

# SAFETY DATA SHEET

**Product Trade Name:** MC B-8614A

**Revision Date:** 08-Feb-2018

**Revision Number:** 1

## 1. Identification

### 1.1. Product Identifier

**Product Trade Name:** MC B-8614A  
**Synonyms:** None  
**Chemical Family:** Blend  
**Internal ID Code:** MB000654

### 1.2 Recommended use and restrictions on use

**Application:** Biocide  
**Uses advised against:** Consumer use

### 1.3 Manufacturer's Name and Contact Details

#### Manufacturer/Supplier

Multi-Chem Group LLC  
 A Halliburton Energy Services, Inc. Company  
 3000 N. Sam Houston Pkwy E., Houston, TX 77032  
 Phone: 1-281-871-4000

Halliburton Group Canada  
 645 - 7th Ave SW Suite 1800  
 Calgary, AB, T2P 4G8, Canada  
 Telephone: 1-403-231-9300

**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 (accessible 24 hours a day / 7 days a week)  
 Global Incident Response Access Code: 334305  
 Contract Number: 14012

## 2. Hazards Identification

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

Acute Oral Toxicity	Category 4 - H302
Acute inhalation toxicity - dust/mist	Category 4 - H332
Skin Corrosion / Irritation	Category 1 - H314
Serious Eye Damage/Irritation	Category 1 - H318
Respiratory Sensitization	Category 1 - H334
Skin Sensitization	Category 1 - H317
Acute Aquatic Toxicity	Category 1 - H400

Chronic Aquatic Toxicity

Category 2 - H411

**2.2. Label Elements****Hazard Pictograms****Signal Word:**

Danger

**Hazard Statements**

H302 - Harmful if swallowed  
 H314 - Causes severe skin burns and eye damage  
 H317 - May cause an allergic skin reaction  
 H318 - Causes serious eye damage  
 H332 - Harmful if inhaled  
 H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled  
 H400 - Very toxic to aquatic life  
 H411 - Toxic to aquatic life with long lasting effects

**Precautionary Statements****Prevention**

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  
 P280 - Wear protective gloves/protective clothing/eye protection/face protection  
 P284 - In case of inadequate ventilation wear respiratory protection.

**Response**

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  
 P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].  
 P310 - Immediately call a POISON CENTER or doctor/physician  
 P363 - Wash contaminated clothing before reuse  
 P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
 P342 + P311 - If experiencing respiratory symptoms: Call a POISON CENTRE or doctor/physician

**Storage  
Disposal**

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 CENTRE or doctor/physician  
 P391 - Collect spillage  
 P405 - Store locked up  
 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
Glutaraldehyde	111-30-8	10 - 30%	Acute Tox. 3 (H301) Acute Tox. 2 (H330) Skin Corr. 1B (H314) Eye Corr. 1 (H318) Resp. Sens. 1 (H334) Skin Sens. 1 (H317) STOT SE 3 (H335) Aquatic Acute 1 (H400) Aquatic Chronic 2 (H411)
Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	68424-85-1	1 - 5%	Acute Tox. 4 (H302) Acute Tox. 3 (H311) Skin Corr. 1B (H314) Eye Corr. 1 (H318) STOT SE 3 (H335) Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410)

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

## 4. First Aid Measures

### 4.1. Description of first aid measures

<b>Inhalation</b>	If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.
<b>Eyes</b>	Immediately flush eyes with large amounts of water for at least 30 minutes. Seek prompt medical attention.
<b>Skin</b>	In case of contact, immediately flush skin with plenty of soap and water for at least 30 minutes and remove contaminated clothing, shoes and leather goods immediately. Get medical attention immediately.
<b>Ingestion</b>	Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

### 4.2 Most important symptoms/effects, acute and delayed

Harmful if swallowed. Harmful if inhaled. Causes severe skin burns and eye damage. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause allergic skin and respiratory reaction. Causes severe skin irritation with tissue destruction. Causes severe eye irritation which may damage tissue. May cause allergic skin reaction. May cause allergic respiratory reaction.

