

SAFETY DATA SHEET

Product Trade Name: MC MX 2-3498

Revision Date: 04-May-2016

Revision Number: 2

1. Identification

1.1. Product Identifier

Product Trade Name: MC MX 2-3498
Synonyms: None
Chemical Family: Blend
Internal ID Code: MC003503

1.2 Recommended use and restrictions on use

Application: Iron Sulfide Dissolver
Uses advised against: Consumer use

1.3 Manufacturer's Name and Contact Details

Manufacturer/Supplier

Multi-Chem Group LLC
 424 S Chadbourne St, San Angelo, TX 76903
 Phone: 1 325 223 6200
 Emergency Phone Number: 1-866-519-4752 (US, Canada, Mexico) or 1-760-476-3962

Halliburton Energy Services
 645 - 7th Ave SW Suite 1800
 Calgary, AB
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 Canada

Prepared By: Chemical Stewardship
 Telephone: 1-281-871-6107
 e-mail: fdunexchem@halliburton.com

1.4. Emergency telephone number

Emergency Telephone Number: 1-866-519-4752 or 1-760-476-3962

2. Hazard(s) Identification

2.1 Classification in accordance with paragraph (d) of §1910.1200

Acute Oral Toxicity	Category 4 - H302
Acute inhalation toxicity - vapor	Category 4 - H332
Skin Corrosion / Irritation	Category 2 - H315
Serious Eye Damage/Irritation	Category 1 - H318
Skin Sensitization	Category 1 - H317
Reproductive Toxicity	Category 1B - H360
Specific Target Organ Toxicity - (Single Exposure)	Category 1 - H370
Specific Target Organ Toxicity - (Repeated Exposure)	Category 1 - H372

Acute Aquatic Toxicity	Category 2 - H401
Chronic Aquatic Toxicity	Category 2 - H411
Flammable liquids.	Category 3 - H226

2.2. Label Elements

Hazard pictograms



Signal Word:

Danger

Hazard Statements

H226 - Flammable liquid and vapor
 H302 - Harmful if swallowed
 H315 - Causes skin irritation
 H317 - May cause an allergic skin reaction
 H318 - Causes serious eye damage
 H332 - Harmful if inhaled
 H360 - May damage fertility or the unborn child
 H370 - Causes damage to organs
 H372 - Causes damage to organs through prolonged or repeated exposure
 H401 - Toxic to aquatic life
 H411 - Toxic to aquatic life with long lasting effects

Precautionary Statements

Prevention

P201 - Obtain special instructions before use
 P202 - Do not handle until all safety precautions have been read and understood
 P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking
 P233 - Keep container tightly closed
 P240 - Ground/Bond container and receiving equipment
 P241 - Use explosion-proof electrical/ventilating/lighting/equipment
 P242 - Use only non-sparking tools
 P243 - Take precautionary measures against static discharge
 P260 - Do not breathe dust/fume/gas/mist/vapors/spray
 P264 - Wash face, hands and any exposed skin thoroughly after handling
 P270 - Do not eat, drink or smoke when using this product
 P271 - Use only outdoors or in a well-ventilated area
 P272 - Contaminated work clothing should not be allowed out of the workplace
 P273 - Avoid release to the environment

Response

P280 - Wear protective gloves/protective clothing/eye protection/face protection
 P301+ P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
 P301+ P330 + P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting
 P302 + P352 - IF ON SKIN: Wash with plenty of soap and water
 P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower

	P362 - Take off contaminated clothing and wash before reuse
	P304 + P340 - IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing
	P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
	P310 - Immediately call a POISON CENTER or doctor/physician
	P370 + P378 - In case of fire: Use CO2, dry chemical, or foam
	P391 - Collect spillage
Storage	P403 + P235 - Store in a well-ventilated place. Keep cool
	P405 - Store locked up
Disposal	P501 - Dispose of contents/container in accordance with local/regional/national/international regulations

