures may cause central nervous system (CNS) effects and respiratory tract irritation.
Ingestion: May cause gastric distress, nausea and vomiting if ingested. Aspiration can be a hazard if this material is swallowed.

Carcinogenicity & Chronic Effects: See Section 11 - Toxicological Information.
Routes of Exposure: Eyes. Dermal (skin) contact. Dermal (skin) absorption. Inhalation.
Target Organs/Medical Conditions Aggravated by Overexposure: Eyes. Skin. Respiratory System. Central Nervous System (CNS).

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS No.	Wt. %	Comments:
Dipropylene glycol methyl ether	34590-94-8	60 - 100	No comments.
Biopolymer		10 - 30	No comments.

Composition Comments: Component LD50 and LC50 values are provided in Section 11, if available.

4. FIRST AID MEASURES

Eye Contact: Promptly wash eyes with lots of water while lifting eye lids. Look for and remove contact lenses. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

Skin Contact: Wash skin thoroughly with soap and water. Remove contaminated clothing and launder before reuse. Get medical attention if any discomfort continues.

Inhalation: Move person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Do not induce vomiting. Dilute with 2 - 3 glasses of water or milk, if conscious. Never give anything by mouth to an unconscious person. Get immediate medical attention.

General notes: Persons seeking medical attention should carry a copy of this MSDS with them.

Notes To Physician: Aspiration may cause severe lung damage. Evacuate stomach in a way which avoids aspiration.

5. FIRE FIGHTING MEASURES

Flammable Properties

Flash Point: F (C): 144F (62C)
Flash Point Method: PMCC
Flammable Limits in Air - Lower (%): ND
Flammable Limits in Air - Upper (%): ND
Autoignition Temperature: F (C): ND
Explosion Data - Sensitivity to Mechanical Impact: NA
Explosion Data - Sensitivity to Static Discharge: If applicable, information is provided in Section 5 Special Fire-Fighting Procedures, Other Flammable Properties and Section 6 Spill Procedures.
Flammability Class: IIIA
Extinguishing Media: Water fog, carbon dioxide, foam, dry chemical.

Protection Of Fire-Fighters:

Special Fire-Fighting Procedures: Do not enter fire area without proper personal protective equipment, including NIOSH/MSHA approved self-contained breathing apparatus. Evacuate area and fight fire from a safe distance. Water spray may be used to keep fire-exposed containers cool. Keep water run off out of sewers and waterways. Note that flammable vapors may form an ignitable mixture with air. Vapors may travel considerable distances and flash back if ignited.

Hazardous Combustion Products: Oxides of: Carbon.

Conditions of Flammability: Products are classified as flammable/combustible based on flash point as defined in the Health Canada Controlled Products Regulations, U.S. Occupational Health and Safety Administration Hazard Communication Standard and transportation regulations. See Sections 1, 2, 5, 14 and 15 for flammable/combustible classification information. Flammable/combustible materials may ignite and burn if exposed to a flame or other sources of ignition.
Other Flammable Properties: ND

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Use personal protective equipment identified in Section 8.

Spill Procedures: Evacuate the spill area with the exception of the spill response team. Keep personnel removed and upwind of spill. Extinguish all ignition sources. Avoid sparks, flames, heat and smoking. Shut off leak if it can be done safely. Contain spilled material. Do not allow spilled material to enter sewers, storm drains or surface waters. Absorb in vermiculite, dry sand or earth. Place into containers for disposal. Note that flammable/combustible vapors may form an ignitable mixture with air. Vapors may travel considerable distances from spill and flash back, if ignited.

Environmental Precautions: Waste must be disposed of in accordance with federal, state and local laws. In the U.S., for products with reportable quanitity (RQ) components - if the RQ is exceeded, report to National Spill Response Office at 1 800 424 8802.

7. HANDLING AND STORAGE

Handling: Put on appropriate personal protective equipment. Avoid contact with skin and eyes. Avoid breathing vapors or spray mists. Use only in a well ventilated area. Ground and bond containers when transferring material. Wash thoroughly after handling.

Storage: Store in dry, well-ventilated area. Keep container closed. Keep away from heat, sparks and flames. Store away from incompatibles.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits (TLV & PEL - 8H TWA):

Ingredient	CAS No.	Wt. %	ACGIH TLV	OSHA PEL	Other	Notes
Dipropylene glycol methyl ether	34590-94-8	60 - 100	100 ppm	100 ppm	150 ppm STEL (NIOSH)	Skin.
Biopolymer		10 - 30	NA	NA	NA	(1)

Notes
(1) Control as an ACGIH particulate not otherwise specified (PNOS): 10 mg/m^3 (Inhalable); 3 mg/m^3 (Respirable) and an OSHA particulate not otherwise regulated (PNOR): 15 mg/m^3 (Total); 5 mg/m^3 (Respirable).
Skin - Potential for cutaneous absorption.

Engineering Controls: Local exhaust ventilation as necessary to maintain exposures to within applicable limits.

Personal Protection Equipment

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

Eye/Face Protection: Wear chemical safety goggles.

Skin Protection: Wear appropriate clothing to prevent repeated or prolonged skin contact. Wear chemical resistant gloves such as nitrile or neoprene.

Respiratory Protection: All respiratory protection equipment should be used within a comprehensive respiratory protection program that meets the requirements of 29 CFR 1910.134 (U.S. OSHA Respiratory Protection Standard) or local equivalent.

If exposed to airborne mist/aerosol of this product, use an organic vapor cartridge with a P-95 pre-filter attached. In work environments containing oil mist/aerosol, use an organic vapor cartridge with a P-95 pre-filter attached.

If exposed to vapors from this product, use a NIOSH/MSHA-approved respirator with an organic vapor cartridge.

General Hygiene Considerations: Work clothes should be washed separately at the end of each work day. Disposable clothing should be discarded, if contaminated with product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	White to tan
Odor:	Ether.
Physical State:	Slurry Liquid
pH:	7.0 (1% solution)
Specific Gravity (H2O = 1):	1.1
Solubility (Water):	Soluble
Flash Point: F (C):	144F (62C)
Melting/Freezing Point:	<-100F (-73C)
Boiling Point:	>300F (149C)
Vapor Pressure:	0.4 mm Hg at 77F (25C)
Vapor Density (Air=1):	5.1
Evaporation Rate:	ND
Octanol/Water Partition Coefficient:	ND
Odor Threshold(s):	ND

10. STABILITY AND REACTIVITY

Chemical Stability:	Stable
Conditions to Avoid:	Keep away from heat, sparks and flame.
Materials to Avoid:	Oxidizers.
Conditions of Reactivity:	See Conditions and Materials to Avoid, if applicable.
Hazardous Decomposition Products:	For thermal decomposition products, see Section 5.
Hazardous Polymerization	Will not occur

11. TOXICOLOGICAL INFORMATION

Acute Exposure Effects, Irritation and Sensitization: See Section 2.
Chronic, Carcinogenicity, Reproductive Toxicity, Teratogenicity, Embryotoxicity, Mutagenicity Effects: See Component Toxicological Summary and Product Toxicological Information, if available.
Synergistic Products/Effects: ND

Component Toxicological Data: Any adverse component toxicological effects and acute toxicity values (LD50s, LC50s) are listed below. If no effects or acute values are listed for components, no such data were identified.

Ingredient	CAS No.	Acute Data
Dipropylene glycol methyl ether	34590-94-8	Oral LD50 5.4 g/kg (rat); Dermal LD50 5.1 g/kg (rabbit); Inhalation LC50 >400 ppm/7H (rat)
Biopolymer		Oral LD50: >5000 mg/kg (rat); Inhalation LC50: >5 mg/l/4H (rat)

Product Toxicological Information: No toxicological data is available for this product.

12. ECOLOGICAL INFORMATION

Component Ecotoxicity Data: Component ecotoxicity data are listed below. If no data are listed, none were found in the component review.

Ingredient	CAS No.	Data
Dipropylene glycol methyl ether	34590-94-8	LC50 96H: 10,000 mg/l (fathead minnow); EC50 48H: 5000 mg/l (Daphnia)
Biopolymer		LC50 96H: >100 mg/l (rainbow trout); EC50 72H: >100 mg/l (Scenedesmus subspicatus); EC50 48H: >100 mg/l (Daphnia magna); Aerobic Aqueous Medium 28D: 95% degradation

Product Ecotoxicity Data: Contact M-I Environmental Affairs Department for available product ecotoxicity data.
Biodegration: ND
Bioaccumulation: ND

13. DISPOSAL CONSIDERATIONS

Waste Classification: ND

Waste Management: Under U.S. Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA), it is the responsibility of the user to determine at the time of disposal, whether the product meets RCRA criteria for the hazardous waste. This is because product uses, transformations, mixtures, processes, etc., may render the resulting materials hazardous. Empty containers retain residues. All labeled precautions must be observed.

Disposal Method: Recover and reclaim or recycle, if practical. Should this product become a waste, dispose of in a permitted industrial landfill. Ensure that the containers are empty by the RCRA criteria prior to disposal in a permitted industrial landfill.

14. TRANSPORT INFORMATION

U.S. DOT
Shipping Description: Not regulated under TDG, IMDG, ICAO/IATA. Not regulated for U.S. ground transport in non-bulk containers (<119 gallons). When shipped in U.S. in bulk containers, NA1993, Combustible liquid, n.o.s. (contains glycol ether), PG III.

Canada TDG Shipping Description:	Not regulated.
UN PIN No:	Not regulated.
IMDG Shipping Description:	Not regulated.
ICAO/IATA Shipping Description:	Not regulated.

15. REGULATORY INFORMATION

U.S. Federal and State Regulations

SARA 311/312 Hazard Catagories: Immediate (acute) health hazard.

SARA 302/304, 313; CERCLA RQ, California Proposition 65: Note: If no components are listed below, this product is not subject to the referenced SARA and CERCLA regulations and is not known to contain a Proposition 65 listed chemical at a level that is expected to pose a significant risk under anticipated use conditions.

International Chemical Inventories

Australia AICS - Components are listed or exempt from listing.
Canada DSL - Components are listed or exempt from listing.
China Inventory - Contains a component that is not listed.
European Union EINECS/ELINCS - Components are listed or exempt from listing.
Japan METI ENCS - Contains a component that is not listed.
Korea TCCL ECL - Components are listed or exempt from listing.
New Zealand - Components are listed or exempt from listing.
Philippine PICCS - Contains a component that is not listed.
U.S. TSCA - Components are listed or exempt from listing.
U.S. TSCA - Diutan gum is subject to TSCA 12(b) export notification requirements.

Canadian Classification:

Controlled Products Regulations Statement: This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS Class: B3 D2B

16. OTHER INFORMATION

The following sections have been revised: 1, 15, 16.

NA - Not Applicable, ND - Not Determined.

*A mark of M-I L.L.C.

Disclaimer:

MATERIAL SAFETY DATA SHEET

MSDS No. 13392 **Trade Name:** POWERVIS* **Revision Date:** 04/27/2010

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Trade Name: POWERVIS*

Chemical Family: Viscosifier
Product Use: Drilling fluid additive.

Supplied by: M-I L.L.C.
P.O. Box 42842
Houston, TX 77242
www.miswaco.com
Telephone Number: 281-561-1512
Emergency Telephone (24 hr.): 281-561-1600
Prepared by: Product Safety Group

Revision No. 0

HMIS Rating
Health: 1 **Flammability:** 1 **Physical Hazard:** 0 **PPE:** E

4=Severe, 3=Serious, 2=Moderate, 1=Slight, 0=Minimal Hazard. *Chronic effects - See Section 11. See Section 8 for Personal Protective Equipment recommendations.

2. HAZARDS IDENTIFICATION

Emergency Overview: Caution! May cause mechanical irritation of eyes, skin and respiratory tract. Long term inhalation of particulates may cause lung damage.

Canadian Classification:
UN PIN No: Not regulated. **WHMIS Class:** Not a controlled product.

Physical State: Powder, dust. **Color:** White to tan **Odor:** Slight

Potential Health Effects:
Acute Effects

Eye Contact: May cause mechanical irritation
Skin Contact: May cause mechanical irritation.
Inhalation: May cause mechanical irritation.
Ingestion: May cause gastric distress, nausea and vomiting if ingested.

Carcinogenicity & Chronic Effects: See Section 11 - Toxicological Information.
Routes of Exposure: Eyes. Dermal (skin) contact. Inhalation.
Target Organs/Medical Conditions Aggravated by Overexposure: Eyes. Skin. Respiratory System.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS No.	Wt. %	Comments:
Polysaccharide		60-100	No comments.

4. FIRST AID MEASURES

Eye Contact: Promptly wash eyes with lots of water while lifting eye lids. Look for and remove contact lenses. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

Skin Contact: Wash skin thoroughly with soap and water. Remove contaminated clothing and launder before reuse. Get medical attention if any discomfort continues.

Inhalation: Move person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Dilute with 2 - 3 glasses of water or milk, if conscious. Never give anything by mouth to an unconscious person. If signs of irritation or toxicity occur seek medical attention.

General notes: Persons seeking medical attention should carry a copy of this MSDS with them.

5. FIRE FIGHTING MEASURES

Flammable Properties

Flash Point: F (C): NA
Flammable Limits in Air - Lower (%): ND
Flammable Limits in Air - Upper (%): ND
Autoignition Temperature: F (C): ND
Flammability Class: NA
Other Flammable Properties: Particulate may accumulate static electricity. Dusts at sufficient concentrations can form explosive mixtures with air.
Extinguishing Media: Use extinguishing media appropriate for surrounding fire.

Protection Of Fire-Fighters:

Special Fire-Fighting Procedures: Do not enter fire area without proper personal protective equipment, including NIOSH/MSHA approved self-contained breathing apparatus. Evacuate area and fight fire from a safe distance. Water spray may be used to keep fire-exposed containers cool. Keep water run off out of sewers and waterways.

Hazardous Combustion Products: Oxides of: Carbon.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Use personal protective equipment identified in Section 8.

Spill Procedures: Evacuate the spill area with the exception of the spill response team. Wet product may create a slipping hazard. Contain spilled material. Avoid the generation of dust. Sweep, vacuum, or shovel and place into closable container for disposal.

Environmental Precautions: Do not allow to enter sewer or surface and subsurface waters. Waste must be disposed of in accordance with federal, state and local laws.

7. HANDLING AND STORAGE

Handling: Put on appropriate personal protective equipment. Avoid contact with skin and eyes. Avoid generating or breathing dust. Product is slippery if wet. Use only with adequate ventilation. Wash thoroughly after handling.

Storage: Store in dry, well-ventilated area. Keep container closed. Store away from incompatibles. Follow safe warehousing practices regarding palletizing, banding, shrink-wrapping and/or stacking.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits (TLV & PEL - 8H TWA):

Ingredient	CAS No.	Wt. %	ACGIH TLV	OSHA PEL	Other	Notes
Polysaccharide		60-100	NA	NA	NA	(1)

Notes
(1) Control as an ACGIH particulate not otherwise specified (PNOS): 10 mg/m^3 (Inhalable); 3 mg/m^3 (Respirable) and an OSHA particulate not otherwise regulated (PNOR): 15 mg/m^3 (Total); 5 mg/m^3 (Respirable).

Engineering Controls: Use appropriate engineering controls such as, exhaust ventilation and process enclosure, to ensure air contamination and keep workers exposure below the applicable limits.

Personal Protection Equipment

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazards present and the risk of exposure to those hazards. The PPE recommendations below are based on our assessment of the chemical hazards associated with this product. The risk of exposure and need for respiratory protection will vary from workplace to workplace and should be assessed by the user.

Eye/Face Protection: Dust resistant safety goggles.

Skin Protection: Not normally necessary. If needed to minimize irritation: Wear appropriate clothing to prevent repeated or prolonged skin contact. Wear chemical resistant gloves such as: Nitrile. Neoprene.

Respiratory Protection: All respiratory protection equipment should be used within a comprehensive respiratory protection program that meets the requirements of 29 CFR 1910.134 (U.S. OSHA Respiratory Protection Standard) or local equivalent.

If exposed to airborne particles of this product use at least a NIOSH-approved N95 half-mask disposable or re-useable particulate respirator. In work environments containing oil mist/aerosol use at least a NIOSH-approved P95 half-mask disposable or re-useable particulate respirator.

General Hygiene Considerations: Work clothes should be washed separately at the end of each work day. Disposable clothing should be discarded, if contaminated with product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color: White to tan
Odor: Slight
Physical State: Powder, dust.
pH: ND
Specific Gravity (H2O = 1): ND
Solubility (Water): Soluble

Flash Point: F (C):	NA
Melting/Freezing Point:	ND
Boiling Point:	ND
Vapor Pressure:	NA
Vapor Density (Air=1):	NA
Evaporation Rate:	NA
Odor Threshold(s):	ND

10. STABILITY AND REACTIVITY

Chemical Stability:	Stable
Conditions to Avoid:	ND
Materials to Avoid:	Oxidizers.
Hazardous Decomposition Products:	For thermal decomposition products, see Section 5.
Hazardous Polymerization	Will not occur

11. TOXICOLOGICAL INFORMATION

Component Toxicological Data: Any adverse component toxicological effects are listed below. If no effects are listed, no such data were found.

Product Toxicological Information:
Long term inhalation of particulate can cause irritation, inflammation and/or permanent injury to the lungs. Illnesses such as pneumoconiosis ("dusty lung"), pulmonary fibrosis, chronic bronchitis, emphysema and bronchial asthma may develop.

12. ECOLOGICAL INFORMATION

Component Ecotoxicity Data:	Component ecotoxicity data are listed below. If no data are listed, none were found in the component review.
Product Ecotoxicity Data:	Contact M-I Environmental Affairs Department for available product ecotoxicity data.
Biodegration:	ND
Bioaccumulation:	ND
Octanol/Water Partition Coefficient:	ND

13. DISPOSAL CONSIDERATIONS

Waste Classification:	ND
Waste Management:	Under U.S. Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA), it is the responsibility of the user to determine at the time of disposal, whether the product meets RCRA criteria for the hazardous waste. This is because product uses, transformations, mixtures, processes, etc., may render the resulting materials hazardous. Empty containers retain residues. All labeled precautions must be observed.

Disposal Method: Recover and reclaim or recycle, if practical. Should this product become a waste, dispose of in a permitted industrial landfill. Ensure that the containers are empty by the RCRA criteria prior to disposal in a permitted industrial landfill.

14. TRANSPORT INFORMATION

U.S. DOT

Shipping Description: Not regulated for transportation by DOT, TDG, IMDG, ICAO/IATA.

Canada TDG Shipping Description: Not regulated.

UN PIN No: Not regulated.

IMDG Shipping Description: Not regulated.

ICAO/IATA Shipping Description: Not regulated.

15. REGULATORY INFORMATION

U.S. Federal and State Regulations

SARA 311/312 Hazard Catagories: Not a SARA 311/312 hazard.

SARA 302/304, 313; CERCLA RQ, California Proposition 65: Note: If no components are listed below, this product is not subject to the referenced SARA and CERCLA regulations and is not known to contain a Proposition 65 listed chemical at a level that is expected to pose a significant risk under anticipated use conditions.

International Chemical Inventories

Australia AICS - Contains a component that is not listed.
Canada DSL - Components are listed or exempt from listing.
China Inventory - Components are listed or exempt from listing.
European Union EINECS/ELINCS - Components are listed or exempt from listing.
Japan METI ENCS - Contains a component that is not listed.
Korea TCCL ECL - Components are listed or exempt from listing.
New Zealand - Contains a component that is not listed.
Philippine PICCS - Contains a component that is not listed.
U.S. TSCA - Components are listed or exempt from listing.
U.S. TSCA - No components are subject to TSCA 12(b) export notification requirements.

Canadian Classification:

Controlled Products Regulations Statement: This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS Class: Not a controlled product.

16. OTHER INFORMATION

The following sections have been revised: New issue

NA - Not Applicable, ND - Not Determined.

Disclaimer:

MSDS furnished independent of product sale. While every effort has been made to accurately describe this product, some of the data are obtained from sources beyond our direct supervision. We can not make any assertions as to its reliability or completeness; therefore, user may rely on it only at user´s risk. We have made no effort to censor or conceal deleterious aspects of this product. Since we cannot anticipate or control the conditions under which this information and product may be used, we make no guartantee that the precautions we have suggested will be adequate for all individuals and/or situations. It is the obligation of each user of this product to comply with the requirements of all applicable laws regarding use and disposal of this product. Additional information will be furnished upon request to assist the user; however, no warranty, either expressed or implied, nor liability of any nature with respect to this product or to the data herein is made or incurred hereunder.

MATERIAL SAFETY DATA SHEET

MSDS NO. 10337 **Trade Name:** SAFE-CARB* **Revision Date:** 03/21/2007

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Trade Name: SAFE-CARB*
Chemical Family: Mixture
Product Use: Oil well drilling fluid additive. MSDS covers all grades.
Emergency Telephone (24 hr.): 281-561-1600

Supplied by: M-I L.L.C.
P.O. Box 42842
Houston, TX 77242
www.miswaco.com
Telephone Number: 281-561-1512
Contact Person: Joanne Galvan, Sr. Product Safety Specialist

Revision Number: 3

HMIS Rating
Health: 1* **Flammability:** 0 **Physical Hazard:** 0 **PPE:** E

HMIS Key: 4=Severe, 3=Serious, 2=Moderate, 1=Slight, 0=Minimal Hazard. *Chronic effects - See Section 11. See Section 8 for Personal Protective Equipment recommendations.

2. HAZARDS IDENTIFICATION

Emergency Overview: Caution! May cause mechanical irritation of eyes, skin and respiratory tract. Long term inhalation of particulates may cause lung damage. Cancer hazard. Contains crystalline silica which may cause cancer.

Canadian Classification:
UN PIN No: Not regulated. **WHMIS Class:** D2A

Physical State: Powder. **Odor:** Odorless **Color:** White

Potential Health Effects:

Acute Effects

Eye Contact: May cause mechanical irritation
Skin Contact: May cause mechanical irritation.
Inhalation: May cause mechanical irritation.
Ingestion: May cause gastric distress, nausea and vomiting if ingested.

Carcinogenicity & Chronic Effects: See Section 11 - Toxicological Information.
Routes of Exposure: Eyes. Dermal (skin) contact. Inhalation.
Target Organs/Medical Conditions Aggravated by Overexposure: Eyes. Skin. Respiratory System.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS No.	Wt. %	Comments:
Calcium carbonate	471-34-1	60-100	CAS 1317-65-3 also applies.
Silica, crystalline, quartz	14808-60-7	1-5	No comments.

4. FIRST AID MEASURES

Eye Contact: Promptly wash eyes with lots of water while lifting eye lids. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

Skin Contact: Wash skin thoroughly with soap and water. Remove contaminated clothing and launder before reuse. Get medical attention if any discomfort continues.

Inhalation: Move person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Dilute with 2 - 3 glasses of water or milk, if conscious. Never give anything by mouth to an unconscious person. If signs of irritation or toxicity occur seek medical attention.

General notes: Persons seeking medical attention should carry a copy of this MSDS with them.

5. FIRE FIGHTING MEASURES

Flammable Properties

Flash Point: F (C): NA
Flammable Limits in Air - Lower (%): ND
Flammable Limits in Air - Upper (%): ND
Autoignition Temperature: F (C): ND
Flammability Class: NA
Other Flammable Properties: ND
Extinguishing Media: Use extinguishing media appropriate for surrounding fire.

Protection Of Fire-Fighters:

Special Fire-Fighting Procedures: Do not enter fire area without proper personal protective equipment, including NIOSH/MSHA approved self-contained breathing apparatus. Evacuate area and fight fire from a safe distance. Water spray may be used to keep fire-exposed containers cool. Keep water run off out of sewers and waterways.

Hazardous Combustion Products: Oxides of: Carbon. Calcium.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Use personal protective equipment identified in Section 8.

Spill Procedures: Evacuate surrounding area, if necessary. Contain spilled material. Avoid the generation of dust. Sweep, vacuum, or shovel and place into closable container for disposal.

Environmental Precautions: Waste must be disposed of in accordance with federal, state and local laws. Do not allow to enter sewer or surface and subsurface waters.

7. HANDLING AND STORAGE

Handling: Put on appropriate personal protective equipment. Avoid contact with skin and eyes. Avoid generating or breathing dust. Use only in a well ventilated area. Wash thoroughly after handling.

Storage: Store in dry, well-ventilated area. Keep container closed. Store away from incompatibles. Follow safe warehousing practices regarding palletizing, banding, shrink-wrapping and/or stacking.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits (TLV & PEL - 8H TWA):

Ingredient	CAS No.	Wt. %	ACGIH TLV	OSHA PEL	Other	Notes
Calcium carbonate	471-34-1	60-100	NA	NA	NA	(1)
Silica, crystalline, quartz	14808-60-7	1-5	0.025 mg/m^3	see Table Z-3	NIOSH: 0.05 mg/m^3 TWA (10H day/40H wk)	(R)

Notes
(1) Control as an ACGIH particulate not otherwise specified (PNOS): 10 mg/m^3 (Inhalable); 3 mg/m^3 (Respirable) and an OSHA particulate not otherwise regulated (PNOR): 15 mg/m^3 (Total); 5 mg/m^3 (Respirable).
(R) Respirable fraction (ACGIH);
Table Z-3: PEL for Mineral Dusts containing crystalline silica are 10 mg/m^3 / (%SiO2+2) for quartz and 1/2 the calculated quartz value for cristobalite and tridymite.

Engineering Controls: Use appropriate engineering controls such as, exhaust ventilation and process enclosure, to ensure air contamination and keep workers exposure below the applicable limits.

Personal Protection Equipment

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazards present and the risk of exposure to those hazards. The PPE recommendations below are based on our assessment of the chemical hazards associated with this product. The risk of exposure and need for respiratory protection will vary from workplace to workplace and should be assessed by the user.

Eye/Face Protection: Dust resistant safety goggles.

Skin Protection: Wear appropriate clothing to prevent repeated or prolonged skin contact. Chemical resistant gloves recommended for prolonged or repeated contact. Use protective gloves made of: Nitrile. Neoprene.

Respiratory Protection: All respiratory protection equipment should be used within a comprehensive respiratory protection program that meets the requirements of 29 CFR 1910.134 (U.S. OSHA Respiratory Protection Standard) or local equivalent.

If exposed to airborne particles of this product use at least a NIOSH-approved N95 half-mask disposable or re-useable particulate respirator. In work environments containing oil mist/aerosol use at least a NIOSH-approved P95 half-mask disposable or re-useable particulate respirator.

General Hygiene Considerations: Work clothes should be washed separately at the end of each work day. Disposable clothing should be discarded, if contaminated with product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color: White
Odor: Odorless
Physical State: Powder.
pH: ND
Specific Gravity (H2O = 1): 2.7 - 2.8
Solubility (Water): Slightly.
Melting/Freezing Point: ND
Boiling Point: ND
Vapor Pressure: NA
Vapor Density (Air=1): NA

Evaporation Rate: NA
Odor Threshold(s): ND

10. STABILITY AND REACTIVITY

Chemical Stability: Stable
Conditions to Avoid: Keep away from heat, sparks and flame.
Materials to Avoid: Acids. Aluminum, aluminum alloys. Mercury. Hydrogen. Fluorine. Magnesium. Silicon. Ammonium salts. Aluminum sulfate.
Hazardous Decomposition Products: For thermal decomposition products, see Section 5.
Hazardous Polymerization: Will not occur

11. TOXICOLOGICAL INFORMATION

Component Toxicological Data: Any adverse component toxicological effects are listed below. If no effects are listed, no such data were found.

Ingredient	CAS No.	Acute Data
Calcium carbonate	471-34-1	Oral LD50: 6450 mg/kg (rat)

Ingredient	Component Toxicological Summary
Silica, crystalline, quartz	Crystalline silica is the most widely occurring of all minerals. The most common form of silica is sand. The International Agency for Research on Cancer (IARC) has designated crystalline silica in the form of quartz or cristobalite a Group 1 (carcinogenic to humans). This designation was based on an increased risk of lung cancer among crystalline silica exposed workers. IARC did note that carcinogenicity of crystalline silica in humans was not detected in all industrial circumstances studied. Further, carcinogenicity of crystalline silica may be dependent on inherent characteristics of the crystalline silica or external factors affecting its biological activity or distribution of polymorphs. (IARC Vol. 68, 1997, p. 41). The National Toxicology Program (NTP) classifies crystalline silica as "reasonably anticipated to cause cancer in humans" (6th Annual Report on Carcinogens, 1991). Long term inhalation of crystalline silica can also result in the lung disease, silicosis. Symptoms of this disease include coughing and shortness of breath. (NJ HSFS, January 1996)

Product Toxicological Information:
Long term inhalation of particulate can cause irritation, inflammation and/or permanent injury to the lungs. Illnesses such as pneumoconiosis ("dusty lung"), pulmonary fibrosis, chronic bronchitis, emphysema and bronchial asthma may develop.

12. ECOLOGICAL INFORMATION

Ingredient	CAS No.	Data
Calcium carbonate	471-34-1	LC50 48H static: 56 g/l (Gambusia affinis (western mosquito fish))

Product Ecotoxicity Data: Contact M-I Environmental Affairs Department for available product ecotoxicity data.

Biodegration: ND
Bioaccumulation: ND
Octanol/Water Partition Coefficient: ND

13. DISPOSAL CONSIDERATIONS

Waste Classification: ND

Waste Management: Under U.S. Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA), it is the responsibility of the user to determine at the time of disposal, whether the product meets RCRA criteria for the hazardous waste. This is because product uses, transformations, mixtures, processes, etc., may render the resulting materials hazardous. Empty containers retain residues. All labeled precautions must be observed.

Disposal Method: Recover and reclaim or recycle, if practical. Should this product become a waste, dispose of in a permitted industrial landfill. Ensure that the containers are empty by the RCRA criteria prior to disposal in a permitted industrial landfill.

14. TRANSPORT INFORMATION

U.S. DOT Shipping Description: Not regulated for transportation by DOT, TDG, IMDG, ICAO/IATA.

Canada TDG Shipping Description: Not regulated.
UN PIN No: Not regulated.

IMDG Shipping Description: Not regulated.

15. REGULATORY INFORMATION

U.S. Federal and State Regulations

SARA 311/312 Hazard Catagories: Delayed (chronic) health hazard.

SARA 302/304, 313; CERCLA RQ, California Proposition 65: Note: If no components are listed below, this product is not subject to the referenced SARA and CERCLA regulations and is not known to contain a Proposition 65 listed chemical at a level that is expected to pose a significant risk under anticipated use conditions.

Ingredient	SARA 302 / TPQs	SARA 313	CERCLA RQ	CA 65 Cancer	CA 65 Dev. Tox.	CA 65 Repro. F	CA 65 Repro. M
Silica, crystalline, quartz	---	---	---	X	---	---	---

International Chemical Inventories

Australia AICS - Components are listed or exempt from listing.
Canada DSL - Components are listed or exempt from listing.
China Inventory - Components are listed or exempt from listing.
European Union EINECS/ELINCS - Components are listed or exempt from listing.
Japan METI ENCS - Components are listed or exempt from listing.
Korea TCCL ECL - Components are listed or exempt from listing.
Philippine PICCS - Components are listed or exempt from listing.
U.S. TSCA - Components are listed or exempt from listing.
U.S. TSCA - No components are subject to TSCA 12(b) export notification requirements.

Canadian Classification:

Controlled Products Regulations Statement: This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS Class: D2A

16. OTHER INFORMATION

The following sections have been revised: 1, 2, 3, 8, 16

NA - Not Applicable, ND - Not Determined.

*A mark of M-I L.L.C.

Disclaimer:

MSDS furnished independent of product sale. While every effort has been made to accurately describe this product, some of the data are obtained from sources beyond our direct supervision. We can not make any assertions as to its reliability or completeness; therefore, user may rely on it only at user´s risk. We have made no effort to censor or conceal deleterious aspects of this product. Since we cannot anticipate or control the conditions under which this information and product may be used, we make no guartantee that the precautions we have suggested will be adequate for all individuals and/or situations. It is the obligation of each user of this product to comply with the requirements of all applicable laws regarding use and disposal of this product. Additional information will be furnished upon request to assist the user; however, no warranty, either expressed or implied, nor liability of any nature with respect to this product or to the data herein is made or incurred hereunder.

MATERIAL SAFETY DATA SHEET
Soda Ash

Date: November 4, 2005

I Company Identification

Company Name:	BHS Marketing / Western Briquette
Mailing Address:	P.O. Box 27955 SLC, UT 84127-0955
Physical Address:	2320 West Indiana Ave. SLC, UT 84104
Telephone:	(801) 973-8232
Fax:	(801) 973-8838
Emergency Number:	PERS (800) 633-8253

II Product Identification

Product Name:	Soda Ash
Product Class:	55
Chemical Description:	Sodium Carbonate, anhydrous, is a white odorless, granular material, free of contamination. Meets federal specification O-S-571 G, Type II. Meets AWWA Std.
Cas Number:	497-19-8

III Typical Physical Properties

Physical Appearance:	White granules solid
Odor:	Odorless
Molecular Weight:	105.99
pH:	11.3 at 1wt/wt%
Boiling Point:	Decomposes at 1800 F
Melting Point:	851 Deg C (1564 F)
Specific Gravity:	2.53 at (68F)
Solubility in Water:	Soluble 7wt/wt% at (77 F)

IV Reactivity Data

Chemical Stability:	This material is stable under normal handling and storage conditions
Conditions to Avoid:	Extreme Heat
Materials to Avoid:	Aluminum, Fluorine, Humid Air, Moisture, Sulfuric Acid, Acids, Magnesium, Phosphorus Pentoxide
Hazardous Decomposition Products:	Carbon Dioxide
Hazardous Polymerization:	Will not occur
Decomposition Temperature Range:	400 Deg. C (752 Deg F)

V Toxicological Information and Interpretation

Acute	
Eye irritation:	Eye-Eye irritation, 50 mg Rabbit. Severely irritating
Skin Irritation:	Skin-Skin irritation, Rabbit. Mildly irritating
Dermal Toxicity:	No test data found for Product
Respiratory Irritation:	No test data found for Product.
Acute Inhalation Toxicity:	LC50-Lethal concentration. 50% of Test Species, 2300 mg/cu m/2hrs, rat
Acute Oral Toxicity:	LD50-Lethal Dose. 50% of Test Species, 4090 mg/kg, rat
Chronic Toxicity:	This product does not contain any substances that are considered by OSHA, NTP, IARC or ACGIH to be "probable" or "suspected" human carcinogens

VII Fire and Explosion Hazard Data

Effects of Overexposure:

Acute

Eye Contact:	Causes Irritation.
Skin Contact:	May cause redness, swelling
Ingestion:	Low acute oral toxicity. May cause nausea, vomiting, diarrhea, irritation, corrosion.
Inhalation:	May cause upper respiratory tract irritation, lung irritation
Chronic Effects:	This product does not contain any ingredient designated by IARC, NTP, ACGIH, OSHA as probable or suspected human carcinogens.

VIII Recommended First Aid Measures

Eye Exposure:	Hold eyelids open and flush with a steady, gentle stream of water for at least 15 mins. Seek immediate medical attention.
Skin Exposure:	In case of contact, immediately wash with plenty of soap and water for al least 5 mins. Seek medical attention if irritation develops or persists. Remove contaminated clothing and shoes. Clean contaminated clothing and shoes before re-use.
Inhalation Exposure	Remove and assure that the victim is breathing. If breathing is difficult, administer oxygen, if available. If victim is not breathing, administer CPR (cardio-pulmonary resuscitation). Seek immediate medical attention.
Ingestion Exposure:	If victim is conscious and alert, give 1-2 glasses of water to drink. Do not give anything by mouth to an unconscious person. Seek immediate medical attention. Do not leave victim unattended. To prevent aspiration of swallowed product, lay victim on side with head lower than waist. Vomiting may occur spontaneously. If vomiting occurs and the victim is conscious, give water to further dilute the chemical.
Medical conditions possible aggravated by exposure:	Inhalation of product may aggravate existing chronic respiratory problems such as asthma emphysema or bronchitis. Skin contact may aggravate existing skin disease.
Notes to Physician:	All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

IX Fire Fighting Measures

Extinguishing Media:	Not combustible. Use extinguishing methods suitable for surrounding fire.
Special Fire Fighting Procedures:	Firefighters should wear NIOSH/MSHA approved self-contained breathing apparatus and full protective clothing. Dike area top prevent runoff and contamination of water sources. Dispose of fire control water later.
Unusual Fire and Explosion Hazard:	Not combustible

X Accidental Release Measures

Evacuation Procedure & Safety:	Ventilate closed spaces before entering. Wear appropriate protective gear for situation. See personal information.
Containment of Spills:	Follow Procedure described below under Cleanup and Disposal of spill
Environmental & Regulatory Reporting:	Do not flush to drain. If spilled on the ground, the affected area should be scraped clean placed in an appropriate container for disposal. Prevent material from entering public sewer system or any waterway. Large spills should be handled according to a predetermined plan. For assistance in developing a plan contact with the Technical Service Department using the Product Information phone number.

XI Handling & Storage

Handling:	Do not get in eyes. Do not breath dusts. Avoid direct or prolonged contact with skin.
Storage:	Store in area that is cool, dry, well-ventilated.

XII Exposure Controls/ Personal Protection

Appropriate Hygienic Practices: procedure, prompt	As part of good industrial, personal hygiene and safety avoid all unnecessary exposure to the product and ensure removal from eyes, skin and clothing. Maintain good housekeeping to control dust accumulations.

Personal Protection Equipment

Eye Protection:	Eye and face protection requirements will vary dependent upon work environment conditions and material handling practices. Appropriate ANSI Z87 approved equipment should be selected for the particular use intended for this material.
Skin Protection:	Skin contact should be minimized through use of gloves and suitable long-sleeved clothing (i.e. shirts and pants.) Consideration must be give both to durability as well as permeation resistance.

XIII Ecological Information

Acute Ecotoxicity:	Crustaceans, Daphnia magna, EC_{50}, 48 hours, 265 mg/l Fishes, Lepomis macrochirus, LC_{50} 96 hours, 300 mg/l Algae, Nitszcheria linearis, EC_{50}, 5 day(s), 242 mg/l
Chronic Ecotoxicity:	Phytoplankton, EC biomass, 7 day(s), 14 mg/l
Mobility:	Considerable solubility and mobility
Degradation Abiotic:	Water, hydrolysis. Degradation products: carbonate (pH. 10/bicarbonate (pH 6-10)/carbonic acid/carbon dioxide (ph<6)) Soil-result: N/A
Biotic:	N/A
Potential for Bioaccumulation:	Log Po/w: Result- N/A
Other Adverse Effects/ Comments:	Observed effects are related to alkaline properties of product. Product is not significantly hazardous for the environment.

XIV Disposal Consideration

Waste Treatment:	Sodium Carbonate is not a listed hazardous waste under 40 CFR 261. However, state and local regulations for waste disposal may be more restrictive. Spilled product should be disposed of in an EPA-approved disposal facility in accordance with applicable national, state and local environmental laws and regulations.
Packing Treatment:	Use dedicated containers where possible Rinse the empty containers and treat the effluent in the same way as waste Consult current federal, state and local regulations regarding the proper disposal of emptied containers.
RCRA Hazardous Waste:	Not listed

XV Transport Information

Mode	DOT	IMDG	IATA
UN Number	Not a regulated hazardous material	Not a regulated hazardous material	Not a regulated hazardous material
Other	It is not recommended that ERG guide #111 be used for all non-DOT-regulated material		
STCC#	28-123-22		

XVI Regulatory Information

National Regulations (US)	
TSCA Inventory 8(b):	Yes
SARA Title III Sec. 302/303 Extremely Hazardous Substances (40 CFR 355):	No
SARA Title III Sec 311/312 (40 CFR 370):	Hazard Category: Acute health hazard; Chronic health hazard. Threshhold planning quantity: 10,000 lbs
SARA Title III Sec 313 Toxic Chemical Emissions Reporting (40 CFR 372):	No
CERCLA Hazardous Substance (40 CFR Part 302)	Listed: No Unlisted Substance: No Characteristic: N/A
State Component Listing:	None identified
National Regulations (Canada)	
Canadian DSL Registration:	DSL

WHMIS Classifications: D2B—Material causing other toxic effects
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations, and the SDS contains all the information required by the Controlled Products Regulations.