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

<b>Notes to Physician</b>	Glutaraldehyde may cause burns that require extended irrigation. May cause asthma-like (reactive airways) symptoms. Bronchodilators, expectorants and antitussives may be of help. Glutaraldehyde may transiently worsen reversible airways obstruction including asthma or reactive airways disease. Treat bronchospasm with inhaled beta-2 agonist and oral or parenteral corticosteroids. Inhalation of vapors may result in skin sensitization. In sensitized individuals, reexposure to very small amounts of vapor, mist, or liquid may cause a severe allergic skin reaction. If burn is present, treat as any thermal burn, after decontamination.
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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**

Avoid contact with skin, eyes and clothing. Avoid breathing vapors. Use appropriate protective equipment. Ensure adequate ventilation. Evacuate all persons from the area.

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**

Flush area with water. Dike far ahead of liquid spill for later disposal.

## **7. Handling and storage**

### **7.1. Precautions for safe handling**

#### **Handling Precautions**

Avoid breathing vapors. Ensure adequate ventilation. Avoid contact with eyes, skin, or clothing. Use appropriate protective equipment.

#### **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 well ventilated area.

## **8. Exposure Controls/Personal Protection**

### **8.1 Occupational Exposure Limits**

Substances	CAS Number	OSHA PEL-TWA	ACGIH TLV-TWA
Glutaraldehyde	111-30-8	Not applicable	Ceiling: 0.05 ppm
Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	68424-85-1	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.

<b>Respiratory Protection</b>	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.
<b>Hand Protection</b>	Use gloves which are suitable for the chemicals present in this product as well as other environmental factors in the workplace.
<b>Skin Protection</b>	Wear impervious protective clothing, including boots, gloves, lab coat, apron, rain jacket, pants or coverall, as appropriate, to prevent skin contact.
<b>Eye Protection</b>	Safety glasses with side-shields. If splashes are likely to occur, wear: Goggles, Face-shield.
<b>Other Precautions</b>	Eyewash fountains and safety showers must be easily accessible.

## 9. Physical and Chemical Properties

### 9.1. Information on basic physical and chemical properties

<b>Physical State:</b> Liquid	<b>Color</b>	Clear to Slightly Hazy , Colorless to Light Amber
<b>Odor:</b> Pungent	<b>Odor Threshold:</b>	No information available
<u>Property</u> <u>Remarks/ - Method</u>	<u>Values</u>	
<b>pH:</b>	3.1-4.5	
<b>Freezing Point / Range</b>	No data available	
<b>Melting Point / Range</b>	No data available	
<b>Pour Point / Range</b>	No data available	-3 °C 27 °F
<b>Boiling Point / Range</b>	100.5 °C / 213 °F	
<b>Flash Point</b>	> 93.3 °C / > 200 °F	
<b>Flammability (solid, gas)</b>	No data available	
Upper flammability limit	No data available	
Lower flammability limit	No data available	
<b>Evaporation rate</b>		
<b>Vapor Pressure</b>	No data available	
<b>Vapor Density</b>	No data available	
<b>Specific Gravity</b>	1.0290 - 1.0410 (20 °C/68 °F)	
<b>Water Solubility</b>	No data available	
<b>Solubility in other solvents</b>	No data available	
<b>Partition coefficient: n-octanol/water</b>		
<b>Autoignition Temperature</b>	No data available	
<b>Decomposition Temperature</b>	No data available	
<b>Viscosity</b>	No data available	
<b>Explosive Properties</b>	No information available	
<b>Oxidizing Properties</b>	No information available	

### 9.2. Other information

<b>VOC Content (%)</b>	No data available
<b>Liquid Density</b>	8.58-8.69 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

Excessive heat

### 10.5. Incompatible materials

Strong oxidizers. Contact with alkalis.

### 10.6. Hazardous decomposition products

Carbon monoxide and carbon dioxide. Oxides of nitrogen.

## **11. Toxicological Information**

### 11.1 Information on likely routes of exposure

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

### 11.2 Symptoms related to the physical, chemical and toxicological characteristics

#### **Acute Toxicity**

##### **Inhalation**

Harmful if inhaled. May cause allergic respiratory reaction.

##### **Eye Contact**

Causes severe eye irritation which may damage tissue.

##### **Skin Contact**

Causes severe skin irritation with tissue destruction. Contains a component which is a known or suspected skin sensitizer.

##### **Ingestion**

Harmful if swallowed. May cause headache, dizziness, nausea, vomiting, gastrointestinal irritation and central nervous system depression.