2.3 Hazards not otherwise classified

None known

3. Composition/information on Ingredients

Substances	CAS Number	PERCENT (w/w)	GHS Classification - US
Phosphonium, tetrakis(hydroxymethyl)-, sulfate (2:1)	55566-30-8	10 - 30%	Acute Tox. 3 (H301) Acute Tox. 3 (H331) Eye Corr. 1 (H318) Skin Sens. 1 (H317) Repr. 2 (H361) STOT RE 2 (H373) Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410)
Methanol	67-56-1	10 - 30%	Acute Tox. 3 (H301) Acute Tox. 3 (H311) Acute Tox. 3 (H331) Repr. 1B (H360) STOT SE 1 (H370) Flam. Liq. 2 (H225)
Ethylene glycol	107-21-1	5 - 10%	Acute Tox. 4 (H302) STOT RE 1 (H372)
Morpholine process residues	Proprietary	5 - 10%	Skin Irrit. 2 (H315) Eye Corr. 1 (H318) Skin Sens. 1 (H317)
Ethoxylated alcohols	Proprietary	1 - 5%	Acute Tox. 4 (H302) Skin Irrit. 2 (H315) Eye Corr. 1 (H318) Aquatic Acute 1 (H400) Aquatic Chronic 3 (H412)
Thioglycolic acid	68-11-1	1 - 5%	Acute Tox. 3 (H301) Acute Tox. 3 (H311) Acute Tox. 4 (H332) Skin Corr. 1B (H314) Eye Corr. 1 (H318) STOT SE 3 (H335) Aquatic Acute 3 (H402)
Ammonium chloride	12125-02-9	1 - 5%	Acute Tox. 4 (H302) Eye Irrit. 2 (H319) Aquatic Acute 3 (H402)
Complex Fatty-Acid Compounds	Proprietary	1 - 5%	Skin Corr. 1C (H314) Eye Corr. 1 (H318) STOT SE 3 (H335)

The specific chemical identity of the composition has been withheld as proprietary. The exact percentage

(concentration) of the composition has been withheld as proprietary.

4. First-Aid Measures

4.1. Description of first aid measures

Inhalation	Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Seek immediate medical attention/advice.
Eyes	In case of contact, immediately flush eyes with plenty of water for at least 30 minutes. Remove contact lenses after the first 5 minutes and continue washing. Seek immediate medical attention/advice. Suitable emergency eye wash facility should be immediately available
Skin	In case of contact, immediately flush skin with plenty of soap and water for at least 15 minutes. Get medical attention.
Ingestion	Following ingestion, onset of symptoms may be delayed by 12 to 24 hours. Admission to hospital should be the first priority even if symptoms are absent. Do NOT induce vomiting. Rinse mouth. Never give anything by mouth to an unconscious person. Obtain immediate medical attention.

4.2 Most important symptoms/effects, acute and delayed

Harmful if swallowed. Harmful if inhaled. Causes skin irritation. Causes severe eye irritation which may damage tissue. May cause allergic skin reaction. Potential reproductive hazard. May cause birth defects. May cause damage to internal organs. Prolonged or repeated exposure may cause damage to organs.

4.3. Indication of any immediate medical attention and special treatment needed

Notes to Physician	Gastric lavage or emesis should be performed as soon as possible to minimize absorption, and is recommended within 4 hours of ingestion. Ethanol may be given intravenously to prevent build-up of toxic effects of methanol metabolites. Visual disturbances and metabolic acidosis may occur and dialysis, preferably hemodialysis may be employed to treat these complications.
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5. Fire-fighting measures

5.1. Extinguishing media

Suitable Extinguishing Media

Water fog, carbon dioxide, foam, dry chemical.

Extinguishing media which must not be used for safety reasons

Do NOT spray pool fires directly with water. A solid stream of water directed into hot burning liquid can cause splattering.

5.2 Specific hazards arising from the substance or mixture

Special exposure hazards in a fire

Decomposition in fire may produce harmful gases.

5.3 Special protective equipment and precautions for fire-fighters

Special protective equipment for firefighters

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation. Use appropriate protective equipment. Do not breathe dust/fume/gas/mist/vapors/spray. Remove sources of ignition. Take precautionary measures against static discharges All equipment used when handling the product must be grounded Avoid contact with skin, eyes and clothing. See Section 8 for additional information

6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas.

6.3. Methods and material for containment and cleaning up

Dike far ahead of liquid spill for later disposal. Soak up with inert absorbent material. Pick up and transfer to properly labeled containers. Remove ignition sources and work with non-sparking tools.