EEC Labeling: Name of dangerous product- sodium carbonate

Symbols	Xi	Irritant
Phrases R	36	Irritating to eyes
Phrases S	(2)	Keep out of reach of children
	22	Do not breath dust.
	26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice

Labeling "Dangerous for the environment." Not dangerous.
Provisions classification of WG from EU-DGXI-1/3-04-98

XVII Other Information

Ratings:
NFPA (National Fire Protection Association)
Health = 2 Flammability = 0 Instability = 0 Special = None

HMIS (Hazardous Material Information system)
Health = 2 Fire = 0 Reactivity = 0 PPE = Supplied by User; dependent on local conditions

XVIII Additional Information

The information in this MSDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, expressed or implied, regarding its correctness.

The conditions or methods of handling, storage, use and disposal are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage, or expense arising out of or in any way connected with handling, storage, use or disposal of the product.

*n/a= Not Applicable

MATERIAL SAFETY DATA SHEET

MSDS NO. 10081 **Trade Name:** SP-101* **Revision Date:** 04/04/2006

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Trade Name: SP-101*
Chemical Family: Polymer
Product Use: Oil well drilling fluid additive. Fluid loss reducer.
Emergency Telephone (24 hr.): 281-561-1600

Supplied by: M-I L.L.C.
P.O. Box 42842
Houston, TX 77242
www.miswaco.com
Telephone Number: 281-561-1511
Contact Person: Karsten Fontenot, Product Safety Specialist

Revision Number: 3

HMIS Rating
Health: 1 **Flammability:** 1 **Physical Hazard:** 0 **PPE:** E

HMIS Key: 4=Severe, 3=Serious, 2=Moderate, 1=Slight, 0=Minimal Hazard. *Chronic effects - See Section 11. See Section 8 for Personal Protective Equipment recommendations.

2. HAZARDS IDENTIFICATION

Emergency Overview: Caution! May cause mechanical irritation of eyes, skin and respiratory tract. Long term inhalation of particulates may cause lung damage.

Canadian Classification:
UN PIN No: Not regulated. **WHMIS Class:** Not a controlled product.

Physical State: Powder, dust. **Odor:** None **Color:** Off-white

Potential Health Effects:

Acute Effects

Eye Contact: May cause mechanical irritation
Skin Contact: May cause mechanical irritation.
Inhalation: May cause mechanical irritation.
Ingestion: May cause gastric distress, nausea and vomiting if ingested.

Acute Effects Note: This product may release ammonia or amines when heated or exposed to high pH. Ammonia is a severe eye, skin and respiratory irritant. Ammonia has a very strong odor and can be detected at levels as low as 5 ppm. Many amines are also eye, skin and respiratory irritants.

Carcinogenicity & Chronic Effects: See Section 11 - Toxicological Information.
Routes of Exposure: Eyes. Dermal (skin) contact. Inhalation.
Target Organs/Medical Conditions Aggravated by Overexposure: Eyes. Skin. Respiratory System.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS No.	Wt. %	Comments:
Anionic acrylamide copolymer		100	No comments.

4. FIRST AID MEASURES

Eye Contact: Promptly wash eyes with lots of water while lifting eye lids. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

Skin Contact: Wash skin thoroughly with soap and water. Remove contaminated clothing and launder before reuse. Get medical attention if any discomfort continues.

Inhalation: Move person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Dilute with 2 - 3 glasses of water or milk, if conscious. Never give anything by mouth to an unconscious person. If signs of irritation or toxicity occur seek medical attention.

General Notes: Persons seeking medical attention should carry a copy of this MSDS with them.

5. FIRE FIGHTING MEASURES

Flammable Properties

Flash Point: F (C): NA
Flammable Limits in Air - Lower (%): ND
Flammable Limits in Air - Upper (%): ND
Autoignition Temperature: F (C): ND
Flammability Class: NA
Other Flammable Properties: Particulate may accumulate static electricity. Dusts at sufficient concentrations can form explosive mixtures with air.
Extinguishing Media: Use extinguishing media appropriate for surrounding fire.

Protection Of Fire-Fighters:

Special Fire-Fighting Procedures: Do not enter fire area without proper personal protective equipment, including NIOSH/MSHA approved self-contained breathing apparatus. Evacuate area and fight fire from a safe distance. Water spray may be used to keep fire-exposed containers cool. Keep water run off out of sewers and waterways.

Hazardous Combustion Products: Oxides of carbon and nitrogen. Ammonia.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Use personal protective equipment identified in Section 8.

Spill Procedures: Evacuate surrounding area, if necessary. Wet product may create a slipping hazard. Contain spilled material. Avoid the generation of dust. Sweep, vacuum, or shovel and place into closable container for disposal.

Environmental Precautions: Do not allow to enter sewer or surface and subsurface waters. Waste must be disposed of in accordance with federal, state and local laws.

7. HANDLING AND STORAGE

Handling: Put on appropriate personal protective equipment. Avoid contact with skin and eyes. Avoid generating or breathing dust. Product is slippery if wet. Use only with adequate ventilation. Wash thoroughly after handling.

Storage: Store in dry, well-ventilated area. Keep container closed. Store away from incompatibles. Follow safe warehousing practices regarding palletizing, banding, shrink-wrapping and/or stacking.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits (TLV & PEL - 8H TWA):

Ingredient	CAS No.	Wt. %	ACGIH TLV	OSHA PEL	Other	Notes
Anionic acrylamide copolymer		100	NA	NA	NA	(1) (6)

Notes

(1) Control as an ACGIH particulate not otherwise specified (PNOS): 10 mg/m^3 (Inhalable); 3 mg/m^3 (Respirable) and an OSHA particulate not otherwise regulated (PNOR): 15 mg/m^3 (Total); 5 mg/m^3 (Respirable).
(6) Ammonia or amines may be released when this component is heated or exposed to high pH. The recommended exposure limits for ammonia are ACGIH TLV 25 ppm and OSHA PEL 50 ppm. No general recommended exposure limit is available for amines. A NIOSH/MSHA approved respirator with ammonia/methylamine cartridges should be used to protect against ammonia or amine inhalation exposure.

Engineering Controls: Use appropriate engineering controls such as, exhaust ventilation and process enclosure, to ensure air contamination and keep workers exposure below the applicable limits.

Personal Protection Equipment

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazards present and the risk of exposure to those hazards. The PPE recommendations below are based on our assessment of the chemical hazards associated with this product. The risk of exposure and need for respiratory protection will vary from workplace to workplace and should be assessed by the user.

Eye/Face Protection: Dust resistant safety goggles.

Skin Protection: Not normally necessary. If needed to minimize irritation: Wear appropriate clothing to prevent repeated or prolonged skin contact. Wear chemical resistant gloves such as: Nitrile. Neoprene.

Respiratory Protection: If exposed to particulates/aerosols:
Use at least a NIOSH-approved N95 half-mask disposable particulate respirator. In work environments containing oil mist/aerosol use at least a NIOSH-approved P95 half-mask disposable or reuseable particulate respirator.
If exposed to organic vapors:
Use a NIOSH/MSHA-approved organic vapor respirator. CCROV: CCR with organic vapor cartridge.

A NIOSH/MSHA approved respirator with ammonia/methylamine cartridges should be used to protect against ammonia or amine inhalation exposure.

General Hygiene Considerations: Work clothes should be washed separately at the end of each work day. Disposable clothing should be discarded, if contaminated with product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color: Off-white
Odor: None
Physical State: Powder, dust.
pH: 7.0 (1% in water)
Specific Gravity (H2O = 1): 0.7 - 0.8
Solubility (Water): Soluble
Flash Point: F (C): NA
Melting/Freezing Point: ND
Boiling Point: ND
Vapor Pressure: NA

Vapor Density (Air=1): NA
Evaporation Rate: NA
Odor Threshold(s): ND

10. STABILITY AND REACTIVITY

Chemical Stability: Stable
Conditions to Avoid: ND
Materials to Avoid: Oxidizers.
Hazardous Decomposition Products: For thermal decomposition products, see Section 5.
Hazardous Polymerization: Will not occur

11. TOXICOLOGICAL INFORMATION

Component Toxicological Data: Any adverse component toxicological effects are listed below. If no effects are listed, no such data were found.

Ingredient	CAS No.	Acute Data
Anionic acrylamide copolymer		Oral LD50: Estimated >2000 mg/kg (rat)

Product Toxicological Information:
Long term inhalation of particulate can cause irritation, inflammation and/or permanent injury to the lungs. Illnesses such as pneumoconiosis ("dusty lung"), pulmonary fibrosis, chronic bronchitis, emphysema and bronchial asthma may develop.

Do Not Use. Use TXINF019. This product may contain trace amounts (<0.1%) of acrylamide. The International Agency for Research on Cancer (IARC) has designated acrylamide a Group 2A (probably carcinogenic to humans). This designation was based on sufficient evidence in experimental animals for the carcinogenicity of acrylamide (IARC Vol. 60, 1994, p. 389).
The National Toxicology Program (NTP) classifies acrylamide as "reasonably anticipated to be a human carcinogen" based on sufficient evidence of carcinogenicity in experimental animals (10th Annual Report on Carcinogens, 2002). Acrylamide is a possible mutagen (promotes a mutation (change in chemistry of a gene)) (IARC Vol. 60, 1994, p. 389).

12. ECOLOGICAL INFORMATION

Product Ecotoxicity Data: Contact M-I Environmental Affairs Department for available product ecotoxicity data.

Biodegration: ND
Bioaccumulation: ND
Octanol/Water Partition Coefficient: ND

13. DISPOSAL CONSIDERATIONS

Waste Classification: ND

Waste Management: Under U.S. Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA), it is the responsibility of the user to determine at the time of disposal, whether the product meets RCRA criteria for the hazardous waste. This is because product uses, transformations, mixtures, processes, etc., may render the resulting materials hazardous. Empty containers retain residues. All labeled precautions must be observed.

Disposal Method: Recover and reclaim or recycle, if practical. Should this product become a waste, dispose of in a permitted industrial landfill. Ensure that the containers are empty by the RCRA criteria prior to disposal in a permitted industrial landfill.

14. TRANSPORT INFORMATION

U.S. DOT Shipping Description:	Not regulated for transportation by DOT, TDG, IMDG, ICAO/IATA.
Canada TDG Shipping Description:	Not regulated.
UN PIN No:	Not regulated.
IMDG Shipping Description:	Not regulated.
ICAO/IATA Shipping Description:	Not regulated.

15. REGULATORY INFORMATION

U.S. Federal and State Regulations

SARA 311/312 Hazard Catagories: Not a SARA 311/312 hazard.

SARA 302/304, 313; CERCLA RQ, California Proposition 65: Note: If no components are listed below, this product is not subject to the referenced SARA and CERCLA regulations and is not known to contain a Proposition 65 listed chemical at a level that is expected to pose a significant risk under anticipated use conditions.

International Chemical Inventories

Australia AICS - Components are listed or exempt from listing.
Canada DSL - Components are listed or exempt from listing.
China Inventory - Components are listed or exempt from listing.
European Union EINECS/ELINCS - Components are listed or exempt from listing.
Japan METI ENCS - Contains a component that is not listed.
Korea TCCL ECL - Components are listed or exempt from listing.
Philippine PICCS - Contains a component that is not listed.
U.S. TSCA - Components are listed or exempt from listing.
U.S. TSCA - No components are subject to TSCA 12(b) export notification requirements.

Canadian Classification:

Controlled Products Regulations Statement: This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS Class: Not a controlled product.

16. OTHER INFORMATION

The following sections have been revised: 1, 2, 3, 9, 15, 16

NA - Not Applicable, ND - Not Determined.

*A mark of M-I L.L.C.

Disclaimer:

MATERIAL SAFETY DATA SHEET

MSDS NO. 12460 **Trade Name:** THRUCARB* **Revision Date:** 11/19/2007

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Trade Name: THRUCARB*
Chemical Family: Mixture
Product Use: Oil well drilling fluid additive.
Emergency Telephone (24 hr.): 281-561-1600

Supplied by: M-I L.L.C.
P.O. Box 42842
Houston, TX 77242
www.miswaco.com
Telephone Number: 281-561-1512
Prepared by: Product Safety Group

Revision Number: 1

HMIS Rating
Health: 1* **Flammability:** 0 **Physical Hazard:** 0 **PPE:** E

HMIS Key: 4=Severe, 3=Serious, 2=Moderate, 1=Slight, 0=Minimal Hazard. *Chronic effects - See Section 11. See Section 8 for Personal Protective Equipment recommendations.

2. HAZARDS IDENTIFICATION

Emergency Overview: Caution! May cause mechanical irritation of eyes, skin and respiratory tract. Long term inhalation of particulates may cause lung damage. Cancer hazard. Contains crystalline silica which may cause cancer.

Canadian Classification:
UN PIN No: Not regulated. **WHMIS Class:** D2A

Physical State: Powder. **Odor** Slight tallow-like **Color:** White

Potential Health Effects:

Acute Effects

Eye Contact: May cause mechanical irritation
Skin Contact: May cause mechanical irritation. Prolonged contact with moist skin may cause irritation.
Inhalation: May cause mechanical irritation.
Ingestion: May cause gastric distress, nausea and vomiting if ingested.

Carcinogenicity & Chronic Effects: See Section 11 - Toxicological Information.
Routes of Exposure: Eyes. Dermal (skin) contact. Inhalation.
Target Organs/Medical Conditions Aggravated by Overexposure: Eyes. Skin. Respiratory System.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS No.	Wt. %	Comments:
Calcium carbonate	471-34-1	90 - 100	CAS 1317-65-3 also applies.
Stearic acid	57-11-4	1 - 5	No comments.
Silica, crystalline, quartz	14808-60-7	0.1 - 10	No comments.

4. FIRST AID MEASURES

Eye Contact: Promptly wash eyes with lots of water while lifting eye lids. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

Skin Contact: Wash skin thoroughly with soap and water. Remove contaminated clothing and launder before reuse. Get medical attention if any discomfort continues.

Inhalation: Move person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Dilute with 2 - 3 glasses of water or milk, if conscious. Never give anything by mouth to an unconscious person. If signs of irritation or toxicity occur seek medical attention.

General notes: Persons seeking medical attention should carry a copy of this MSDS with them.

5. FIRE FIGHTING MEASURES

Flammable Properties

Flash Point: F (C): NA
Flammable Limits in Air - Lower (%): ND
Flammable Limits in Air - Upper (%): ND
Autoignition Temperature: F (C): ND
Flammability Class: NA
Other Flammable Properties: ND
Extinguishing Media: This material is not combustible. Use extinguishing media appropriate for surrounding fire.

Protection Of Fire-Fighters:

Special Fire-Fighting Procedures: Do not enter fire area without proper personal protective equipment, including NIOSH/MSHA approved self-contained breathing apparatus. Evacuate area and fight fire from a safe distance. Water spray may be used to keep fire-exposed containers cool. Keep water run off out of sewers and waterways.

Hazardous Combustion Products: Oxides of: Carbon. Calcium.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Use personal protective equipment identified in Section 8.

Spill Procedures: Evacuate surrounding area, if necessary. Contain spilled material. Wet product may create a slipping hazard. Avoid the generation of dust. Sweep, vacuum, or shovel and place into closable container for disposal.

Environmental Precautions: Do not allow to enter sewer or surface and subsurface waters. Waste must be disposed of in accordance with federal, state and local laws.

7. HANDLING AND STORAGE

Handling: Put on appropriate personal protective equipment. Avoid contact with skin and eyes. Avoid generating or breathing dust. Product is slippery if wet. Use only in a well ventilated area. Wash thoroughly after handling.

Storage: Store in dry, well-ventilated area. Keep container closed. Store away from incompatibles. Follow safe warehousing practices regarding palletizing, banding, shrink-wrapping and/or stacking.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits (TLV & PEL - 8H TWA):

Ingredient	CAS No.	Wt. %	ACGIH TLV	OSHA PEL	Other	Notes
Calcium carbonate	471-34-1	90 - 100	NA	NA	NA	(1)
Stearic acid	57-11-4	1 - 5	NA	NA	NA	(1)
Silica, crystalline, quartz	14808-60-7	0.1 - 10	0.025 mg/m^3	see Table Z-3	NIOSH: 0.05 mg/m^3 TWA (10H day/40H wk)	(R)

Notes
(1) Control as an ACGIH particulate not otherwise specified (PNOS): 10 mg/m^3 (Inhalable); 3 mg/m^3 (Respirable) and an OSHA particulate not otherwise regulated (PNOR): 15 mg/m^3 (Total); 5 mg/m^3 (Respirable).
(R) Respirable fraction (ACGIH);
Table Z-3: PEL for Mineral Dusts containing crystalline silica are 10 mg/m^3 / (%SiO2+2) for quartz and 1/2 the calculated quartz value for cristobalite and tridymite.

Engineering Controls: Use appropriate engineering controls such as, exhaust ventilation and process enclosure, to ensure air contamination and keep workers exposure below the applicable limits.

Personal Protection Equipment

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazards present and the risk of exposure to those hazards. The PPE recommendations below are based on our assessment of the chemical hazards associated with this product. The risk of exposure and need for respiratory protection will vary from workplace to workplace and should be assessed by the user.

Eye/Face Protection: Dust resistant safety goggles.

Skin Protection: Wear appropriate clothing to prevent repeated or prolonged skin contact. Chemical resistant gloves recommended for prolonged or repeated contact. Use protective gloves made of: Neoprene. Nitrile.

Respiratory Protection: All respiratory protection equipment should be used within a comprehensive respiratory protection program that meets the requirements of 29 CFR 1910.134 (U.S. OSHA Respiratory Protection Standard) or local equivalent.

If exposed to airborne particles of this product use at least a NIOSH-approved N95 half-mask disposable or re-useable particulate respirator. In work environments containing oil mist/aerosol use at least a NIOSH-approved P95 half-mask disposable or re-useable particulate respirator.

General Hygiene Considerations: Wash promptly with soap and water if skin becomes contaminated. Change work clothing daily if there is any possibility of contamination.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color: White
Odor Slight tallow-like
Physical State: Powder.
pH: ND
Specific Gravity (H2O = 1): 2.5 - 2.8
Solubility (Water): Insoluble

9. PHYSICAL AND CHEMICAL PROPERTIES

Flash Point: F (C): NA
Melting/Freezing Point: ND
Boiling Point: ND
Vapor Pressure: NA
Vapor Density (Air=1): NA
Evaporation Rate: NA
Odor Threshold(s): ND

10. STABILITY AND REACTIVITY

Chemical Stability: Stable
Conditions to Avoid: Keep away from heat, sparks and flame.
Materials to Avoid: Oxidizers. Strong acids. Aluminum, aluminum alloys.
Hazardous Decomposition Products: For thermal decomposition products, see Section 5.
Hazardous Polymerization: Will not occur

11. TOXICOLOGICAL INFORMATION

Component Toxicological Data: Any adverse component toxicological effects are listed below. If no effects are listed, no such data were found.

Ingredient	CAS No.	Acute Data
Calcium carbonate	471-34-1	Oral LD50: 6450 mg/kg (rat)
Stearic acid	57-11-4	Oral LD50: 4640 mg/kg (rat); Dermal LD50: >5000 mg/kg (rabbit)

Ingredient	Component Toxicological Summary
Silica, crystalline, quartz	Crystalline silica is the most widely occurring of all minerals. The most common form of silica is sand. The International Agency for Research on Cancer (IARC) has designated crystalline silica in the form of quartz or cristobalite a Group 1 (carcinogenic to humans). This designation was based on an increased risk of lung cancer among crystalline silica exposed workers. IARC did note that carcinogenicity of crystalline silica in humans was not detected in all industrial circumstances studied. Further, carcinogenicity of crystalline silica may be dependent on inherent characteristics of the crystalline silica or external factors affecting its biological activity or distribution of polymorphs. (IARC Vol. 68, 1997, p. 41). The National Toxicology Program (NTP) classifies crystalline silica as "reasonably anticipated to cause cancer in humans" (6th Annual Report on Carcinogens, 1991). Long term inhalation of crystalline silica can also result in the lung disease, silicosis. Symptoms of this disease include coughing and shortness of breath. (NJ HSFS, January 1996)

Product Toxicological Information:
Long term inhalation of particulate can cause irritation, inflammation and/or permanent injury to the lungs. Illnesses such as pneumoconiosis ("dusty lung"), pulmonary fibrosis, chronic bronchitis, emphysema and bronchial asthma may develop.

12. ECOLOGICAL INFORMATION

Ingredient	CAS No.	Data
Calcium carbonate	471-34-1	LC50 48H static: 56 g/l (Gambusia affinis (western mosquito fish))

Product Ecotoxicity Data: Contact M-I Environmental Affairs Department for available product ecotoxicity data.

Biodegration: Not biodegradable.
Bioaccumulation: Not expected to bioaccumulate.
Octanol/Water Partition Coefficient: ND

13. DISPOSAL CONSIDERATIONS

Waste Classification: This product does not meet the criteria of a hazardous waste if discarded in its purchased form.

Waste Management: Under U.S. Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA), it is the responsibility of the user to determine at the time of disposal, whether the product meets RCRA criteria for the hazardous waste. This is because product uses, transformations, mixtures, processes, etc., may render the resulting materials hazardous. Empty containers retain residues. All labeled precautions must be observed.

Disposal Method: Recover and reclaim or recycle, if practical. Should this product become a waste, dispose of in a permitted industrial landfill. Ensure that the containers are empty by the RCRA criteria prior to disposal in a permitted industrial landfill.

14. TRANSPORT INFORMATION

U.S. DOT Shipping Description: Not regulated for transportation by DOT, TDG, IMDG, ICAO/IATA.

Canada TDG Shipping Description: Not regulated.
UN PIN No: Not regulated.

IMDG Shipping Description: Not regulated.

ICAO/IATA Shipping Description: Not regulated.

15. REGULATORY INFORMATION

U.S. Federal and State Regulations

SARA 311/312 Hazard Catagories: Delayed (chronic) health hazard.

SARA 302/304, 313; CERCLA RQ, California Proposition 65: Note: If no components are listed below, this product is not subject to the referenced SARA and CERCLA regulations and is not known to contain a Proposition 65 listed chemical at a level that is expected to pose a significant risk under anticipated use conditions.

Ingredient	SARA 302 / TPQs	SARA 313	CERCLA RQ	CA 65 Cancer	CA 65 Dev. Tox.	CA 65 Repro. F	CA 65 Repro. M
Silica, crystalline, quartz	---	---	---	X	---	---	---

International Chemical Inventories

Australia AICS - Components are listed or exempt from listing.
Canada DSL - Components are listed or exempt from listing.
China Inventory - Components are listed or exempt from listing.
European Union EINECS/ELINCS - Components are listed or exempt from listing.
Japan METI ENCS - Components are listed or exempt from listing.
Korea TCCL ECL - Components are listed or exempt from listing.
Philippine PICCS - Components are listed or exempt from listing.
U.S. TSCA - Components are listed or exempt from listing.
U.S. TSCA - No components are subject to TSCA 12(b) export notification requirements.

Canadian Classification:

Controlled Products Regulations Statement: This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS Class: D2A

16. OTHER INFORMATION

The following sections have been revised: 1, 3, 16

NA - Not Applicable, ND - Not Determined.

*A mark of M-I L.L.C.

Disclaimer:

MSDS furnished independent of product sale. While every effort has been made to accurately describe this product, some of the data are obtained from sources beyond our direct supervision. We can not make any assertions as to its reliability or completeness; therefore, user may rely on it only at user´s risk. We have made no effort to censor or conceal deleterious aspects of this product. Since we cannot anticipate or control the conditions under which this information and product may be used, we make no guartantee that the precautions we have suggested will be adequate for all individuals and/or situations. It is the obligation of each user of this product to comply with the requirements of all applicable laws regarding use and disposal of this product. Additional information will be furnished upon request to assist the user; however, no warranty, either expressed or implied, nor liability of any nature with respect to this product or to the data herein is made or incurred hereunder.

MATERIAL SAFETY DATA SHEET

MSDS NO. 12459 **Trade Name:** THRUTROL* **Revision Date:** 05/31/2005

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Trade Name: THRUTROL*
Chemical Family: Polysaccharide
Product Use: Oil well drilling fluid additive.
Emergency Telephone (24 hr.): 281-561-1600

Supplied by: M-I L.L.C.
P.O. Box 42842
Houston, TX 77242
www.miswaco.com
Telephone Number: 281-561-1512
Contact Person: Joanne Galvan, Product Safety Specialist

Revision Number: 0

HMIS Rating
Health: 1 **Flammability:** 1 **Physical Hazard:** 0 **PPE:** E

HMIS Key: 4=Severe, 3=Serious, 2=Moderate, 1=Slight, 0=Minimal Hazard. *Chronic effects - See Section 11. See Section 8 for Personal Protective Equipment recommendations.

2. HAZARDS IDENTIFICATION

Emergency Overview: Caution! May cause mechanical irritation of eyes, skin and respiratory tract. Long term inhalation of particulates may cause lung damage.

Canadian Classification:
UN PIN No: Not regulated. **WHMIS Class:** Not a controlled product.

Physical State: Powder, dust. **Odor:** Slight **Color:** Off-white

Potential Health Effects:

Acute Effects

Eye Contact: May cause mechanical irritation.
Skin Contact: May cause mechanical irritation.
Inhalation: May cause mechanical irritation.
Ingestion: May cause gastric distress, nausea and vomiting if ingested.

Carcinogenicity & Chronic Effects: See Section 11 - Toxicological Information.
Routes of Exposure: Eyes. Dermal (skin) contact. Inhalation.
Target Organs/Medical Conditions Aggravated by Overexposure: Eyes. Skin. Respiratory System.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS No.	Wt. %	Comments:
Polysaccharide		100	No comments.

4. FIRST AID MEASURES

Eye Contact: Promptly wash eyes with lots of water while lifting eye lids. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

Skin Contact: Wash skin thoroughly with soap and water. Remove contaminated clothing and launder before reuse. Get medical attention if any discomfort continues.

Inhalation: Move person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Dilute with 2 - 3 glasses of water or milk, if conscious. Never give anything by mouth to an unconscious person. If signs of irritation or toxicity occur seek medical attention.

General Notes: Persons seeking medical attention should carry a copy of this MSDS with them.

5. FIRE FIGHTING MEASURES

Flammable Properties

Flash Point: F (C): NA
Flammable Limits in Air - Lower (%): ND
Flammable Limits in Air - Upper (%): ND
Autoignition Temperature: F (C): ND
Flammability Class: NA
Other Flammable Properties: Particulate may accumulate static electricity. Dusts at sufficient concentrations can form explosive mixtures with air.
Extinguishing Media: Use extinguishing media appropriate for surrounding fire.

Protection Of Fire-Fighters:

Special Fire-Fighting Procedures: Do not enter fire area without proper personal protective equipment, including NIOSH/MSHA approved self-contained breathing apparatus. Evacuate area and fight fire from a safe distance. Water spray may be used to keep fire-exposed containers cool. Keep water run off out of sewers and waterways.

Hazardous Combustion Products: Oxides of: Carbon.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Use personal protective equipment identified in Section 8.

Spill Procedures: Evacuate surrounding area, if necessary. Wet product may create a slipping hazard. Contain spilled material. Avoid the generation of dust. Sweep, vacuum, or shovel and place into closable container for disposal.

Environmental Precautions: Do not allow to enter sewer or surface and subsurface waters. Waste must be disposed of in accordance with federal, state and local laws.

7. HANDLING AND STORAGE

Handling: Put on appropriate personal protective equipment. Avoid contact with skin and eyes. Avoid generating or breathing dust. Product is slippery if wet. Use only with adequate ventilation. Wash thoroughly after handling.

Storage: Store in dry, well-ventilated area. Keep container closed. Store away from incompatibles. Follow safe warehousing practices regarding palletizing, banding, shrink-wrapping and/or stacking.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits (TLV & PEL - 8H TWA):

Ingredient	CAS No.	Wt. %	ACGIH TLV	OSHA PEL	Other	Notes
Polysaccharide		100	NA	NA	NA	(1)

Notes
(1) Control as an ACGIH particulate not otherwise specified (PNOS): 10 mg/m^3 (Inhalable); 3 mg/m^3 (Respirable) and an OSHA particulate not otherwise regulated (PNOR): 15 mg/m^3 (Total); 5 mg/m^3 (Respirable).

Engineering Controls: Use appropriate engineering controls such as, exhaust ventilation and process enclosure, to ensure air contamination and keep workers exposure below the applicable limits.

Personal Protection Equipment

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazards present and the risk of exposure to those hazards. The PPE recommendations below are based on our assessment of the chemical hazards associated with this product. The risk of exposure and need for respiratory protection will vary from workplace to workplace and should be assessed by the user.

Eye/Face Protection: Dust resistant safety goggles.

Skin Protection: Not normally necessary. If needed to minimize irritation: Wear appropriate clothing to prevent repeated or prolonged skin contact. Wear chemical resistant gloves such as: Nitrile. Neoprene.

Respiratory Protection: All respiratory protection equipment should be used within a comprehensive respiratory protection program that meets the requirements of 29 CFR 1910.134 (U.S. OSHA Respiratory Protection Standard) or local equivalent.

If exposed to airborne particles of this product use at least a NIOSH-approved N95 half-mask disposable or re-useable particulate respirator. In work environments containing oil mist/aerosol use at least a NIOSH-approved P95 half-mask disposable or re-useable particulate respirator.

General Hygiene Considerations: Work clothes should be washed separately at the end of each work day. Disposable clothing should be discarded, if contaminated with product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color: Off-white
Odor: Slight
Physical State: Powder, dust.
pH: 9.0 - 10.5 at (4% solution)
Specific Gravity (H2O = 1): 0.48 - 0.64
Solubility (Water): Soluble.
Flash Point: F (C): NA
Melting/Freezing Point: ND
Boiling Point: ND
Viscosity: 150 - 250 (2% solution)
Vapor Pressure: NA
Vapor Density (Air=1): NA
Evaporation Rate: NA
Odor Threshold(s): ND

10. STABILITY AND REACTIVITY

Chemical Stability: Stable
Conditions to Avoid: Keep away from heat, sparks and flame.
Materials to Avoid: Oxidizers.
Hazardous Decomposition Products: For thermal decomposition products, see Section 5.
Hazardous Polymerization: Will not occur

11. TOXICOLOGICAL INFORMATION

Component Toxicological Data: Any adverse component toxicological effects are listed below. If no effects are listed, no such data were found.

Product Toxicological Information:
Long term inhalation of particulate can cause irritation, inflammation and/or permanent injury to the lungs. Illnesses such as pneumoconiosis ("dusty lung"), pulmonary fibrosis, chronic bronchitis, emphysema and bronchial asthma may develop.

12. ECOLOGICAL INFORMATION

Product Ecotoxicity Data: Contact M-I Environmental Affairs Department for available product ecotoxicity data.

Biodegration: ND
Bioaccumulation: ND
Octanol/Water Partition Coefficient: ND

13. DISPOSAL CONSIDERATIONS

Waste Classification: ND

Waste Management: Under U.S. Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA), it is the responsibility of the user to determine at the time of disposal, whether the product meets RCRA criteria for the hazardous waste. This is because product uses, transformations, mixtures, processes, etc., may render the resulting materials hazardous. Empty containers retain residues. All labeled precautions must be observed.

Disposal Method: Recover and reclaim or recycle, if practical. Should this product become a waste, dispose of in a permitted industrial landfill. Ensure that the containers are empty by the RCRA criteria prior to disposal in a permitted industrial landfill.

14. TRANSPORT INFORMATION

U.S. DOT Shipping Description: Not regulated for transportation by DOT, TDG, IMDG, ICAO/IATA.

Canada TDG Shipping Description: Not regulated.
UN PIN No: Not regulated.

IMDG Shipping Description: Not regulated.

ICAO/IATA Shipping Description: Not regulated.

15. REGULATORY INFORMATION

U.S. Federal and State Regulations

SARA 311/312 Hazard Catagories: Not a SARA 311/312 hazard.

SARA 302/304, 313; CERCLA RQ, California Proposition 65: Note: If no components are listed below, this product is not subject to the referenced SARA and CERCLA regulations and is not known to contain a Proposition 65 listed chemical at a level that is expected to pose a significant risk under anticipated use conditions.

International Chemical Inventories

Australia AICS - Components are listed or exempt from listing.
Canada DSL - Components are listed or exempt from listing.
China Inventory - Components are listed or exempt from listing.
European Union EINECS/ELINCS - Components are listed or exempt from listing.
Japan METI ENCS - Components are listed or exempt from listing.
Korea TCCL ECL - Components are listed or exempt from listing.
Philippine PICCS - Components are listed or exempt from listing.
U.S. TSCA - Components are listed or exempt from listing.
U.S. TSCA - No components are subject to TSCA 12(b) export notification requirements.

Canadian Classification:

Controlled Products Regulations Statement: This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS Class: Not a controlled product.

16. OTHER INFORMATION

The following sections have been revised: New issue

NA - Not Applicable, ND - Not Determined.

*A mark of M-I L.L.C.

Disclaimer:

MSDS furnished independent of product sale. While every effort has been made to accurately describe this product, some of the data are obtained from sources beyond our direct supervision. We can not make any assertions as to its reliability or completeness; therefore, user may rely on it only at user´s risk. We have made no effort to censor or conceal deleterious aspects of this product. Since we cannot anticipate or control the conditions under which this information and product may be used, we make no guartantee that the precautions we have suggested will be adequate for all individuals and/or situations. It is the obligation of each user of this product to comply with the requirements of all applicable laws regarding use and disposal of this product. Additional information will be furnished upon request to assist the user; however, no warranty, either expressed or implied, nor liability of any nature with respect to this product or to the data herein is made or incurred hereunder.

MATERIAL SAFETY DATA SHEET

MSDS NO. 12190 **Trade Name:** WALNUT NUT PLUG® **Revision Date:** 01/14/2004

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Trade Name: WALNUT NUT PLUG®
Chemical Family: Cellulose
Product Use: Oil well drilling fluid additive. Lost circulation material.
Emergency Telephone (24 hr.): 281-561-1600

Supplied by: M-I L.L.C.
A Smith/Schlumberger Company
P.O. Box 42842
Houston, TX 77242
Telephone Number: 281-561-1511
Contact Person: Catherine Miller, Product Safety

Revision Number: 1

HMIS Rating

Health: 1* **Flammability:** 1 **Physical Hazard:** 0 **PPE:** E

HMIS Key: 4=Severe, 3=Serious, 2=Moderate, 1=Slight, 0=Minimal Hazard. *Chronic effects - See Section 11. See Section 8 for Personal Protective Equipment recommendations.

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS NO:	Wt. %	Ingredient Comments:
Cellulose	9004-34-6	99 - 100	No comments.
Silica, crystalline, quartz	14808-60-7	0.1 - 1	No comments.

3. HAZARDS IDENTIFICATION

Emergency Overview: Caution! May cause eye, skin, and respiratory tract irritation. Long term inhalation of particulates may cause lung damage. Cancer hazard. Contains crystalline silica which may cause cancer.

Canadian Classification:
UN PIN No: Not regulated **WHMIS Class:** D2A

Physical State: Powder, dust. **Odor:** Mild (or faint) **Color:** Tan

Potential Health Effects:

Acute Effects

Eye Contact: May cause mechanical irritation
Skin Contact: May cause mechanical irritation. Long term contact can cause skin dryness.
Inhalation: May cause mechanical irritation.
Ingestion: May cause gastric distress, nausea and vomiting if ingested.

Carcinogenicity & Chronic Effects: See Section 11 - Toxicological Information.
Routes of Exposure: Eyes. Dermal (skin) contact. Inhalation.

Target Organs/Medical Conditions Aggravated by Overexposure: Respiratory System. Skin. Eyes.

4. FIRST AID MEASURES

Eye Contact: Promptly wash eyes with lots of water while lifting eye lids. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

Skin Contact: Wash skin thoroughly with soap and water. Remove contaminated clothing and launder before reuse. Get medical attention if any discomfort continues.

Inhalation: Move person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Dilute with 2 - 3 glasses of water or milk, if conscious. Never give anything by mouth to an unconscious person. If signs of irritation or toxicity occur seek medical attention.

General Notes: Persons seeking medical attention should carry a copy of this MSDS with them.

5. FIRE FIGHTING MEASURES

Flammable Properties

Flash Point: F (C): NA
Flammable Limits in Air - Lower (%): ND
Flammable Limits in Air - Upper (%): ND
Autoignition Temperature: F(C) ND
Flammability Class: NA
Other Flammable Properties: Particulate may accumulate static electricity. Dusts at sufficient concentrations can form explosive mixtures with air. Palleted bags of some fine cellulosic materials have been reported to smolder under certain conditions. See Section 7 Handling and Storage.
Extinguishing Media: Use extinguishing media appropriate for surrounding fire.

Protection Of Fire-Fighters:

Special Fire-Fighting Procedures: Do not enter fire area without proper personal protective equipment, including NIOSH/MSHA approved self-contained breathing apparatus. Evacuate area and fight fire from a safe distance. Water spray may be used to keep fire-exposed containers cool. Keep water run off out of sewers and waterways.

Hazardous Combustion Products: Oxides of: Carbon.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Use personal protective equipment identified in Section 8.

Spill Procedures: Evacuate surrounding area, if necessary. Wet product may create a slipping hazard. Contain spilled material. Avoid the generation of dust. Sweep, vacuum, or shovel and place into closable container for disposal.

Environmental Precautions: Do not allow to enter sewer or surface and subsurface waters. Waste must be disposed of in accordance with federal, state and local laws.

7. HANDLING AND STORAGE

Handling: Put on appropriate personal protective equipment. Avoid contact with skin and eyes. Avoid generating or breathing dust. Product is slippery if wet. Use only in a well ventilated area. Wash thoroughly after handling.

Storage: Store in dry, well-ventilated area. Keep container closed. Store away from incompatibles. Follow safe warehousing practices regarding palletizing, banding, shrink-wrapping and/or stacking.
Palleted bags of some fine cellulosic materials have been reported to smolder. To minimize the risk of smoldering: 1. Minimize fines in the product. 2. Minimize moisture. 3. If shrink wrapped: a. Minimize dust on bags as being stacked prior to shrink wrapping. b. Allow to sit for at least 24 hours before loading. Observe for smoldering. c. Practice care if heat gun is used to seal shrink wrap. Avoid generation of sparks.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits (TLV & PEL - 8H TWA):

Ingredient	CAS NO:	Wt. %	ACGIH TLV	OSHA PEL	Other	Notes
Cellulose	9004-34-6	99 - 100	10 mg/m^3	15 mg/m^3 (Total); 5 mg/m^3 (Respirable)	NA	None
Silica, crystalline, quartz	14808-60-7	0.1 - 1	0.05 mg/m^3	see Table Z-3	NIOSH: 0.05 mg/m^3 TWA (10H day/40H wk)	(R)

Notes
(R) Respirable fraction (ACGIH);
Table Z-3: PEL for Mineral Dusts containing crystalline silica are 10 mg/m^3 / (%SiO2+2) for quartz and 1/2 the calculated quartz value for cristobalite and tridymite.

Engineering Controls: Use appropriate engineering controls such as, exhaust ventilation and process enclosure, to ensure air contamination and keep workers exposure below the applicable limits.

Personal Protection Equipment

Eye/Face Protection: Dust resistant safety goggles.

Skin Protection: Wear appropriate clothing to prevent repeated or prolonged skin contact. Chemical resistant gloves recommended for prolonged or repeated contact. Use protective gloves made of: Neoprene. Nitrile.