7. Handling and storage

7.1. Precautions for safe handling

Handling Precautions

Do not breathe dust/fume/gas/mist/vapors/spray. Ensure adequate ventilation. Use appropriate protective equipment. Remove sources of ignition. Ground and bond containers when transferring from one container to another. Avoid contact with eyes, skin, or clothing.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Storage Information

Store in a cool well ventilated area. Keep from heat, sparks, and open flames.

8. Exposure Controls/Personal Protection

8.1 Occupational Exposure Limits

Substances	CAS Number	OSHA PEL-TWA	ACGIH TLV-TWA
Phosphonium, tetrakis(hydroxymethyl)-, sulfate (2:1)	55566-30-8	2.00 mg/m ³	2 mg/m ³
Methanol	67-56-1	TWA: 200 ppm	TWA: 200 ppm STEL: 250 ppm
Ethylene glycol	107-21-1	Ceiling: 50 ppm	Ceiling: 100 mg/m ³ (aerosol only)
Morpholine process residues	Proprietary	Not applicable	Not applicable
Ethoxylated alcohols	Proprietary	Not applicable	Not applicable
Thioglycolic acid	68-11-1	Not applicable	TWA: 1 ppm
Ammonium chloride	12125-02-9	Not applicable	TWA: 10 mg/m ³ STEL: 20 mg/m ³
Complex Fatty-Acid Compounds	Proprietary	Not applicable	Not applicable

8.2 Appropriate engineering controls

Engineering Controls

Ensure adequate ventilation, especially in confined areas

8.3 Individual protection measures, such as personal protective equipment

Personal Protective Equipment

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

Respiratory Protection

If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional.

Hand Protection

Use gloves which are suitable for the chemicals present in this product as well as other environmental factors in the workplace.

Skin Protection

Wear impervious protective clothing, including boots, gloves, lab coat, apron, rain

Eye Protection	jacket, pants or coverall, as appropriate, to prevent skin contact. Safety glasses with side-shields. If splashes are likely to occur, wear: Goggles, Face-shield.
Other Precautions	Eyewash fountains and safety showers must be easily accessible.

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State: Liquid	Color	Dark amber to Black , Clear to Slightly Hazy
Odor: Mild	Odor Threshold:	No information available

<u>Property</u> <u>Remarks/ - Method</u>	<u>Values</u>
pH:	3.86-4.86 (10% in 1:1 IPA:H2O)
Freezing Point / Range	-34.4 °C / -30 °F
Melting Point / Range	No data available
Boiling Point / Range	No data available
Flash Point	34.6 °C / 94.3 °F (SFCC)
Flammability (solid, gas)	No data available
Upper flammability limit	No data available
Lower flammability limit	No data available
Evaporation rate	No data available
Vapor Pressure	No data available
Vapor Density	No data available
Specific Gravity	1.0859-1.1109
Water Solubility	Soluble in water
Solubility in other solvents	No data available
Partition coefficient: n-octanol/water	No data available
Autoignition Temperature	No data available
Decomposition Temperature	No data available
Viscosity	No data available
Explosive Properties	No information available
Oxidizing Properties	No information available

9.2. Other information

VOC Content (%)	No data available
Liquid Density	9.05-9.26 lbs/gal

10. Stability and Reactivity

10.1. Reactivity

Not expected to be reactive.

10.2. Chemical stability

Stable

10.3. Possibility of hazardous reactions

Will Not Occur

10.4. Conditions to avoid

Keep away from heat, sparks and flame.

10.5. Incompatible materials

Strong oxidizers. Strong acids. Strong alkalis.

10.6. Hazardous decomposition products

Carbon oxides. Oxides of nitrogen. Oxides of phosphorus. Oxides of sulfur. Hydrogen chloride gas

11. Toxicological Information

11.1 Information on likely routes of exposure

Principle Route of Exposure Ingestion. Eye contact. Inhalation. Skin contact.

11.2 Symptoms related to the physical, chemical and toxicological characteristics

Acute Toxicity

Inhalation

May cause central nervous system depression including headache, dizziness, drowsiness, incoordination, slowed reaction time, slurred speech, giddiness and unconsciousness. Harmful if inhaled.

Eye Contact

Causes serious eye damage.

Skin Contact

Causes skin irritation. May cause an allergic skin reaction.

Ingestion

Ingestion of this product may cause blindness due to the presence of methanol. Harmful if swallowed.

Chronic Effects/Carcinogenicity May cause birth defects. Contains known or suspected reproductive toxins. Causes damage to organs through prolonged or repeated exposure.

11.3 Toxicity data

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Phosphonium, tetrakis(hydroxymethyl)-, sulfate (2:1)	55566-30-8	248 mg/kg (Rat) 575 mg/kg (Rat)	> 4084 mg/kg (Rabbit) >2000 mg/kg (Rat)	0.5895 mg/L (Rat) 4h (average) 0.59 mg/L (Rat) 4h (mist)
Methanol	67-56-1	300 mg/kg-bw (human) < 790 to 13,000 mg/kg (rat)	1000 mg/kg-bw (human) 17,100 mg/kg (rabbit)	10 mg/L (human, vapor, 4h)
Ethylene glycol	107-21-1	4000 mg/kg (Rat) 7712 mg/kg (Rat) > 10000 mg/kg (Rat) 1670 mg/kg (Cat) 1400 – 1600 mg/kg (Human)	9530 µL/kg (Rabbit) > 3500 mg/kg (Mouse)	> 2.5 mg/L (Rat) 6h (saturated concentration)
Morpholine process residues	Proprietary	3816 mg/kg-bw (rat)	> 2000 mg/kg (Rat)	No toxicity at saturation (rat, 8 h, vapour)
Ethoxylated alcohols	Proprietary	1600 mg/kg	No data available	No data available
Thioglycolic acid	68-11-1	73 mg/kg (Rat)	848 mg/kg (Rabbit)	0.21 mg/L (Rat) 4h 1.388 mg/L (Rat) 4h
Ammonium chloride	12125-02-9	1410 mg/kg (Rat) 1220 mg/kg (Rat) 1630 mg/kg (Rat) 1300 mg/kg (Mouse)	> 2000 mg/kg (Rat)	No data available
Complex Fatty-Acid Compounds	Proprietary	>4000 mg/kg (Rat)	No data available	No data available

Substances	CAS Number	Skin corrosion/irritation
Phosphonium, tetrakis(hydroxymethyl)-, sulfate (2:1)	55566-30-8	No data of sufficient quality are available.
Methanol	67-56-1	Non-irritating to the skin (Rabbit)
Ethylene glycol	107-21-1	Non-irritating to the skin (Rabbit)
Morpholine process residues	Proprietary	Causes moderate skin irritation. (Rabbit) Skin, rabbit:
Ethoxylated alcohols	Proprietary	Causes skin irritation.
Thioglycolic acid	68-11-1	Corrosive to skin
Ammonium chloride	12125-02-9	Non-irritating to the skin (Rabbit)
Complex Fatty-Acid Compounds	Proprietary	Causes severe skin irritation with tissue destruction.

Substances	CAS Number	Serious eye damage/irritation
Phosphonium,	55566-30-8	Causes severe eye irritation

tetrakis(hydroxymethyl)-, sulfate (2:1)		
Methanol	67-56-1	Non-irritating to the eye (Rabbit)
Ethylene glycol	107-21-1	Non-irritating to the eye (Rabbit)
Morpholine process residues	Proprietary	Causes eye burns Causes severe eye irritation. Will damage tissue.
Ethoxylated alcohols	Proprietary	Causes severe eye irritation which may damage tissue.
Thioglycolic acid	68-11-1	Corrosive to eyes
Ammonium chloride	12125-02-9	Causes moderate eye irritation (Rabbit)
Complex Fatty-Acid Compounds	Proprietary	Causes severe eye irritation. Will damage tissue.

Substances	CAS Number	Skin Sensitization
Phosphonium, tetrakis(hydroxymethyl)-, sulfate (2:1)	55566-30-8	Shown to be strong sensitizer in animal (guinea pig) studies.
Methanol	67-56-1	Did not cause sensitization on laboratory animals (guinea pig)
Ethylene glycol	107-21-1	Did not cause sensitization on laboratory animals (guinea pig) Patch test on human volunteers did not demonstrate sensitization properties
Morpholine process residues	Proprietary	May cause sensitization by skin contact (mouse)
Ethoxylated alcohols	Proprietary	Did not cause sensitization on laboratory animals
Thioglycolic acid	68-11-1	Not regarded as a sensitizer.
Ammonium chloride	12125-02-9	Did not cause sensitization on laboratory animals (guinea pig)
Complex Fatty-Acid Compounds	Proprietary	As a precaution the product should be treated as a sensitizer