Respiratory Protection: If exposed to particulates/aerosols:
Use at least a NIOSH-approved N95 half-mask disposable particulate respirator. In work environments containing oil mist/aerosol use at least a NIOSH-approved P95 half-mask disposable or reuseable particulate respirator.
If exposed to organic vapors:
Use a NIOSH/MSHA-approved organic vapor respirator. CCROV: CCR with organic vapor cartridge.
A NIOSH/MSHA approved respirator with ammonia/methylamine cartridges should be used to protect against ammonia or amine inhalation exposure.

Refer to Exposure Limits table (Section 8) for component specific respiratory protection recommendations.

General Hygiene Considerations: Work clothes should be washed separately at the end of each work day. Disposable clothing should be discarded, if contaminated with product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color: Tan

Odor:	Mild (or faint)
Physical State:	Powder, dust.
pH:	ND
Vapor Pressure:	NA
Vapor Density (Air=1):	NA
Flash Point: F (C):	NA
Boiling Point:	ND
Melting/Freezing Point:	ND
Solubility (Water):	Insoluble
Specific Gravity (H2O = 1):	1.4 - 1.65 at 68 F (20 C)
Evaporation Rate:	NA
Odor Threshold(s):	ND

10. STABILITY AND REACTIVITY

Chemical Stability:	Stable
Conditions to Avoid:	Keep away from heat, sparks and flame. See Section 7 also.
Materials to Avoid:	Oxidizers.
Hazardous Decomposition Products:	For thermal decomposition products, see Section 5.
Hazardous Polymerization:	Will not occur

11. TOXICOLOGICAL INFORMATION

Component Toxicological Data: Any adverse component toxicological effects are listed below. If no effects are listed, no such data were found.

Ingredient	CAS NO:	Acute Data
Cellulose	9004-34-6	Oral LD50: >5000 mg/kg (rat); Dermal LD50: >2000 mg/kg (rabbit); LC50: >5800 mg/m^3/4H (rat)

Ingredient	Component Toxicological Summary
Silica, crystalline, quartz	Crystalline silica is the most widely occurring of all minerals. The most common form of silica is sand. The International Agency for Research on Cancer (IARC) has designated crystalline silica in the form of quartz or cristobalite a Group 1 (carcinogenic to humans). This designation was based on an increased risk of lung cancer among crystalline silica exposed workers. IARC did note that carcinogenicity of crystalline silica in humans was not detected in all industrial circumstances studied. Further, carcinogenicity of crystalline silica may be dependent on inherent characteristics of the crystalline silica or external factors affecting its biological activity or distribution of polymorphs. (IARC Vol. 68, 1997, p. 41). The National Toxicology Program (NTP) classifies crystalline silica as "reasonably anticipated to cause cancer in humans" (6th Annual Report on Carcinogens, 1991). Long term inhalation of crystalline silica can also result in the lung disease, silicosis. Symptoms of this disease include coughing and shortness of breath. (NJ HSFS, January 1996)

Product Toxicological Information:
Long term inhalation of particulate can cause irritation, inflammation and/or permanent injury to the lungs. Illnesses such as pneumoconiosis ("dusty lung"), pulmonary fibrosis, chronic bronchitis, emphysema and bronchial asthma may develop.

12. ECOLOGICAL INFORMATION

Component Ecotoxicity Data: No data available.

Product Ecotoxicity Data: Contact M-I Environmental Affairs Department for available product ecotoxicity data.

Biodegration: ND
Bioaccumulation: ND
Octanol/Water Partition Coefficient: ND

13. DISPOSAL CONSIDERATIONS

Waste Classification: ND

Waste Management: Under U.S. Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA), it is the responsibility of the user to determine at the time of disposal, whether the product meets RCRA criteria for the hazardous waste. This is because product uses, transformations, mixtures, processes, etc., may render the resulting materials hazardous. Empty containers retain residues. All labeled precautions must be observed.

Disposal Method: Recover and reclaim or recycle, if practical. Should this product become a waste, dispose of in a permitted industrial landfill. Ensure that the containers are empty by the RCRA criteria prior to disposal in a permitted industrial landfill.

14. TRANSPORT INFORMATION

U.S. DOT Shipping Description: Not regulated for transportation by DOT, TDG, IMDG, ICAO/IATA.

Canada TDG Shipping Description: Not regulated
UN PIN No: Not regulated

IMDG Shipping Description: Not regulated

ICAO/IATA Shipping Description: Not regulated

15. REGULATORY INFORMATION

U.S. Federal and State Regulations

SARA 311/312 Hazard Catagories: Delayed (chronic) health hazard.

SARA 302/304, 313; CERCLA RQ, California Proposition 65: Note: If no components are listed below, this product is not subject to the referenced SARA and CERCLA regulations and is not known to contain a Proposition 65 listed chemical at a level that is expected to pose a significant risk under anticipated use conditions.

Ingredient	SARA 302 / TPQs	SARA 313	CERCLA RQ	CA 65 Cancer	CA 65 Dev. Tox.	CA 65 Repro. F	CA 65 Repro. M
Silica, crystalline, quartz	---	---	---	X	---	---	---

International Chemical Inventories

Australia AICS - Components are listed or exempt from listing.
Canada DSL - Components are listed or exempt from listing.
China Inventory - Components are listed or exempt from listing.
European Union EINECS - Components are listed or exempt from listing.
Japan METI ENCS - Components are listed or exempt from listing.
Korea TCCL ECL - Components are listed or exempt from listing.
Philippine PICCS - Components are listed or exempt from listing.
U.S. TSCA - Components are listed or exempt from listing.
U.S. TSCA - No components are subject to TSCA 12(b) export notification requirements.

Canadian Classification:

Controlled Products Regulations Statement: This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS Class: D2A

16. OTHER INFORMATION

The following sections have been revised: New issue

NA - Not Applicable, ND - Not Determined.

Disclaimer:

MSDS furnished independent of product sale. While every effort has been made to accurately describe this product, some of the data are obtained from sources beyond our direct supervision. We can not make any assertions as to its reliability or completeness; therefore, user may rely on it only at user´s risk. We have made no effort to censor or conceal deleterious aspects of this product. Since we cannot anticipate or control the conditions under which this information and product may be used, we make no guartantee that the precautions we have suggested will be adequate for all individuals and/or situations. It is the obligation of each user of this product to comply with the requirements of all applicable laws regarding use and disposal of this product. Additional information will be furnished upon request to assist the user; however, no warranty, either expressed or implied, nor liability of any nature with respect to this product or to the data herein is made or incurred hereunder.

– SINCE 1980
argo chemical
30933 IMPERIAL STREET, BAKERSFIELD, CA 93263
AND
100 QUANTICO AVENUE, BAKERSFIELD, CA 93307
PHONE: 661 322-2222 FAX: 661 322-2303
COMMODITY CHEMICALS - CHEMICAL CLEANERS - FOOD PROCESSING CHEMICALS - WATER TREATMENT CHEMICALS

Safety Data Sheet
Defoamer 40 AQXS

Section 1 – Identification;

Product Name:	Defoamer 40 AQXS
Product Identifier:	Defoamer
Chemical Family:	Mixture
Recommended Use:	Foam Control Agent

Manufacturer or Suppliers Details

Company Name:	Argo Chemical, Inc.
Company Address:	30933 Imperial Street Bakersfield, Ca. 93263 United States of America
Phone Number:	(661) 322-2222

Emergency Response Telephone Number

Chemtrec	(800) 424-9300

Section 2 – Hazard(s) Identification;

Hazard Classification: Eye Irritation, Category 2B
Hazard Statement(s): H320 Causes eye irritation.

Signal Word: **Warning**

Pictogram(s): Category 2B = No pictograms required

Precautionary Statements:

Prevention

P280 Wear protective gloves/protective clothing/eye protection/face protection

Response

P305+P351+P338 If in eyes**:** Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337+P313 If eye irritation persists: Get medical advice/attention.

Disposal

P501 Dispose of contents/container in accordance with local/regional/national/international regulation.

Description of Hazards Not Otherwise Classified: No Additional Information

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Defoamer 40 AQXS

Section 3 – Composition/Information on Ingredients;

CAS #	Hazardous Components (Chemical Name)	Concentration	GHS Classification
NA	Silicon Emulsion Blend	NA	Non-Hazardous

All ingredients are non-hazardous and are not required to be listed per OSHA regulations or are below cut-off/concentration limits per UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS), table 1.5.1

Section 4 – First-Aid Measures;

General: If irritation or other symptoms occur or persist from any route of exposure, remove the affected individual from the area: see a physician/get medical attention.

P305+P351+P338 **If in eyes:** Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Skin contact: Wash the affected area thoroughly with plenty of soap and water. Get medical attention if symptoms occur.
Ingestion: Do not induce vomiting. Never give anything by mouth to an unconscious person. Rinse out the mouth with water. Get medical attention.

Protection of first aid responders: Wear proper personal protective clothing and equipment.
Most important symptoms and effects, both acute and delayed: See section 11 for additional information.
Indication of any immediate medical attention and special treatment needed: Treat symptomatically.

Section 5 – Fire-Fighting Measures;

Extinguishing media: Suitable extinguishing media: Water spray, dry chemical, foam, carbon dioxide**.**
Unsuitable extinguishing media: None known
Specific hazards arising from the substance or mixture:
Reactivity: No dangerous reaction known under conditions of normal use. See section 10 (Hazardous Decomposition Products) for additional information.
Special Protective Equipment and Precautions for firefighters:
Protection during firefighting: Keep upwind of the fire. Wear protective clothing and respiratory protection (SCBA). Use water spray to cool exposed containers.

Section 6 – Accidental Release Measures;

Personal precautions, protective equipment and emergency procedures
Protective equipment: Use personal protection recommended in section 8. Isolate the hazard area and deny entry to unnecessary and unprotected personnel.
Environmental precautions
Do not disperse in the environment. Inform authorities if the material is fed into the public sewage system or in public waters.

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Methods and materials for containment and cleaning up

Contain spilled material if possible. Absorb with materials such as: Dirt. Sand. Sawdust. Collect in suitable and properly labeled containers. Wash the spill site with water. See Section 13, Disposal Considerations, for additional information.

Section 7 – Handling and Storage;

Precautions for safe handling

Recommendations for Wash hands and other exposed areas with mild soap and water safe handling: before eating, drinking, smoking and when leaving the work place.

Conditions for safe storage, including any incompatibilities

Storage conditions: Store in a cool, well ventilated area. Keep container closed when not in use.
Incompatible materials: Strong acids, oxidizing agents, strong bases.
Storage: Protect from heat

Section 8 – Exposure Controls/Personal Protection;

Control parameters

Exposure limits: No exposure limits established for components of this product.

Individual protection measures

Personal protection: Avoid all unnecessary exposure
Hand protection: Protective gloves made of rubber or PVC
Eye protection: Safety glasses or goggles are recommended when using this product.
Skin and body protection: None necessary under normal conditions of use
Respiratory protection: None necessary under normal conditions of use.

Engineering controls (Ventilation etc.)

Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels.

Section 9 – Physical and Chemical Properties;

Physical state:	Liquid
Appearance:	Opaque
Color:	White
Odor:	Slight
Odor threshold:	No data available
pH:	5.0 - 7.0
Melting point/freezing point:	No data available
Initial boiling point:	No data available
Boiling range:	No data available
Flash point:	> 212°F / > 100°C
Evaporation rate	No data available
Flammability (solid, gas):	No data available
Upper/lower flammability or explosive limits:	No data available

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Vapor pressure:	No data available.
Vapor density at 20°C:	No data available.
Relative density @ 60°F:	1.00 ± 0.05
Solubility:	Dispersible
Log Pow:	No data available
Log Kow	No data available
Auto-ignition temperature:	No data available
Decomposition temperature:	No data available
Dynamic viscosity:	No data available

Section 10 – Stability and Reactivity;

Reactivity
No dangerous reaction known under conditions of normal use.
Chemical stability
Stable under recommended storage conditions. See Storage, Section 7.
Possibility of hazardous reactions
Polymerization will not occur by itself.
Conditions to avoid
Heat, incompatible substances (see below)
Incompatible materials
Strong acids, oxidizing materials, strong bases
Hazardous decomposition products
Decomposition products can include and are not limited to: oxides of carbon, oxides of silicon

Section 11 – Toxicological Information;

Information on toxicological effects
Acute toxicity: Not classified
Skin corrosion/irritation: No data available
Inhalation: No data available
Ingestion: No data available
Eye damage/eye irritation: No data available
Sensitization of skin or respirations: No data available
Mutagenicity of germ cells: No data available
Reproductive toxicity: No data available
Specific target organ toxicity: No data available
(single exposure): No data available
Specific target organ toxicity: No data available
(repeated exposure): No data available
Symptoms after ingestion: No data available

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Section 12 – Ecological Information;

Ecotoxicity (aquatic and terrestrial, where available)
Not established
Persistence and degradability
No data available
Bioaccumulative potential
No data available
Mobility in soil
No data available
Other adverse effects
No additional information available

Section 13 – Disposal Considerations;

Waste treatment method
Waste disposal recommendations: Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations.
Dispose of packaging or containers in accordance with local, regional, national and international regulations. Empty container contains product residue which may exhibit hazards of product.
Contaminated Packaging
Container packaging may exhibit hazards.

Section 14 – Transport Information;

UN number: Not regulated
UN proper shipping name: Proper shipping name: NOT REGULATED
Special precautions: No additional information available
Transport hazard class(es): Not regulated.
Packing group: Not regulated
Environmental Hazards: None known.
Transport in bulk: None known.

Section 15 – Regulatory Information;

Safety, health and environment regulations/legislation specific for the product:
U.S. federal and state regulations/legislation:
This SDS has been prepared in accordance with the hazard criteria of the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
U.S. Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Reportable Quantity (RQ):
Not Applicable
U.S. Superfund Amendments and Reauthorization Act (SARA) - SARA Section 313:
None Known
California Proposition 65:

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This product contains no chemicals listed by the State of California under Proposition 65

Section 16 – Other Information;

Date of Preparation	Date of Revision	Revision Number	Date of Issue
4/29/15	5/20/2015	003	5/20/15

This SDS supersedes all prior dated versions for this product

This SDS has been prepared in accordance with the hazard criteria of the OSHA Hazard Communication Standard, 29 CFR 1910.1200 including utilizing pertinent data associated with the mixtures' components.

DISCLAIMER: The information contained herein is accurate to the best of our knowledge at the date of publication. This SDS has been compiled and is solely intended for this product. ARGO CHEMICAL MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR COURSE OF PERFORMANCE OR USAGE OF TRADE. User must independently confirm the safety and fitness for use of this material for a particular purpose and suitability for user's method of use or application. The information given is not to be considered a warranty or quality specification. User assumes all responsibility and all the risk of liability for all results arising from the use, handling or storage of this product.

This product contains no chemicals listed by the State of California under Proposition 65

SAFETY DATA SHEET
DF-10 DEFOAMER

NON-HAZARDOUS • WATER-BASED • SILICONE EMULSION DEFOAMER •

SECTION 1 - IDENTIFICATION

PRODUCT NAME: **DF-10 DEFOAMER**

PRODUCT USE: **ANTI-FOAM EMULSION**

SUPPLIER/ ADDRESS: **CHEMEX CHEMICALS, INC.**
1903 E. VIRGINIA AVE
BAKERSFIELD, CA 93307

24-HR TEL: **(661) 864-1600**

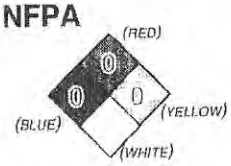
REVISED: **JANUARY 23, 2015**

SECTION #2 - HAZARD(S) IDENTIFICATION

GHS

GHS PICTORAM NOT REQUIRED

NFPA



WARNING

HAZARD STATEMENTS

MAY BE HARMFUL IF SWALLOWED, IN CONTACT WITH SKIN, OR INHALED. (H303+H313+H333)
CAUSES EYE IRRITATION (H320)

PRECAUTIONARY STATEMENTS

WASH SKIN THOROUGHLY AFTER HANDLING. (P264)
IF SWALLOWED: TREAT SYMPTOMATICALLY AND SUPPORTIVELY. IF INGESTION OF A LARGE AMOUNT DOES OCCUR, CONTACT A POISON CONTROL CENTER IMMEDIATELY, AND SEEK MEDICAL ADVICE/ATTENTION IF YOU FEEL UNWELL. (P312)
IF IN EYES: RINSE CAUTIOUSLY WITH WATER FOR SEVERAL MINUTES. REMOVE CONTACTS, IF PRESENT AND EASY TO DO SO. CONTINUE RINSING. (P305+P351+P338) IF EYE IRRITATION PERSISTS, GET MEDICAL ATTENTION/ADVICE. (P337+P313)
IF ON SKIN: RINSE CONTACTED AREAS WITH WATER THEN WASH THOROUGHLY WITH SOAP AND PLENTY OF WATER. IF SKIN IRRITATION OCCURS, GET MEDICAL ADVICE/ATTENTION. (P312)
IF INHALED: NO ADVERSE EFFECTS ANTICPATED. IF INHALED, REMOVE TO FRESH AIR, AND KEEP AT REST IN A POSITION COMFORTABLE FOR BREATHING. IF BREATHING IS DIFFICULT, GIVE OXYGEN. IF BREATHING HAS STOPPED, GIVE ARTIFICIAL RESPIRATION, AND GET MEDICAL ATTENTION IMMEDIATELY. (P304+P312)

OTHER

NO COMPONENTS OF THIS PRODUCT ARE CONSIDERED AS HAZARDOUS BY 29 CFR 1910.120.
WEAR PROTECTIVE GLOVES/PROTECTIVE CLOTHING/EYE PROTECTION/FACE PROTECTION.
THIS PRODUCT IS NOT LIKELY TO PRESENT AN INHALATION HAZARD UNDER NORMAL WORKING CONDITIONS. AVOID INHALING MISTS AND VAPORS.
PROLONGED OR REPEATED CONTACT MAY CAUSE IRRITIATION TO SKIN AND/OR DRYING OF SKIN.
MAY CAUSE GASTROINTESTINAL DISTRESS IF SWALLOWED.
THERE ARE NO KNOWN MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE TO THIS PRODUCT.

SEE ALSO SECTIONS 8-EXPOSURE CONTROL/PERSONAL PROTECTION AND 11-TOXICOLOGICAL EFFECTS.

SAFETY DATA SHEET
DF-10 DEFOAMER
NON-HAZARDOUS • WATER-BASED • SILICONE EMULSION DEFOAMER •

SECTION #3 - COMPOSITION

DF-10* is a MIXTURE of silicone compounds in polypropylene glycol acrylic polymer and water, and contains **NO COMPONENTS CONSIDERED AS HAZARDOUS (BY 29 CFR 1910.120).**

**The precise composition of this product is proprietary information. A more detailed disclosure will be provided to qualified medical or initial hygiene personnel as privileged information upon request, in case of need for specific treatment.*

SEE ALSO SECTIONS 8-EXPOSURE CONTROL/PERSONAL PROTECTION AND 11-TOXICOLOGICAL EFFECTS.

SECTION #4 - FIRST-AID MEASURES

GENERAL
Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. Show this safety data sheet (SDS) to the medical personnel.

IF EXPOSED OR CONCERNED, GET MEDICAL ADVICE/ATTENTION, IF YOU FEEL UNWELL.

The most important symptoms/effects, acute and delayed are:

PRE-EXISTING SKIN CONDTIONS MAY BE AGGRAVATED BY PROLONGED OR REPEATED CONTACT.

To the best of our knowledge, there are no known medical conditions aggravated by exposure to this product (Chemex DF-10 Defoamer), and no effects are expected during normal use. However, if irritation or other symptoms occur/persist from any route of exposure, remove the affected individual from the area, treat symptomatically, and get medical attention if symptoms occur/persist.

There is no evidence of adverse chronic effects from available information.

EMERGENCY & FIRST-AID PROCEDURES:

SKIN CONTACT: Rinse contacted areas with water, then wash skin with plenty of soap and water. If skin irritation occurs, get medical advice/attention.

EYE CONTACT: Any material that contacts the eye(s) should be washed out immediately with water. Rinse cautiously, holding eyelids open to assure complete flushing. If eye irritation persists, get medical advice/attention.

INHALATION: No adverse effects anticipated. If inhaled, remove person to fresh air. If breathing is difficult, give oxygen, and administer C.P.R. if necessary. If you feel unwell, get medical advice/attention.

INGESTION: Treat symptomatically and supportively. It ingestion of a large amount does occur, call a poison control center immediately. If victim is conscious and alert, give two (2) glasses of water and induce vomiting, and get immediate medical advice/attention.

SEE ALSO SECTIONS 8-EXPOSURE CONTROL/PERSONAL PROTECTION AND 11-TOXICOLOGICAL EFFECTS.

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SECTION #5 - FIREFIGHTING MEASURES

FLAMMABLE PROPERTIES
NOT FLAMMABLE BY OSHA CRITERIA.

FIRE FIGHTING PROCEDURES:
If in confined area, wear special/chemical protective clothing and use positive-pressure self-contained breathing apparatus (MSHA/NIOSH approved or equivalent) and full protective gear. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products.
SEE ALSO SECTION-8 EXPOSURE CONTROL PERSONAL PROTECTIVE EQUIPMENT.

EXTINGUISHING MEDIA
Use WATER SPRAY, ABC DRY CHEMICAL, FOAM OR CARBON DIOXIDE.
Note: Water (jet) or foam may cause frothing. Use water to keep fire-exposed containers cool. Water spray may be used to flush spills away from exposures.

UNUSUAL FIRE & EXPLOSION HAZARDS:
Airtight containers may burst or rupture when exposed to extreme heat. Do not allow sealed containers to overheat. Move containers from fire area if you can do so without risk. **This container may be hazardous when emptied.** Since emptied containers retain product residue (vapor & liquid), all labeled hazard precautions must be observed. Cutting, grinding, or welding on containers may cause explosion or fire, which could result in bodily harm, or release of harmful fumes.

COMBUSTION PRODUCTS:
Thermal decompositions products may include carbon dioxide, carbon monoxide, and silica may form if water boils off, and product burns.

SECTION #6 - ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK PROCEDURES

PRECAUTIONS
Avoid contact with eyes/skin. Avoid prolonged inhalation of mists/vapors, and do not ingest.
Use personal protective equipment. Avoid all personal contact. Keep unnecessary/unprotected people away from, and upwind, of spill/leak. Do not touch damaged containers or spilled material unless wearing appropriate PPE during cleanup. Floor may become slippery.

SEE ALSO SECTIONS 8-EXPOSURE CONTROL/PERSONAL PROTECTION AND 7-HANDLING & STORAGE.

SPILL PROCEDURES
Avoid contact and use appropriate PPE. Ventilate area. Stop the flow of material, if without risk.
Small spills: Small amounts may be flushed into sanitary sewer with water. **Large spills:** Dike the spilled material, where this is possible, and prevent entry into waterways, sewer, basements, and/or confined areas. Cover spill with an inert absorbent material (e.g. sand, sawdust) and transfer to container for disposal. Using clean, dedicated equipment, sweep and scoop all spilled material, and other contaminated material and place into clean, dry, plastic containers for disposal. Flush residue from surfaces with large quantities of water.

DISPOSE OF ALL WASTE IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS.

SEE ALSO SECTION 13-DISPOSAL INFORMATION

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SECTION #7 - HANDLING and STORAGE

HANDLING
Wear personal protective equipment including safety glasses, and protective gloves & clothing.
Use in an adequate ventilated area to keep spray/mists to a minimum. Avoid inhaling mists & vapors, and avoid contact with skin and eyes. Do not ingest/swallow. Do not eat/drink/smoke when using this product. Do not handle near strong acids, oxidizing agents. Wash hands/skin thoroughly after handling.
As with all chemicals, good industrial hygiene practices should be followed when handling this material.

SEE ALSO SECTION 8-EXPOSURE CONTROL/PERSONAL PROTECTION.

STORAGE
Do not allow containers to overheat. Keep away from heat, sparks, and open flame. Store in a dry, well-ventilated area. Keep container tightly closed when not in use. Keep product from freezing, and store at temperatures between 4°C-38°C (40°F-100°F). Do not store in open, unlabeled or mislabeled containers. Do not store near strong acids, oxidizing agents. Do not reuse empty container without commercial cleaning or reconditioning. The recommended shelf life of this product is 7-12 months.

SECTION #8 - EXPOSURE CONTROL / PERSONAL PROTECTION

EXPOSURE CONTROL

EXPOSURE LIMITS
DF-10 is a water-based silicone solution, and contains no components considered hazardous. The precise composition of this product is proprietary information. A more detailed disclosure can be provided to a qualified medical or industrial hygiene personnel as privileged information upon request in case of need for a specific treatment.

EXPOSURE GUIDELINES
In accordance with 29 CFR 1910.1200, this product does not contain sufficient concentration of any substances defined as hazardous. No exposure limits were found for this product or any of if its ingredients. No threshold limit values (TLV) established by the Occupational Safety and Health Administration (OSHA) for this product. No permissible exposure levels (PEL) established by American Conference of Governmental Hygienists (ACGIH) for this product.

ENGINEERING CONTROLS
Where engineering controls are indicated by use conditions, or a potential for excessive exposure exist, then the following traditional exposure control techniques may be used effectively to minimize employee exposure:

- Wear protective gloves, clothing, and eyewear.
- Provide adequate ventilation or other engineering controls to keep the airborne concentration to a minimum.
- Ensure that eyewash stations and safety showers are near work areas.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES

GENERAL
Avoid contact with skin & eyes. Avoid inhaling vapors. Personal hygiene is an important work practice and exposure control measure. The following general measures should be taken when working with this material:

- Do not store/use/consume foods, beverages or tobacco products in areas where this material is stored.
- Wash hands and face carefully before eating, drinking, using tobacco, or using the toilet.
- Wash exposed skin promptly to remove accidental splashes or contact with this material.

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SECTION #8 - EXPOSURE CONTROL / PERSONAL PROTECTION (CONTINUED)

EYES: Chemical splash goggles should be used for minimum protection.
Contact with eyes may cause irritation. Eye and face protection requirements will vary dependent upon work environment conditions and material handling practices. Eye contact should be prevented through the use of safety glasses with side-shields, or chemical splash goggles. An emergency eye wash station should be readily accessible to the general work area.

SKIN: Gloves, protective clothing/footwear should be used to minimize skin contact. Skin contact should be minimized through use of gloves and suitable long-sleeved clothing (shirts, pants).
Contact with skin may cause irritation to individuals with pre-existing skin conditions, and repeated or prolonged contact may cause irritation, dermatitis, or drying and/or cracking of skin.

INHALATION: Use ventilation, local exhaust, and breathing protection (if necessary). For the reasonable foreseeable industrial end use(s) of this material, respiratory protection should not be necessary. If ventilation is inadequate, wear an appropriate air purifying respirator or use supplied air system.
Inhalation of a vapor or mist can irritate nasal passages. If ventilation is not sufficient to effectively prevent buildup of aerosols or vapors, appropriate NIOSH/MSHA
respiratory protection must be provided. Respiratory protection is not required during normal use of this product.

INGESTION: Do not ingest this product.
No data available.

SECTION #9 - PHYSICAL and CHEMICAL PROPERTIES

APPEARANCE (COLOR, STATE, ODOR, ETC.):	MILKY WHITE LIQUID, BLAND ODOR
pH:	NOT DETERMINED (N/D)
SOLUBILITY IN WATER:	DISPERSIBLE
SPECIFIC GRAVITY:	0.99
VAPOR PRESSURE (mm Hg 68°F):	SIMILAR TO WATER
VAPOR DENSITIY (AIR = 1):	LIGHTER THAN AIR (WATER VAPOR)
EVAPORATION RATE (BUTYL ACETATE = 1):	SIMILAR TO WATER
MELTING POINT:	N/D
BOILING POINT:	212 °F
FLASH POINT:	>200 °F (PMCC)
EXPLOSIVE LIMITS:	NOT A SAFETY FACTOR
FLAMMABILITY:	NON-FLAMMABLE (BOILS WITH RELEASE OF WATER)

SECTION #10 - STABILITY and REACTIVITY

STABLITY / INSTABILITY:	STABLE
CONDITIONS TO AVOID:	EXCESSIVE HEAT. OPEN FLAMES
MATERIALS TO AVOID:	REACTS WITH STRONG OXIDIZERS, ACIDS. SLIGHTLY REACIVE WITH ALKALIS.
HAZARDOUS DECOMPOSITION PRODUCTS:	THERMAL DECOMPOSITION MAY PRODUCE CARBON MONOXIDE (CO), CARBON DIOXIDE (CO_2) AND SILICA.
HAZARDOUS POLYMERIZATION:	WILL NOT OCCUR.

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SECTION #11 - TOXICOLOGICAL INFORMATION

EXPOSURE ROUTES

The primary routes of entry are through SKIN, EYE, INGESTION, and INHALATION. Acute effects of exposure to this material through passage of the material through the skin, eyes, or inhalation may include the following:

Prolonged or repeated exposure to product contact with eyes/skin may cause irritation.
Vapors of the concentrated product or its application can irritate the eyes.

CARCINOGENICITY INFORMATION

The ingredients in this material ARE NOT listed as a carcinogenic by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), or the Occupational Safety and Health Administration (OSHA).

TOXICOLOGICAL INFORMATION (COMPONENTS/INGREDIENTS)

Based on the data available, and in accordance with 29 CFR 1910.1200, this product does not contain a sufficient concentration of any substance to be defined as hazardous. No toxicity studies have been conducted on this product.

SECTION #12 - ECOLOGICAL INFORMATION

This product is expected to be inherently biodegradable. Accidental spillage may lead to penetration of the soil and in groundwater. However, there is no evidence that this would cause adverse ecological effects.

SECTION #13 - DISPOSAL INFORMATION

Dispose of in accordance with local, state and federal requirements. No disposal method should be used which would pose an environmental or human health threat, including any that would contaminate the ground or surface water. Chemical additions, processing, or otherwise altering this material may make the waste management information presented in this SDS inaccurate, or otherwise inappropriate. Be advised that the state and local requirement for disposal may be different from federal laws and regulations. Consult state/local regulations regarding the proper disposal of your waste stream material.

SECTION #14 - TRANSPORT INFORMATION

DOT PROPER SHIPPING DESCRIPTION: NOT RESTRICTED LIQUID
WATER-BASED SILICONE SOLUTION

DOT HAZARD CLASS, PG, ID#: CLASS 9, GROUP III, UN 3082

SECTION #15 - REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS

TSCA Section 12(b) Export Notification, 40 CFR 707, Subpart D
U.S. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):
THE INTENTIONAL INGREDIENTS OF THIS PRODUCT ARE LISTED.

CERCLA Reportable Quantity, 40 CFR 302.4(a) – Hazardous substances:
NONE PRESENT OR NONE PRESENT IN REGULATED QUANTITIES.

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SECTION #15 - REGULATORY INFORMATION (CONTINUED)

SARA 302, 40 CFR 355 Appendix A

NONE PRESENT OR NONE PRESENT IN REGULATED QUANTITIES.

SARA 311/312 Hazardous Class(es) 40 CFR 370.2

ACUTE (IMMEDIATE) HEALTH HAZARD.

SARA 313 Components 40 CFR 372.65

NONE PRESENT OR NONE PRESENT IN REGULATED QUANTITIES.
THIS MATERIAL DOES NOT CONTAIN ANY CHEMICAL COMPONENTS WITH KNOWN CHEMICAL ABSTRACTS (CAS) REGISTRY NUMBERS THAT EXCEED THE THRESHOLD (DE MINIMUS) REPORTING LEVELS ESTABLISHED BY SARA TITLE 313, SECTION 313.

STATE & LOCAL REGULATIONS

CALIFORNIA – Proposition 65

NO INGREDIENT IN THIS MIXTURE IS REGULATED BY CALIFORNIA PROP 65.

SECTION #16 - OTHER INFORMATION

Disclaimer: Some of the information presented and conclusions drawn, herein, are from sources other than direct test data on this product itself. The information in this Safety Data Sheet (SDS) was obtained from sources believed to be reliable, however the information is provided without warranty, expressed or implied, regarding its correctness. The conditions or methods of handling, storage, use and disposal of this product are beyond our control and may be beyond our knowledge. For this, and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use and disposal of this product. This SDS was prepared and is for use for this product only. If this product is used as a component in another product, this SDS information may not be applicable. **This Safety Data Sheet (SDS) for "CHEMEX DF-10 DEFOAMER" was revised JANUARY 23, 2015, and has been prepared in accordance with OSHA Hazard Communication Standard (29 CFR 1910.120) and the Globally Harmonized System (GHS) format.**

MATERIAL SAFETY DATA SHEET
EnovaSB FA

Section 01 - Product Information

Product Name:	**EnovaSB FA**
Product Number:	SB-0830
Product Use:	Sand Control
Manufacturer/Supplier:	Enova Solutions Inc. 3553 Landco Drive, Ste B Bakersfield, CA 93308
Phone Number:	(661) 327-2405
Emergency Phone:	(661) 327-2405

Emergency tel. number: +1 800-424-9300 CHEMTREC
Trade name: EnovaSB FA
Chemical family: Alcohol
Primary product use: Sand Control

Section 02 - Composition information on hazardous ingredients

Hazardous ingredients:

Component	CAS-no.	Percent
Furfuryl alcohol	98-00-0	97-100%

Section 03 - Hazards identification

Emergency overview:
Clear, colorless to light yellow to orange color.
Liquid.
Eye irritant.
Skin Irritant.

Potential Healt Effects:
Eye: May cause eye irritation.
Skin: Harmful if absorbed through the skin. May cause skin irritation.
Ingestion: Toxic if swallowed. May cause irritation of the digestive tract.
Inhalation: Toxic if inhaled. May cause respiratory tract irritation.
Chronic: Two year study by NTP, inhalation rat.
Target Organs: Causes damage to: Respiratory tract, skin, central nervous system, eye, lens or cornea.

Section 04 - First aid measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
Skin: Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Get medical aid.
Ingestion: Never give anything by mouth to an unconscious person. Get medical aid. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.
Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
Note to Physician: Treat symptomatically and supportively. No specific antidote.

Section 05 - Fire fighting measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas. Extinguishing Media: Use agent most appropriate to extinguish fire. Use water spray, dry chemical, carbon dioxide, or appropriate foam.
Flash Point: 170℉, 77℃ (TCC)
Auto ignition Temperature: 736℉, 391℃ (also reported 915℉, 490℃ Merck Inde x)
Explosion limits, Lower: 1.8
Upper: 16.3
NFPA Rating: Health: 2; Flammability: 2; Reactivity: 1

Section 06 - Accidental release measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Clean up spills immediately, observing precautions in the Protective Equipment section. Provide ventilation.

Section 07 - Handling and storage

Advice on safe handling and storage:
Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
Storage: Keep container closed when not in use. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

Section 08 - Exposure controls / personal protection

Occupational exposure limits:

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Exposure Limits:
Chemical name: Furfuryl alcohol
ACGIH: Skin STEL 15 ppm, 15 minutes
TWA 10 ppm (8 hours)
NIOSH: Skin STEL 15 ppm, 15 minutes
TWA 10 ppm (10 hours)
OSHA – Final PELS: 50 ppm (8 hours)

Personal Protective Equipment:
Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves (Nitrile rubber gloves) to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

Section 09 - Physical and chemical properties

Physical State: Liquid
Appearance: Clear, colorless to yellow to orange color.
Odor: Mild odor.
pH: Mixed with water, pH of 4 to 7.
Vapor Pressure: 0.4 mm Hg at 20℃.
Vapor Density: 3.4
Evaporation Rate: 0.04 compared to butyl acetate
Viscosity: 5 cps at 25 ℃
Boiling Point: 338℉, 170℃
Freezing/Melting Point: 6℉, -14℃.
Decomposition Temperature: Not available.
Solubility: Completely soluble in water, acetone, alcohols.
Specific Gravity/Density: 1.14 g/cc.
Molecular Formula: C5H6O2
Molecular Weight: 98.10

Section 10 - Stability and reactivity

Chemical Stability: Stable under normal temperatures and pressures.
Conditions to Avoid: Incompatible materials, strong acids, excess heat, strong oxidants.
Incompatibilities with other Materials: Strong acids and oxidizing agents.
Hazardous Decomposition Products: Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.
Hazardous Polymeration: Has been reported when furfuryl alcohol is exposed to strong acids or high heat.

Section 11 - Toxicological information

RTECS#:
CAS#: 98-00-0
LD50/LC50: Rat, oral LD50, 177 mg/kg.
Rat, dermal LD50 3825 mg/kg
Muskrat, oral LD50 160 mg/kg

• NTP Draft Technical Report TR-482 (2-year inhalation studies rats and mice). Some evidence of carcinogenic activity in male rats, nasal neoplasms; equivocal evidence of carcinogenic activity in female rats, nasal and kidney neoplasms. Some evidence of carcinogenic activity in male mice, kidney neoplasms. No evidence of carcinogenic activity in female mice.
• EU proposed classification, provisionally Carc. Cat 3.

Epidemiology: No information available.
Teratogenicity: No information available.
Reproductive Effects: No information available.
Mutagenicity: Not mutagenic, 4 Salmonella strains with and without S9. In vivo, male mice bone marrow cells, negative.
Neurotoxicity: No information available.
Other Studies: See RTECS reports.

Section 12 - Ecological information

No information available.

Section 13 - Disposal considerations

Furfuryl alcohol is not an EPA hazardous waste. Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

Section 14 - Transport information

US DOT
Shipping Name: Furfuryl alcohol
Hazard Class: 6.1
UN Number: UN2874
Packing Group: III

Section 15 - Regulatory information

US FEDERAL:
TSCA (Toxic Substance Control Act):
Listed on the TSCA inventory. Furfuryl alcohol

TSCA Significant New Use Rule: None of the chemicals in this product have SNUR under TSCA.

Section 12b: None of the chemicals in this product are listed under TSCA Section 12b.

CERLA Hazardous Substances and Corresponding RQs:
None of the chemicals in this product have an RQ.

SARA Section 302 (Superfund Amendments and Reauthorizations Act):
None of the chemicals in this product have a TPQ.

313 Reportable Ingredients: None of the chemicals are reportable under Section 313.

Health & Safety Reporting List: None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules: None of the chemicals are under a Chemical Test Rule

Clean Act: This material does not contain any hazardous air pollutants, Class 1 Ozone depletors, or Class 2 Ozone depletors.

Clean Water Act: None of the chemicals in this product are listed as Hazardous Substances, Priority Pollutants, or Toxic Pollutants under the CWA.

OSHA: OSHA considers none of the chemicals in this product highly hazardous.
Volatile organic compounds VOC:
Content VOC (weight-%): 100%

Section 16 – Other information

Revision Date: 7/20/2012

This information is supplied under the OSHA Hazard Communication Standard, 29 CFR 1910.1200, and is offered in good faith based on data available to us that we believe to be true and accurate. The recommended industrial hygiene and safe handling procedures are believed to be generally applicable to the material. However, each user should review these recommendations in the specific context of the intended use and determine whether they are appropriate for that use. No warranty, express or implied, is made regarding the accuracy of this data, the hazards connected with the use of the material, or the results to be obtained from the use thereof. We assume no responsibility for damage or injury from the use of the product described herein. Data provided here are typical and not intended for use as product specifications.

MATERIAL SAFETY DATA SHEET
EnovaSB SCS

Section 01 - Product Information

Product Name:	**EnovaSB SCS**
Product Number:	**SB-1113**
Product Use:	Sand Control
Manufacturer/Supplier:	Enova Solutions Inc. 3553 Landco Drive, Ste B Bakersfield, CA 93308
Phone Number:	(661) 327-2405
Emergency Phone:	(661) 327-2405

Emergency tel. number: +1 800-424-9300 CHEMTREC
Trade name: EnovaSB SCS
Chemical family: Mixture; Alcohol, Ester, and Inorganic Acid
Primary product use: Sand Control

Section 02 - Composition information on hazardous ingredients

Hazardous ingredients:

Component	CAS-no.	Concentration
Ethyl Acetate	141-78-6	Trade Secret
Methanol	67-56-1	Trade Secret
Sulfuric Acid	7664-93-9	Trade Secret

Section 03 - Hazards identification

Emergency overview:
Clear, colorless liquid with a strong solvent odor.
Eye irritant.
Skin irritant.

Expected Route of entry:
Inhalation: Harmful if inhaled.

Skin contact: Danger. Corrosive.

Eye contact: Danger. Corrosive.

Ingestion: Harmful if ingested.

Skin absorption: No data available.

Health effects of exposure:
Causes severe eye and skin irritation or burns. Harmful if swallowed or inhaled.

Section 04 - First aid measures

Eyes:
Immediately flush eyes with plenty of clean running water for at least 15 minutes, lifting the upper and lower lids occasionally. Call a physician immediately.

External:
In case of contact, immediately flush skin with plenty of clean running water for at least 15 minutes. Remove contaminated clothing and shoes. Then wash with soap and water. If burn or irritation occurs, call a physician.

Internal:
If swallowed, drink a glass of water and induce vomiting immediately, as directed by medical personnel. Then give a large quantity of milk or water to drink and transport to a hospital. Never give anything by mouth to an unconscious person.

NOTE: Methanol CANNOT be neutralized or made non-toxic.

Inhalation:
If inhaled, immediately move to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Call a physician. Exposure may aggravate existing respiratory, heart, skin, or eye disorders.

Section 05 - Fire fighting measures

Flashpoint: 25 °F
Lower explosion limit: 2.6 %(V)
Data relate to solvent
Upper explosion limit: 36.5 %(V)
Data relate to solvent
Auto ignition temperature: 820 °F
Special fire fighting procedure:
When fire fighting, wear full protective equipment, including self-contained breathing apparatus.
Unusual fire and explosion hazards:
May produce hazardous fumes and hazardous decomposition products.
Vapors from this product may concentrate in confined spaces and form an explosive mixture.
This product can readily attack some metals (i.e. aluminum, magnesium, and zinc) to liberate flammable/explosive hydrogen gases.
NFPA Rating: Health: 2; Flammability: 3; Reactivity: 0

Section 06 - Accidental release measures

Steps to be taken in case of spill or leak:
Remove all ignition sources and contain spilled liquid. Wearing recommended protective equipment, and using explosion-proof equipment, remove bulk of liquid; add dry material to absorb remaining liquid; pick up and containerize for product recovery or disposal.

Section 07 - Handling and storage

Advice on safe handling and storage:
Store in a cool area away from heat, sparks, flame and other sources of ignition. Keep container tightly sealed. Prevent a possible fire hazard by bonding and grounding or inert gas purge. Wash thoroughly after handling.

Section 08 - Exposure controls / personal protection

Respiratory protection: If airborne concentrations pose a health hazard, become irritating, or exceed recommended limits, use a NIOSH approved respirator in accordance with OSHA respiratory protection requirements under 29CFR1910.134.
Hand protection: Chemical resistant gloves (rubber or synthetic rubber)
Eye protection: Chemical splash goggles.
Other protective equipment: Rubber apron, rubber boots, eyewash, safety shower
Advice on system design: Local ventilation recommended - mechanical ventilation may be used.

Section 09 - Physical and chemical properties

Form: Liquid
Color: Clear, colorless
Odor: Strong Solvent
pH: No Data Available
Solubility in water: Appreciable
Freezing point: No Data Available
Boiling range: 148-171 °F
Information applies to the solvent.

Section 10 - Stability and reactivity

Thermal decomposition: When heated to decomposition it emits toxic oxides of carbon and sulfur as well as sulfuric acid fumes.
Chemical stability: Stable.
Hazardous Polymerization: Will not occur.
Conditions to avoid: Keep away from heat, sparks, open flames, and other sources of ignition.

Section 11 - Toxicological information

Product information:
Acute oral toxicity: LD50 > 530 mg/kg (rat)
The product has not been tested. The information is derived from the properties of the individual components.
Acute dermal toxicity: LD50 > 610 mg/kg (rabbit)
The product has not been tested. The information is derived from the properties of the individual components.
Skin irritation: irritant
The product has not been tested. The information is derived from the properties of the individual components.
Eye irritation: irritant
The product has not been tested. The information is derived from the properties of the individual components.

Section 12 - Ecological information

Not available.

Section 13 - Disposal considerations

Waste disposal information:
This product, if disposed as shipped, meets EPA criteria of hazardous waste as specified in 40 CFR 261 on the basis of its ignitability. Dispose of product in a licensed hazardous waste disposal facility in accordance with all applicable laws.

When empty, container should be cleaned thoroughly before disposal, return to manufacturer or any other industrial use.

Section 14 - Transport information

DOT Regulation:

Proper shipping name:	Ethyl Acetate
Hazard class:	3
Packing group:	II
UN/NA-number:	UN 1173
Primary hazard class:	3
Emergency Response	
Reportable Quantity:	5,000 lbs Ethyl Acetate/Methanol

Section 15 - Regulatory information

TSCA Status:
All components of this product are listed on the TSCA Inventory.

SARA (section 311/312):
Reactive hazard: no
Pressure hazard: no
Fire hazard: yes
Immediate/acute: yes
Delayed/chronic: yes

SARA 313 information:
This product contains the chemical or chemicals listed below which are subject to the supplier notification requirements of Section 313 of the Superfund Amendments and Reauthorization Act of 1986 ("SARA") and the requirements of 40 CFR Part 372:

Component	**CAS-no.**
Methanol	67-56-1
Sulfuric Acid	7664-93-9

Volatile organic compounds VOC:
Content VOC (weight-%): 80+%

CERCLA information:

Component	**CAS-no**	**Percentage RQ**
Ethyl Acetate	141-78-6	5,000 lbs
Methanol	67-56-1	5,000 lbs
Sulfuric Acid	7664-93-9	1,000 lbs

Section 16 - Other information

Revision Date: 7-20-2012

Other precautions:
Observe all necessary precautions for handling combustible liquids.

Label information:
CAUTION! COMBUSTIBLE LIQUID AND VAPOR MAY IRRITATE LUNGS IF INHALED. MAY CAUSE IRRITATION TO EYES. TARGET ORGANS: respiratory system, central nervous system, Avoid breathing fumes, vapors, mists, or spray. Avoid contact with skin, eyes and clothing. Do not swallow. Use with adequate ventilation and/or approved respiratory protection. Wear proper protective equipment. Wash thoroughly after handling. Keep container closed when not in use. Skin contact: wash thoroughly with soap and water for 15 minutes. If skin irritation occurs, seek medical attention. Wash contaminated clothing before reuse. Eye contact: flush with water for at least 15 minutes while holding eyelids open. Seek immediate medical attention. Ingestion: do not induce vomiting, if vomiting occurs, keep airway clear and keep head lower than hips to prevent aspiration. Seek medical attention immediately. Inhalation: remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Seek medical attention if respiratory irritation continues.

NFPA:
Health: 2 Flammability: 3 Reactivity: 0

SAFETY DATA SHEET
F-603 FOAM SOAP

NOT REGULATED LIQUID • BIODEGRADABLE • WATER-BASED CONCENTRATED SOAP

SECTION 1 - IDENTIFICATION

PRODUCT NAME: **F-603 FOAM SOAP**

PRODUCT USE: **WASHING, SCOURING, CLEANING COMPOUND**

SUPPLIER/ ADDRESS: **CHEMEX CHEMICALS, INC.**
1903 E. VIRGINIA AVE
BAKERSFIELD, CA 93307

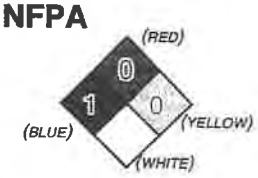
24-HR TEL: **(661) 864-1600**

REVISED: **JULY 15, 2014**

SECTION #2 - HAZARD(S) IDENTIFICATION

GHS

NFPA



WARNING

HAZARD STATEMENT

MAY BE HARMFUL IF SWALLOWED OR INHALED (H303+H333)
CAUSES SKIN AND EYE IRRITATION (H315+H320)

PRECAUTIONARY STATEMENTS

WASH SKIN THOROUGHLY AFTER HANDLING. (P264)
SKIN CONTACT SHOULD BE MINIMIZED THROUGH THE USE OF PROPER PROTECTIVE EQUIPMENT. WEAR PROPER PROTECTIVE GLOVES/PROTECTIVE CLOTHING AND EYE PROTECTION/FACE PROTECTION (CHEMICAL SPLASH GOGGLES/FACE SHIELD), GLOVES AND PROTECTIVE CLOTHING/FOOTWEAR WHEN HANDLING. (P280)
IF SWALLOWED: TREAT SYMPTOMATICALLY AND SUPPORTIVELY. IF INGESTION OF A LARGE AMOUNT DOES OCCUR, CONTACT A POISON CONTROL CENTER IMMEDIATELY, AND SEEK MEDICAL ADVICE/ATTENTION IF YOU FEEL UNWELL. (P312)
IF IN EYES: RINSE CAUTIOUSLY WITH WATER FOR SEVERAL MINUTES. REMOVE CONTACTS, IF PRESENT AND EASY TO DO SO. CONTINUE RINSING. (P305+P351+P338) IF EYE IRRITATION PERSISTS, GET MEDICAL ATTENTION/ADVICE. (P337+P313)
IF ON SKIN: WASH SKIN WITH SOAP AND WATER. (P302+P352) TAKE OFF CONTAMINATED CLOTHING/SHOES AND WASH BEFORE REUSE. (P321, P362+P364) IF SKIN IRRITATION OCCURS, AND PERSISTS SEEK IMMEDIATE MEDICAL ADVICE/ATTENTION. (P332+P313)
IF INHALED: NO ADVERSE EFFECTS ANTICPATED. IF INHALED, REMOVE TO FRESH AIR, AND KEEP AT REST IN A POSITION COMFORTABLE FOR BREATHING. IF BREATHING IS DIFFICULT, GIVE OXYGEN. IF BREATHING HAS STOPPED, GIVE ARTIFICIAL RESPIRATION, AND GET MEDICAL ATTENTION IMMEDIATELY. (P304+P312)

SEE ALSO SECTIONS 8-EXPOSURE CONTROL/PERSONAL PROTECTION AND 11-TOXICOLOGICAL EFFECTS.

SAFETY DATA SHEET
F-603 FOAM SOAP

NOT REGULATED LIQUID • BIODEGRADABLE • WATER-BASED CONCENTRATED SOAP

SECTION #3 - COMPOSITION

F-603 FOAM SOAP is a biodegradable water-based product, and contains **NO COMPONENTS CONSIDERED AS HAZARDOUS (BY 29 CFR 1910.120).** This product, under the generic name (alpha-olefin sulfonate) is approved for food grade applications (CFR 178.3400) by the United States Department of Agriculture (USDA), and by the Federal Drug Administration (FDA).

COMPONENT	CAS#	% BY WEIGHT
WATER	7732-18-5	58
SODIUM (C14-16) OLEFIN SULFONATE	68439-57-6	40
SODIUM CHLORIDE	7647-14-5	1
SODIUM SULFATE	7757-82-6	1

*THE PRECISE COMPOSITION OF THIS PRODUCT IS PROPRIETARY INFORMATION. A MORE DETAILED DISCLOSURE WILL BE PROVIDED, BY CHEMEX CHEMICALS, INC. (C.C.I.), TO QUALIFIED MEDICAL OR INDUSTRIAL HYGIENE PERSONNEL, AS PRIVILEGED INFORMATION, AND UPON REQUEST OF NEED FOR SPECIFIC TREATMENT.

SEE ALSO SECTIONS 8-EXPOSURE CONTROL/PERSONAL PROTECTION AND 11-TOXICOLOGICAL EFFECTS.

SECTION #4 - FIRST-AID MEASURES

GENERAL

Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. Show this safety data sheet (SDS) to the medical personnel. To the best of our knowledge, there are no known medical conditions aggravated by exposure to this product, and no effects are expected during normal use. However, if irritation or other symptoms occur/persist from any route of exposure, remove the affected individual from the area, treat symptomatically, and get medical attention.

The most important symptoms/effects, acute and delayed are:

IRRITATION TO EYES
IRRITATION TO SKIN
NAUSEA, DIARRHEA, AND/OR ABDOMINAL CRAMPS (IF INGESTED)

There is no evidence of adverse chronic effects from available information.

EMERGENCY & FIRST-AID PROCEDURES:

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation persists after washing.

SKIN CONTACT: Wash off with soap and plenty of water. Remove contaminated clothing. Get medical attention if irritation develops and persists. Wash clothing separately before reuse.

INHALATION: If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. Call a physician if symptoms develop or persist.

INGESTION: Rinse mouth thoroughly. Do not induce vomiting without advice from poison control center. If ingestion of a large amount does occur, call a poison control center immediately;

SEE ALSO SECTIONS 8-EXPOSURE CONTROL/PERSONAL PROTECTION AND 11-TOXICOLOGICAL EFFECTS.

SAFETY DATA SHEET
F-603 FOAM SOAP

NOT REGULATED LIQUID • BIODEGRADABLE • WATER-BASED CONCENTRATED SOAP

SECTION #5 - FIREFIGHTING MEASURES

FLAMMABLE PROPERTIES
NOT FLAMMABLE BY OSHA CRITERIA.
NOT COMBUSTIBLE BY OSHA CRITERIA.

FIRE FIGHTING PROCEDURES
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

EXTINGUISHING MEDIA
SMALL FIRE: USE DRY CHEMICAL POWDER
LARGE FIRE: USE WATER SPRAY, FOG, OR FOAM. **DO NOT USE WATER JET.**

UNUSUAL FIRE & EXPLOSION HAZARDS
Airtight containers may burst or rupture when exposed to extreme heat. Do not allow sealed containers to overheat. Move containers from fire area if you can do so without risk.

COMBUSTION PRODUCTS
Product may become combustible with extreme high temperature. Thermal decompositions products may include sulfur dioxide, oxides of sulfur.

SECTION #6 - ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK PROCEDURES

PRECAUTIONS
Avoid contact with eyes/skin. Avoid all personal contact. Keep unnecessary/unprotected people away from, and upwind, of spill/leak. Do not touch damaged containers or spilled material unless wearing appropriate PPE during cleanup. Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area).

SEE ALSO SECTIONS 8-EXPOSURE CONTROL/PERSONAL PROTECTION AND 7-HANDLING & STORAGE.

SPILL PROCEDURES
Avoid contact and use appropriate PPE. Ventilate area. Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Prevent entry into waterways, sewer, basements or confined areas. Never return spills in original containers for re-use.

SMALL SPILLS: Dilute material with water and mop up, or absorb with inert, dry material, and then place in an appropriate waste container. Finish cleaning by spreading water on contaminated surface, and dispose of according to local and regional authority requirements.

LARGE SPILLS: Absorb with an inert material and put the spilled material in an appropriate waste disposal. Finish cleaning by spreading water on contaminated surface and allow evacuating through sanitary system.

DISPOSE OF ALL WASTE IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS.

SEE ALSO SECTION 13-DISPOSAL INFORMATION

SAFETY DATA SHEET
F-603 FOAM SOAP

NOT REGULATED LIQUID • BIODEGRADABLE • WATER-BASED CONCENTRATED SOAP

SECTION #7 - HANDLING and STORAGE

HANDLING

WARNING: THIS PRODUCT IS A CONCENTRATED SOAP, WHICH CAN BE IRRITATING TO SKIN AND EYES. USE CAUTION WHEN HANDLING.
Do not use in areas without adequate ventilation. Wear proper personal protective equipment.
Avoid contact with skin. Avoid contact with eyes. Do not ingest/swallow this product. Wash contacted areas with water thoroughly, after handling.
Avoid release to the environment. As with all chemicals, good industrial hygiene practices should be followed when handling this material. Do not handle/store/open near an open flame, sources of heat/ignition, or near strong oxidizing agents.

SEE ALSO SECTION 8-EXPOSURE CONTROL/PERSONAL PROTECTION.

STORAGE

Store in a dry, well-ventilated area. Store at temperatures between 50-100 degrees F.
Keep container tightly closed. Keep away from heat, sparks, and open flame, or sources of ignition. Protect material from direct sunlight. Do not handle/store near strong oxidizing agents.

SECTION #8 - EXPOSURE CONTROL / PERSONAL PROTECTION

OVERVIEW

This product is a 40% active concentrated soap, and at dilution ratios required for proper foam strength (usually around 1%, 2% maximum) most or any harmful effects are greatly diminished. **F-603 FOAM SOAP** (alpha olefin sulfonate) is a biodegradable, water-based product, and contains no ingredients considered hazardous.

This product under the generic name "alpha olefin sulfonate" has USDA and FDA approval for food grade applications (CFR 178.3400). **THIS PRODUCT IS A CONCENTRATED SOAP, AND IN THE CONCENTRATED FORM IT CAN BE IRRITATING TO SKIN AND EYES. USE CAUTION WHEN HANDLING. WASH CONTACTED AREAS WITH WATER UNTIL IRRITATION IS ALLEVIATED.**

ALL CHEMICAL COMPOUNDS SHOULD BE HANDLED WITH CAUTION AND KEPT AWAY FROM CHILDREN.

EXPOSURE GUIDELINES

No exposure limits were found for this product or any of if its ingredients. In accordance with 29 CFR 1910.1200, this product does not contain sufficient concentration of any substances considered as hazardous.

ENGINEERING CONTROLS

Where engineering controls are indicated by use conditions or a potential for excessive exposure exist, the following traditional exposure control techniques may be used effectively to minimize employee exposures:

GENERAL DILUTION.
EXHAUST VENTILATION
ENSURE ADEQUATE VENTILATION, ESPECIALLY IN CONFINED AREAS.
ENSURE THAT EYEWASH STATIONS AND SAFETY SHOWERS ARE NEAR WORK AREAS.
WASH HANDS FACE BEFORE EATING, DRINKING, USING TOBACCO, OR USING THE TOILET.

SEE ALSO SECTION 11-TOXICOLOGICAL INFORMATION.

SAFETY DATA SHEET
F-603 FOAM SOAP

NOT REGULATED LIQUID • BIODEGRADABLE • WATER-BASED CONCENTRATED SOAP

SECTION #8 - EXPOSURE CONTROL / PERSONAL PROTECTION *(CONTINUED)*

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES

EYES: Use eye/face protection, including chemical splash goggles and/or face shield.
Contact with eyes can cause irritation.

SKIN: Gloves, protective clothing/footwear should be used to minimize skin contact.
Contact with skin can cause irritation, redness. Repeated or prolonged contact may cause irritation, drying, and/or cracking of skin.

INHALATION: Use ventilation, local exhaust, and breathing protection. Respiratory protection is not required during normal use of this product. However, wear an appropriate air-purifying respirator when ventilation is inadequate.
Inhalation of a vapor or mists can irritate respiratory tract.

INGESTION: Do not swallow/ingest this product.
Ingestion may cause irritation or gastrointestinal discomfort.

SECTION #9 - PHYSICAL and CHEMICAL PROPERTIES

APPEARANCE (COLOR, STATE, ODOR, ETC.):	LIQUID, LIGHT AMBER COLOR, MILD ODOR
pH (5% aqueous solution):	7.7
VAPOR PRESSURE:	1 mm Hg (68° F)
VAPOR DENSITIY (AIR = 1):	1
SOLUBILITY IN WATER:	VERY SOLUBLE
ACTIVITY:	38-40%
SPECIFIC GRAVITY:	1.067
EVAPORATION RATE (BUTYL ACETATE = 1):	<1
MELTING POINT:	NOT DETERMINED
BOILING POINT:	>212 °F
FLASH POINT:	>201 °F
FLAMMABLE LIMITS IN AIR (%VOLUME):	PRODUCT MAY BECOME COMBUSTIBLE WITH EXTREME HIGH TEMPERATURE
AUTO-IGNITION TEMPERATURE:	NOT DETERMINED

SECTION #10 - STABILITY and REACTIVITY

STABLITY / INSTABILITY:	STABLE
CONDITIONS TO AVOID:	EXCESSIVE HEAT, OPEN FLAMES, DIRECT SUNLIGHT.
MATERIALS TO AVOID:	REACTS WITH STRONG OXIDIZERS
HAZARDOUS DECOMPOSITION PRODUCTS:	THERMAL DECOMPOSITION MAY PRODUCE SULFUR DIOXIDE, OXIDES OF SULFUR AND OXIDES OF CARBON.
HAZARDOUS POLYMERIZATION:	WILL NOT OCCUR.

SAFETY DATA SHEET
F-603 FOAM SOAP

NOT REGULATED LIQUID • BIODEGRADABLE • WATER-BASED CONCENTRATED SOAP

SECTION #11 - TOXICOLOGICAL INFORMATION

EXPOSURE ROUTES
The most important acute effects of exposure to this material through passage of the material through the skin, eyes, or inhalation may include the following:

IRRITATION TO EYES
IRRITATION TO SKIN

Prolonged or repeated exposure to product contact with eyes/skin may cause irritation. Vapors of the concentrated product or its application can irritate the eyes. There is no evidence of adverse chronic effects from available information.

CARCINOGENICITY INFORMATION
The ingredients in this material ARE NOT listed as a carcinogenic by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), or the Occupational Safety and Health Administration (OSHA).

REPRODUCTIVITY
Contains no ingredient listed as toxic to reproduction.

TOXICOLOGICAL INFORMATION (COMPONENTS/INGREDIENTS)
Based on the data available, and in accordance with 29 CFR 1910.1200, this product does not contain a sufficient concentration of any substance to be defined as hazardous. No toxicity studies have been conducted on this product.

SECTION #12 - ECOLOGICAL INFORMATION

This material readily biodegrades under aerobic conditions of secondary wastewater treatment systems. This material has toxicity LC50 values for fish in the 0.3 mg/L to 21 mg/L range.

SECTION #13 - DISPOSAL INFORMATION

This product is NOT considered hazardous waste by the Environmental Protection Agency (EPA).

Chemical additions, processing or otherwise altering this material may make the waste management information presented in this Safety Data Sheet (SDS) inaccurate or otherwise inappropriate. Please be advised that the state and local requirement for disposal may be otherwise different from federal laws and regulations. Consult state and local regulations regarding the proper disposal of your waste stream material.

Dispose of in accordance with all local, state and federal requirements.

SECTION #14 - TRANSPORT INFORMATION

DOT SHIPPING DESCRIPTION: NOT REGULATED LIQUID
WASHING, SCOURING, CLEANING COMPOUND

SAFETY DATA SHEET
F-603 FOAM SOAP

NOT REGULATED LIQUID • BIODEGRADABLE • WATER-BASED CONCENTRATED SOAP

SECTION #15 - REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS

TSCA Section 12(b) Export Notification, 40 CFR 707, Subpart D

U.S. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):

THE INTENTIONAL INGREDIENTS OF THIS PRODUCT ARE LISTED.

CERCLA Reportable Quantity, 40 CFR 302.4(a) – Hazardous substances:

NONE PRESENT OR NONE PRESENT IN REGULATED QUANTITIES.

SARA 302, 40 CFR 355 Appendix A

NONE PRESENT OR NONE PRESENT IN REGULATED QUANTITIES.

SARA 311/312 Hazardous Class(es) 40 CFR 370.2

ACUTE (IMMEDIATE) HEALTH HAZARD.

SARA 313 Components 40 CFR 372.65

NONE PRESENT OR NONE PRESENT IN REGULATED QUANTITIES.
THIS MATERIAL DOES NOT CONTAIN ANY CHEMICAL COMPONENTS WITH KNOWN CHEMICAL ABSTRACTS (CAS) REGISTRY NUMBERS THAT EXCEED THE THRESHOLD (DE MINIMUS) REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (SARA)

STATE & LOCAL REGULATIONS

CALIFORNIA – Proposition 65

NO INGREDIENT IN THIS MIXTURE IS REGULATED BY CALIFORNIA PROP 65.

SECTION #16 - OTHER INFORMATION

Disclaimer: Some of the information presented and conclusions drawn herein are from sources other than direct test data on this product itself. The information in this Safety Data Sheet (SDS) was obtained from sources believed to be reliable, however the information is provided without warranty, expressed or implied, regarding its correctness. The conditions or methods of handling, storage, use and disposal of this product are beyond our control and may be beyond our knowledge. For this, and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use and disposal of this product. This Safety Data Sheet (SDS) was prepared and is for use for this product only. If this product is used as a component in another product, this SDS information may not be applicable. **This Safety Data Sheet (SDS) for "CHEMEX F-603 FOAM SOAP" was revised July 15, 2014, and has been prepared in accordance with OSHA Hazard Communication Standard (29 CFR 1200) and the Globally Harmonized System (GHS) format.**

SAFETY DATA SHEET

Section 1. Identification

Product name : PAW4HF ASPHALTIC CRUDE EMULSIFIER

Product code : PAW4HF

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Emulsifier.

Print date : 10/14/2014.

Validation date : 10/14/2014.

Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 4

GHS label elements

Signal word : Warning

Hazard statements : Combustible liquid.

Precautionary statements

Prevention : Wear protective gloves: > 8 hours (breakthrough time): Natural rubber gloves.. Wear eye or face protection. Keep away from flames and hot surfaces. - No smoking.

Response : Not applicable.

Storage : Store in a well-ventilated place. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
2-Butoxyethanol	5 - 10	111-76-2

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Continue to rinse for at least 10 minutes. Check for and remove any contact lenses. Get medical attention if irritation occurs.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Skin contact : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Section 4. First aid measures

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Specific hazards arising from the chemical : Combustible liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor.

Section 6. Accidental release measures

Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
2-Butoxyethanol	US ACGIH	20	-	-	-	-	-	-	-	-	
	OSHA PEL	50	240	-	-	-	-	-	-	-	[1]
	OSHA PEL 1989	25	120	-	-	-	-	-	-	-	[1]

[1]Absorbed through skin.

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Individual protection measures

Section 8. Exposure controls/personal protection

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles.

Hand protection : Chemical-resistant gloves: Natural rubber gloves.

Skin protection : Wear long sleeves to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Clear.]

Color : Water-white.

Odor : Alcohol-like.

Odor threshold : Not available.

pH : Not available.

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: 62.22°C (144°F) [PMCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : 32.4 kPa (243 mm Hg (4.7 psig)) @ 54.44°C 130 F (Reid)

Vapor density : >1 [Air = 1]

Relative density : 1.0525 (15.6°C)

Density : 8.77 (lbs/gal)

Solubility in water : Soluble

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

VOC : Not available.

Pour Point : -9.4°C (15.1°F)

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
2-Butoxyethanol	LC50 Inhalation Gas. LD50 Dermal LD50 Dermal LD50 Dermal LD50 Oral LD50 Oral	Rat Guinea pig Rabbit Rabbit Guinea pig Rabbit	450 ppm >2000 mg/kg 200 mg/kg 99 mg/kg 500 to 2000 mg/kg 320 mg/kg	4 hours - - - - -

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

Product/ingredient name	OSHA	IARC	NTP
2-Butoxyethanol	-	3	-

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Not applicable.

Specific target organ toxicity (repeated exposure)

Not applicable.

Aspiration hazard

Section 11. Toxicological information

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral Dermal Inhalation (vapors)	5841.1 mg/kg 12850.5 mg/kg 128.5 mg/l

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
2-Butoxyethanol	Acute EC50 >1000 mg/l Fresh water Acute LC50 1000 mg/l Marine water Acute LC50 1250000 µg/l Marine water	Daphnia - Daphnia magna Crustaceans - Chaetogammarus marinus - Young Fish - Menidia beryllina	48 hours 48 hours 96 hours

Persistence and degradability

Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	NA1993	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	Combustible liquid, n.o.s. (Contains: 2-Butoxyethanol)	-	-	-
Transport hazard class(es)	Combustible liquid.	-	-	-
Packing group	III	-	-	-
Environmental hazards	No.	No.	No.	No.
Additional information	**Remarks** This material is not regulated by DOT if transported in a packaging </= 119 gallons. This material is not regulated by TDG or IMO.	-	-	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Not applicable.

Marine pollutant Not available.

Section 14. Transport information

North-America NAERG : 128

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.

TSCA 12(b) annual export notification: No products were found.

United States inventory (TSCA 8b): All components are listed or exempted.

Clean Water Act (CWA) 307: No products were found.

Clean Water Act (CWA) 311: No products were found.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Fire hazard

SARA 313

	Product name	CAS number	%
Supplier notification	2-Butoxyethanol	111-76-2	5 - 10

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)

History

Date of printing : 10/14/2014.

Indicates information that has changed from previously issued version.

Notice to reader

NOTE: The information on this MSDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : PETROSWEET™ HSW700 SCAVENGER
™ a trademark of Baker Hughes, Inc.

Product code : HSW700

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Hydrogen Sulfide Scavenger.

Print date : 10/6/2014.

Validation date : 10/6/2014.

Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/SDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 3
ACUTE TOXICITY: ORAL - Category 4
ACUTE TOXICITY: INHALATION - Category 3
SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
SKIN SENSITIZATION - Category 1
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [optic nerve] - Category 1
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) [respiratory tract] - Category 1

GHS label elements

Hazard pictograms :

Signal word : Danger

Section 2. Hazards identification

Hazard statements : Flammable liquid and vapor.
Toxic if inhaled.
Harmful if swallowed.
Causes serious eye damage.
Causes skin irritation.
May cause an allergic skin reaction.
Causes damage to organs. (optic nerve)
Causes damage to organs through prolonged or repeated exposure. (respiratory tract)

Precautionary statements

Prevention : Wear protective gloves: > 8 hours (breakthrough time): Nitrile or Neoprene gloves. 4H gloves. Butyl rubber gloves.. Wear eye or face protection. Keep away from heat, sparks, open flames and hot surfaces. - No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Do not breathe vapor. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace.

Response : Get medical attention if you feel unwell. IF exposed: Call a POISON CENTER or physician. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician. IF SWALLOWED: Call a POISON CENTER or physician if you feel unwell. Rinse mouth. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. If skin irritation or rash occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.

Storage : Store locked up. Store in a well-ventilated place. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Additional information

The vapor pressure of the alkanolamine/aldehyde condensate in this product is extremely low. In hydrogen sulfide scavenging applications in oil and gas production or processing of hydrogen streams, mechanically generated mists or aerosols are not expected to be formed. Therefore, in these applications human inhalation exposure to this alkanolamine/aldehyde condensate is not expected to occur.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Alkanolamine/aldehyde condensate	40 - 50	4719-04-4
Methanol	5 - 10	67-56-1
Monoethanolamine	1 - 5	141-43-5

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Get medical attention immediately. Call a poison center or physician. Immediately flush the eye(s) continuously with lukewarm, gently flowing water for at least 20-60 minutes while holding the eyelid(s) open. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician.

Section 4. First aid measures

Inhalation : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Get medical attention immediately. Call a poison center or physician. Wash affected area with soap and mild detergent for at least 20 - 60 minutes. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : Toxic if inhaled. May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : Causes skin irritation. May cause an allergic skin reaction.

Ingestion : Harmful if swallowed. May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain,watering,redness

Inhalation : No specific data.

Skin contact : pain or irritation,redness,blistering may occur

Ingestion : stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Specific hazards arising from the chemical : Flammable liquid and vapor. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 6. Accidental release measures

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Additional information

The recommended shelf life for this product is 12 months from the manufacturing date.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Methanol	US ACGIH	200	262	-	250	328	-	-	-	-	[1]
	OSHA PEL	200	260	-	-	-	-	-	-	-	
	OSHA PEL 1989	200	260	-	250	325	-	-	-	-	[1]
Monoethanolamine	US ACGIH	3	7.5	-	6	15	-	-	-	-	
	OSHA PEL	3	6	-	-	-	-	-	-	-	
	OSHA PEL 1989	3	8	-	6	15	-	-	-	-	

[1]Absorbed through skin.

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Section 8. Exposure controls/personal protection

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles. If inhalation hazards exist, a full-face respirator may be required instead.

Hand protection : Chemical-resistant gloves: Nitrile or Neoprene gloves. 4H gloves. Butyl rubber gloves.

Skin protection : Wear long sleeves and chemical resistant apron to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid.

Color : Light yellow to Straw Yellow.

Odor : Amine like.

Odor threshold : Not available.

pH : 10 to 11.5

: 5% of product in 75% isopropanol / 25% water solution

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: 52.2°C (126°F) [SFCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : 32.4 kPa (243 mm Hg, 4.7 psig) @ 54.4°C, 130 F (Reid)

Vapor density : >1 [Air = 1]

Relative density : 1.074 (15.6°C)

Density : 8.95 (lbs/gal)

Solubility in water : Soluble

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Section 9. Physical and chemical properties

Decomposition temperature : Not available.

Viscosity : Dynamic (15.6°C): 14 to 16 cP

VOC : Not available.

Pour Point : -37°C (-34.6°F)

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials, reducing materials and acids.
Methanol is incompatible and may react with acetyl bromide, alkyl aluminum solutions, beryllium hydride, boron trichloride, nitric acid, cyanuric chloride, dichloromethane, diethylzinc, metals (granulated forms of aluminum and magnesium – including aluminum and zinc salts), phosphorus III oxide, and potassium tert-butoxide.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Alkanolamine/aldehyde condensate	LC50 Inhalation Dusts and mists	Rat - Female	0.338 mg/l	4 hours
	LC50 Inhalation Dusts and mists	Rat - Male	0.4 mg/l	4 hours
	LD50 Oral	Rat	763 mg/kg	-
Methanol	LC50 Inhalation Gas.	Rat	145000 ppm	1 hours
	LC50 Inhalation Gas.	Rat	64000 ppm	4 hours
	LD50 Dermal	Rabbit	15800 mg/kg	-
	LD50 Oral	Rat	5600 mg/kg	-
Monoethanolamine	LD50 Oral	Rat	1720 mg/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

No applicable toxicity data

Section 11. Toxicological information

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Methanol Monoethanolamine	Category 1 Category 3	Not determined Not applicable.	optic nerve Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Alkanolamine/aldehyde condensate	Category 1	Not determined	respiratory tract

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : Causes damage to organs through prolonged or repeated exposure. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral Dermal Inhalation (vapors) Inhalation (dusts and mists)	657.8 mg/kg 3077.8 mg/kg 30.78 mg/l 0.7659 mg/l

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Alkanolamine/aldehyde condensate	Acute EC50 6.66 mg/l	Algae - Green algae	72 hours
	Acute EC50 11.9 mg/l	Daphnia - Daphnia magna	48 hours
	Acute LC50 16.07 mg/l	Fish - Brachadanio rerio	96 hours
Methanol	Acute EC50 16.912 mg/l Marine water	Algae - Ulva pertusa	96 hours
	Acute EC50 10000000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 2500000 µg/l Marine water	Crustaceans - Crangon crangon	48 hours
	Acute LC50 100 mg/l Fresh water	Fish - Pimephales promelas	96 hours
	Chronic NOEC 9.96 mg/l Marine water	Algae - Ulva pertusa	96 hours
Monoethanolamine	Acute EC50 80000 µg/l Fresh water	Algae - Isochrysis galbana	96 hours
	Acute LC50 >100000 µg/l Marine water	Crustaceans - Crangon crangon - Adult	48 hours
	Acute LC50 170000 µg/l Fresh water	Fish - Carassius auratus	96 hours
PETROSWEET™ HSW700 SCAVENGER	Acute EC50 5.4 mg/l	Algae	48 hours
	Acute LC50 64 mg/l	Fish	96 hours
	Acute LC50 180 mg/l	Fish	96 hours

Persistence and degradability

Not available.

Other adverse effects : No known significant effects or critical hazards.

Additional information

An EcoTox™ Report, and/or the material's environmental fate is available upon request at the following number: 1-800-235-4249, then press 4.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN2929	UN2929	UN2929	UN2929
UN proper shipping name	TOXIC LIQUIDS, FLAMMABLE, ORGANIC, N.O.S. (Contains: Alkanolamine/aldehyde condensate, Methanol)	TOXIC LIQUIDS, FLAMMABLE, ORGANIC, N.O.S. (Contains: Alkanolamine/aldehyde condensate, Methanol)	TOXIC LIQUIDS, FLAMMABLE, ORGANIC, N.O.S. (Contains: Alkanolamine/aldehyde condensate, Methanol)	TOXIC LIQUIDS, FLAMMABLE, ORGANIC, N.O.S. (Contains: Alkanolamine/aldehyde condensate, Methanol)
Transport hazard class(es)	6.1 (3) 	6.1 (3) 	6.1 (3) 	6.1 (3) 
Packing group	II	II	II	II
Environmental hazards	No.	No.	No.	No.
Additional information	-	-	**Emergency schedules (EmS)** F-E S-D	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Methanol, 5988 gal of this product.

Marine pollutant Not available.

North-America NAERG : 131

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 4(a) final test rules**: Alkanolamine/aldehyde condensate

TSCA 12(b) one-time export: Alkanolamine/aldehyde condensate

TSCA 12(b) annual export notification: No products were found.

United States inventory (TSCA 8b): All components are listed or exempted.

Clean Water Act (CWA) 307: No products were found.

Clean Water Act (CWA) 311: No products were found.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

SARA 302/304 : No products were found.

SARA 311/312

Section 15. Regulatory information

Classification : Fire hazard
Immediate (acute) health hazard
Delayed (chronic) health hazard

SARA 313

	Product name	CAS number	%
Supplier notification	Methanol	67-56-1	5 - 10

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)

History

Date of printing : 10/6/2014.

Indicates information that has changed from previously issued version.

Notice to reader

NOTE: The information on this SDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This SDS was prepared and is to be used for this product. If the product is used as a component in another product, this SDS information may not be applicable.

Section 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name:	SURF-SOL
Product Number:	RJ 62000 D
Product Use:	Work-Over Fluid.
Manufacturer/Supplier:	Enova Solutions Inc.
	3553 Landco Drive, Ste B
	Bakersfield, CA 93308
Phone Number:	(661) 327-2405
Emergency Phone:	(661) 327-2405
Date of Preparation:	April 4, 2012

Section 2: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

CAUTION

MAY CAUSE EYE IRRITATION. MAY CAUSE SKIN IRRITATION.

Potential Health Effects: See Section 11 for more information.

Likely Routes of Exposure: Skin contact, eye contact, inhalation, and ingestion.

Eye: May cause eye irritation.

Skin: May cause skin irritation.

Ingestion: May be harmful if swallowed. May cause stomach distress, nausea, or vomiting. Harmful: may cause lung damage if swallowed.

Inhalation: May cause respiratory tract irritation. This product may be aspirated into the lungs and cause chemical pneumonitis.

Chronic Effects: Prolonged or repeated contact may dry skin and cause irritation.

Signs and Symptoms: Symptoms may include discomfort or pain, excess blinking and tear production, with marked redness and swelling of the conjunctiva. Symptoms may include redness, edema, drying, defatting and cracking of the skin.

Medical Conditions Aggravated By Exposure: Asthma. Allergies.

Target Organs: Skin, eyes, gastrointestinal tract, respiratory system.

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Potential Environmental Effects: May cause long-term adverse effects in the aquatic environment See Section 12 for more information.

Section 3: COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient	CAS #	Wt. %
Kerosene	8008-20-6	5 – 70
Proprietary Blend of Surfactants		0 - 5
Conditioned Water	7732 - 18 – 5	2 - 30
Stoddard Solvents	8052 – 41 – 3	.1 - 2

Section 4: FIRST AID MEASURES

Eye Contact: In case of contact, immediately flush eyes with plenty of water. If easy to do, remove contact lenses, if worn.

Skin Contact: In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Call a physician if irritation develops and persists.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

Ingestion: If swallowed, do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.

General Advice: In case of accident or if you feel unwell, seek medical advice immediately (show the label or MSDS where possible).

Note to Physicians: Symptoms may not appear immediately.

Section 5: FIRE FIGHTING MEASURES

Flammability: Not flammable by OSHA criteria.