Substances	CAS Number	Respiratory Sensitization
Phosphonium, tetrakis(hydroxymethyl)-, sulfate (2:1)	55566-30-8	No information available
Methanol	67-56-1	No information available
Ethylene glycol	107-21-1	No information available
Morpholine process residues	Proprietary	No information available
Ethoxylated alcohols	Proprietary	No information available
Thioglycolic acid	68-11-1	No information available
Ammonium chloride	12125-02-9	No information available
Complex Fatty-Acid Compounds	Proprietary	No information available

Substances	CAS Number	Mutagenic Effects
Phosphonium, tetrakis(hydroxymethyl)-, sulfate (2:1)	55566-30-8	While some in vitro tests were positive and/or equivocal, in vivo results were negative. (similar substances)
Methanol	67-56-1	The weight of evidence from available in vitro and in vivo studies indicates that this substance is not expected to be mutagenic.
Ethylene glycol	107-21-1	In vitro tests did not show mutagenic effects. In vivo tests did not show mutagenic effects.
Morpholine process residues	Proprietary	In vitro tests did not show mutagenic effects. In vivo tests did not show mutagenic effects.
Ethoxylated alcohols	Proprietary	Not regarded as mutagenic.
Thioglycolic acid	68-11-1	In vitro tests did not show mutagenic effects. In vivo tests did not show mutagenic effects.
Ammonium chloride	12125-02-9	Not regarded as mutagenic.
Complex Fatty-Acid Compounds	Proprietary	No information available

Substances	CAS Number	Carcinogenic Effects
Phosphonium, tetrakis(hydroxymethyl)-, sulfate (2:1)	55566-30-8	Not regarded as carcinogenic.
Methanol	67-56-1	No data of sufficient quality are available.
Ethylene glycol	107-21-1	Did not show carcinogenic effects in animal experiments
Morpholine process residues	Proprietary	No information available
Ethoxylated alcohols	Proprietary	Not regarded as carcinogenic.
Thioglycolic acid	68-11-1	Did not show carcinogenic effects in animal experiments
Ammonium chloride	12125-02-9	Did not show carcinogenic effects in animal experiments
Complex Fatty-Acid Compounds	Proprietary	No information available

Substances	CAS Number	Reproductive toxicity
Phosphonium,	55566-30-8	Adverse developmental effects were only observed at maternally toxic doses.

tetrakis(hydroxymethyl)-, sulfate (2:1)		
Methanol	67-56-1	Experiments have shown reproductive toxicity effects on laboratory animals
Ethylene glycol	107-21-1	Fetotoxic and teratogenic effects observed in experimental animals at concentrations that did not produce maternal toxicity.
Morpholine process residues	Proprietary	Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments.
Ethoxylated alcohols	Proprietary	Not regarded as a reproductive and developmental toxicant.
Thioglycolic acid	68-11-1	Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments.
Ammonium chloride	12125-02-9	Did not show teratogenic effects in animal experiments. Animal testing did not show any effects on fertility. (similar substances)
Complex Fatty-Acid Compounds	Proprietary	No information available

Substances	CAS Number	STOT - single exposure
Phosphonium, tetrakis(hydroxymethyl)-, sulfate (2:1)	55566-30-8	No data of sufficient quality are available.
Methanol	67-56-1	May cause disorder and damage to the Central Nervous System (CNS)
Ethylene glycol	107-21-1	No significant toxicity observed in animal studies at concentration requiring classification.
Morpholine process residues	Proprietary	No significant toxicity observed in animal studies at concentration requiring classification.
Ethoxylated alcohols	Proprietary	No significant toxicity observed in animal studies at concentration requiring classification.
Thioglycolic acid	68-11-1	May cause respiratory irritation.
Ammonium chloride	12125-02-9	No information available
Complex Fatty-Acid Compounds	Proprietary	No information available