Means of Extinction:

Suitable Extinguishing Media: Powder, water spray, foam, carbon dioxide.

Unsuitable Extinguishing Media: Not available.

Products of Combustion: Oxides of carbon.

Explosion Data:

Sensitivity to Mechanical Impact: Not available.

Sensitivity to Static Discharge: Not available.

Protection of Firefighters: Keep upwind of fire. Wear full fire fighting turn-out gear (full Bunker gear) and respiratory protection (SCBA).

Section 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions: Use personal protection recommended in Section 8. Isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Environmental Precautions: This material is a water pollutant. Keep out of drains, sewers, ditches, and waterways. Minimize use of water to prevent environmental contamination.

Methods for Containment: Contain and/or absorb spill with inert material (e.g. sand, vermiculite), then place in a suitable container. Do not flush to sewer or allow to enter waterways. Use appropriate Personal Protective Equipment (PPE).

Methods for Clean-Up: Vacuum or sweep material and place in a disposal container. Allow gas to dissipate harmlessly into the atmosphere.

Other Information: Not available.

Section 7: HANDLING AND STORAGE

Handling: Avoid contact with skin and eyes. Do not swallow. Do not breathe gas/fumes/vapor/spray. Handle and open container with care. When using, do not eat or drink. Wash hands before eating, drinking, or smoking.

Storage: Keep out of the reach of children. Keep container tightly closed. Keep away from food, drink and animal feeding stuffs.

Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines

	Exposure Limits	
Ingredient	**OSHA-PEL**	**ACGIH-TLV**
Kerosene	Not available.	200 mg/m^3

Engineering Controls: Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, etc.) below recommended exposure limits.

Personal Protective Equipment:

Eye/Face Protection: Wear eye/face protection.

Hand Protection: Wear suitable gloves.

Skin and Body Protection: Wear suitable protective clothing.

Respiratory Protection: In case of insufficient ventilation, wear suitable respiratory equipment.

General Hygiene Considerations: Handle according to established industrial hygiene and safety practices.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Opaque.
Color:	White-Pink
Odour:	Kerosene.
Odour Threshold:	Not available.
Physical State:	Liquid.
pH:	7
Kinematic Viscosity @ 70 Deg F:	212.7 cSt
Freezing Point:	Not available.
Boiling Point:	~ 212 °C (~ 413.6 °F)
Flash Point, COC:	178 Deg F
Evaporation Rate:	Not available.
Lower Flammability Limit:	Not available.
Upper Flammability Limit:	Not available.
Vapor Pressure:	1.46 psi
Vapor Density:	Not available.
Specific Gravity:	Not available.
API Gravity:	29.3 deg. API
Solubility in Water:	Complete.
Coefficient of Water/Oil Distribution:	Not available.
Auto-ignition Temperature:	Not available.
Percent Volatile, wt. %:	4
VOC content, wt. %:	Not available.

Section 10: STABILITY AND REACTIVITY

Stability: Stable under normal storage conditions.

Conditions of Reactivity: Heat. Incompatible materials.

Incompatible Materials: Oxidizers.

Hazardous Decomposition Products: Oxides of carbon.

Possibility of Hazardous Reactions: No dangerous reaction known under conditions of normal use.

Section 11: TOXICOLOGY INFORMATION

EFFECTS OF ACUTE EXPOSURE

Component Anaylsis

Ingredient	**LD_{50} (oral)**	**LC_{50}**
Kerosene	> 5000 mg/kg, rat	> 5000 mg/m3 4hr, rat

Eye: May cause eye irritation. Symptoms may include discomfort or pain, excess blinking and tear production, with marked redness and swelling of the conjunctiva.

Skin: May cause skin irritation. Symptoms may include redness, edema, drying, defatting and cracking of the skin.

Ingestion: May be harmful if swallowed. May cause stomach distress, nausea, or vomiting. Harmful: may cause lung damage if swallowed.

Inhalation: May cause respiratory tract irritation. This product may be aspirated into the lungs and cause chemical pneumonitis.

EFFECTS OF CHRONIC EXPOSURE

Target Organs: Not available.

Chronic Effects: Not hazardous by OSHA criteria.

Carcinogenicity: Not hazardous by OSHA criteria.

Ingredient	**Chemical Listed as Carcinogen or Potential Carcinogen ***
Kerosene	A3

* See Section 15 for more information.

Mutagenicity: Not hazardous by OSHA criteria.

Reproductive Effects: Not hazardous by OSHA criteria.

Developmental Effects:

Teratogenicity: Not hazardous by OSHA criteria.

Embryotoxicity: Not hazardous by OSHA criteria.

Respiratory Sensitization: Not hazardous by OSHA criteria.

Skin Sensitization: Not hazardous by OSHA criteria.

Toxicologically Synergistic Materials: Not available.

Section 12: ECOLOGICAL INFORMATION

Ecotoxicity: May cause long-term adverse effects in the aquatic environment

Persistence / Degradability: Not available.

Bioaccumulation / Accumulation: Not available.

Mobility in Environment: Not available.

Section 13: DISPOSAL CONSIDERATIONS

Disposal Instructions:

This material and its container must be disposed of in a safe way.

Section 14: TRANSPORTATION INFORMATION

DOT Classification

Not regulated

Section 15: REGULATORY INFORMATION

Federal Regulations

US: MSDS prepared pursuant to the Hazard Communication Standard (CFR29 910.1200).

SARA Title III

Ingredient	Section 302 (EHS) TPQ (lbs.)	Section 304 EHS RQ (lbs.)	CERCLA RQ (lbs.)	Section 313
Kerosene	Not listed.	Not listed.	Not listed.	Not listed.

State Regulations

California Proposition 65:

This product contains a chemical known to the state of California to cause cancer.

This product contains a chemical or chemicals known to the State of California to cause birth defects or other reproductive harm.

Global Inventories

Ingredient	USA TSCA
Kerosene	Yes.

NFPA - National Fire Protection Association:

Health - 1 **Fire -** 2 **Reactivity -** 0

Hazard Rating: 0 = minimal, 1 = slight, 2 = moderate, 3 = severe, 4 = extreme

SOURCE AGENCY CARCINOGEN CLASSIFICATIONS:

OSHA (O) Occupational Safety and Health Administration.

ACGIH (G) American Conference of Governmental Industrial Hygienists.

A1 - Confirmed human carcinogen.

A2 - Suspected human carcinogen.

A3 - Animal carcinogen.

A4 - Not classifiable as a human carcinogen.

A5 - Not suspected as a human carcinogen.

IARC (I) International Agency for Research on Cancer.

1 - The agent (mixture) is carcinogenic to humans.

2A - The agent (mixture) is probably carcinogenic to humans; there is limited evidence of carcinogenicity in humans and sufficient evidence of carcinogenicity in experimental animals.

2B - The agent (mixture) is possibly carcinogenic to humans; there is limited evidence of carcinogenicity in humans in the absence of sufficient evidence of carcinogenicity in experimental animals.

3 - The agent (mixture, exposure circumstance) is not classifiable as to its carcinogenicity to humans.

4 - The agent (mixture, exposure circumstance) is probably not carcinogenic to humans.

NTP (N) National Toxicology Program.

1 - Known to be carcinogens.

2 - Reasonably anticipated to be carcinogens.

Section 16: OTHER INFORMATION

Disclaimer:

The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. It is the user's responsibility to satisfy oneself as to the suitability and completeness of this information for the user's own particular use.

Version #: 1.0

Expires: April 4, 2015

Prepared by: Nexreg Compliance Inc.
Phone: (519) 488-5126
www.nexreg.com

SAFETY DATA SHEET

Section 1. Identification

Product name : TECHNI-CHEK 3658

Product code : CRW3658

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Corrosion inhibitor.

Print date : 2/2/2015.

Validation date : 2/2/2015.

Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : SKIN CORROSION/IRRITATION - Category 1
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
AQUATIC HAZARD (ACUTE) - Category 1
AQUATIC HAZARD (LONG-TERM) - Category 2

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Causes severe skin burns and eye damage.
Very toxic to aquatic life.
Toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention : Wear protective gloves. Wear eye or face protection. Wear protective clothing. Avoid release to the environment. Wash hands thoroughly after handling.

Section 2. Hazards identification

Response : Collect spillage. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.

Storage : Store locked up.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Quaternary ammonium compound	10 - 20	Trade secret.
Phosphate ester salt	5 - 10	Trade secret.
Ethanol	1 - 5	64-17-5
Alkyl amine	0.1 - 1	Trade secret.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Get medical attention immediately. Call a poison center or physician. Immediately flush the eye(s) continuously with lukewarm, gently flowing water for at least 20-60 minutes while holding the eyelid(s) open. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician.

Inhalation : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Get medical attention immediately. Call a poison center or physician. Wash affected area with soap and mild detergent for at least 20 - 60 minutes. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.

Section 4. First aid measures

Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : Causes severe burns.

Ingestion : May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain,watering,redness

Inhalation : No specific data.

Skin contact : pain or irritation,redness,blistering may occur

Ingestion : stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst. This material is very toxic to aquatic life. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides,phosphorus oxides,halogenated compounds

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Avoid release to the environment. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Ethanol	US ACGIH OSHA PEL OSHA PEL 1989	- 1000 1000	- 1900 1900	- - -	1000 - -	- - -	- - -	- - -	- - -	- - -	

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles. If inhalation hazards exist, a full-face respirator may be required instead.

Hand protection : Chemical-resistant gloves.

Skin protection : Wear long sleeves and chemical resistant apron to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Clear.]

Color : Colorless.

Odor : Alcohol [Slight]

Odor threshold : Not available.

pH : 5.5 to 7.5

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: >93.34°C (>200°F) [TCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Slightly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Section 9. Physical and chemical properties

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : Not available.

Relative density : 1

Density : 8.32 (lbs/gal)

Solubility in water : Soluble

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

VOC : Not available.

Pour Point : -1.67°C (29°F)

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials, metals, acids and alkalis.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Quaternary ammonium compound	LD50 Oral	Rat	426 mg/kg	-
Ethanol	LC50 Inhalation Vapor	Rat	20000 ppm	10 hours
	LC50 Inhalation Vapor	Rat	124700 mg/m³	4 hours
	LD50 Oral	Rat	7 g/kg	-
Alkyl amine	LD50 Oral	Rat	1000 to 1250 mg/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Section 11. Toxicological information

Carcinogenicity

No applicable toxicity data

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Not applicable.

Specific target organ toxicity (repeated exposure)

Not applicable.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	3506.2 mg/kg

Section 12. Ecological information

Toxicity

Section 12. Ecological information

Product/ingredient name	Result	Species	Exposure
Quaternary ammonium compound	Acute EC50 37 ppb Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 64 ppb Fresh water	Fish - Oncorhynchus mykiss	96 hours
	Chronic NOEC 4.15 ppb Marine water	Daphnia - Daphnia magna	21 days
	Chronic NOEC 32.2 ppb	Fish - Pimephales promelas	34 days
Ethanol	Acute EC50 17.921 mg/l Marine water	Algae - Ulva pertusa	96 hours
	Acute EC50 2000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 25500 µg/l Marine water	Crustaceans - Artemia franciscana - Larvae	48 hours
	Acute LC50 42000 µg/l Fresh water	Fish - Oncorhynchus mykiss	4 days
	Chronic NOEC 4.995 mg/l Marine water	Algae - Ulva pertusa	96 hours
	Chronic NOEC 0.375 ul/L Fresh water	Fish - Gambusia holbrooki - Larvae	12 weeks

Persistence and degradability

Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN1760	UN1760	UN1760	UN1760
UN proper shipping name	CORROSIVE LIQUID, N.O.S. (Contains: Quaternary ammonium compound)	CORROSIVE LIQUID, N.O.S. (Contains: Quaternary ammonium compound)	CORROSIVE LIQUID, N.O.S. (Contains: Quaternary ammonium compound)	CORROSIVE LIQUID, N.O.S. (Contains: Quaternary ammonium compound)
Transport hazard class(es)	8 	8 	8 	8 
Packing group	III	III	III	III
Environmental hazards	Yes.	Yes.	Yes.	No.

Section 14. Transport information

Additional information	-	-	**Emergency schedules (EmS)** F-A S-B	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Not applicable.

Marine pollutant Quaternary ammonium compound

North-America NAERG : 154

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: No products were found.
Clean Water Act (CWA) 311: No products were found.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Immediate (acute) health hazard

SARA 313

Supplier notification : No products were found.

Canada

Canada (CEPA DSL): : At least one component is not listed in DSL but all such components are listed in NDSL.

Section 16. Other information

National Fire Protection Association (U.S.A.)

History

Date of printing : 2/2/2015.

Indicates information that has changed from previously issued version.

Notice to reader

Section 16. Other information

NOTE: The information on this MSDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : TECHNI-HIB 3743

Product code : CRW3743

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Corrosion inhibitor.

Print date : 10/31/2014.

Validation date : 10/31/2014.

Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : SKIN CORROSION/IRRITATION - Category 1B
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
AQUATIC HAZARD (ACUTE) - Category 1
AQUATIC HAZARD (LONG-TERM) - Category 2

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Causes severe skin burns and eye damage.
Very toxic to aquatic life.
Toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention : Wear protective gloves: > 8 hours (breakthrough time): neoprene nitrile polyvinyl alcohol (PVA) polyvinyl chloride (PVC). Wear eye or face protection. Wear protective clothing. Avoid release to the environment. Wash hands thoroughly after handling.

Section 2. Hazards identification

Response : Collect spillage. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.

Storage : Store locked up.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Quaternary ammonium compound	20 - 30	Trade secret.
Phosphate ester salt	5 - 10	Trade secret.
Ethanol	1 - 5	64-17-5
Alkyl amine	0.1 - 1	Trade secret.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Get medical attention immediately. Call a poison center or physician. Immediately flush the eye(s) continuously with lukewarm, gently flowing water for at least 20-60 minutes while holding the eyelid(s) open. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician.

Inhalation : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Get medical attention immediately. Call a poison center or physician. Wash affected area with soap and mild detergent for at least 20 - 60 minutes. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.

Section 4. First aid measures

Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : Causes severe burns.

Ingestion : May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain,watering,redness

Inhalation : No specific data.

Skin contact : pain or irritation,redness,blistering may occur

Ingestion : stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst. This material is very toxic to aquatic life. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides,phosphorus oxides,halogenated compounds

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Avoid release to the environment. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Ethanol	US ACGIH OSHA PEL OSHA PEL 1989	- 1000 1000	- 1900 1900	- - -	1000 - -	- - -	- - -	- - -	- - -	- - -	

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles. If inhalation hazards exist, a full-face respirator may be required instead.

Hand protection : Chemical-resistant gloves: neoprene nitrile polyvinyl alcohol (PVA) polyvinyl chloride (PVC)

Skin protection : Wear long sleeves and chemical resistant apron to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Clear.]

Color : Colorless to pale pink.

Odor : Alcohol-like. [Slight]

Odor threshold : Not available.

pH : 5 to 7

Melting/freezing point : -4.4444°C (24°F)

Boiling point : 104.44°C (220°F)

Initial Boiling Point : Not available.

Flash point : Closed cup: 93.333°C (200°F) [TCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Not available.

Section 9. Physical and chemical properties

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : Not available.

Relative density : 1

Density : 8.33 (lbs/gal)

Solubility in water : Soluble

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

VOC : Not available.

Pour Point : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials, metals, acids and alkalis.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Quaternary ammonium compound	LD50 Oral	Rat	426 mg/kg	-
Ethanol	LC50 Inhalation Vapor	Rat	20000 ppm	10 hours
	LC50 Inhalation Vapor	Rat	124700 mg/m³	4 hours
	LD50 Oral	Rat	7 g/kg	-
Alkyl amine	LD50 Oral	Rat	1000 to 1250 mg/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Section 11. Toxicological information

Carcinogenicity

Product/ingredient name	OSHA	IARC	NTP
Ethanol	-	1	-

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Not applicable.

Specific target organ toxicity (repeated exposure)

Not applicable.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	2103.7 mg/kg

Section 12. Ecological information

Toxicity

Section 12. Ecological information

Product/ingredient name	Result	Species	Exposure
Quaternary ammonium compound	Acute EC50 37 ppb Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 64 ppb Fresh water	Fish - Oncorhynchus mykiss	96 hours
	Chronic NOEC 4.15 ppb Marine water	Daphnia - Daphnia magna	21 days
	Chronic NOEC 32.2 ppb	Fish - Pimephales promelas	34 days
Ethanol	Acute EC50 17.921 mg/l Marine water	Algae - Ulva pertusa	96 hours
	Acute EC50 2000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 25500 µg/l Marine water	Crustaceans - Artemia franciscana - Larvae	48 hours
	Acute LC50 42000 µg/l Fresh water	Fish - Oncorhynchus mykiss	4 days
	Chronic NOEC 4.995 mg/l Marine water	Algae - Ulva pertusa	96 hours
	Chronic NOEC 0.375 ul/L Fresh water	Fish - Gambusia holbrooki - Larvae	12 weeks

Persistence and degradability

Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN1760	UN1760	UN1760	UN1760
UN proper shipping name	CORROSIVE LIQUID, N.O.S. (Contains: Quaternary ammonium compound)	CORROSIVE LIQUID, N.O.S. (Contains: Quaternary ammonium compound)	CORROSIVE LIQUID, N.O.S. (Contains: Quaternary ammonium compound)	CORROSIVE LIQUID, N.O.S. (Contains: Quaternary ammonium compound)
Transport hazard class(es)	8 	8 	8 	8 
Packing group	III	III	III	III
Environmental hazards	Yes.	Yes.	Yes.	No.

Section 14. Transport information

Additional information	-	-	-	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Not applicable.

Marine pollutant Quaternary ammonium compound

North-America NAERG : 154

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: No products were found.
Clean Water Act (CWA) 311: No products were found.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Immediate (acute) health hazard

SARA 313

Supplier notification : No products were found.

Canada

Canada (CEPA DSL): : At least one component is not listed in DSL but all such components are listed in NDSL.

Section 16. Other information

National Fire Protection Association (U.S.A.)

History

Date of printing : 10/31/2014.

Indicates information that has changed from previously issued version.

Notice to reader

Section 16. Other information

NOTE: The information on this MSDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : WCW3003 COMBINATION INHIBITOR
Product code : WCW3003

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Emulsifier. Corrosion inhibitor.

Print date : 2/2/2015.
Validation date : 2/2/2015.
Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : SKIN CORROSION/IRRITATION - Category 1
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
AQUATIC HAZARD (ACUTE) - Category 2
AQUATIC HAZARD (LONG-TERM) - Category 2

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Causes severe skin burns and eye damage.
Toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention : Wear protective gloves. Wear eye or face protection. Wear protective clothing. Avoid release to the environment. Wash hands thoroughly after handling.

Section 2. Hazards identification

Response : Collect spillage. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.

Storage : Store locked up.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Quaternary ammonium compound	5 - 10	Trade secret.
Phosphate ester salt	1 - 5	Trade secret.
Ethanol	1 - 5	64-17-5
Alkyl amine	0.1 - 1	Trade secret.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Get medical attention immediately. Call a poison center or physician. Immediately flush the eye(s) continuously with lukewarm, gently flowing water for at least 20-60 minutes while holding the eyelid(s) open. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician.

Inhalation : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Get medical attention immediately. Call a poison center or physician. Wash affected area with soap and mild detergent for at least 20 - 60 minutes. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.

Section 4. First aid measures

Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : Causes severe burns.

Ingestion : May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain,watering,redness

Inhalation : No specific data.

Skin contact : pain or irritation,redness,blistering may occur

Ingestion : stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides,phosphorus oxides,halogenated compounds

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Avoid release to the environment. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Ethanol	US ACGIH OSHA PEL OSHA PEL 1989	- 1000 1000	- 1900 1900	- - -	1000 - -	- - -	- - -	- - -	- - -	- - -	

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles. If inhalation hazards exist, a full-face respirator may be required instead.

Hand protection : Chemical-resistant gloves.

Skin protection : Wear long sleeves and chemical resistant apron to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Clear.]

Color : Yellow.

Odor : Mercaptan.

Odor threshold : Not available.

pH : 5 to 7

: Neat - without dilution.

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: 94°C (201.2°F) [SFCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Section 9. Physical and chemical properties

Flammability (solid, gas) : Slightly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : >1 [Air = 1]

Relative density : 1.0399 (15.6°C)

Density : 8.66 (lbs/gal)

Solubility in water : Soluble

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

VOC : Not available.

Pour Point : -5°C (23°F)

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials, metals, acids and alkalis.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Quaternary ammonium compound	LD50 Oral	Rat	426 mg/kg	-
Ethanol	LC50 Inhalation Vapor	Rat	20000 ppm	10 hours
	LC50 Inhalation Vapor	Rat	124700 mg/m³	4 hours
	LD50 Oral	Rat	7 g/kg	-
Alkyl amine	LD50 Oral	Rat	1000 to 1250 mg/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Section 11. Toxicological information

Mutagenicity

No applicable toxicity data

Carcinogenicity

No applicable toxicity data

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Not applicable.

Specific target organ toxicity (repeated exposure)

Not applicable.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	6010.6 mg/kg

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Quaternary ammonium compound	Acute EC50 37 ppb Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 64 ppb Fresh water	Fish - Oncorhynchus mykiss	96 hours
	Chronic NOEC 4.15 ppb Marine water	Daphnia - Daphnia magna	21 days
	Chronic NOEC 32.2 ppb	Fish - Pimephales promelas	34 days
Ethanol	Acute EC50 17.921 mg/l Marine water	Algae - Ulva pertusa	96 hours
	Acute EC50 2000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 25500 µg/l Marine water	Crustaceans - Artemia franciscana - Larvae	48 hours
	Acute LC50 42000 µg/l Fresh water	Fish - Oncorhynchus mykiss	4 days
	Chronic NOEC 4.995 mg/l Marine water	Algae - Ulva pertusa	96 hours
	Chronic NOEC 0.375 ul/L Fresh water	Fish - Gambusia holbrooki - Larvae	12 weeks

Persistence and degradability

Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN1760	UN1760	UN1760	UN1760
UN proper shipping name	CORROSIVE LIQUID, N.O.S. (Contains: Quaternary ammonium compound)	CORROSIVE LIQUID, N.O.S. (Contains: Quaternary ammonium compound)	CORROSIVE LIQUID, N.O.S. (Contains: Quaternary ammonium compound)	CORROSIVE LIQUID, N.O.S. (Contains: Quaternary ammonium compound)
Transport hazard class(es)	8 	8 	8 	8 
Packing group	III	III	III	III

Section 14. Transport information

Environmental hazards	Yes.	Yes.	Yes.	No.
Additional information	-	-	**Emergency schedules (EmS)** F-A S-B	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Not applicable.

Marine pollutant Quaternary ammonium compound

North-America NAERG : 154

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: No products were found.
Clean Water Act (CWA) 311: No products were found.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Immediate (acute) health hazard

SARA 313

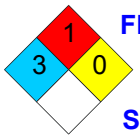
Supplier notification : No products were found.

Canada

Canada (CEPA DSL): : At least one component is not listed in DSL but all such components are listed in NDSL.

Section 16. Other information

National Fire Protection Association (U.S.A.)



History

Date of printing : 2/2/2015.

Indicates information that has changed from previously issued version.

Section 16. Other information

Notice to reader

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The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : WCW4527 COMBINATION ASPHALTIC OIL EMULSIFIER/CORROSION INHIBITOR

Product code : WCW4527

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Emulsifier. Corrosion inhibitor.

Print date : 11/5/2014.

Validation date : 11/5/2014.

Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/SDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A
SKIN SENSITIZATION - Category 1
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) [heart, kidneys and liver] - Category 2
AQUATIC HAZARD (ACUTE) - Category 3
AQUATIC HAZARD (LONG-TERM) - Category 3

GHS label elements

Hazard pictograms :

Signal word : Warning

Hazard statements : Causes serious eye irritation.
Causes skin irritation.
May cause an allergic skin reaction.
May cause damage to organs through prolonged or repeated exposure. (heart, kidneys, liver)
Harmful to aquatic life with long lasting effects.

Precautionary statements

Section 2. Hazards identification

Prevention : Wear protective gloves: > 8 hours (breakthrough time): Natural rubber gloves.. Wear eye or face protection. Avoid release to the environment. Do not breathe vapor. Wash hands thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace.

Response : Get medical attention if you feel unwell. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. Wash contaminated clothing before reuse. If skin irritation or rash occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage : Not applicable.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Ethylene glycol	5 - 10	107-21-1
Sulfur compound	1 - 5	Trade secret.
Quaternary ammonium compound	1 - 5	Trade secret.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Continue to rinse for at least 10 minutes. Check for and remove any contact lenses. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention following exposure or if feeling unwell. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention following exposure or if feeling unwell. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Section 4. First aid measures

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : Causes skin irritation. May cause an allergic skin reaction.

Ingestion : Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain or irritation,watering,redness

Inhalation : No specific data.

Skin contact : irritation,redness

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides,sulfur oxides,halogenated compounds

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

Section 6. Accidental release measures

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Avoid release to the environment. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	**List name**	**ppm**	**mg/m³**	**Other**	**ppm**	**mg/m³**	**Other**	**ppm**	**mg/m³**	**Other**	**Notations**
Ethylene glycol	US ACGIH OSHA PEL 1989	- -	- -	- -	- -	- -	- -	- 50	100 125	- -	[a]

Form: [a]Aerosol

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles.

Hand protection : Chemical-resistant gloves: Natural rubber gloves.

Skin protection : Wear long sleeves to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Clear.]

Color : Amber.

Odor : Mercaptan.

Odor threshold : Not available.

pH : Not available.

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: 98°C (208.4°F) [PMCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Slightly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Section 9. Physical and chemical properties

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : >1 [Air = 1]

Relative density : 1.05 to 1.06 (15.6°C)

Density : 8.77 (lbs/gal)

Solubility in water : Soluble

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

VOC : Not available.

Pour Point : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials and alkalis. Slightly reactive or incompatible with the following materials: acids.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Ethylene glycol	LD50 Oral	Rat	4700 mg/kg	-
Sulfur compound	LD50 Dermal	Rabbit	251 mg/kg	-
	LD50 Oral	Rat	244 mg/kg	-
Quaternary ammonium compound	LD50 Oral	Rat	400 mg/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

Section 11. Toxicological information

No applicable toxicity data

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Not applicable.

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Ethylene glycol Sulfur compound	Category 2 Category 2	Not determined Not determined	kidneys heart and liver

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : May cause damage to organs through prolonged or repeated exposure. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral Dermal Inhalation (vapors)	4348.8 mg/kg 3190.6 mg/kg 191.4 mg/l

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Ethylene glycol	Acute LC50 100000 µg/l Marine water Acute LC50 10000000 µg/l Fresh water Acute LC50 8050000 µg/l Fresh water	Crustaceans - Crangon crangon Daphnia - Daphnia magna Fish - Pimephales promelas	48 hours 48 hours 96 hours
Quaternary ammonium compound	Acute LC50 100 to 500 µg/l	Crustaceans - Echinogammarus olivii	48 hours

Persistence and degradability

Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN3082	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Contains: Ethylene glycol)	-	-	-
Transport hazard class(es)	9 	-	-	-
Packing group	III	-	-	-
Environmental hazards	Yes.	No.	No.	No.

Section 14. Transport information

Additional information	**Remarks** This material is Not Regulated if transported in a package that does not meet or exceed the Reportable Quantity (RQ).	-	-	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Ethylene glycol, 8145 gal of this product.

Marine pollutant Not available.

North-America NAERG : 171

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.

TSCA 12(b) annual export notification: No products were found.

United States inventory (TSCA 8b): All components are listed or exempted.

Clean Water Act (CWA) 307: Naphthalene

Clean Water Act (CWA) 311: Potassium hydroxide; Xylene; Naphthalene; sodium hydroxide

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Immediate (acute) health hazard
Delayed (chronic) health hazard

SARA 313

	Product name	CAS number	%
Supplier notification	Ethylene glycol	107-21-1	5 - 10

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)

History

Date of printing : 11/5/2014.

Indicates information that has changed from previously issued version.

Notice to reader

NOTE: The information on this SDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This SDS was prepared and is to be used for this product. If the product is used as a component in another product, this SDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : DFO91 DEFOAMER

Product code : DFO91

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Defoamer.

Print date : 10/28/2014.

Validation date : 10/28/2014.

Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 3
SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
CARCINOGENICITY - Category 2
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [Respiratory tract irritation and Narcotic effects] - Category 3
AQUATIC HAZARD (LONG-TERM) - Category 2

GHS label elements

Hazard pictograms :

Signal word : Warning

Hazard statements : Flammable liquid and vapor.
Causes serious eye irritation.
Causes skin irritation.
Suspected of causing cancer.
May cause respiratory irritation.
May cause drowsiness and dizziness.
Toxic to aquatic life with long lasting effects.

Precautionary statements

Section 2. Hazards identification

Prevention : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wear protective gloves: > 8 hours (breakthrough time): Nitrile or Neoprene gloves.. Wear eye or face protection. Keep away from heat, sparks, open flames and hot surfaces. - No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Avoid breathing vapor. Wash hands thoroughly after handling.

Response : Collect spillage. IF exposed or concerned: Get medical attention. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage : Store locked up. Store in a well-ventilated place. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements : Avoid contact with skin and clothing. Wash thoroughly after handling.

Hazards not otherwise classified : Prolonged or repeated contact may dry skin and cause irritation.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Light aromatic naphtha	40 - 50	64742-95-6
1,2,4-Trimethylbenzene	20 - 30	95-63-6
1,3,5-Trimethylbenzene	5 - 10	108-67-8
1,2,3-Trimethylbenzene	1 - 5	526-73-8
Xylene	1 - 5	1330-20-7
Cumene	0.1 - 1	98-82-8

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Continue to rinse for at least 10 minutes. Check for and remove any contact lenses. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Wash skin thoroughly with soap and water or use recognized skin cleanser. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Section 4. First aid measures

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Can cause central nervous system (CNS) depression. May cause drowsiness and dizziness. May cause respiratory irritation.

Skin contact : Causes skin irritation. Defatting to the skin.

Ingestion : Can cause central nervous system (CNS) depression. Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain or irritation,watering,redness

Inhalation : respiratory tract irritation,coughing,nausea or vomiting,headache,drowsiness/fatigue, dizziness/vertigo,unconsciousness

Skin contact : irritation,redness,dryness,cracking

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Additional information

If product is ingested and vomiting occurs naturally, have person lean forward to reduce the risk of aspiration into the lungs.

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Section 5. Fire-fighting measures

Specific hazards arising from the chemical : Flammable liquid and vapor. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,metal oxide/oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapor or mist. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
1,2,4-Trimethylbenzene	US ACGIH	25	123	-	-	-	-	-	-	-	
	OSHA PEL 1989	25	125	-	-	-	-	-	-	-	
1,3,5-Trimethylbenzene	US ACGIH	25	123	-	-	-	-	-	-	-	
	OSHA PEL 1989	25	125	-	-	-	-	-	-	-	
1,2,3-Trimethylbenzene	US ACGIH	25	123	-	-	-	-	-	-	-	
	OSHA PEL 1989	25	125	-	-	-	-	-	-	-	
Xylene	US ACGIH	100	434	-	150	651	-	-	-	-	
	OSHA PEL	100	435	-	-	-	-	-	-	-	
	OSHA PEL 1989	100	435	-	150	655	-	-	-	-	
Cumene	US ACGIH	50	-	-	-	-	-	-	-	-	
	OSHA PEL	50	245	-	-	-	-	-	-	-	[1]
	OSHA PEL 1989	50	245	-	-	-	-	-	-	-	[1]

[1]Absorbed through skin.

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Section 8. Exposure controls/personal protection

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles.

Hand protection : Chemical-resistant gloves: Nitrile or Neoprene gloves.

Skin protection : Wear long sleeves to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid.

Color : Amber.

Odor : Aromatic.

Odor threshold : Not available.

pH : Not available.

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: 38°C (100.4°F) [SFCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : 9.7 kPa (72.4 mm Hg (1.4 psig)) @ 54.44°C (130 F) (Reid)

Vapor density : >1 [Air = 1]

Relative density : 0.884 (15.6°C)

Density : 7.36 (lbs/gal)

Solubility in water : Insoluble

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Dynamic (16°C): 9.8 cP

Section 9. Physical and chemical properties

VOC : Not available.

Pour Point : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials and acids.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Light aromatic naphtha	LD50 Oral	Rat	2900 mg/kg	-
1,2,4-Trimethylbenzene	LC50 Inhalation Vapor	Rat	18000 mg/m³	4 hours
	LD50 Oral	Rat	5 g/kg	-
1,3,5-Trimethylbenzene	LC50 Inhalation Vapor	Rat	24000 mg/m³	4 hours
	LD50 Oral	Rat	5000 mg/kg	-
Xylene	LC50 Inhalation Gas.	Rat	5000 ppm	4 hours
	LD50 Dermal	Rabbit	>1700 mg/kg	-
	LD50 Oral	Male rat	3523 mg/kg	-
	LD50 Oral	Rat	4300 mg/kg	-
Cumene	LC50 Inhalation Vapor	Mouse	10000 mg/m³	7 hours
	LC50 Inhalation Vapor	Rat	39000 mg/m³	4 hours
	LD50 Dermal	Rabbit	10600 mg/kg	-
	LD50 Oral	Rat	2.9 g/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

Product/ingredient name	OSHA	IARC	NTP
Xylene	-	3	-
Cumene	-	2B	Reasonably anticipated to be a human carcinogen.

Reproductive toxicity

Section 11. Toxicological information

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Light aromatic naphtha	Category 3	Not applicable.	Narcotic effects
1,2,4-Trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
1,3,5-Trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
1,2,3-Trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
Xylene	Category 3	Not applicable.	Narcotic effects
Cumene	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Not applicable.

Aspiration hazard

Name	Result
Light aromatic naphtha	ASPIRATION HAZARD - Category 1
1,2,3-Trimethylbenzene	ASPIRATION HAZARD - Category 1
Xylene	ASPIRATION HAZARD - Category 1
Cumene	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.

Carcinogenicity : Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Section 11. Toxicological information

Route	ATE value
Oral	4273.7 mg/kg
Dermal	48888.9 mg/kg
Inhalation (gases)	222222.2 ppm
Inhalation (vapors)	62.5 mg/l

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
1,2,4-Trimethylbenzene	Acute LC50 4910 µg/l Marine water	Crustaceans - Elasmopus pectenicrus	48 hours
	Acute LC50 22.4 mg/l Fresh water	Fish - Tilapia zillii	96 hours
1,3,5-Trimethylbenzene	Acute LC50 12520 to 15050 µg/l Fresh water	Fish - Carassius auratus	96 hours
	Chronic NOEC 400 µg/l Fresh water	Daphnia - Daphnia magna	21 days
Xylene	Acute LC50 8500 µg/l Marine water	Crustaceans - Palaemonetes pugio	48 hours
	Acute LC50 13400 µg/l Fresh water	Fish - Pimephales promelas	96 hours
Cumene	Acute EC50 2600 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute LC50 7400 to 11290 µg/l Fresh water	Crustaceans - Artemia sp.	48 hours
	Acute LC50 30500 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 2700 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours

Persistence and degradability

Not available.

Other adverse effects : No known significant effects or critical hazards.

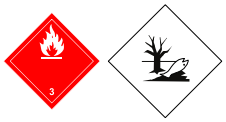
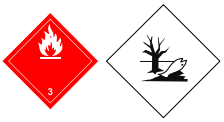
Additional information

An EcoTox™ Report, and/or the material's environmental fate is available upon request at the following number: 1-800-235-4249, then press 4.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN1993	UN1993	UN1993	UN1993
UN proper shipping name	FLAMMABLE LIQUID, N.O.S. (Contains: Light aromatic naphtha, 1,2, 4-Trimethylbenzene)	FLAMMABLE LIQUID, N.O.S. (Contains: Light aromatic naphtha, 1,2, 4-Trimethylbenzene)	FLAMMABLE LIQUID, N.O.S. (Contains: Light aromatic naphtha, 1,2,4-Trimethylbenzene)	FLAMMABLE LIQUID, N.O.S. (Contains: Light aromatic naphtha, 1,2, 4-Trimethylbenzene)
Transport hazard class(es)	3 	3 	3 	3 
Packing group	III	III	III	III
Environmental hazards	Yes.	Yes.	Yes.	No.
Additional information	-	-	**Emergency schedules (EmS)** F-E S-E	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Xylene, 604 gal of this product.

Marine pollutant Light aromatic naphtha
1,2,4-Trimethylbenzene

North-America NAERG : 128

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: Naphthalene
Clean Water Act (CWA) 311: Xylene; Naphthalene

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Fire hazard
Immediate (acute) health hazard
Delayed (chronic) health hazard

Section 15. Regulatory information

SARA 313

	Product name	CAS number	%
Supplier notification	1,2,4-Trimethylbenzene Xylene	95-63-6 1330-20-7	20 - 30 1 - 5

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)

History

Date of printing : 10/28/2014.

Indicates information that has changed from previously issued version.

Notice to reader

NOTE: The information on this MSDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : PAO3857Y PARAFFIN DISPERSANT

Product code : PAO3857Y

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Paraffin dispersant.

Print date : 11/21/2014.

Validation date : 11/21/2014.

Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 3
SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
CARCINOGENICITY - Category 2
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [Respiratory tract irritation and Narcotic effects] - Category 3
AQUATIC HAZARD (LONG-TERM) - Category 2

GHS label elements

Hazard pictograms :

Signal word : Warning

Hazard statements : Flammable liquid and vapor.
Causes serious eye irritation.
Causes skin irritation.
Suspected of causing cancer.
May cause respiratory irritation.
May cause drowsiness and dizziness.
Toxic to aquatic life with long lasting effects.

Precautionary statements

Section 2. Hazards identification

Prevention : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wear protective gloves: > 8 hours (breakthrough time): Nitrile or Neoprene gloves. 4H gloves.. Wear eye or face protection. Keep away from heat, sparks, open flames and hot surfaces. - No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Avoid breathing vapor. Wash hands thoroughly after handling.

Response : Collect spillage. IF exposed or concerned: Get medical attention. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage : Store locked up. Store in a well-ventilated place. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Light aromatic naphtha	20 - 30	64742-95-6
1,2,4-Trimethylbenzene	10 - 20	95-63-6
1,3,5-Trimethylbenzene	1 - 5	108-67-8
Ammonium alkylaryl sulfonates	1 - 5	Trade secret.
1,2,3-Trimethylbenzene	1 - 5	526-73-8
Alkylaryl sulfonates	1 - 5	Trade secret.
Xylene	1 - 5	1330-20-7
Cumene	0.1 - 1	98-82-8

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Continue to rinse for at least 10 minutes. Check for and remove any contact lenses. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Section 4. First aid measures

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Can cause central nervous system (CNS) depression. May cause drowsiness and dizziness. May cause respiratory irritation. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : Causes skin irritation.

Ingestion : Can cause central nervous system (CNS) depression. Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain or irritation,watering,redness

Inhalation : respiratory tract irritation,coughing,nausea or vomiting,headache,drowsiness/fatigue, dizziness/vertigo,unconsciousness

Skin contact : irritation,redness

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Additional information

If product is ingested and vomiting occurs naturally, have person lean forward to reduce the risk of aspiration into the lungs.

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Section 5. Fire-fighting measures

Specific hazards arising from the chemical : Flammable liquid and vapor. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides,sulfur oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapor or mist. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	**List name**	**ppm**	**mg/m³**	**Other**	**ppm**	**mg/m³**	**Other**	**ppm**	**mg/m³**	**Other**	**Notations**
1,2,4-Trimethylbenzene	US ACGIH	25	123	-	-	-	-	-	-	-	
	OSHA PEL 1989	25	125	-	-	-	-	-	-	-	
1,3,5-Trimethylbenzene	US ACGIH	25	123	-	-	-	-	-	-	-	
	OSHA PEL 1989	25	125	-	-	-	-	-	-	-	
1,2,3-Trimethylbenzene	US ACGIH	25	123	-	-	-	-	-	-	-	
	OSHA PEL 1989	25	125	-	-	-	-	-	-	-	
Xylene	US ACGIH	100	434	-	150	651	-	-	-	-	
	OSHA PEL	100	435	-	-	-	-	-	-	-	
	OSHA PEL 1989	100	435	-	150	655	-	-	-	-	
Cumene	US ACGIH	50	-	-	-	-	-	-	-	-	
	OSHA PEL	50	245	-	-	-	-	-	-	-	[1]
	OSHA PEL 1989	50	245	-	-	-	-	-	-	-	[1]

[1]Absorbed through skin.

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Section 8. Exposure controls/personal protection

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles.

Hand protection : Chemical-resistant gloves: Nitrile or Neoprene gloves. 4H gloves.

Skin protection : Wear long sleeves to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Clear.]

Color : Amber.

Odor : Aromatic hydrocarbon.

Odor threshold : Not available.

pH : Not available.

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: 52.8°C (127°F) [SFCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : 22.1 kPa (165.5 mm Hg (3.2 psig)) @ 54.44°C 130 F (Reid)

Vapor density : >1 [Air = 1]

Relative density : 0.982 (15.6°C)

Density : 8.18 (lbs/gal)

Solubility in water : Insoluble

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

VOC : Not available.

Section 9. Physical and chemical properties

Pour Point : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials and acids. Addition of strong bases (such as sodium hydroxide or potassium hydroxide) to this product may release ammonia gas which is irritating and corrosive to the lungs.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Light aromatic naphtha	LD50 Oral	Rat	2900 mg/kg	-
1,2,4-Trimethylbenzene	LC50 Inhalation Vapor	Rat	18000 mg/m³	4 hours
	LD50 Oral	Rat	5 g/kg	-
1,3,5-Trimethylbenzene	LC50 Inhalation Vapor	Rat	24000 mg/m³	4 hours
	LD50 Oral	Rat	5000 mg/kg	-
Xylene	LC50 Inhalation Gas.	Rat	5000 ppm	4 hours
	LD50 Dermal	Rabbit	>1700 mg/kg	-
	LD50 Oral	Male rat	3523 mg/kg	-
	LD50 Oral	Rat	4300 mg/kg	-
Cumene	LC50 Inhalation Vapor	Mouse	10000 mg/m³	7 hours
	LC50 Inhalation Vapor	Rat	39000 mg/m³	4 hours
	LD50 Dermal	Rabbit	10600 mg/kg	-
	LD50 Oral	Rat	2.9 g/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

Product/ingredient name	OSHA	IARC	NTP
Xylene	-	3	-
Cumene	-	2B	Reasonably anticipated to be a human carcinogen.

Reproductive toxicity

Section 11. Toxicological information

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Light aromatic naphtha	Category 3	Not applicable.	Narcotic effects
1,2,4-Trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
1,3,5-Trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
1,2,3-Trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
Xylene	Category 3	Not applicable.	Narcotic effects
Cumene	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Not applicable.

Aspiration hazard

Name	Result
Light aromatic naphtha	ASPIRATION HAZARD - Category 1
1,2,3-Trimethylbenzene	ASPIRATION HAZARD - Category 1
Xylene	ASPIRATION HAZARD - Category 1
Cumene	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : No known significant effects or critical hazards.

Carcinogenicity : Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Section 11. Toxicological information

Route	ATE value
Oral	4266.5 mg/kg
Dermal	94278.6 mg/kg
Inhalation (gases)	428539.3 ppm
Inhalation (vapors)	120.5 mg/l

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
1,2,4-Trimethylbenzene	Acute LC50 4910 µg/l Marine water	Crustaceans - Elasmopus pectenicrus	48 hours
	Acute LC50 22.4 mg/l Fresh water	Fish - Tilapia zillii	96 hours
1,3,5-Trimethylbenzene	Acute LC50 12520 to 15050 µg/l Fresh water	Fish - Carassius auratus	96 hours
	Chronic NOEC 400 µg/l Fresh water	Daphnia - Daphnia magna	21 days
Xylene	Acute LC50 8500 µg/l Marine water	Crustaceans - Palaemonetes pugio	48 hours
	Acute LC50 13400 µg/l Fresh water	Fish - Pimephales promelas	96 hours
Cumene	Acute EC50 2600 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute LC50 7400 to 11290 µg/l Fresh water	Crustaceans - Artemia sp.	48 hours
	Acute LC50 30500 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 2700 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours

Persistence and degradability

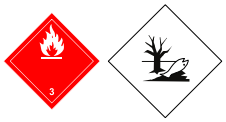
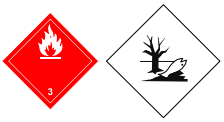
Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN1993	UN1993	UN1993	UN1993
UN proper shipping name	FLAMMABLE LIQUID, N.O.S. (Contains: Light aromatic naphtha, 1,2, 4-Trimethylbenzene)	FLAMMABLE LIQUID, N.O.S. (Contains: Light aromatic naphtha, 1,2, 4-Trimethylbenzene)	FLAMMABLE LIQUID, N.O.S. (Contains: Light aromatic naphtha, 1,2,4-Trimethylbenzene)	FLAMMABLE LIQUID, N.O.S. (Contains: Light aromatic naphtha, 1,2, 4-Trimethylbenzene)
Transport hazard class(es)	3 	3 	3 	3 
Packing group	III	III	III	III
Environmental hazards	Yes.	Yes.	Yes.	No.
Additional information	-	-	**Emergency schedules (EmS)** F-E S-E	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Xylene, 1048 gal of this product.

Marine pollutant Light aromatic naphtha
1,2,4-Trimethylbenzene

North-America NAERG : 128

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: Naphthalene
Clean Water Act (CWA) 311: Xylene; Naphthalene; Potassium hydroxide

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

SARA 302/304 : No products were found.

SARA 311/312
Classification : Fire hazard
Immediate (acute) health hazard
Delayed (chronic) health hazard

Section 15. Regulatory information

SARA 313

	Product name	CAS number	%
Supplier notification	1,2,4-Trimethylbenzene Xylene	95-63-6 1330-20-7	10 - 20 1 - 5

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)

History

Date of printing : 11/21/2014.

Indicates information that has changed from previously issued version.

Notice to reader

NOTE: The information on this MSDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : PAW4HF ASPHALTIC CRUDE EMULSIFIER

Product code : PAW4HF

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Emulsifier.

Print date : 10/14/2014.

Validation date : 10/14/2014.

Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 4

GHS label elements

Signal word : Warning

Hazard statements : Combustible liquid.

Precautionary statements

Prevention : Wear protective gloves: > 8 hours (breakthrough time): Natural rubber gloves.. Wear eye or face protection. Keep away from flames and hot surfaces. - No smoking.

Response : Not applicable.

Storage : Store in a well-ventilated place. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
2-Butoxyethanol	5 - 10	111-76-2

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Continue to rinse for at least 10 minutes. Check for and remove any contact lenses. Get medical attention if irritation occurs.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Skin contact : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Section 4. First aid measures

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Specific hazards arising from the chemical : Combustible liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor.

Section 6. Accidental release measures

Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
2-Butoxyethanol	US ACGIH	20	-	-	-	-	-	-	-	-	
	OSHA PEL	50	240	-	-	-	-	-	-	-	[1]
	OSHA PEL 1989	25	120	-	-	-	-	-	-	-	[1]

[1]Absorbed through skin.

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Individual protection measures

Section 8. Exposure controls/personal protection

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles.

Hand protection : Chemical-resistant gloves: Natural rubber gloves.

Skin protection : Wear long sleeves to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Clear.]

Color : Water-white.

Odor : Alcohol-like.

Odor threshold : Not available.

pH : Not available.

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: 62.22°C (144°F) [PMCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : 32.4 kPa (243 mm Hg (4.7 psig)) @ 54.44°C 130 F (Reid)

Vapor density : >1 [Air = 1]

Relative density : 1.0525 (15.6°C)

Density : 8.77 (lbs/gal)

Solubility in water : Soluble

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

VOC : Not available.

Pour Point : -9.4°C (15.1°F)

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
2-Butoxyethanol	LC50 Inhalation Gas. LD50 Dermal LD50 Dermal LD50 Dermal LD50 Oral LD50 Oral	Rat Guinea pig Rabbit Rabbit Guinea pig Rabbit	450 ppm >2000 mg/kg 200 mg/kg 99 mg/kg 500 to 2000 mg/kg 320 mg/kg	4 hours - - - - -

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

Product/ingredient name	OSHA	IARC	NTP
2-Butoxyethanol	-	3	-

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Not applicable.

Specific target organ toxicity (repeated exposure)

Not applicable.

Aspiration hazard

Section 11. Toxicological information

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral Dermal Inhalation (vapors)	5841.1 mg/kg 12850.5 mg/kg 128.5 mg/l

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
2-Butoxyethanol	Acute EC50 >1000 mg/l Fresh water Acute LC50 1000 mg/l Marine water Acute LC50 1250000 µg/l Marine water	Daphnia - Daphnia magna Crustaceans - Chaetogammarus marinus - Young Fish - Menidia beryllina	48 hours 48 hours 96 hours

Persistence and degradability

Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	NA1993	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	Combustible liquid, n.o.s. (Contains: 2-Butoxyethanol)	-	-	-
Transport hazard class(es)	Combustible liquid.	-	-	-
Packing group	III	-	-	-
Environmental hazards	No.	No.	No.	No.
Additional information	**Remarks** This material is not regulated by DOT if transported in a packaging </= 119 gallons. This material is not regulated by TDG or IMO.	-	-	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Not applicable.

Marine pollutant Not available.

Section 14. Transport information

North-America NAERG : 128

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.

TSCA 12(b) annual export notification: No products were found.

United States inventory (TSCA 8b): All components are listed or exempted.

Clean Water Act (CWA) 307: No products were found.

Clean Water Act (CWA) 311: No products were found.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Fire hazard

SARA 313

	Product name	CAS number	%
Supplier notification	2-Butoxyethanol	111-76-2	5 - 10

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)

History

Date of printing : 10/14/2014.

Indicates information that has changed from previously issued version.

Notice to reader

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This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : RE8869DMO DEMULSIFIER

Product code : RE8869DMO

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Demulsifier.

Print date : 11/24/2014.

Validation date : 11/24/2014.

Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 3
ACUTE TOXICITY: INHALATION - Category 4
SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
CARCINOGENICITY - Category 2
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [Narcotic effects] - Category 3
AQUATIC HAZARD (LONG-TERM) - Category 2

GHS label elements

Hazard pictograms :

Signal word : Warning

Hazard statements : Flammable liquid and vapor.
Harmful if inhaled.
Causes serious eye irritation.
Causes skin irritation.
Suspected of causing cancer.
May cause drowsiness and dizziness.
Toxic to aquatic life with long lasting effects.

Section 2. Hazards identification

Precautionary statements

Prevention : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wear protective gloves: > 8 hours (breakthrough time): PVC gloves. Viton gloves. 4H gloves.. Wear eye or face protection. Keep away from heat, sparks, open flames and hot surfaces. - No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Avoid breathing vapor. Wash hands thoroughly after handling.

Response : Collect spillage. IF exposed or concerned: Get medical attention. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage : Store locked up. Store in a well-ventilated place. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Xylene	20 - 30	1330-20-7
Light aromatic naphtha	10 - 20	64742-95-6
1,2,4-Trimethylbenzene	5 - 10	95-63-6
Ethylbenzene	1 - 5	100-41-4
1,3,5-Trimethylbenzene	1 - 5	108-67-8
1,2,3-Trimethylbenzene	1 - 5	526-73-8
Cumene	0.1 - 1	98-82-8

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Continue to rinse for at least 10 minutes. Check for and remove any contact lenses. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Section 4. First aid measures

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Harmful if inhaled. Can cause central nervous system (CNS) depression. May cause drowsiness and dizziness. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : Causes skin irritation.

Ingestion : Can cause central nervous system (CNS) depression. Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain or irritation,watering,redness

Inhalation : nausea or vomiting,headache,drowsiness/fatigue,dizziness/vertigo,unconsciousness

Skin contact : irritation,redness

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Additional information

If product is ingested and vomiting occurs naturally, have person lean forward to reduce the risk of aspiration into the lungs.

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Section 5. Fire-fighting measures

Specific hazards arising from the chemical : Flammable liquid and vapor. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapor or mist. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	**List name**	**ppm**	**mg/m³**	**Other**	**ppm**	**mg/m³**	**Other**	**ppm**	**mg/m³**	**Other**	**Notations**
Xylene	US ACGIH	100	434	-	150	651	-	-	-	-	
	OSHA PEL	100	435	-	-	-	-	-	-	-	
	OSHA PEL 1989	100	435	-	150	655	-	-	-	-	
1,2,4-Trimethylbenzene	US ACGIH	25	123	-	-	-	-	-	-	-	
	OSHA PEL 1989	25	125	-	-	-	-	-	-	-	
Ethylbenzene	US ACGIH	20	-	-	-	-	-	-	-	-	
	OSHA PEL	100	435	-	-	-	-	-	-	-	
	OSHA PEL 1989	100	435	-	125	545	-	-	-	-	
1,3,5-Trimethylbenzene	US ACGIH	25	123	-	-	-	-	-	-	-	
	OSHA PEL 1989	25	125	-	-	-	-	-	-	-	
1,2,3-Trimethylbenzene	US ACGIH	25	123	-	-	-	-	-	-	-	
	OSHA PEL 1989	25	125	-	-	-	-	-	-	-	
Cumene	US ACGIH	50	-	-	-	-	-	-	-	-	
	OSHA PEL	50	245	-	-	-	-	-	-	-	[1]
	OSHA PEL 1989	50	245	-	-	-	-	-	-	-	[1]

[1]Absorbed through skin.

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Section 8. Exposure controls/personal protection

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles.

Hand protection : Chemical-resistant gloves: PVC gloves. Viton gloves. 4H gloves.

Skin protection : Wear long sleeves to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Clear to hazy.]

Color : Amber.

Odor : Aromatic hydrocarbon.

Odor threshold : Not available.

pH : 11.2 [Conc. (% w/w): 5%]

: 5% of product in 75% water / 25% isopropanol solution

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: 35°C (95°F) [SFCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Highly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : 29 kPa (217.2 mm Hg (4.2 psig)) @ 54.44°C (130 F) (Reid)

Vapor density : >1 [Air = 1]

Relative density : 0.9257 (15.6°C)

Density : 7.71 (lbs/gal)

Solubility in water : Insoluble

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Section 9. Physical and chemical properties

Viscosity : Dynamic (15.6°C): 29.3 cP

VOC : Not available.

Pour Point : <-42.78°C (<-45°F)

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials and acids.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Xylene	LC50 Inhalation Gas.	Rat	5000 ppm	4 hours
	LD50 Dermal	Rabbit	>1700 mg/kg	-
	LD50 Oral	Male rat	3523 mg/kg	-
	LD50 Oral	Rat	4300 mg/kg	-
Light aromatic naphtha	LD50 Oral	Rat	2900 mg/kg	-
1,2,4-Trimethylbenzene	LC50 Inhalation Vapor	Rat	18000 mg/m³	4 hours
	LD50 Oral	Rat	5 g/kg	-
Ethylbenzene	LD50 Dermal	Rabbit	15400 mg/kg	-
	LD50 Oral	Rat	3500 mg/kg	-
1,3,5-Trimethylbenzene	LC50 Inhalation Vapor	Rat	24000 mg/m³	4 hours
	LD50 Oral	Rat	5000 mg/kg	-
Cumene	LC50 Inhalation Vapor	Mouse	10000 mg/m³	7 hours
	LC50 Inhalation Vapor	Rat	39000 mg/m³	4 hours
	LD50 Dermal	Rabbit	10600 mg/kg	-
	LD50 Oral	Rat	2.9 g/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

Section 11. Toxicological information

Product/ingredient name	OSHA	IARC	NTP
Xylene	-	3	-
Ethylbenzene	-	2B	-
Cumene	-	2B	Reasonably anticipated to be a human carcinogen.

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Xylene	Category 3	Not applicable.	Narcotic effects
Light aromatic naphtha	Category 3	Not applicable.	Narcotic effects
1,2,4-Trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
1,3,5-Trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
1,2,3-Trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
Cumene	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Not applicable.

Aspiration hazard

Name	Result
Xylene	ASPIRATION HAZARD - Category 1
Light aromatic naphtha	ASPIRATION HAZARD - Category 1
1,2,3-Trimethylbenzene	ASPIRATION HAZARD - Category 1
Cumene	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : No known significant effects or critical hazards.

Carcinogenicity : Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Section 11. Toxicological information

Acute toxicity estimates

Route	ATE value
Oral	6742.1 mg/kg
Dermal	4146 mg/kg
Inhalation (gases)	18845.4 ppm
Inhalation (vapors)	107.9 mg/l

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Xylene	Acute LC50 8500 µg/l Marine water	Crustaceans - Palaemonetes pugio	48 hours
	Acute LC50 13400 µg/l Fresh water	Fish - Pimephales promelas	96 hours
1,2,4-Trimethylbenzene	Acute LC50 4910 µg/l Marine water	Crustaceans - Elasmopus pectenicrus	48 hours
	Acute LC50 22.4 mg/l Fresh water	Fish - Tilapia zillii	96 hours
Ethylbenzene	Acute EC50 4600 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 2930 to 4400 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 5200 µg/l Marine water	Crustaceans - Americamysis bahia	48 hours
	Acute LC50 4200 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
	Chronic NOEC 1000 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
1,3,5-Trimethylbenzene	Acute LC50 12520 to 15050 µg/l Fresh water	Fish - Carassius auratus	96 hours
	Chronic NOEC 400 µg/l Fresh water	Daphnia - Daphnia magna	21 days
Cumene	Acute EC50 2600 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute LC50 7400 to 11290 µg/l Fresh water	Crustaceans - Artemia sp.	48 hours
	Acute LC50 30500 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 2700 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours

Persistence and degradability

Not available.

Other adverse effects : No known significant effects or critical hazards.

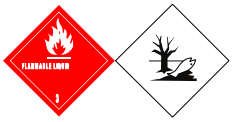
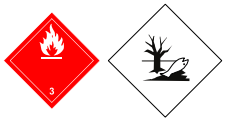
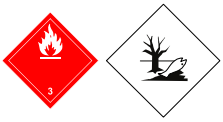
Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been

Section 13. Disposal considerations

cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN1993	UN1993	UN1993	UN1993
UN proper shipping name	FLAMMABLE LIQUID, N.O.S. (Contains: Xylene, Ethylbenzene)	FLAMMABLE LIQUID, N.O.S. (Contains: Xylene, Ethylbenzene)	FLAMMABLE LIQUID, N.O.S. (Contains: Xylene, Ethylbenzene)	FLAMMABLE LIQUID, N.O.S. (Contains: Xylene, Ethylbenzene)
Transport hazard class(es)	3 	3 	3 	3 
Packing group	III	III	III	III
Environmental hazards	Yes.	Yes.	Yes.	No.
Additional information	-	-	-	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Xylene, 49 gal of this product.
Ethylbenzene, 2869 gal of this product.

Marine pollutant Light aromatic naphtha
1,2,4-Trimethylbenzene

North-America NAERG : 128

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: Ethylbenzene; Naphthalene
Clean Water Act (CWA) 311: Xylene; Ethylbenzene; Naphthalene; Potassium hydroxide

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

Section 15. Regulatory information

SARA 302/304 : No products were found.

SARA 311/312

Classification : Fire hazard
Immediate (acute) health hazard
Delayed (chronic) health hazard

SARA 313

	Product name	CAS number	%
Supplier notification	Xylene 1,2,4-Trimethylbenzene Ethylbenzene	1330-20-7 95-63-6 100-41-4	10 - 30 5 - 10 1 - 5

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)

History

Date of printing : 11/24/2014.

Indicates information that has changed from previously issued version.

Notice to reader

NOTE: The information on this MSDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : TECHNI-HIB 3743

Product code : CRW3743

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Corrosion inhibitor.

Print date : 10/31/2014.

Validation date : 10/31/2014.

Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : SKIN CORROSION/IRRITATION - Category 1B
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
AQUATIC HAZARD (ACUTE) - Category 1
AQUATIC HAZARD (LONG-TERM) - Category 2

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Causes severe skin burns and eye damage.
Very toxic to aquatic life.
Toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention : Wear protective gloves: > 8 hours (breakthrough time): neoprene nitrile polyvinyl alcohol (PVA) polyvinyl chloride (PVC). Wear eye or face protection. Wear protective clothing. Avoid release to the environment. Wash hands thoroughly after handling.

Section 2. Hazards identification

Response : Collect spillage. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.

Storage : Store locked up.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Quaternary ammonium compound	20 - 30	Trade secret.
Phosphate ester salt	5 - 10	Trade secret.
Ethanol	1 - 5	64-17-5
Alkyl amine	0.1 - 1	Trade secret.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Get medical attention immediately. Call a poison center or physician. Immediately flush the eye(s) continuously with lukewarm, gently flowing water for at least 20-60 minutes while holding the eyelid(s) open. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician.

Inhalation : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Get medical attention immediately. Call a poison center or physician. Wash affected area with soap and mild detergent for at least 20 - 60 minutes. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.

Section 4. First aid measures

Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : Causes severe burns.

Ingestion : May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain,watering,redness

Inhalation : No specific data.

Skin contact : pain or irritation,redness,blistering may occur

Ingestion : stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst. This material is very toxic to aquatic life. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides,phosphorus oxides,halogenated compounds

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Avoid release to the environment. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Ethanol	US ACGIH OSHA PEL OSHA PEL 1989	- 1000 1000	- 1900 1900	- - -	1000 - -	- - -	- - -	- - -	- - -	- - -	

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles. If inhalation hazards exist, a full-face respirator may be required instead.

Hand protection : Chemical-resistant gloves: neoprene nitrile polyvinyl alcohol (PVA) polyvinyl chloride (PVC)

Skin protection : Wear long sleeves and chemical resistant apron to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Clear.]

Color : Colorless to pale pink.

Odor : Alcohol-like. [Slight]

Odor threshold : Not available.

pH : 5 to 7

Melting/freezing point : -4.4444°C (24°F)

Boiling point : 104.44°C (220°F)

Initial Boiling Point : Not available.

Flash point : Closed cup: 93.333°C (200°F) [TCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Not available.

Section 9. Physical and chemical properties

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : Not available.

Relative density : 1

Density : 8.33 (lbs/gal)

Solubility in water : Soluble

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

VOC : Not available.

Pour Point : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials, metals, acids and alkalis.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Quaternary ammonium compound	LD50 Oral	Rat	426 mg/kg	-
Ethanol	LC50 Inhalation Vapor	Rat	20000 ppm	10 hours
	LC50 Inhalation Vapor	Rat	124700 mg/m³	4 hours
	LD50 Oral	Rat	7 g/kg	-
Alkyl amine	LD50 Oral	Rat	1000 to 1250 mg/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Section 11. Toxicological information

Carcinogenicity

Product/ingredient name	OSHA	IARC	NTP
Ethanol	-	1	-

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Not applicable.

Specific target organ toxicity (repeated exposure)

Not applicable.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	2103.7 mg/kg

Section 12. Ecological information

Toxicity

Section 12. Ecological information

Product/ingredient name	Result	Species	Exposure
Quaternary ammonium compound	Acute EC50 37 ppb Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 64 ppb Fresh water	Fish - Oncorhynchus mykiss	96 hours
	Chronic NOEC 4.15 ppb Marine water	Daphnia - Daphnia magna	21 days
	Chronic NOEC 32.2 ppb	Fish - Pimephales promelas	34 days
Ethanol	Acute EC50 17.921 mg/l Marine water	Algae - Ulva pertusa	96 hours
	Acute EC50 2000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 25500 µg/l Marine water	Crustaceans - Artemia franciscana - Larvae	48 hours
	Acute LC50 42000 µg/l Fresh water	Fish - Oncorhynchus mykiss	4 days
	Chronic NOEC 4.995 mg/l Marine water	Algae - Ulva pertusa	96 hours
	Chronic NOEC 0.375 ul/L Fresh water	Fish - Gambusia holbrooki - Larvae	12 weeks

Persistence and degradability

Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN1760	UN1760	UN1760	UN1760
UN proper shipping name	CORROSIVE LIQUID, N.O.S. (Contains: Quaternary ammonium compound)	CORROSIVE LIQUID, N.O.S. (Contains: Quaternary ammonium compound)	CORROSIVE LIQUID, N.O.S. (Contains: Quaternary ammonium compound)	CORROSIVE LIQUID, N.O.S. (Contains: Quaternary ammonium compound)
Transport hazard class(es)	8 	8 	8 	8 
Packing group	III	III	III	III
Environmental hazards	Yes.	Yes.	Yes.	No.

Section 14. Transport information

Additional information	-	-	-	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Not applicable.

Marine pollutant Quaternary ammonium compound

North-America NAERG : 154

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: No products were found.
Clean Water Act (CWA) 311: No products were found.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Immediate (acute) health hazard

SARA 313

Supplier notification : No products were found.

Canada

Canada (CEPA DSL): : At least one component is not listed in DSL but all such components are listed in NDSL.

Section 16. Other information

National Fire Protection Association (U.S.A.)

History

Date of printing : 10/31/2014.

Indicates information that has changed from previously issued version.

Notice to reader

Section 16. Other information

NOTE: The information on this MSDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : TRETOLITE™ RBW213 WATER CLARIFIER
™ a trademark of Baker Hughes Incorporated.

Product code : RBW213

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Water clarifier.

Print date : 1/5/2015.

Validation date : 1/5/2015.

Version : 1.01

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : SKIN CORROSION/IRRITATION - Category 1
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) [kidneys] - Category 2

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Causes severe skin burns and eye damage.
May cause damage to organs through prolonged or repeated exposure. (kidneys)

Precautionary statements

Prevention : Wear protective gloves. Wear eye or face protection. Wear protective clothing. Do not breathe vapor. Wash hands thoroughly after handling.

Section 2. Hazards identification

Response : Get medical attention if you feel unwell. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.

Storage : Store locked up.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Salt of an organic sulfur compound	30 - 40	Trade secret.
Ethylene glycol	10 - 20	107-21-1

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Get medical attention immediately. Call a poison center or physician. Immediately flush the eye(s) continuously with lukewarm, gently flowing water for at least 20-60 minutes while holding the eyelid(s) open. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician.

Inhalation : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Get medical attention immediately. Call a poison center or physician. Wash affected area with soap and mild detergent for at least 20 - 60 minutes. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Section 4. First aid measures

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : Causes severe burns.

Ingestion : May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain,watering,redness

Inhalation : No specific data.

Skin contact : pain or irritation,redness,blistering may occur

Ingestion : stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides,sulfur oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Keep away from acids. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Separate from acids. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	**List name**	**ppm**	**mg/m³**	**Other**	**ppm**	**mg/m³**	**Other**	**ppm**	**mg/m³**	**Other**	**Notations**
Ethylene glycol	US ACGIH OSHA PEL 1989	- -	- -	- -	- -	- -	- -	- 50	100 125	- -	[a]

Form: [a]Aerosol

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles. If inhalation hazards exist, a full-face respirator may be required instead.

Hand protection : Chemical-resistant gloves.

Skin protection : Wear long sleeves and chemical resistant apron to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Clear.]

Color : Yellow. to Green.

Odor : Pungent.

Odor threshold : Not available.

pH : 11 to 12

: 5% in water

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: >93.4°C (>200.1°F) [PMCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Section 9. Physical and chemical properties

Flammability (solid, gas) : Slightly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : 5.1 kPa (38.6 mm Hg) @ 38°C

Vapor density : Not available.

Relative density : 1.162 (15.6°C)

Density : 9.68 (lbs/gal)

Solubility in water : Soluble

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

VOC : Not available.

Pour Point : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials.
Slightly reactive or incompatible with the following materials: acids.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Ethylene glycol	LD50 Oral	Rat	4700 mg/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

No applicable toxicity data

Section 11. Toxicological information

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Not applicable.

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Ethylene glycol	Category 2	Not determined	kidneys

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : May cause damage to organs through prolonged or repeated exposure.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	2870 mg/kg

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Ethylene glycol	Acute LC50 100000 µg/l Marine water Acute LC50 10000000 µg/l Fresh water Acute LC50 8050000 µg/l Fresh water	Crustaceans - Crangon crangon Daphnia - Daphnia magna Fish - Pimephales promelas	48 hours 48 hours 96 hours

Persistence and degradability

Section 12. Ecological information

Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN3267	UN3267	UN3267	UN3267
UN proper shipping name	CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S. (Contains: Salt of an organic sulfur compound)	CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S. (Contains: Salt of an organic sulfur compound)	CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S. (Contains: Salt of an organic sulfur compound)	CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S. (Contains: Salt of an organic sulfur compound)
Transport hazard class(es)	8 	8 	8 	8 
Packing group	III	III	III	III
Environmental hazards	No.	No.	No.	No.
Additional information	-	-	**Emergency schedules (EmS)** F-A S-B	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Ethylene glycol, 2965 gal of this product.

Section 14. Transport information

Marine pollutant Not available.

North-America NAERG : 153

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: No products were found.
Clean Water Act (CWA) 311: Potassium hydroxide

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Immediate (acute) health hazard
Delayed (chronic) health hazard

SARA 313

	Product name	CAS number	%
Supplier notification	Ethylene glycol	107-21-1	10 - 20

Canada

Canada (CEPA DSL): : At least one component is not listed in DSL but all such components are listed in NDSL.

Section 16. Other information

National Fire Protection Association (U.S.A.)

History

Date of printing : 1/5/2015.

Indicates information that has changed from previously issued version.

Notice to reader

NOTE: The information on this MSDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : TRETOLITE™ RBW301X WATER CLARIFIER
™ a trademark of Baker Hughes, Inc.

Product code : RBW301X

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Water clarifier.

Print date : 10/27/2014.

Validation date : 10/27/2014.

Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) [kidneys] - Category 2
AQUATIC HAZARD (ACUTE) - Category 2
AQUATIC HAZARD (LONG-TERM) - Category 3

GHS label elements

Hazard pictograms :

Signal word : Warning

Hazard statements : May cause damage to organs through prolonged or repeated exposure. (kidneys)
Toxic to aquatic life.
Harmful to aquatic life with long lasting effects.

Precautionary statements

Prevention : Avoid release to the environment. Do not breathe vapor.

Response : Get medical attention if you feel unwell.

Storage : Not applicable.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Section 2. Hazards identification

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Ethylene glycol	10 - 20	107-21-1
Amine salt	5 - 10	Trade secret.
Zinc chloride	0.1 - 1	7646-85-7

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Continue to rinse for at least 10 minutes. Check for and remove any contact lenses. Get medical attention following exposure or if feeling unwell.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention following exposure or if feeling unwell. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention following exposure or if feeling unwell. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention following exposure or if feeling unwell. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

Section 4. First aid measures

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst. This material is toxic to aquatic life. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides,halogenated compounds

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Section 6. Accidental release measures

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not breathe vapor or mist. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid release to the environment. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Ethylene glycol	US ACGIH	-	-	-	-	-	-	-	100	-	[a]
	OSHA PEL 1989	-	-	-	-	-	-	50	125	-	
Zinc chloride	US ACGIH	-	1	-	-	2	-	-	-	-	[b]
	OSHA PEL	-	1	-	-	-	-	-	-	-	[b]
	OSHA PEL 1989	-	1	-	-	2	-	-	-	-	[b]

Form: [a]Aerosol [b]Fume

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures

Section 8. Exposure controls/personal protection

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles.

Hand protection : Chemical-resistant gloves: Neoprene gloves.

Skin protection : Wear long sleeves to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Clear to hazy.]

Color : Amber to dark brown.

Odor : Sweet. [Slight]

Odor threshold : Not available.

pH : 3.6

: Neat - without dilution.

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: >93.4°C (>200.1°F) [SFCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Slightly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : >1 [Air = 1]

Relative density : 1.11 (15.6°C)

Density : 9.25 (lbs/gal)

Solubility in water : Soluble

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

VOC : 140 g/l

Pour Point : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials.
Slightly reactive or incompatible with the following materials: acids.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Ethylene glycol Zinc chloride	LD50 Oral LD50 Oral	Rat Rat	4700 mg/kg 350 mg/kg	- -

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

No applicable toxicity data

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Not applicable.

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Ethylene glycol	Category 2	Not determined	kidneys

Aspiration hazard

Not available.

Section 11. Toxicological information

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : May cause damage to organs through prolonged or repeated exposure.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	4975.4 mg/kg

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Ethylene glycol	Acute LC50 100000 µg/l Marine water	Crustaceans - Crangon crangon	48 hours
	Acute LC50 10000000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 8050000 µg/l Fresh water	Fish - Pimephales promelas	96 hours
Zinc chloride	Acute EC50 26 µg/l	Algae - Navicula incerta	96 hours
	Acute EC50 34 µg/l Fresh water	Algae - Chlorella vulgaris	72 hours
	Acute EC50 1.8 mg/l Fresh water	Aquatic plants - Lemna aequinoctialis	96 hours
	Acute EC50 100 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 49.99 µg/l Fresh water	Crustaceans - Moina irrasa	48 hours
	Acute LC50 0.027 mg/l Marine water	Fish - Limanda punctatissima	96 hours
	Chronic NOEC 20 µg/l Marine water	Algae - Chlorella sp.	72 hours
	Chronic NOEC 1000 µg/l Fresh water	Crustaceans - Procambarus clarkii	21 days
	Chronic NOEC 80 µg/l Fresh water	Daphnia - Daphnia magna	21 days
	Chronic NOEC 31.5 µg/l Fresh water	Fish - Oncorhynchus mykiss	30 days

Persistence and degradability

Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN3082	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S. (Contains: Ethylene glycol)	-	-	-
Transport hazard class(es)	9 	-	-	-
Packing group	III	-	-	-
Environmental hazards	Yes.	No.	No.	No.
Additional information	This material is Not Regulated if transported in a package that does not meet or exceed the Reportable Quantity (RQ).	-	-	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Ethylene glycol, 5379 gal of this product.

Marine pollutant Not available.

Section 14. Transport information

North-America NAERG : 171

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.

TSCA 12(b) annual export notification: No products were found.

United States inventory (TSCA 8b): All components are listed or exempted.

Clean Water Act (CWA) 307: zinc chloride

Clean Water Act (CWA) 311: zinc chloride

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Delayed (chronic) health hazard

SARA 313

	Product name	CAS number	%
Supplier notification	Ethylene glycol	107-21-1	10 - 20

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)

History

Date of printing : 10/27/2014.

Indicates information that has changed from previously issued version.

Notice to reader

NOTE: The information on this MSDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : WCW3003 COMBINATION INHIBITOR
Product code : WCW3003

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Emulsifier. Corrosion inhibitor.

Print date : 2/2/2015.
Validation date : 2/2/2015.
Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : SKIN CORROSION/IRRITATION - Category 1
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
AQUATIC HAZARD (ACUTE) - Category 2
AQUATIC HAZARD (LONG-TERM) - Category 2

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Causes severe skin burns and eye damage.
Toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention : Wear protective gloves. Wear eye or face protection. Wear protective clothing. Avoid release to the environment. Wash hands thoroughly after handling.

Section 2. Hazards identification

Response : Collect spillage. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.

Storage : Store locked up.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Quaternary ammonium compound	5 - 10	Trade secret.
Phosphate ester salt	1 - 5	Trade secret.
Ethanol	1 - 5	64-17-5
Alkyl amine	0.1 - 1	Trade secret.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Get medical attention immediately. Call a poison center or physician. Immediately flush the eye(s) continuously with lukewarm, gently flowing water for at least 20-60 minutes while holding the eyelid(s) open. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician.

Inhalation : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Get medical attention immediately. Call a poison center or physician. Wash affected area with soap and mild detergent for at least 20 - 60 minutes. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.

Section 4. First aid measures

Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : Causes severe burns.

Ingestion : May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain,watering,redness

Inhalation : No specific data.

Skin contact : pain or irritation,redness,blistering may occur

Ingestion : stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides,phosphorus oxides,halogenated compounds

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Avoid release to the environment. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Ethanol	US ACGIH OSHA PEL OSHA PEL 1989	- 1000 1000	- 1900 1900	- - -	1000 - -	- - -	- - -	- - -	- - -	- - -	

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles. If inhalation hazards exist, a full-face respirator may be required instead.

Hand protection : Chemical-resistant gloves.

Skin protection : Wear long sleeves and chemical resistant apron to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Clear.]

Color : Yellow.

Odor : Mercaptan.

Odor threshold : Not available.

pH : 5 to 7

: Neat - without dilution.

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: 94°C (201.2°F) [SFCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Section 9. Physical and chemical properties

Flammability (solid, gas) : Slightly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : >1 [Air = 1]

Relative density : 1.0399 (15.6°C)

Density : 8.66 (lbs/gal)

Solubility in water : Soluble

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

VOC : Not available.

Pour Point : -5°C (23°F)

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials, metals, acids and alkalis.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Quaternary ammonium compound	LD50 Oral	Rat	426 mg/kg	-
Ethanol	LC50 Inhalation Vapor	Rat	20000 ppm	10 hours
	LC50 Inhalation Vapor	Rat	124700 mg/m³	4 hours
	LD50 Oral	Rat	7 g/kg	-
Alkyl amine	LD50 Oral	Rat	1000 to 1250 mg/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Section 11. Toxicological information

Mutagenicity

No applicable toxicity data

Carcinogenicity

No applicable toxicity data

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Not applicable.

Specific target organ toxicity (repeated exposure)

Not applicable.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	6010.6 mg/kg

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Quaternary ammonium compound	Acute EC50 37 ppb Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 64 ppb Fresh water	Fish - Oncorhynchus mykiss	96 hours
	Chronic NOEC 4.15 ppb Marine water	Daphnia - Daphnia magna	21 days
	Chronic NOEC 32.2 ppb	Fish - Pimephales promelas	34 days
Ethanol	Acute EC50 17.921 mg/l Marine water	Algae - Ulva pertusa	96 hours
	Acute EC50 2000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 25500 µg/l Marine water	Crustaceans - Artemia franciscana - Larvae	48 hours
	Acute LC50 42000 µg/l Fresh water	Fish - Oncorhynchus mykiss	4 days
	Chronic NOEC 4.995 mg/l Marine water	Algae - Ulva pertusa	96 hours
	Chronic NOEC 0.375 ul/L Fresh water	Fish - Gambusia holbrooki - Larvae	12 weeks

Persistence and degradability

Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN1760	UN1760	UN1760	UN1760
UN proper shipping name	CORROSIVE LIQUID, N.O.S. (Contains: Quaternary ammonium compound)	CORROSIVE LIQUID, N.O.S. (Contains: Quaternary ammonium compound)	CORROSIVE LIQUID, N.O.S. (Contains: Quaternary ammonium compound)	CORROSIVE LIQUID, N.O.S. (Contains: Quaternary ammonium compound)
Transport hazard class(es)	8 	8 	8 	8 
Packing group	III	III	III	III

Section 14. Transport information

Environmental hazards	Yes.	Yes.	Yes.	No.
Additional information	-	-	**Emergency schedules (EmS)** F-A S-B	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Not applicable.

Marine pollutant Quaternary ammonium compound

North-America NAERG : 154

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: No products were found.
Clean Water Act (CWA) 311: No products were found.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Immediate (acute) health hazard

SARA 313

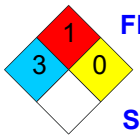
Supplier notification : No products were found.

Canada

Canada (CEPA DSL): : At least one component is not listed in DSL but all such components are listed in NDSL.

Section 16. Other information

National Fire Protection Association (U.S.A.)



History

Date of printing : 2/2/2015.

Indicates information that has changed from previously issued version.