Substances	CAS Number	STOT - repeated exposure
Phosphonium, tetrakis(hydroxymethyl)-, sulfate (2:1)	55566-30-8	May cause disorder and damage to the (Liver)
Methanol	67-56-1	No data of sufficient quality are available.
Ethylene glycol	107-21-1	Causes damage to organs through prolonged or repeated exposure: (Kidney)
Morpholine process residues	Proprietary	No significant toxicity observed in animal studies at concentration requiring classification.
Ethoxylated alcohols	Proprietary	No significant toxicity observed in animal studies at concentration requiring classification.
Thioglycolic acid	68-11-1	Not applicable due to corrosivity of the substance.
Ammonium chloride	12125-02-9	No significant toxicity observed in animal studies at concentration requiring classification.
Complex Fatty-Acid Compounds	Proprietary	No information available

Substances	CAS Number	Aspiration hazard
Phosphonium, tetrakis(hydroxymethyl)-, sulfate (2:1)	55566-30-8	Not applicable
Methanol	67-56-1	Not applicable
Ethylene glycol	107-21-1	No information available
Morpholine process residues	Proprietary	Not applicable
Ethoxylated alcohols	Proprietary	Not applicable
Thioglycolic acid	68-11-1	Not applicable
Ammonium chloride	12125-02-9	Not applicable
Complex Fatty-Acid Compounds	Proprietary	Not applicable

12. Ecological Information

12.1. Toxicity

Ecotoxicity effects

Toxic to aquatic life. Toxic to aquatic life with long lasting effects.

Product Ecotoxicity Data

No data available

Substance Ecotoxicity Data

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates

Phosphonium, tetrakis(hydroxymethyl)-, sulfate (2:1)	55566-30-8	EC50 (72h) 0.47 mg/L (Skeletonema costatum)	LC50 (96h) 94 mg/L (Oncorhynchus mykiss) LC50 (96h) 97 mg/L (Lepomis macrochirus)	No information available	LC50 (48h) 0.39 mg/L (Acartia tonsa) EC50 (48h) 15 mg/L (Daphnia magna)
Methanol	67-56-1	EC50 (96 h) =22000 mg/L (Pseudokirchnerella subcapitata) NOEC (8 d) =8000 mg/L (Scenedesmus quadricauda)	LC50 (96 h) =15400 mg/L (Lepomis macrochirus) EC50 (200 h) =14536 mg/L (Oryzias latipes)	IC50 (3h) > 1000 mg/L (activated sludge)	EC50 (96 h) =18260 mg/L (Daphnia magna) NOEC (21 d) =208 mg/L (Daphnia magna)
Ethylene glycol	107-21-1	EC50 6500 - 13000 mg/L (Pseudokirchnerella subcapitata) TGK (8d) > 10000 mg/L (Scenedesmus quadricauda)	LC50 41000 mg/L (Oncorhynchus mykiss) LC50 (96h) 72860 mg/L (Pimephales promelas) NOEC (7d) 15380 mg/L (mortality) (Pimephales promelas)	TTC (16h) > 10000 mg/L (Pseudomonas putida) EC20 (30 m) > 1995 mg/L (activated sludge, domestic) (similar substance)	EC50 46300 mg/L (Daphnia magna) EC50 (48h) >100 mg/L (Daphnia magna) NOEC (7d) 8590 mg/L (reproduction) (Ceriodaphnia dubia)
Morpholine process residues	Proprietary	EC50 (72 h) =100 mg/L (Skeletonema costatum) EC50 (72 h) >120 mg/L (Desmodesmus subspicatus) NOEC (72 h) >120 mg/L (Desmodesmus subspicatus)	LC50 (96 h) >100 mg/L (Scophthalmus maximus) LC50 (96 h) =681.1 mg/L (Leuciscus idus)	EC50 (3h) > 1000 mg/L (activated sludge)	LC50 (48 h) =287.2 mg/L (Acartia tonsa) EC50 (48 h) >120 mg/L (Daphnia Magna)
Ethoxylated alcohols	Proprietary	EC50 0.7 mg/L (Selenastrum capricornutum)	No information available	No information available	0.39 mg/L (Daphnia Magna)
Thioglycolic acid	68-11-1	EC50 (72h) > 100 mg/L (Scenedesmus subspicatus) (similar substance)	LC50 (96h) > 100 mg/L (Oncorhynchus mykiss)	EC50 (3h) 530 mg/L (Activated sludge) (similar substance)	EC50 (48h) 38 mg/L (Daphnia magna)
Ammonium chloride	12125-02-9	EC50 40-70 mg/L (Skeletonema costatum) EC50 (10d) 90.4 mg/L (Navicula sp.) NOEC (10d) 26.8 mg/L (growth rate) (Navicula sp.) EC50 (5d) 1300 mg/L (growth rate) (Chlorella vulgaris)	LC50 (96h) 275 mg/L (Cyprinus carpio) LC50 (96h) 163 mg/L (Pimephales promelas) LC50 (96h) 218 mg/L (Lepomis cyanellus) LC50 (96h) 34 mg/L (Oncorhynchus mykiss) NOEC (28d) 11.8 mg/L (Pimephales promelas)	EC50 (30m) 1618 mg/L (activated sludge, domestic)	TLM96 16 mg/L (Crangon crangon) EC50 (48h) 101 mg/L (Daphnia magna) NOEC (21d) 14.6 mg/L (Daphnia magna)
Complex Fatty-Acid Compounds	Proprietary	No information available	No information available	No information available	No information available