Section 16. Other information

Notice to reader

NOTE: The information on this MSDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : WCW4527 COMBINATION ASPHALTIC OIL EMULSIFIER/CORROSION INHIBITOR

Product code : WCW4527

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Emulsifier. Corrosion inhibitor.

Print date : 11/5/2014.

Validation date : 11/5/2014.

Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/SDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A
SKIN SENSITIZATION - Category 1
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) [heart, kidneys and liver] - Category 2
AQUATIC HAZARD (ACUTE) - Category 3
AQUATIC HAZARD (LONG-TERM) - Category 3

GHS label elements

Hazard pictograms :

Signal word : Warning

Hazard statements : Causes serious eye irritation.
Causes skin irritation.
May cause an allergic skin reaction.
May cause damage to organs through prolonged or repeated exposure. (heart, kidneys, liver)
Harmful to aquatic life with long lasting effects.

Precautionary statements

Section 2. Hazards identification

Prevention : Wear protective gloves: > 8 hours (breakthrough time): Natural rubber gloves.. Wear eye or face protection. Avoid release to the environment. Do not breathe vapor. Wash hands thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace.

Response : Get medical attention if you feel unwell. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. Wash contaminated clothing before reuse. If skin irritation or rash occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage : Not applicable.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Ethylene glycol	5 - 10	107-21-1
Sulfur compound	1 - 5	Trade secret.
Quaternary ammonium compound	1 - 5	Trade secret.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Continue to rinse for at least 10 minutes. Check for and remove any contact lenses. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention following exposure or if feeling unwell. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention following exposure or if feeling unwell. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Section 4. First aid measures

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : Causes skin irritation. May cause an allergic skin reaction.

Ingestion : Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain or irritation,watering,redness

Inhalation : No specific data.

Skin contact : irritation,redness

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides,sulfur oxides,halogenated compounds

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

Section 6. Accidental release measures

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Avoid release to the environment. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	**List name**	**ppm**	**mg/m³**	**Other**	**ppm**	**mg/m³**	**Other**	**ppm**	**mg/m³**	**Other**	**Notations**
Ethylene glycol	US ACGIH OSHA PEL 1989	- -	- -	- -	- -	- -	- -	- 50	100 125	- -	[a]

Form: [a]Aerosol

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles.

Hand protection : Chemical-resistant gloves: Natural rubber gloves.

Skin protection : Wear long sleeves to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Clear.]

Color : Amber.

Odor : Mercaptan.

Odor threshold : Not available.

pH : Not available.

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: 98°C (208.4°F) [PMCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Slightly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Section 9. Physical and chemical properties

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : >1 [Air = 1]

Relative density : 1.05 to 1.06 (15.6°C)

Density : 8.77 (lbs/gal)

Solubility in water : Soluble

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

VOC : Not available.

Pour Point : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials and alkalis. Slightly reactive or incompatible with the following materials: acids.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Ethylene glycol	LD50 Oral	Rat	4700 mg/kg	-
Sulfur compound	LD50 Dermal	Rabbit	251 mg/kg	-
	LD50 Oral	Rat	244 mg/kg	-
Quaternary ammonium compound	LD50 Oral	Rat	400 mg/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

Section 11. Toxicological information

No applicable toxicity data

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Not applicable.

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Ethylene glycol Sulfur compound	Category 2 Category 2	Not determined Not determined	kidneys heart and liver

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : May cause damage to organs through prolonged or repeated exposure. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral Dermal Inhalation (vapors)	4348.8 mg/kg 3190.6 mg/kg 191.4 mg/l

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Ethylene glycol	Acute LC50 100000 µg/l Marine water Acute LC50 10000000 µg/l Fresh water Acute LC50 8050000 µg/l Fresh water	Crustaceans - Crangon crangon Daphnia - Daphnia magna Fish - Pimephales promelas	48 hours 48 hours 96 hours
Quaternary ammonium compound	Acute LC50 100 to 500 µg/l	Crustaceans - Echinogammarus olivii	48 hours

Persistence and degradability

Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN3082	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Contains: Ethylene glycol)	-	-	-
Transport hazard class(es)	9 	-	-	-
Packing group	III	-	-	-
Environmental hazards	Yes.	No.	No.	No.

Section 14. Transport information

Additional information	**Remarks** This material is Not Regulated if transported in a package that does not meet or exceed the Reportable Quantity (RQ).	-	-	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Ethylene glycol, 8145 gal of this product.

Marine pollutant Not available.

North-America NAERG : 171

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.

TSCA 12(b) annual export notification: No products were found.

United States inventory (TSCA 8b): All components are listed or exempted.

Clean Water Act (CWA) 307: Naphthalene

Clean Water Act (CWA) 311: Potassium hydroxide; Xylene; Naphthalene; sodium hydroxide

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Immediate (acute) health hazard
Delayed (chronic) health hazard

SARA 313

	Product name	CAS number	%
Supplier notification	Ethylene glycol	107-21-1	5 - 10

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)

History

Date of printing : 11/5/2014.

Indicates information that has changed from previously issued version.

Notice to reader

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This SDS was prepared and is to be used for this product. If the product is used as a component in another product, this SDS information may not be applicable.

Underground Injection Control Testing Summary Table: #1

nordion
SCIENCE ADVANCING HEALTH

MATERIAL SAFETY DATA SHEET

DATE: January 2013

SECTION 1 MATERIAL IDENTIFICATION		For Internal Use Only HAZARD RATING LABEL
CHEMICAL NAME	Sodium Iodide Iodine 131 (I-131) Solution	
CHEMICAL SYNONYMS	$Na^{131}I$ in NaOH containing 0.02M Na_2SO_4 pH-9-13	
CHEMICAL FAMILY	Base; Sodium Iodide in dilute sodium hydroxide solution	
MANUFACTURER /SUPPLIER NAME	Nordion Canada Inc. 447 March Road Kanata, Ontario K2K 1X8 Telephone: (613) 592-2790 - Radiation Safety	

SECTION 2 HAZARDOUS INGREDIENTS				
INGREDIENT	**Activity or %**	**Radiation Category**	**%**	**TLV**
High Radioactivity	200-10000 mCi/ml	High energy gamma and high energy beta Half-Life: 8.02 days		
Sodium Hydroxide	< 2.8 mg/ml (< 0.3% w/v)			
CNSC Permitted Exposures: 20 mSv/y for Radiation Workers; 1 mSv/y for Public				

SECTION 3 PHYSICAL DATA			
BOILING POINT: 760 mm Hg (°C)	100-105°C	**SOLUBILITY IN WATER, % by weight @ 25°C**	100
VAPOUR PRESSURE: 20°C (mm Hg)	N/A	**SPECIFIC GRAVITY (H_2O = 1)**	1.003
VAPOUR DENSITY (air = 1)	> 1.0	**EVAPORATION RATE (butylacetate = 1)**	N/A
pH		**MELTING POINT**	
APPEARANCE AND ODOUR:	Product appears like water and is contained in a shielded and securely sealed package. No odour.		

SECTION 4 FIRE AND EXPLOSION HAZARD DATA				
FLASH POINT (°C); TEST METHOD:	None	**FLAMMABLE LIMITS**	**LEL** N/A	**UEL** N/A
AUTOIGNITION TEMPERATURE (°C)	None			
EXTINGUISHING MEDIA:	N/A			
SPECIAL FIREFIGHTING PROCEDURES: N/A				
UNUSUAL FIRE AND EXPLOSION HAZARDS: Aqueous solutions of isotopes may generate combustible gases. Precautions are necessary to isolate the gases from potential sources of ignition.				

SECTION 5 REACTIVITY DATA		
STABILITY:	**STABLEX**	**CONDITIONS TO AVOID:** None
	UNSTABLE ☐	
INCOMPATIBILITY:	N/A	
HAZARDOUS DECOMPOSITION PRODUCTS:		
HAZARDOUS POLYMERIZATION:	**WILL NOT OCCURX**	**CONDITIONS TO AVOID:** Not identified.
	MAY OCCUR ☐	

N/A - Not Applicable

SECTION 6 HEALTH HAZARD DATA	
EFFECTS OF OVEREXPOSURE:	**INHALATION:** Will result in heavy thyroid radiation dose. No respiratory symptoms.
	INGESTION: Will result in heavy thyroid radiation dose. Sodium hydroxide concentration low, may cause throat irritation and burning sensation.
	EYES: Sodium hydroxide will have irritation effect; wash immediately.
	SKIN: Corrosive effect and high radiation on contact; wash immediately.
EMERGENCY FIRST AID PROCEDURES:	**INHALATION:** Remove to fresh air and stand upwind if outside. Ascertain if individual has allergies to iodine. If not, administer stable iodine (eg. Lugol's solution). Seek medical attention for radiation intake.
	INGESTION: Ascertain if individual has allergies to iodine. If not, administer stable iodine (eg. Lugol's solution). Do not induce vomiting, due to corrosive effect of solution. Remove from source. Seek medical aid for radiation intake.
	EYES: Flush open eye(s) continuously for 15 minutes with clean water. Remove from source. See Physician for external radiation or if irritation persists.
	SKIN: Wash well with soap and water to remove contamination. Remove contaminated clothing. Remove from source. See Physician for external radiation or if irritation persists.
	NOTE: IN ALL CASES, OBTAIN MEDICAL AID PROMPTLY.
SECTION 7 SPECIAL PROTECTION INFORMATION	
VENTILATION:	With I-131 local ventilation is very important, if I-131 gasses off. Wear respiratory protection, and stand upwind (if outside).
RESPIRATORY PROTECTION:	Air purifying respirator with combination radio-nuclide cartridge or SCBA where spill has occurred.
PROTECTIVE CLOTHING:	If package is damaged, wear lead-lined gloves before handling.
EYE PROTECTION:	☐ NOT NORMALLY NECESSARY ☐ SAFETY GLASSES WITH SIDE SHIELDS ☐ SAFETY GLASSES ☐ GASTIGHT GOGGLES OR EQUIVALENT X CHEMICAL WORKERS GOGGLES ☐ OTHER
SECTION 8 SPECIAL PRECAUTIONS	
PRECAUTIONS IN HANDLING AND STORAGE:	Shielded container and vial may have some radioactive surface contamination. It must always be opened in an adequately ventilated enclosure and employing appropriate contamination control techniques.
OTHER PRECAUTIONS:	All shippers and consignees must possess radioisotope license and conform with all conditions of license
SECTION 9 SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IF MATERIAL SPILLED OR LEAKED: Note also Section 7. If wet spill occurs, isolate contaminated area using vermiculite or charcoal. When acidified this material will release I-131. If in transport mode, call CANUTEC at (613) 996-6666 in Canada or National Response Centre at 1-800-424-8802 in USA.	
WASTE DISPOSAL METHOD: If on site, follow instructions on site license or as directed by local Radiation Control Officer. Disposal should be in accordance with local or national regulations for acceptable levels of radioactive contamination. For non returnable components, disposal of shielding materials should also be in accordance with local or national regulations for disposal of heavy metals (eg lead.)	

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SCIENCE ADVANCING HEALTH

Xe-133

SAFETY DATA SHEET ANSI Z400.1-2004

447 March Road Kanata Ontario Canada K2K 1X8
Emergency Radiation Contact 613-592-9375

Section 1-Product ID

Chemical Name
Xenon -133

Chemical Synonym
Xe-133

Recommended Product Use
Medical Imaging Agent

Hazard Symbols

Section 2- Hazards Identification

Precautionary Measures
Avoid ingestion, inhalation, skin and eye contact. Care should be taken to minimize radiation exposure. Appropriate radiation shielding should be used. Keep material in a lead container. Avoid direct handling by using remote manipulation tools. Wash hands after handling to minimize exposure. Pregnant or nursing women should avoid exposure.

Hazardous Ingredients
Xe-133 Gas
Carbon dioxide
Xenon

Health Hazards

Eyes- Exposure to ionizing radiation may produce adverse effects

Skin- Exposure to ionizing radiation may produce adverse effects

Inhalation- Exposure to ionizing radiation may produce adverse effects

Ingestion- Exposure to ionizing radiation may produce adverse effects

Absorption- NA

Target Organs- Lung; bone; fatty tissue

Section 3- Composition/Information on Ingredients

Component	Concentration	CAS #

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Section 4- First Aid Measures

Contact First Aid-
Eyes- NA
Skin- NA
Inhalation- Remove form source to fresh air environment
Ingestion-NA
Absorption- NA

Medical Responders Information-
Xenon-133 gas is a radiopharmaceutical that is used to evaluate pulmonary function and cerebral blood flow, and for imaging the lungs. It is administered by inhalation from closed respirator systems and spirometers. Xenon-133 gas is a readily diffusible gas which is neither utilized nor produced by the body. Most of the Xenon-133 gas that enters the circulation from a single breath is returned to the lungs and exhaled after a single pass through the peripheral circulation. It is essentially an inert gas. Overexposure manifests as asphyxiation.

Section 5- Fire Fighting Measures

Flammable Properties
Non flammable gas

Extinguishing Media
Dry chemical, Water spray, Foam.

Firefighting Personal Protective Equipment
Specific hazards: Radioactive. Protective equipment: Use personal protective equipment. In the event of fire or leak, wear self-contained breathing apparatus.

Post fire Monitoring
Monitor and decontaminate protective clothing and equipment for radioactive exposure before reuse.

Section 6- Accidental Release Management

Personal Precautions
Evacuate affected rooms. Contact the company Radiation Safety Officer. Care should be taken to minimize radiation exposure. Handle as radioactive gas release. . Use personal protective equipment. Depending on the nature of the spill (quantity and extent of release) a self-contained breathing apparatus may be needed

Environmental Precautions
Minimize release to the environment

Containment Equipment and Method
Seal leaking containers

Cleanup Method
Allow released gas to clear from the affected area through building ventilation

Section 7-Safe Handling and Storage

Handling Precautions

Avoid exposure - obtain special instructions before use. Contact the company/institution Radiation Safety Officer. Care should be taken to minimize radiation exposure. Handling time should be kept to a minimum. Appropriate radiation shielding should be used. Use of syringe shields and
tongs are recommended. Keep material in a lead container. Avoid direct handling by using remote manipulation tools. Obtain appropriate governmental licenses to possess and handle radioactive material

Storage Conditions Required

Store at controlled room temperature of 15 - 30°C. Storage and disposal of product should be controlled in a manner compliant with applicable governmental regulations pertaining to radionuclides. Store and handle in a designated area. Keep away from heat, sparks and flames.

Container Requirements

Store in sturdy containers appropriate to maintain the integrity of this material for its intended use

Section 8- Exposure Controls / Personal Protection

Exposure limits	NRC	ICRP/ACGIH	OSHA	NIOSH
	20mSv/yr for Rad. workers 1mSv/yr for public	20mSv/yr for Rad. workers 1mSv/yr for public	50mSv/yr	NA

Recommended Industrial Hygiene Monitoring

Follow standard hygiene monitoring for radionuclides as per local federal regulations. If required please contact Nordion at the supplied phone number to see assistance.

Engineering Controls

Use process enclosures, containment technology, or other engineering controls to keep airborne levels below recommended exposure limit.

Respiratory Protection

Use and selection of respiratory protection is based upon engineering controls in use and potential for gas release. When engineering controls are not sufficient to control exposure to below the exposure limit, wear an approved air supply respirator

Eye Protection

Chemical safety goggles and face shields are recommended

Hand Protection Impervious nitrile, rubber and latex gloves are recommended. Please note that employees who are allergic to natural rubber latex should use nitrile gloves.
Skin Protection Wear disposable coverall, polyethylene apron and sleeves, and shoe covers.
Personal Hygiene Wash hands and face before breaks and immediately after handling the product.

Section 9- Physical and Chemical Properties

Physical State Gas
Colour No Colour
Molecular Weight NA
Odor No odor
Solubility in Water 100% soluble

Section 10- Stability and Reactivity

Chemical Stability Stable under recommended storage conditions
Conditions to Avoid Heat sparks and open flame
Incompatible Products NA
Hazardous Decompositions Products NA
Hazardous Reactions No hazardous polymerization occurs

Section 11- Toxicological Information

Routes of Entry
Eyes- NA

Skin-NA

Inhalation-NA

Ingestion-NA

Acute Toxicity
Xenon/Carbon dioxide: asphyxiation if oxygen displaced. Carbon dioxide: In high concentrations causes rapid circulatory insufficiency

Carcinogenicity
Ionizing radiation: exposure known to increase risk of cancer.

Reproductive/ Development Toxicity
Ionizing radiation: exposure known to increase risk of reproductive and developmental effects

Target Organs
Carbon dioxide: cardiovascular system

Symptoms of Exposure
Carbon dioxide: headache, nausea and vomiting, which may lead to unconsciousness

Section 12- Ecological Information

Exotonicological Information (Aquatic)
NA

Exotonicological Information (Terrestrial)
NA

Chemical Fate
Not available. Hazardous component, Xe-133 will undergo radiological decay to Cs-133, a non-radioactive isotope of Cesium.

Section 13-Disposal Considerations

Disposal and Packaging Recommendations
Segregate and label radioactive waste. Disposal should be in accordance with applicable regional, national, and local laws and regulations. Local regulations may be more stringent than regional or national requirements. This information presented only applies to the material as supplied.

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447 March Road Kanata Ontario Canada K2K 1X8
Emergency Radiation Contact 613-592-9375

Section 14- Transportation Information

The classification for transportation of radioactive materials will depend on the specific activity level of the material, type of isotope, as well as the quantity shipped.
Please follow the license requirements attached to product top ensure proper shipping protocols are being followed

Section 15- Regulatory Information

All shippers and consignees must possess a valid radioisotope license and conform with all conditions of that license

Section 16- Other Information

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^{85}Kr	Nuclide Safety Data Sheet Krypton-85 **Based on information from www.nchps.org**	^{85}Kr

I. PHYSICAL DATA

Radiation[1]:	Gamma/X - 514 keV (0.434% abundance)
	Beta 687.4 keV max; 251.59 keV average (99.6% abundance)
Gamma Constant:	mR/hr per mCi @ 1.0 meter [mSv/hr per MBq @ 1.0 meter][2]
Beta Dose:	1.78E-2 mSv/hr per MBq @ 30 cm from point source
Half-Life [$T_{½}$] :	Physical $T_{½}$: 3934.4 days
	Biological $T_{½}$: Rapid (~minutes); small fraction deposited in fatty tissue
	Effective $T_{½}$: Rapid (~minutes)
Specific Activity[1]:	3.9E2 Ci/g [6.98E3 TBq/g] max.

II. RADIOLOGICAL DATA

Radiotoxicity[3]:	Submersion: 6.1E-12 Sv/hr per Bq/m³ [EDE]; 1.2E-11 Sv/hr per Bq/m³ [Bone]
Critical Organs:	Lung; bone; fatty tissue
Intake Routes:	Inhalation
Radiological Hazard:	External & Internal Exposure

III. SHIELDING

	Half Value Layer [HVL]	Tenth Value Layer [TVL]
Lead [Pb]	0.04 mm (0.002 inches)	0.37 mm (0.015 inches)

- The accessible dose rate should be background but must be < 2 mR/hr

IV. DOSIMETRY MONITORING

- Always wear radiation dosimetry monitoring badges [body & ring] whenever handling ^{85}Kr

V. DETECTION & MEASUREMENT

Portable Survey Meters:

Geiger-Mueller [e.g. Bicron PGM,] to assess shielding effectiveness

Low Energy Gamma Detector [e.g. Ludlum 44-21] for contamination surveys

Wipe Test: N/A – inert gas

VI. SPECIAL PRECAUTIONS

- Avoid inhalation [only significant route of intake]
- Use shielding [lead or leaded Plexiglas] to minimize exposure while handling mCi quantities of ^{85}Kr
- Ensure ^{85}Kr gas delivery systems are leak proof
- ^{85}Kr adheres to some plastics, rubber, greases & oils; handle in glass where possible

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[1] Delacroix et al, Radiation Protection Dosimetry - Radionuclide and Radiation Protection Data Handbook (Kent, England: Nuclear Technology Publishing, 1998), p. 91

[2] Health Physics & Radiological Health Handbook, 3rd Ed. [Baltimore, MD; Williams & Wilkins, 1998], p. 6-11

[3] Federal Guidance Report No. 11 [Oak Ridge, TN; Oak Ridge National Laboratory, 1988], p. 182

VII. GENERAL PRECAUTIONS

1. Maintain your occupational exposure to radiation As Low As Reasonably Achievable [ALARA].
2. Ensure all persons handling radioactive material are trained, registered, & listed on an approved protocol.
3. Review the nuclide characteristics on (reverse side) prior to working with that nuclide. Review the protocol(s) authorizing the procedure to be performed and follow any additional precautions in the protocol. Contact the responsible Principal Investigator to view the protocol information.
4. Plan experiments to minimize external exposure by reducing exposure time, using shielding and increasing your distance from the radiation source. Reduce internal and external radiation dose by monitoring the worker and the work area after each use of radioactive material, then promptly cleaning up any contamination discovered. Use the smallest amount of radioisotope possible so as to minimize radiation dose and radioactive waste.
5. Keep an accurate inventory of radioactive material, including records of all receipts, transfers & disposal. Perform and record regular lab surveys.
6. Provide for safe disposal of radioactive waste by following institutional Waste Handling & Disposal Procedures. Avoid generating mixed waste (combinations of radioactive, biological, and chemical waste). Note that lab staff may not pour measurable quantities of radioactive material down the drain.
7. If there is a question regarding any aspect of the radiation safety program or radioactive material use, contact Radiation Safety.

VIII. LAB PRACTICES

1. Disposable gloves, lab coats, and safety glasses are the minimum PPE [Personal Protective Equipment] required when handling radioactive material. Remove & discard potentially contaminated PPE prior to leaving the area where radioactive material is used.
2. Clearly outline radioactive material use areas with tape bearing the legend "radioactive". Cover lab bench tops where radioactive material will be handled with plastic-backed absorbent paper; change this covering periodically and whenever it's contaminated. Alternatively cover benches with thick plastic sheeting (i.e., painter's drop cloth), periodically wipe it clean and replace it if torn.
3. Label each unattended radioactive material container with the radioactive symbol, isotope, activity, and, except for waste, the ICN [inventory control number]. Place containers too small for such labels in larger labeled containers.
4. Handle radioactive solutions in trays large enough to contain the material in the event of a spill.
5. Never eat, drink, smoke, handle contact lenses, apply cosmetics, or take/apply medicine in the lab; keep food, drinks, cosmetics, etc. out of the lab entirely. Do not pipette by mouth.
6. Never store [human] food and beverage in refrigerators/freezers used for storing radioisotopes.
7. Prevent skin contact with skin-absorbable solvents containing radioactive material.
8. Fume hoods and biological safety cabinets for use with non-airborne radioactive material must be approved (through the protocol) and must be labeled "Caution Radioactive Material".
9. All volatile, gaseous, or aerosolized radioactive material must be used only in a properly operating charcoal and/or HEPA filtered fume hood or Biological Safety Cabinet bearing a Caution Airborne Radioactivity hood label, unless otherwise specified in writing by the Radiation Safety Officer. In particular, radioactive iodination must be performed only in these specially designed fume hoods. The Radiation Safety Officer (through a protocol) must approve all such use.
10. Take special precautions when working with radioactive compounds that tend to become volatile [e.g. ^{35}S labeled amino acids, $^{125}I^-$ iodine tends to volatilize in acidic solutions]. These precautions may include: using the materials only within an approved fume hood, protecting the house vacuum system with primary and secondary vapor trapping devices, and covering active cell cultures with carbon-impregnating paper.
11. Use sealed containers and appropriate secondary containment to carry radioactive material between rooms Notify Radiation Safety staff before taking any radioactive material off site.

SAFETY DATA SHEET

Section 1. Identification

Product name : BPB 59480
Product code : BPB59480

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Boiler Water Treatment. Neutralizing agent.

Print date : 1/8/2015.
Validation date : 12/22/2014.
Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 4
SKIN CORROSION/IRRITATION - Category 1
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
TOXIC TO REPRODUCTION [Fertility] - Category 2

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Combustible liquid.
Causes severe skin burns and eye damage.
Suspected of damaging fertility.

Precautionary statements

Prevention : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wear protective gloves. Wear eye or face protection. Wear protective clothing. Keep away from flames and hot surfaces. - No smoking. Wash hands thoroughly after handling.

Section 2. Hazards identification

Response : IF exposed or concerned: Get medical attention. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.

Storage : Store locked up. Store in a well-ventilated place. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Cyclohexylamine	5 - 10	108-91-8
Isobutanolamine	5 - 10	124-68-5
Ethoxylated amine	5 - 10	Trade secret.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Get medical attention immediately. Call a poison center or physician. Immediately flush the eye(s) continuously with lukewarm, gently flowing water for at least 20-60 minutes while holding the eyelid(s) open. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician.

Inhalation : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Get medical attention immediately. Call a poison center or physician. Wash affected area with soap and mild detergent for at least 20 - 60 minutes. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.

Section 4. First aid measures

Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : Causes severe burns.

Ingestion : May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain,watering,redness

Inhalation : reduced fetal weight,increase in fetal deaths,skeletal malformations

Skin contact : pain or irritation,redness,blistering may occur,reduced fetal weight,increase in fetal deaths,skeletal malformations

Ingestion : stomach pains,reduced fetal weight,increase in fetal deaths,skeletal malformations

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Specific hazards arising from the chemical : Combustible liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Keep away from acids. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Section 7. Handling and storage

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from acids. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Cyclohexylamine	US ACGIH OSHA PEL 1989	10 10	41 40	- -	- -	- -	- -	- -	- -	- -	

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles. If inhalation hazards exist, a full-face respirator may be required instead.

Hand protection : Chemical-resistant gloves.

Skin protection : Wear long sleeves and chemical resistant apron to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Clear.]

Color : Yellow to light amber [Light]

Odor : Amine-like.

Odor threshold : Not available.

pH : 11.5 to 13

Section 9. Physical and chemical properties

	:	Neat - without dilution.
Melting/freezing point	:	-1°C (30.2°F)
Boiling point	:	101°C (213.8°F)
Initial Boiling Point	:	Not available.
Flash point	:	Closed cup: 66.1°C (151°F) [TCC]
Burning time	:	Not applicable.
Burning rate	:	Not applicable.
Evaporation rate	:	Not available.
Flammability (solid, gas)	:	Flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.
Lower and upper explosive (flammable) limits	:	Not available.
Vapor pressure	:	2.4 kPa (18 mm Hg) @ 21.1°C (Calculated Value for all Components.)
Vapor density	:	>1 [Air = 1]
Relative density	:	0.994 (15.6°C)
Density	:	8.28 (lbs/gal)
Solubility in water	:	Soluble
Partition coefficient: n-octanol/water	:	Not available.
Auto-ignition temperature	:	Not available.
Decomposition temperature	:	Not available.
Viscosity	:	Dynamic (15.6°C): 25 cP
VOC	:	Not available.
Pour Point	:	-1°C (30.2°F)

Section 10. Stability and reactivity

Reactivity	:	No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	:	The product is stable.
Possibility of hazardous reactions	:	Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	:	Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.
Incompatible materials	:	Reactive or incompatible with the following materials: oxidizing materials, acids and alkalis.
Hazardous decomposition products	:	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Cyclohexylamine	LC50 Inhalation Vapor	Mouse	1070 mg/m³	4 hours
	LC50 Inhalation Vapor	Rat	2.3 mg/l	4 hours
	LC50 Inhalation Vapor	Rat	7500 mg/m³	4 hours
Isobutanolamine	LD50 Oral	Rat	2900 mg/kg	-
Ethoxylated amine	LD50 Dermal	Rat	>10000 mg/kg	-
	LD50 Oral	Rat	620 mg/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

Product/ingredient name	OSHA	IARC	NTP
Cyclohexylamine	-	3	-

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Not applicable.

Specific target organ toxicity (repeated exposure)

Not applicable.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Section 11. Toxicological information

Fertility effects : Suspected of damaging fertility.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	3057.6 mg/kg
Dermal	12771.4 mg/kg

Additional information

This product was corrosive when tested using the Corrositex test method.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Cyclohexylamine	Acute EC50 20 mg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
	Acute LC50 44 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
Ethoxylated amine	Acute EC50 3.7 to 7.2 mg/l	Daphnia	48 hours
	Acute LC50 0.51 to 0.91 mg/l	Fish	96 hours
BPB 59480	Acute LC50 3.95 ppm	Daphnia	48 hours
	Acute LC50 2.41 ppm	Fish	96 hours

Persistence and degradability

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
BPB 59480	-	-	Not readily

Other adverse effects : No known significant effects or critical hazards.

Additional information

An EcoTox™ Report, and/or the material's environmental fate is available upon request at the following number: 1-800-235-4249, then press 4.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN3267	UN3267	UN3267	UN3267
UN proper shipping name	CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S. (Contains: Cyclohexylamine, Isobutanolamine)	CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S. (Contains: Cyclohexylamine, Isobutanolamine)	CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S. (Contains: Cyclohexylamine, Isobutanolamine)	CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S. (Contains: Cyclohexylamine, Isobutanolamine)
Transport hazard class(es)	8 	8 	8 	8 
Packing group	III	III	III	III
Environmental hazards	No.	No.	No.	No.
Additional information	-	-	**Emergency schedules (EmS)** F-A S-B	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Not applicable.

Marine pollutant Not available.

North-America NAERG : 153

Section 15. Regulatory information

U.S. Federal regulations :

TSCA 4(a) final test rules: Cyclohexanol

TSCA 12(b) one-time export: No products were found.

TSCA 12(b) annual export notification: No products were found.

United States inventory (TSCA 8b): All components are listed or exempted.

Clean Water Act (CWA) 307: No products were found.

Clean Water Act (CWA) 311: sodium hydroxide

Clean Air Act (CAA) 112 regulated toxic substances: Cyclohexylamine

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

SARA 302/304

Section 15. Regulatory information

Name	%	EHS	SARA 302 TPQ		SARA 304 RQ	
			(lbs)	(gallons)	(lbs)	(gallons)
Cyclohexylamine	5 - 10	Yes.	10000	1386.5	10000	1386.5

SARA 311/312

Classification : Fire hazard
Immediate (acute) health hazard
Delayed (chronic) health hazard

SARA 313

Supplier notification : No products were found.

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)

History

Date of printing : 1/8/2015.

Indicates information that has changed from previously issued version.

Notice to reader

NOTE: The information on this MSDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : CLO64 CLEANER
Product code : CLO64

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Cleaner

Print date : 1/8/2015.
Validation date : 12/10/2014.
Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 3
SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
CARCINOGENICITY - Category 2
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [Respiratory tract irritation and Narcotic effects] - Category 3
AQUATIC HAZARD (LONG-TERM) - Category 2

GHS label elements

Hazard pictograms :

Signal word : Warning

Hazard statements : Flammable liquid and vapor.
Causes serious eye irritation.
Causes skin irritation.
Suspected of causing cancer.
May cause respiratory irritation.
May cause drowsiness and dizziness.
Toxic to aquatic life with long lasting effects.

Precautionary statements

Section 2. Hazards identification

Prevention : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wear protective gloves. Wear eye or face protection. Keep away from heat, sparks, open flames and hot surfaces. - No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Avoid breathing vapor. Wash hands thoroughly after handling.

Response : Collect spillage. IF exposed or concerned: Get medical attention. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage : Store locked up. Store in a well-ventilated place. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Light aromatic naphtha	40 - 50	64742-95-6
1,2,4-Trimethylbenzene	30 - 40	95-63-6
1,3,5-Trimethylbenzene	5 - 10	108-67-8
1,2,3-Trimethylbenzene	1 - 5	526-73-8
Xylene	1 - 5	1330-20-7
Cumene	1 - 5	98-82-8

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Continue to rinse for at least 10 minutes. Check for and remove any contact lenses. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Section 4. First aid measures

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Can cause central nervous system (CNS) depression. May cause drowsiness and dizziness. May cause respiratory irritation.

Skin contact : Causes skin irritation.

Ingestion : Can cause central nervous system (CNS) depression. Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain or irritation,watering,redness

Inhalation : respiratory tract irritation,coughing,nausea or vomiting,headache,drowsiness/fatigue, dizziness/vertigo,unconsciousness

Skin contact : irritation,redness

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Additional information

If product is ingested and vomiting occurs naturally, have person lean forward to reduce the risk of aspiration into the lungs.

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Section 5. Fire-fighting measures

Specific hazards arising from the chemical : Flammable liquid and vapor. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapor or mist. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
1,2,4-Trimethylbenzene	US ACGIH	25	123	-	-	-	-	-	-	-	
	OSHA PEL 1989	25	125	-	-	-	-	-	-	-	
1,3,5-Trimethylbenzene	US ACGIH	25	123	-	-	-	-	-	-	-	
	OSHA PEL 1989	25	125	-	-	-	-	-	-	-	
1,2,3-Trimethylbenzene	US ACGIH	25	123	-	-	-	-	-	-	-	
	OSHA PEL 1989	25	125	-	-	-	-	-	-	-	
Xylene	US ACGIH	100	434	-	150	651	-	-	-	-	
	OSHA PEL	100	435	-	-	-	-	-	-	-	
	OSHA PEL 1989	100	435	-	150	655	-	-	-	-	
Cumene	US ACGIH	50	-	-	-	-	-	-	-	-	
	OSHA PEL	50	245	-	-	-	-	-	-	-	[1]
	OSHA PEL 1989	50	245	-	-	-	-	-	-	-	[1]

[1]Absorbed through skin.

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Section 8. Exposure controls/personal protection

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles.

Hand protection : Chemical-resistant gloves.

Skin protection : Wear long sleeves to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid.

Color : Amber.

Odor : Aromatic.

Odor threshold : Not available.

pH : Not available.

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: 39°C (102.2°F) [SFCC ASTM D-3828]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : >1 [Air = 1]

Relative density : 0.878 (16°C)

Density : 7.31 (lbs/gal)

Solubility in water : Insoluble

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Dynamic (16°C): 7 cP

Section 9. Physical and chemical properties

VOC : Not available.

Pour Point : -40°C (-40°F)

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials and acids.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Light aromatic naphtha	LD50 Oral	Rat	2900 mg/kg	-
1,2,4-Trimethylbenzene	LC50 Inhalation Vapor	Rat	18000 mg/m³	4 hours
	LD50 Oral	Rat	5 g/kg	-
1,3,5-Trimethylbenzene	LC50 Inhalation Vapor	Rat	24000 mg/m³	4 hours
	LD50 Oral	Rat	5000 mg/kg	-
Xylene	LC50 Inhalation Gas.	Rat	5000 ppm	4 hours
	LD50 Dermal	Rabbit	>1700 mg/kg	-
	LD50 Oral	Male rat	3523 mg/kg	-
	LD50 Oral	Rat	4300 mg/kg	-
Cumene	LC50 Inhalation Vapor	Mouse	10000 mg/m³	7 hours
	LC50 Inhalation Vapor	Rat	39000 mg/m³	4 hours
	LD50 Dermal	Rabbit	10600 mg/kg	-
	LD50 Oral	Rat	2.9 g/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

Product/ingredient name	OSHA	IARC	NTP
Xylene	-	3	-
Cumene	-	2B	Reasonably anticipated to be a human carcinogen.

Reproductive toxicity

Section 11. Toxicological information

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Light aromatic naphtha	Category 3	Not applicable.	Narcotic effects
1,2,4-Trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
1,3,5-Trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
1,2,3-Trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
Xylene	Category 3	Not applicable.	Narcotic effects
Cumene	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Not applicable.

Aspiration hazard

Name	Result
Light aromatic naphtha	ASPIRATION HAZARD - Category 1
1,2,3-Trimethylbenzene	ASPIRATION HAZARD - Category 1
Xylene	ASPIRATION HAZARD - Category 1
Cumene	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : No known significant effects or critical hazards.

Carcinogenicity : Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Section 11. Toxicological information

Route	ATE value
Oral	3845.5 mg/kg
Dermal	44631.9 mg/kg
Inhalation (gases)	202872.1 ppm
Inhalation (vapors)	57.06 mg/l

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
1,2,4-Trimethylbenzene	Acute LC50 4910 µg/l Marine water	Crustaceans - Elasmopus pectenicrus	48 hours
	Acute LC50 22.4 mg/l Fresh water	Fish - Tilapia zillii	96 hours
1,3,5-Trimethylbenzene	Acute LC50 12520 to 15050 µg/l Fresh water	Fish - Carassius auratus	96 hours
	Chronic NOEC 400 µg/l Fresh water	Daphnia - Daphnia magna	21 days
Xylene	Acute LC50 8500 µg/l Marine water	Crustaceans - Palaemonetes pugio	48 hours
	Acute LC50 13400 µg/l Fresh water	Fish - Pimephales promelas	96 hours
Cumene	Acute EC50 2600 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute LC50 7400 to 11290 µg/l Fresh water	Crustaceans - Artemia sp.	48 hours
	Acute LC50 30500 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 2700 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours

Persistence and degradability

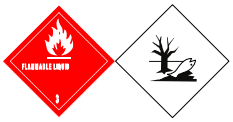
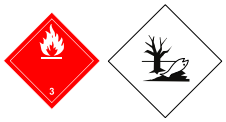
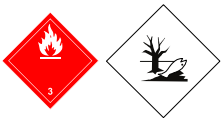
Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN1993	UN1993	UN1993	UN1993
UN proper shipping name	FLAMMABLE LIQUID, N.O.S. (Contains: Light aromatic naphtha, 1,2, 4-Trimethylbenzene)	FLAMMABLE LIQUID, N.O.S. (Contains: Light aromatic naphtha, 1,2, 4-Trimethylbenzene)	FLAMMABLE LIQUID, N.O.S. (Contains: Light aromatic naphtha, 1,2, 4-Trimethylbenzene)	FLAMMABLE LIQUID, N.O.S. (Contains: Light aromatic naphtha, 1,2, 4-Trimethylbenzene)
Transport hazard class(es)	3 	3 	3 	3 
Packing group	III	III	III	III
Environmental hazards	Yes.	Yes.	Yes.	No.
Additional information	-	-	**Emergency schedules (EmS)** F-E S-E	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Xylene, 555 gal of this product.

Marine pollutant Light aromatic naphtha
1,2,4-Trimethylbenzene

North-America NAERG : 128

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: Naphthalene
Clean Water Act (CWA) 311: Xylene; Naphthalene

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Fire hazard
Immediate (acute) health hazard
Delayed (chronic) health hazard

Section 15. Regulatory information

SARA 313

	Product name	CAS number	%
Supplier notification	1,2,4-Trimethylbenzene Xylene Cumene	95-63-6 1330-20-7 98-82-8	30 - 40 1 - 5 1 - 5

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)

History

Date of printing : 1/8/2015.

Indicates information that has changed from previously issued version.

Notice to reader

NOTE: The information on this MSDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : CLW3075 CLEANER

Product code : CLW3075

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Cleaner.

Print date : 1/8/2015.

Validation date : 12/19/2014.

Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [Respiratory tract irritation] - Category 3

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Causes serious eye damage.
Causes skin irritation.
May cause respiratory irritation.

Precautionary statements

Prevention : Wear protective gloves. Wear eye or face protection. Use only outdoors or in a well-ventilated area. Avoid breathing vapor. Wash hands thoroughly after handling.

Section 2. Hazards identification

Response : IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. Wash contaminated clothing before reuse. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.

Storage : Store locked up.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Alkylarylsulfonate amine salt	20 - 30	Trade secret.
Organic surfactant	1 - 5	Trade secret.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Get medical attention immediately. Call a poison center or physician. Immediately flush the eye(s) continuously with lukewarm, gently flowing water for at least 20-60 minutes while holding the eyelid(s) open. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician.

Inhalation : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Get medical attention immediately. Call a poison center or physician. Wash affected area with soap and mild detergent for at least 20 - 60 minutes. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Section 4. First aid measures

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : May cause respiratory irritation. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : Causes skin irritation.

Ingestion : May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain,watering,redness

Inhalation : respiratory tract irritation,coughing

Skin contact : pain or irritation,redness,blistering may occur

Ingestion : stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides,sulfur oxides,metal oxide/oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

Section 6. Accidental release measures

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
No exposure limit value known.											