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Phosphonium, tetrakis(hydroxymethyl)-, sulfate (2:1)	55566-30-8	(17.7% @ 28d)
Methanol	67-56-1	(95-97% @ 20d)
Ethylene glycol	107-21-1	Readily biodegradable (100% @ 10d)
Morpholine process residues	Proprietary	No information available
Ethoxylated alcohols	Proprietary	No information available
Thioglycolic acid	68-11-1	(67% @ 28d)
Ammonium chloride	12125-02-9	The methods for determining biodegradability are not applicable to inorganic substances.
Complex Fatty-Acid Compounds	Proprietary	No information available

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Phosphonium, tetrakis(hydroxymethyl)-, sulfate (2:1)	55566-30-8	Log Kow = 9.8
Methanol	67-56-1	-0.77 BCF = 1.0 – 4.5 (Cyprinus carpio) BCF < 10 (Leuciscus idus melanotus)

Ethylene glycol	107-21-1	-1.36
Morpholine process residues	Proprietary	Log Pow <1
Ethoxylated alcohols	Proprietary	No information available
Thioglycolic acid	68-11-1	-2.99
Ammonium chloride	12125-02-9	No information available
Complex Fatty-Acid Compounds	Proprietary	No information available

12.4. Mobility in soil

Substances	CAS Number	Mobility
Phosphonium, tetrakis(hydroxymethyl)-, sulfate (2:1)	55566-30-8	No information available
Methanol	67-56-1	No information available
Ethylene glycol	107-21-1	No information available
Morpholine process residues	Proprietary	No information available
Ethoxylated alcohols	Proprietary	No information available
Thioglycolic acid	68-11-1	No information available
Ammonium chloride	12125-02-9	No information available
Complex Fatty-Acid Compounds	Proprietary	No information available

12.5 Other adverse effects

No information available

13. Disposal Considerations

13.1. Waste treatment methods

Disposal methods Disposal should be made in accordance with federal, state, and local regulations.
Contaminated Packaging Dispose of container according to national or local regulations.

14. Transport Information

US DOT

UN Number UN1993
UN proper shipping name: Flammable Liquid, N.O.S. (Contains Methanol)
Transport Hazard Class(es): 3
Packing Group: III
Environmental Hazards: Marine Pollutant
NAERG: NAERG 128

Canadian TDG

UN Number Not restricted
UN proper shipping name: Not approved for transport in Canada
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Not applicable

Not approved for transport in Canada

IMDG/IMO

UN Number UN1993
UN proper shipping name: Flammable Liquid, N.O.S. (Contains Methanol)
Transport Hazard Class(es): 3
Packing Group: III
Environmental Hazards: Marine Pollutant
EMS: EmS F-E, S-E

IATA/ICAO

UN Number UN1993
UN proper shipping name: Flammable Liquid, N.O.S. (Contains Methanol)

Transport Hazard Class(es): 3
 Packing Group: III
 Environmental Hazards: Marine Pollutant

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable

Special Precautions for User None

15. Regulatory Information

US Regulations

US TSCA Inventory All components listed on inventory or are exempt.