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

Section 8. Exposure controls/personal protection

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles. If inhalation hazards exist, a full-face respirator may be required instead.

Hand protection : Chemical-resistant gloves.

Skin protection : Wear long sleeves and chemical resistant apron to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Clear to hazy.]

Color : Yellow. [Dark]

Odor : Mild.

Odor threshold : Not available.

pH : 7.3 to 8.3

: Neat - without dilution.

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: >93.4°C (>200.1°F) [SFCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Slightly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : 2.2 kPa (16.5 mm Hg) @ 21.1°C (Calculated Value for all Components.)

Vapor density : >1 [Air = 1]

Relative density : 0.952 (15.6°C)

Density : 7.93 (lbs/gal)

Solubility in water : Dispersible

Section 9. Physical and chemical properties

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Dynamic (15.6°C): 50 cP

VOC : 8 g/l

Pour Point : -3.9°C (25°F)

Additional information

Soluble in Diesel

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Organic surfactant	LC50 Inhalation Vapor LD50 Dermal LD50 Oral	Rat Rabbit Rat	2500 ppm 10000 mg/kg 1900 mg/kg	4 hours - -

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

No applicable toxicity data

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Section 11. Toxicological information

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Alkylarylsulfonate amine salt	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Not applicable.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Organic surfactant	Acute EC50 43 mg/l Fresh water Acute LC50 28000 to 40000 µg/l Fresh water	Daphnia - Daphnia magna Fish - Oncorhynchus mykiss - Fingerling	48 hours 96 hours

Persistence and degradability

Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-	-
Transport hazard class(es)	-	-	-	-
Packing group	-	-	-	-
Environmental hazards	No.	No.	No.	No.
Additional information	-	-	-	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Not applicable.

Marine pollutant Not available.

North-America NAERG : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: No products were found.
Clean Water Act (CWA) 311: No products were found.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Immediate (acute) health hazard

SARA 313

Supplier notification : No products were found.

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)

History

Date of printing : 1/8/2015.

Indicates information that has changed from previously issued version.

Notice to reader

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The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : OSW5200 OXYGEN SCAVENGER

Product code : OSW5200

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Oxygen scavenger.

Print date : 10/21/2014.

Validation date : 10/21/2014.

Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : CORROSIVE TO METALS - Category 1
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
RESPIRATORY SENSITIZATION - Category 1
SKIN SENSITIZATION - Category 1
CARCINOGENICITY: INHALATION - Category 1A
TOXIC TO REPRODUCTION [Unborn child] - Category 1B
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE): INHALATION [respiratory tract] - Category 2

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : May be corrosive to metals.
Causes serious eye irritation.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause an allergic skin reaction.
May cause cancer if inhaled.
May damage the unborn child.
May cause damage to organs through prolonged or repeated exposure if inhaled. (respiratory tract)

Section 2. Hazards identification

Precautionary statements

Prevention : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wear protective gloves: > 8 hours (breakthrough time): Butyl rubber gloves.. Wear eye or face protection. In case of inadequate ventilation wear respiratory protection. Keep only in original container. Do not breathe vapor. Wash hands thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace.

Response : Absorb spillage to prevent material damage. Get medical attention if you feel unwell. IF exposed or concerned: Get medical attention. IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. If experiencing respiratory symptoms: Call a POISON CENTER or physician. IF ON SKIN: Wash with plenty of soap and water. Wash contaminated clothing before reuse. If skin irritation or rash occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage : Store locked up. Store in corrosive resistant container with a resistant inner liner.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Additional information

Corrosive to metal.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Ammonium bisulfite	60 - 70	10192-30-0
Nickel sulfate	0.1 - 1	7786-81-4

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Continue to rinse for at least 10 minutes. Check for and remove any contact lenses. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. In the event of any complaints or symptoms, avoid further exposure.

Skin contact : Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Section 4. First aid measures

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : May cause allergy or asthma symptoms or breathing difficulties if inhaled. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : May cause an allergic skin reaction.

Ingestion : Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain or irritation,watering,redness

Inhalation : wheezing and breathing difficulties,asthma,reduced fetal weight,increase in fetal deaths, skeletal malformations

Skin contact : irritation,redness,reduced fetal weight,increase in fetal deaths,skeletal malformations

Ingestion : reduced fetal weight,increase in fetal deaths,skeletal malformations

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous thermal decomposition products : nitrogen oxides,sulfur oxides

Section 5. Fire-fighting measures

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Absorb spillage to prevent material damage. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Absorb spillage to prevent material damage. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems or asthma, allergies or chronic or recurrent respiratory disease should not be employed in any process in which this product is used. Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container. Absorb spillage to prevent material damage.

Section 7. Handling and storage

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store in corrosive resistant container with a resistant inner liner. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Nickel sulfate, as Ni	US ACGIH OSHA PEL OSHA PEL 1989	- - -	0.1 1 0.1	- - -	- - -	- - -	- - -	- - -	- - -	- - -	[a][A] [b][A]

Form: [a]Inhalable fraction [b]Soluble
Notes: [A]as Ni

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles.

Hand protection : Chemical-resistant gloves: Butyl rubber gloves.

Skin protection : Wear long sleeves to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Clear.]

Color : Yellow. [Light]

Odor : Pungent.

Odor threshold : Not available.

pH : 4.5 to 5.5

: Neat - without dilution.

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: >93.34°C (>200°F) [SFCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Slightly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : >1 [Air = 1]

Relative density : 1.35 (25°C)

Density : 11.27 (lbs/gal)

Solubility in water : Soluble

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Dynamic: 8.04 cP

VOC : Not available.

Pour Point : -40°C (-40°F)

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials, acids and alkalis.
Avoid strong mineral acids which will yield sulfur dioxide gas. Do not use copper or its alloys

Section 10. Stability and reactivity

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

No applicable toxicity data

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

Product/ingredient name	OSHA	IARC	NTP
Nickel sulfate	-	1	-

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Not applicable.

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Nickel sulfate	Category 1	Inhalation	respiratory tract

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : May cause damage to organs through prolonged or repeated exposure if inhaled. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity : May cause cancer if inhaled. Risk of cancer depends on duration and level of exposure.

Mutagenicity : No known significant effects or critical hazards.

Section 11. Toxicological information

Teratogenicity : May damage the unborn child.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Nickel sulfate	Acute IC50 7.28 mg/l Marine water	Algae - Phaeodactylum tricornutum - Exponential growth phase	72 hours
	Acute IC50 4.59 mg/l Marine water	Algae - Phaeodactylum tricornutum - Exponential growth phase	96 hours
	Acute LC50 125000 µg/l Marine water	Crustaceans - Crangon crangon - Adult	48 hours
	Acute LC50 180 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 1280 µg/l Fresh water	Fish - Oncorhynchus mykiss - Larvae	96 hours

Persistence and degradability

Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN2693	UN2693	UN2693	UN2693
UN proper shipping name	BISULFITES, AQUEOUS SOLUTION, N.O.S. (Contains: Ammonium bisulfite)	BISULFITES, AQUEOUS SOLUTION, N.O.S. (Contains: Ammonium bisulfite)	BISULPHITES, AQUEOUS SOLUTION, N.O.S. (Contains: Ammonium bisulfite)	BISULFITES, AQUEOUS SOLUTION, N.O.S. (Contains: Ammonium bisulfite)
Transport hazard class(es)	8 	8 	8 	8 
Packing group	III	III	III	III
Environmental hazards	No.	No.	No.	No.
Additional information	-	-	**Emergency schedules (EmS)** F-A S-B	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Ammonium bisulfite, 727 gal of this product.

Marine pollutant Not available.

North-America NAERG : 154

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.

TSCA 12(b) annual export notification: No products were found.

United States inventory (TSCA 8b): All components are listed or exempted.

Clean Water Act (CWA) 307: nickel sulphate

Clean Water Act (CWA) 311: ammonium hydrogensulphite; nickel sulphate

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Reactive
Immediate (acute) health hazard
Delayed (chronic) health hazard

Section 15. Regulatory information

SARA 313

	Product name	CAS number	%
Supplier notification	Ammonium bisulfite Nickel sulfate	10192-30-0 7786-81-4	60 - 70 0.1 - 1

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)

History

Date of printing : 10/21/2014.

Indicates information that has changed from previously issued version.

Notice to reader

NOTE: The information on this MSDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : TECHNI-HIB 3743

Product code : CRW3743

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Corrosion inhibitor.

Print date : 10/31/2014.

Validation date : 10/31/2014.

Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : SKIN CORROSION/IRRITATION - Category 1B
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
AQUATIC HAZARD (ACUTE) - Category 1
AQUATIC HAZARD (LONG-TERM) - Category 2

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Causes severe skin burns and eye damage.
Very toxic to aquatic life.
Toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention : Wear protective gloves: > 8 hours (breakthrough time): neoprene nitrile polyvinyl alcohol (PVA) polyvinyl chloride (PVC). Wear eye or face protection. Wear protective clothing. Avoid release to the environment. Wash hands thoroughly after handling.

Section 2. Hazards identification

Response : Collect spillage. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.

Storage : Store locked up.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Quaternary ammonium compound	20 - 30	Trade secret.
Phosphate ester salt	5 - 10	Trade secret.
Ethanol	1 - 5	64-17-5
Alkyl amine	0.1 - 1	Trade secret.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Get medical attention immediately. Call a poison center or physician. Immediately flush the eye(s) continuously with lukewarm, gently flowing water for at least 20-60 minutes while holding the eyelid(s) open. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician.

Inhalation : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Get medical attention immediately. Call a poison center or physician. Wash affected area with soap and mild detergent for at least 20 - 60 minutes. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.

Section 4. First aid measures

Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : Causes severe burns.

Ingestion : May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain,watering,redness

Inhalation : No specific data.

Skin contact : pain or irritation,redness,blistering may occur

Ingestion : stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst. This material is very toxic to aquatic life. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides,phosphorus oxides,halogenated compounds

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Avoid release to the environment. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Ethanol	US ACGIH OSHA PEL OSHA PEL 1989	- 1000 1000	- 1900 1900	- - -	1000 - -	- - -	- - -	- - -	- - -	- - -	

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles. If inhalation hazards exist, a full-face respirator may be required instead.

Hand protection : Chemical-resistant gloves: neoprene nitrile polyvinyl alcohol (PVA) polyvinyl chloride (PVC)

Skin protection : Wear long sleeves and chemical resistant apron to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Clear.]

Color : Colorless to pale pink.

Odor : Alcohol-like. [Slight]

Odor threshold : Not available.

pH : 5 to 7

Melting/freezing point : -4.4444°C (24°F)

Boiling point : 104.44°C (220°F)

Initial Boiling Point : Not available.

Flash point : Closed cup: 93.333°C (200°F) [TCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Not available.

Section 9. Physical and chemical properties

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : Not available.

Relative density : 1

Density : 8.33 (lbs/gal)

Solubility in water : Soluble

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

VOC : Not available.

Pour Point : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials, metals, acids and alkalis.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Quaternary ammonium compound	LD50 Oral	Rat	426 mg/kg	-
Ethanol	LC50 Inhalation Vapor	Rat	20000 ppm	10 hours
	LC50 Inhalation Vapor	Rat	124700 mg/m³	4 hours
	LD50 Oral	Rat	7 g/kg	-
Alkyl amine	LD50 Oral	Rat	1000 to 1250 mg/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Section 11. Toxicological information

Carcinogenicity

Product/ingredient name	OSHA	IARC	NTP
Ethanol	-	1	-

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Not applicable.

Specific target organ toxicity (repeated exposure)

Not applicable.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	2103.7 mg/kg

Section 12. Ecological information

Toxicity

Section 12. Ecological information

Product/ingredient name	Result	Species	Exposure
Quaternary ammonium compound	Acute EC50 37 ppb Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 64 ppb Fresh water	Fish - Oncorhynchus mykiss	96 hours
	Chronic NOEC 4.15 ppb Marine water	Daphnia - Daphnia magna	21 days
	Chronic NOEC 32.2 ppb	Fish - Pimephales promelas	34 days
Ethanol	Acute EC50 17.921 mg/l Marine water	Algae - Ulva pertusa	96 hours
	Acute EC50 2000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 25500 µg/l Marine water	Crustaceans - Artemia franciscana - Larvae	48 hours
	Acute LC50 42000 µg/l Fresh water	Fish - Oncorhynchus mykiss	4 days
	Chronic NOEC 4.995 mg/l Marine water	Algae - Ulva pertusa	96 hours
	Chronic NOEC 0.375 ul/L Fresh water	Fish - Gambusia holbrooki - Larvae	12 weeks

Persistence and degradability

Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN1760	UN1760	UN1760	UN1760
UN proper shipping name	CORROSIVE LIQUID, N.O.S. (Contains: Quaternary ammonium compound)	CORROSIVE LIQUID, N.O.S. (Contains: Quaternary ammonium compound)	CORROSIVE LIQUID, N.O.S. (Contains: Quaternary ammonium compound)	CORROSIVE LIQUID, N.O.S. (Contains: Quaternary ammonium compound)
Transport hazard class(es)	8 	8 	8 	8 
Packing group	III	III	III	III
Environmental hazards	Yes.	Yes.	Yes.	No.

Section 14. Transport information

Additional information	-	-	-	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Not applicable.

Marine pollutant Quaternary ammonium compound

North-America NAERG : 154

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: No products were found.
Clean Water Act (CWA) 311: No products were found.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Immediate (acute) health hazard

SARA 313

Supplier notification : No products were found.

Canada

Canada (CEPA DSL): : At least one component is not listed in DSL but all such components are listed in NDSL.

Section 16. Other information

National Fire Protection Association (U.S.A.)

History

Date of printing : 10/31/2014.

Indicates information that has changed from previously issued version.

Notice to reader

Section 16. Other information

NOTE: The information on this MSDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : TRETOLITE™ FLW163 FLOTATION AID
™ a trademark of Baker Hughes Incorporated.

Product code : FLW163

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Flotation aid.

Print date : 1/15/2015.

Validation date : 1/15/2015.

Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : SKIN CORROSION/IRRITATION - Category 2
SKIN SENSITIZATION - Category 1
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [Narcotic effects] - Category 3

GHS label elements

Hazard pictograms :

Signal word : Warning

Hazard statements : Causes skin irritation.
May cause an allergic skin reaction.
May cause drowsiness and dizziness.

Precautionary statements

Prevention : Wear protective gloves. Use only outdoors or in a well-ventilated area. Avoid breathing vapor. Wash hands thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace.

Section 2. Hazards identification

Response : IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. Wash contaminated clothing before reuse. If skin irritation or rash occurs: Get medical attention.

Storage : Store locked up.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements : Avoid contact with skin and clothing. Wash thoroughly after handling.

Hazards not otherwise classified : Prolonged or repeated contact may dry skin and cause irritation.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Petroleum distillates	20 - 30	64742-47-8
Oxyalkylated alkylphenol	1 - 5	Trade secret.
Fatty acid oxyalkylate	0.1 - 1	70142-34-6

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Continue to rinse for at least 10 minutes. Check for and remove any contact lenses. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Wash skin thoroughly with soap and water or use recognized skin cleanser. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Section 4. First aid measures

Eye contact : Causes serious eye irritation.

Inhalation : Can cause central nervous system (CNS) depression. May cause drowsiness and dizziness. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : Causes skin irritation. Defatting to the skin. May cause an allergic skin reaction.

Ingestion : Can cause central nervous system (CNS) depression. Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain or irritation,watering,redness

Inhalation : nausea or vomiting,headache,drowsiness/fatigue,dizziness/vertigo,unconsciousness

Skin contact : irritation,redness,dryness,cracking

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Additional information

If product is ingested and vomiting occurs naturally, have person lean forward to reduce the risk of aspiration into the lungs.

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides,halogenated compounds

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapor or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	**List name**	**ppm**	**mg/m³**	**Other**	**ppm**	**mg/m³**	**Other**	**ppm**	**mg/m³**	**Other**	**Notations**
Petroleum distillates, as total hydrocarbon vapor	US ACGIH	-	200	-	-	-	-	-	-	-	[1]

[1]Absorbed through skin.

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles.

Hand protection : Chemical-resistant gloves.

Skin protection : Wear long sleeves to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid.

Color : White.

Odor : Organic.

Odor threshold : Not available.

pH : Not available.

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: >93.4°C (>200.1°F) [PMCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Slightly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Section 9. Physical and chemical properties

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : >1 [Air = 1]

Relative density : 1.038 (15.6°C)

Density : 8.65 (lbs/gal)

Solubility in water : Dispersible

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

VOC : Not available.

Pour Point : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Petroleum distillates	LD50 Oral	Rat	>5000 mg/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

No applicable toxicity data

Reproductive toxicity

No applicable toxicity data

Section 11. Toxicological information

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Petroleum distillates Fatty acid oxyalkylate	Category 3 Category 3	Not applicable. Not applicable.	Narcotic effects Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Not applicable.

Aspiration hazard

Name	Result
Petroleum distillates	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	24038.5 mg/kg

Additional information

This product contains trace quantities of acrylamide monomer. Acrylamide has been identified as a suspected cancer agent by the National Toxicology Program (NTP) and/or by the International Agency for Research on Cancer (IARC). Acrylamide is also a chemical known to the State of California to cause cancer under Proposition 65.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Petroleum distillates	Acute LC50 2200 µg/l Fresh water Acute LC50 2900 µg/l Fresh water	Fish - Lepomis macrochirus Fish - Oncorhynchus mykiss	4 days 96 hours

Persistence and degradability

Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-	-
Transport hazard class(es)	-	-	-	-
Packing group	-	-	-	-
Environmental hazards	No.	No.	No.	No.
Additional information	-	-	-	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

Section 14. Transport information

DOT Reportable Quantity Not applicable.

Marine pollutant Not available.

North-America NAERG : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: No products were found.
Clean Water Act (CWA) 311: No products were found.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Immediate (acute) health hazard

SARA 313

Supplier notification : No products were found.

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)

History

Date of printing : 1/15/2015.

Indicates information that has changed from previously issued version.

Notice to reader

NOTE: The information on this MSDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : TRETOLITE™ RBW517 WATER CLARIFIER
™ a trademark of Baker Hughes Incorporated.

Product code : RBW517

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Water clarifier.

Print date : 1/23/2015.

Validation date : 1/22/2015.

Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

Classification of the substance or mixture : Not classified.

GHS label elements

Signal word : No signal word.

Hazard statements : No known significant effects or critical hazards.

Precautionary statements

Prevention : Not applicable.

Response : Not applicable.

Storage : Not applicable.

Disposal : Not applicable.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Ammonium chloride	1 - 5	12125-02-9

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

Ingestion : Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides,sulfur oxides,halogenated compounds

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8).

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Ammonium chloride	US ACGIH OSHA PEL 1989	- -	10 10	- -	- -	20 20	- -	- -	- -	- -	[a]

Form: [a]Fume

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles.

Hand protection : Chemical-resistant gloves: Nitrile or Neoprene gloves. 4H gloves.

Skin protection : Wear long sleeves to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Milky.]

Color : White.

Odor : Mild.

Odor threshold : Not available.

pH : 3.5 to 4.5 [Conc. (% w/w): 100%]

: Neat - without dilution.

Melting/freezing point : -20°C (-4°F)

Boiling point : 120°C (248°F)

Initial Boiling Point : Not available.

Flash point : Closed cup: >93.4°C (>200.1°F)

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Slightly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : >1 [Air = 1]

Relative density : 1.15 to 1.21 (15.6°C)

Density : 9.633 to 10.079 (lbs/gal)

Solubility in water : Soluble

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

VOC : Not available.

Pour Point : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials and acids.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Ammonium chloride	LD50 Oral	Rat	1220 mg/kg	-
	LD50 Oral	Rat	1410 mg/kg	-
TRETOLITE™ RBW517 WATER CLARIFIER	LD50 Oral	Rat	>7500 mg/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

No applicable toxicity data

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Not applicable.

Specific target organ toxicity (repeated exposure)

Not applicable.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Dermal.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Section 11. Toxicological information

Acute toxicity estimates

Not available.

Additional information

Acrylamide is a component of this product. The major effects of chronic acrylamide exposure are on the nervous system. Exposure to acrylamide for a few days or weeks can produce lassitude (weariness), drowsiness, sleepiness, loss of concentration, nervousness, irritability, loss of body coordination, speech and language disturbances, jerking of the eye, and urinary retention (ACGIH, 1991). Peripheral neuropathy with primarily motor and proprioceptive disturbances (interruptions in the ability of the muscles, tendons, and other internal tissue to receive stimuli), may follow 2 to 3 weeks later (Igisu et al, 1975).

In chronic low-dose exposure, effects are predominantly sensorimotor (mixed bed fibers containing sensory and motor nerves) and proprioceptive neuropathies (interruptions in the nerves ability to receive stimuli) with loss of deep tendon reflexes, muscle weakness and wasting, distal extremity numbness, paresthesias (abnormal burning, pricking, tickling or tingling), foot drop, and persistent ataxia (Auld & Bedwell, 1967; Garland & Patterson, 1967; Fullerton, 1969; Satchell & McLeod, 1981). In severe cases, residual ataxia, loss of reflexes, distal extremity weakness, and sensory disturbances may remain (Donovan & Pearson, 1987; Fullerton, 1969). Persons exposed for more than 22 weeks showed little recovery in peripheral neural function (outer neurons) after one year (Cavigneaux & Cabasson, 1972; Kesson et al, 1977; He et al, 1989). Rats and hens exposed to 12, 25, or 50 mg/kg of acrylamide 3 times per week for 3 weeks developed ataxia (staggering gait). Both peripheral and central nervous system damage were seen in rats, while hens developed only peripheral nerve lesions (Jortner & Ehrich, 1993).

In a two year study in rats where acrylamide was administered in the drinking water, an increased incidence of scrotal mesotheliomas (a rare abnormal increase in tissue growth in the scrotum), central nervous system tumors, thyroid tumors and tumors at other sites were described.

Acrylamide has been reported to be genotoxic in many test systems. Acrylamide inhibited DNA synthesis in rat cells in vitro (RTECS, 1996). Acrylamide induced chromosome aberrations in mice in vivo, in mouse lymphocytes and hamster lung cells, and in cultured human lymphocytes (white blood cells) (RTECS, 1996; HSDB, 1996). Sister chromatid exchanges were seen in rats and mice in vivo, and in hamster lung cells (RTECS, 1996).

IARC has classified acrylamide as a Group 2A carcinogen [probable human carcinogen (human evidence is inadequate, animal evidence is sufficient)]. NTP has classified acrylamide as a suspect carcinogen, and OSHA has classified acrylamide as a Group 2A (possible select carcinogen), upgraded from a Group 2B, based on a study conducted in 1994. (LOLI)

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Ammonium chloride	Acute EC50 0.07 mg/l Marine water	Algae - Hormosira banksii	72 hours
	Acute EC50 0.1 mg/l Fresh water	Crustaceans - Cypris subglobosa	48 hours
	Acute LC50 390 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 80 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
	Chronic NOEC 0.6 mg/l Marine water	Algae - Entomoneis punctulata	72 hours
	Chronic NOEC 330 µg/l Fresh water	Crustaceans - Crangonyx sp.	21 days
	Chronic NOEC 19.66 mg/l Fresh water	Daphnia - Daphnia magna	21 days
	Chronic NOEC 0.006 mg/l Fresh water	Fish - Ictalurus punctatus	30 days
TRETOLITE™ RBW517 WATER CLARIFIER	Acute EC50 88 mg/l	Daphnia	48 hours
	Acute LC50 52 mg/l	Daphnia	96 hours
	Acute LC50 28 mg/l	Fish	96 hours
	Acute LC50 7.9 mg/l	Fish	96 hours

Section 12. Ecological information

Persistence and degradability

Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN3082	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Contains: Ammonium chloride)	-	-	-
Transport hazard class(es)	9 	-	-	-
Packing group	III	-	-	-
Environmental hazards	Yes.	No.	No.	No.
Additional information	**Remarks** This material is Not Regulated if transported in a package that does not meet or exceed the Reportable Quantity (RQ).	-	-	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 14. Transport information

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Ammonium chloride, 16910 gal of this product.

Marine pollutant Not available.

North-America NAERG : 171

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: No products were found.
Clean Water Act (CWA) 311: Ammonium chloride

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Not applicable.

SARA 313

	Product name	CAS number	%
Supplier notification	Ammonium sulfate Ammonium chloride	7783-20-2 12125-02-9	10 - 20 1 - 5

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)

History

Date of printing : 1/23/2015.

Indicates information that has changed from previously issued version.

Notice to reader

NOTE: The information on this MSDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

Section 16. Other information

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : TRETOLITE™ RBW611 WATER CLARIFIER
™ a trademark of Baker Hughes Incorporated.

Product code : RBW611

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Water clarifier.

Print date : 1/16/2015.

Validation date : 1/15/2015.

Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) [kidneys] - Category 2
AQUATIC HAZARD (ACUTE) - Category 3
AQUATIC HAZARD (LONG-TERM) - Category 3

GHS label elements

Hazard pictograms :

Signal word : Warning

Hazard statements : May cause damage to organs through prolonged or repeated exposure. (kidneys)
Harmful to aquatic life with long lasting effects.

Precautionary statements

Prevention : Avoid release to the environment. Do not breathe vapor.

Response : Get medical attention if you feel unwell.

Storage : Not applicable.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Section 2. Hazards identification

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Ethylene glycol	10 - 20	107-21-1
Aluminum chloride hydroxide	5 - 10	12042-91-0
Zinc chloride	0.1 - 1	7646-85-7

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Continue to rinse for at least 10 minutes. Check for and remove any contact lenses. Get medical attention following exposure or if feeling unwell.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention following exposure or if feeling unwell. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention following exposure or if feeling unwell. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention following exposure or if feeling unwell. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

Section 4. First aid measures

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides,halogenated compounds,metal oxide/ oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Section 6. Accidental release measures

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not breathe vapor or mist. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid release to the environment. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Ethylene glycol	US ACGIH	-	-	-	-	-	-	-	100	-	[a]
	OSHA PEL 1989	-	-	-	-	-	-	50	125	-	
Aluminum chloride hydroxide, as Al	OSHA PEL 1989	-	2	-	-	-	-	-	-	-	[A]
Zinc chloride	US ACGIH	-	1	-	-	2	-	-	-	-	[b]
	OSHA PEL	-	1	-	-	-	-	-	-	-	[b]
	OSHA PEL 1989	-	1	-	-	2	-	-	-	-	[b]

Form: [a]Aerosol [b]Fume
Notes: [A]as Al

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Section 8. Exposure controls/personal protection

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles.

Hand protection : Chemical-resistant gloves.

Skin protection : Wear long sleeves to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Clear.]

Color : Amber. [Dark]

Odor : Sweet. [Slight]

Odor threshold : Not available.

pH : 4.3 [Conc. (% w/w): 1%]

: Neat - without dilution.

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: >93.4°C (>200.1°F) [SFCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Slightly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : >1 [Air = 1]

Relative density : 1.1336 (15.6°C)

Density : 9.44 (lbs/gal)

Solubility in water : Soluble

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Dynamic (15.6°C): 13 cP

VOC : Not available.

Pour Point : -31.1°C (-24°F)

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials.
Slightly reactive or incompatible with the following materials: acids.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Ethylene glycol	LD50 Oral	Rat	4700 mg/kg	-
Aluminum chloride hydroxide	LD50 Dermal	Rabbit	>2000 mg/kg	-
	LD50 Oral	Rat	9187 mg/kg	-
Zinc chloride	LD50 Oral	Rat	350 mg/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

No applicable toxicity data

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Not applicable.

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Ethylene glycol	Category 2	Not determined	kidneys

Aspiration hazard

Not available.

Section 11. Toxicological information

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : May cause damage to organs through prolonged or repeated exposure.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	4783.8 mg/kg

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Ethylene glycol	Acute LC50 100000 µg/l Marine water	Crustaceans - Crangon crangon	48 hours
	Acute LC50 10000000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 8050000 µg/l Fresh water	Fish - Pimephales promelas	96 hours
Aluminum chloride hydroxide	Acute LC50 100 to 500 mg/l	Fish	48 hours

Persistence and degradability

Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues.

Section 13. Disposal considerations

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN3082	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S. (Contains: Ethylene glycol)	-	-	-
Transport hazard class(es)	9 	-	-	-
Packing group	III	-	-	-
Environmental hazards	Yes.	No.	No.	No.
Additional information	**Remarks** This material is Not Regulated if transported in a package that does not meet or exceed the Reportable Quantity (RQ).	-	-	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Ethylene glycol, 5068 gal of this product.

Marine pollutant Not available.

North-America NAERG : 171

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: zinc chloride
Clean Water Act (CWA) 311: zinc chloride; Acetic acid

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Delayed (chronic) health hazard

SARA 313

	Product name	CAS number	%
Supplier notification	Ethylene glycol	107-21-1	10 - 20

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)

History

Date of printing : 1/16/2015.

Indicates information that has changed from previously issued version.

Notice to reader

NOTE: The information on this MSDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : TRETOLITE™ RBW777W WATER CLARIFIER
™ a trademark of Baker Hughes Incorporated.

Product code : RBW777W

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Not available.

Print date : 1/16/2015.

Validation date : 1/14/2015.

Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : ACUTE TOXICITY: ORAL - Category 4
SKIN CORROSION/IRRITATION - Category 1
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
AQUATIC HAZARD (ACUTE) - Category 1
AQUATIC HAZARD (LONG-TERM) - Category 1

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Harmful if swallowed.
Causes severe skin burns and eye damage.
Very toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention : Wear protective gloves. Wear eye or face protection. Wear protective clothing. Avoid release to the environment. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling.

Section 2. Hazards identification

Response : Collect spillage. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.

Storage : Store locked up.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Zinc chloride	40 - 50	7646-85-7
Acetic acid	1 - 5	64-19-7

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Get medical attention immediately. Call a poison center or physician. Immediately flush the eye(s) continuously with lukewarm, gently flowing water for at least 20-60 minutes while holding the eyelid(s) open. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician.

Inhalation : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Get medical attention immediately. Call a poison center or physician. Wash affected area with soap and mild detergent for at least 20 - 60 minutes. Wash contaminated skin with soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Section 4. First aid measures

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : Causes severe burns.

Ingestion : Harmful if swallowed. May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain,watering,redness

Inhalation : No specific data.

Skin contact : pain or irritation,redness,blistering may occur

Ingestion : stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst. This material is very toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides,halogenated compounds

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). The spilled material may be neutralized with sodium carbonate, sodium bicarbonate or sodium hydroxide. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Avoid release to the environment. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Keep away from alkalis. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Separate from alkalis. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	**List name**	**ppm**	**mg/m³**	**Other**	**ppm**	**mg/m³**	**Other**	**ppm**	**mg/m³**	**Other**	**Notations**
Zinc chloride	US ACGIH	-	1	-	-	2	-	-	-	-	[a]
	OSHA PEL	-	1	-	-	-	-	-	-	-	[a]
	OSHA PEL 1989	-	1	-	-	2	-	-	-	-	[a]
Acetic acid	US ACGIH	10	25	-	15	37	-	-	-	-	
	OSHA PEL	10	25	-	-	-	-	-	-	-	
	OSHA PEL 1989	10	25	-	-	-	-	-	-	-	

Form: [a]Fume

Consult local authorities for acceptable exposure limits.
Only components of this product with established exposure limits appear in the box above.
If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles. If inhalation hazards exist, a full-face respirator may be required instead.

Hand protection : Chemical-resistant gloves.

Skin protection : Wear long sleeves and chemical resistant apron to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Clear to hazy.]

Color : Yellow to amber.

Odor : Acid. Mild.

Odor threshold : Not available.

pH : 0.8 to 1.2

: 5% of product in 75% isopropanol / 25% water solution

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: >93.4°C (>200.1°F) [SFCC]

Burning time : Not applicable.

Section 9. Physical and chemical properties

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Slightly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : >1 [Air = 1]

Relative density : 1.594 (15.6°C)

Density : 13.28 (lbs/gal)

Solubility in water : Not available.

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

VOC : Not available.

Pour Point : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials, organic materials and alkalis.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Zinc chloride Acetic acid	LD50 Oral LC50 Inhalation Vapor LD50 Dermal LD50 Oral	Rat Rat Rabbit Rat	350 mg/kg 11000 mg/m³ 1060 mg/kg 3310 mg/kg	- 4 hours - -

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Section 11. Toxicological information

Mutagenicity

No applicable toxicity data

Carcinogenicity

No applicable toxicity data

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Not applicable.

Specific target organ toxicity (repeated exposure)

Not applicable.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	728.7 mg/kg

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Zinc chloride	Acute EC50 26 µg/l	Algae - Navicula incerta	96 hours
	Acute EC50 34 µg/l Fresh water	Algae - Chlorella vulgaris - Exponential growth phase	72 hours
	Acute EC50 1.8 mg/l Fresh water	Aquatic plants - Lemna aequinoctialis	96 hours
	Acute EC50 100 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 49.99 µg/l Fresh water	Crustaceans - Moina irrasa - Neonate	48 hours
	Acute LC50 0.027 mg/l Marine water	Fish - Limanda punctatissima - Pre-larvae	96 hours
	Chronic NOEC 0.02 mg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
	Chronic NOEC 1000 µg/l Fresh water	Crustaceans - Procambarus clarkii - Intermolt	21 days
	Chronic NOEC 80 µg/l Fresh water	Daphnia - Daphnia magna - Juvenile (Fledgling, Hatchling, Weanling)	21 days
	Chronic NOEC 31.5 µg/l Fresh water	Fish - Oncorhynchus mykiss	30 days
Acetic acid	Acute EC50 73400 µg/l Fresh water	Algae - Navicula seminulum	96 hours
	Acute EC50 65000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 50.1 ul/L Marine water	Crustaceans - Artemia sp.	48 hours
	Acute LC50 75000 µg/l Fresh water	Fish - Lepomis macrochirus	96 hours

Persistence and degradability

Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN1760	UN1760	UN1760	UN1760
UN proper shipping name	CORROSIVE LIQUID, N.O.S. (Contains: Zinc chloride, Acetic acid)	CORROSIVE LIQUID, N.O.S. (Contains: Zinc chloride, Acetic acid)	CORROSIVE LIQUID, N.O.S. (Contains: Zinc chloride, Acetic acid)	CORROSIVE LIQUID, N.O.S. (Contains: Zinc chloride, Acetic acid)
Transport hazard class(es)	8 	8 	8 	8 
Packing group	III	III	III	III
Environmental hazards	Yes.	Yes.	Yes.	No.
Additional information	-	-	-	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Zinc chloride, 159 gal of this product.
Acetic acid, 7530 gal of this product.

Marine pollutant Zinc chloride

North-America NAERG : 1

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: zinc chloride
Clean Water Act (CWA) 311: zinc chloride; Acetic acid

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

SARA 302/304 : No products were found.

SARA 311/312
Classification : Immediate (acute) health hazard

SARA 313

Section 15. Regulatory information

	Product name	CAS number	%
Supplier notification	Zinc chloride	7646-85-7	40 - 50

Canada

Canada (CEPA DSL): : At least one component is not listed in DSL but all such components are listed in NDSL.

Section 16. Other information

National Fire Protection Association (U.S.A.)

History

Date of printing : 1/16/2015.

Indicates information that has changed from previously issued version.

Notice to reader

NOTE: The information on this MSDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : WAW4000 WETTING AGENT

Product code : WAW4000

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Wetting agent.

Print date : 2/3/2015.

Validation date : 2/3/2015.

Version : 2

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : ACUTE TOXICITY: ORAL - Category 4
SKIN CORROSION/IRRITATION - Category 1C
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
AQUATIC HAZARD (ACUTE) - Category 2
AQUATIC HAZARD (LONG-TERM) - Category 3

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Harmful if swallowed.
Causes severe skin burns and eye damage.
Toxic to aquatic life.
Harmful to aquatic life with long lasting effects.

Precautionary statements

Prevention : Wear protective gloves. Wear eye or face protection. Wear protective clothing. Avoid release to the environment. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling.

Section 2. Hazards identification

Response : IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.

Storage : Store locked up.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Polyoxyalkylene	20 - 30	Trade secret.
Acetic acid	20 - 30	64-19-7

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Get medical attention immediately. Call a poison center or physician. Immediately flush the eye(s) continuously with lukewarm, gently flowing water for at least 20-60 minutes while holding the eyelid(s) open. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician.

Inhalation : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Get medical attention immediately. Call a poison center or physician. Wash affected area with soap and mild detergent for at least 20 - 60 minutes. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Section 4. First aid measures

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system.

Skin contact : Causes severe burns.

Ingestion : Harmful if swallowed. May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain,watering,redness

Inhalation : No specific data.

Skin contact : pain or irritation,redness,blistering may occur

Ingestion : stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst. This material is toxic to aquatic life. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Avoid release to the environment. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Acetic acid	US ACGIH OSHA PEL OSHA PEL 1989	10 10 10	25 25 25	- - -	15 - -	37 - -	- - -	- - -	- - -	- - -	

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles. If inhalation hazards exist, a full-face respirator may be required instead.

Hand protection : Chemical-resistant gloves.

Skin protection : Wear long sleeves and chemical resistant apron to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid.

Color : Colorless.

Odor : Vinegar-like. [Slight]

Odor threshold : Not available.

pH : 2 to 3

: 5% in water

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: >93.4°C (>200.1°F) [SFCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Section 9. Physical and chemical properties

Flammability (solid, gas) : Slightly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : >1 [Air = 1]

Relative density : 1.04 (15.6°C)

Density : 8.67 (lbs/gal)

Solubility in water : Soluble

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

VOC : Not available.

Pour Point : -16.11°C (3°F)

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials, organic materials and alkalis.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Polyoxyalkylene	LD50 Dermal	Rabbit	>2000 mg/kg	-
	LD50 Oral	Rat	2140 mg/kg	-
Acetic acid	LC50 Inhalation Vapor	Rat	11000 mg/m³	4 hours
	LD50 Dermal	Rabbit	1060 mg/kg	-
	LD50 Oral	Rat	3310 mg/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

Section 11. Toxicological information

No applicable toxicity data

Carcinogenicity

No applicable toxicity data

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Not applicable.

Specific target organ toxicity (repeated exposure)

Not applicable.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	1480.3 mg/kg

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Acetic acid	Acute EC50 73400 µg/l Fresh water Acute EC50 65000 µg/l Fresh water Acute LC50 50.1 ul/L Marine water Acute LC50 75000 µg/l Fresh water	Algae - Navicula seminulum Daphnia - Daphnia magna Crustaceans - Artemia sp. Fish - Lepomis macrochirus	96 hours 48 hours 48 hours 96 hours

Section 12. Ecological information

Persistence and degradability

Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN3265	UN3265	UN3265	UN3265
UN proper shipping name	CORROSIVE LIQUID, ACIDIC, ORGANIC, N. O.S. (Contains: Acetic acid)	CORROSIVE LIQUID, ACIDIC, ORGANIC, N. O.S. (Contains: Acetic acid)	CORROSIVE LIQUID, ACIDIC, ORGANIC, N. O.S. (Contains: Acetic acid)	CORROSIVE LIQUID, ACIDIC, ORGANIC, N. O.S. (Contains: Acetic acid)
Transport hazard class(es)	8 	8 	8 	8 
Packing group	III	III	III	III
Environmental hazards	Yes.	Yes.	Yes.	No.
Additional information	-	-	**Emergency schedules (EmS)** F-A S-B	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Acetic acid, 2307 gal of this product.

Section 14. Transport information

Marine pollutant Polyoxyalkylene

North-America NAERG : 153

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: No products were found.
Clean Water Act (CWA) 311: Acetic acid

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Immediate (acute) health hazard

SARA 313

Supplier notification : No products were found.

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)

History

Date of printing : 2/3/2015.

Indicates information that has changed from previously issued version.

Notice to reader

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