TSCA Significant New Use Rules - S5A2

Substances	CAS Number	TSCA Significant New Use Rules - S5A2
Phosphonium, tetrakis(hydroxymethyl)-, sulfate (2:1)	55566-30-8	Not applicable
Methanol	67-56-1	Not applicable
Ethylene glycol	107-21-1	Not applicable
Morpholine process residues	Proprietary	76 FR 65579, Oct 21, 2011
Ethoxylated alcohols	Proprietary	Not applicable
Thioglycolic acid	68-11-1	Not applicable
Ammonium chloride	12125-02-9	Not applicable
Complex Fatty-Acid Compounds	Proprietary	Not applicable

EPA SARA Title III Extremely Hazardous Substances

Substances	CAS Number	EPA SARA Title III Extremely Hazardous Substances
Phosphonium, tetrakis(hydroxymethyl)-, sulfate (2:1)	55566-30-8	Not applicable
Methanol	67-56-1	Not applicable
Ethylene glycol	107-21-1	Not applicable
Morpholine process residues	Proprietary	Not applicable
Ethoxylated alcohols	Proprietary	Not applicable
Thioglycolic acid	68-11-1	Not applicable
Ammonium chloride	12125-02-9	Not applicable
Complex Fatty-Acid Compounds	Proprietary	Not applicable

EPA SARA (311,312) Hazard Class

Acute Health Hazard
 Chronic Health Hazard
 Fire Hazard

EPA SARA (313) Chemicals

Substances	CAS Number	Toxic Release Inventory (TRI) - Group I	Toxic Release Inventory (TRI) - Group II
Phosphonium, tetrakis(hydroxymethyl)-, sulfate (2:1)	55566-30-8	Not applicable	Not applicable
Methanol	67-56-1	1.0%	Not applicable
Ethylene glycol	107-21-1	1.0%	Not applicable
Morpholine process residues	Proprietary	Not applicable	Not applicable
Ethoxylated alcohols	Proprietary	Not applicable	Not applicable
Thioglycolic acid	68-11-1	Not applicable	Not applicable
Ammonium chloride	12125-02-9	1.0%	Not applicable
Complex Fatty-Acid Compounds	Proprietary	Not applicable	Not applicable

EPA CERCLA/Superfund Reportable Spill Quantity

Substances	CAS Number	CERCLA RQ
Phosphonium, tetrakis(hydroxymethyl)-, sulfate (2:1)	55566-30-8	Not applicable
Methanol	67-56-1	5000 lb 2270 kg
Ethylene glycol	107-21-1	5000 lb 2270 kg

Morpholine process residues	Proprietary	Not applicable
Ethoxylated alcohols	Proprietary	Not applicable
Thioglycolic acid	68-11-1	Not applicable
Ammonium chloride	12125-02-9	5000 lb 2270 kg
Complex Fatty-Acid Compounds	Proprietary	Not applicable

EPA RCRA Hazardous Waste Classification

Ignitability D001

California Proposition 65 The California Proposition 65 regulations apply to this product.**MA Right-to-Know Law** One or more components listed.**NJ Right-to-Know Law** One or more components listed.**PA Right-to-Know Law** One or more components listed.**NFPA Ratings:** Health 2, Flammability 3, Reactivity 0**HMS Ratings:** Health 2*, Flammability 3, Physical Hazard 0, PPE: X**Canadian Regulations****Canadian Domestic Substances List (DSL)** All components listed on inventory or are exempt.**16. Other information****Preparation Information**

Prepared By Chemical Stewardship
 Telephone: 1-281-871-6107
 e-mail: fdunexchem@halliburton.com

Revision Date: 04-May-2016**Reason for Revision** Update to Format**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

Key or legend to abbreviations and acronyms used in the safety data sheet

bw – body weight

CAS – Chemical Abstracts Service

d - day

EC50 – Effective Concentration 50%

ErC50 – Effective Concentration growth rate 50%

h - hour

LC50 – Lethal Concentration 50%

LD50 – Lethal Dose 50%

LL50 – Lethal Loading 50%

mg/kg – milligram/kilogram

mg/L – milligram/liter

mg/m³ - milligram/cubic meter

mm - millimeter

mmHg - millimeter mercury
NIOSH – National Institute for Occupational Safety and Health
NTP – National Toxicology Program
OEL – Occupational Exposure Limit
PEL – Permissible Exposure Limit
ppm – parts per million
STEL – Short Term Exposure Limit
TWA – Time-Weighted Average
UN – United Nations
w/w - weight/weight

Key literature references and sources for data

www.ChemADVISOR.com/

Disclaimer Statement

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

End of Safety Data Sheet