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

### 11.3 Toxicity data

#### Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Glutaraldehyde	111-30-8	50 mg/kg (Guinea Pig)	560 µL/kg (Rabbit)	0.28-0.5 mg/L (Rat) 4h
Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	68424-85-1	304.5 mg/kg (rat) 426 mg/kg (rat)	930 mg/kg (rat) 919 mg/kg (mouse)	No data available

Substances	CAS Number	Skin corrosion/irritation
Glutaraldehyde	111-30-8	Causes severe skin irritation with tissue destruction. (Rabbit)
Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	68424-85-1	Causes severe irritation and or burns

Substances	CAS Number	Serious eye damage/irritation
Glutaraldehyde	111-30-8	Causes severe eye irritation which may damage tissue. (Rabbit)
Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	68424-85-1	Causes severe eye irritation which may damage tissue.

Substances	CAS Number	Skin Sensitization
Glutaraldehyde	111-30-8	Skin sensitizer in guinea pig.
Quaternary ammonium compounds,	68424-85-1	Did not cause sensitization on laboratory animals (guinea pig)

benzyl-C12-16-alkyldimethyl, chlorides		
<b>Substances</b>	<b>CAS Number</b>	<b>Respiratory Sensitization</b>
Glutaraldehyde	111-30-8	May cause sensitization by inhalation
Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	68424-85-1	No information available
<b>Substances</b>	<b>CAS Number</b>	<b>Mutagenic Effects</b>
Glutaraldehyde	111-30-8	In vivo tests did not show mutagenic effects.
Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	68424-85-1	In vitro tests did not show mutagenic effects. In vivo tests did not show mutagenic effects.
<b>Substances</b>	<b>CAS Number</b>	<b>Carcinogenic Effects</b>
Glutaraldehyde	111-30-8	Did not show carcinogenic effects in animal experiments
Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	68424-85-1	Did not show carcinogenic effects in animal experiments
<b>Substances</b>	<b>CAS Number</b>	<b>Reproductive toxicity</b>
Glutaraldehyde	111-30-8	Not a confirmed teratogen or embryotoxin.
Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	68424-85-1	Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments.
<b>Substances</b>	<b>CAS Number</b>	<b>STOT - single exposure</b>
Glutaraldehyde	111-30-8	No information available
Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	68424-85-1	No information available May cause respiratory irritation.
<b>Substances</b>	<b>CAS Number</b>	<b>STOT - repeated exposure</b>
Glutaraldehyde	111-30-8	May cause disorder and damage to the Kidney
Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	68424-85-1	No significant toxicity observed in animal studies at concentration requiring classification.
<b>Substances</b>	<b>CAS Number</b>	<b>Aspiration hazard</b>
Glutaraldehyde	111-30-8	Not applicable
Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	68424-85-1	Not applicable

## 12. Ecological Information

### 12.1. Toxicity

#### Ecotoxicity effects

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

#### Substance Ecotoxicity Data

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Glutaraldehyde	111-30-8	EC50(72h): 0.61 mg/L (Desmodesmus subspicatus)	LC50(96h): 10 mg/L (Lepomis macrochirus) NOEC(97d): 1.6 mg/L	EC50 (17h) 6.65 mg/L (Pseudomonas putida)	EC50(48h): 0.35 mg/L (Daphnia magna) EC50(48h): 0.7 mg/L

		EC50(72h): 0.5 mg/L (Skeletonema costatum)	(Oncorhynchus mykiss) LC50(96h): 3.5 mg/L (Oncorhynchus mykiss) LC50(96h): 60 mg/L (Scophthalmus maximus)		(Acartia tonsa) NOEC(21d): 0.13 mg/L (Daphnia magna) EC50(48h): 0.1 mg/L (Acartia tonsa)
Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	68424-85-1	EC50(96 h)=0.03 mg/L (Pseudokirchneriella subcapitata)	LC50(96 h)=0.28 mg/L (Pimephales promelas)	No information available	EC50(48 h)=0.016 mg/L (Daphnia magna) NOEC(21 d)=0.00415 mg/L (Daphnia magna)

## 12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Glutaraldehyde	111-30-8	Readily biodegradable (75% @ 28d)
Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	68424-85-1	(88.9% in 28 days (OECD 301B)% @ 28d)

## 12.3. Bioaccumulative potential

Substances	CAS Number	Bioaccumulation
Glutaraldehyde	111-30-8	-0.36
Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	68424-85-1	0.04

## 12.4. Mobility in soil

Substances	CAS Number	Mobility
Glutaraldehyde	111-30-8	Potential for mobility in soil is high (Koc between 50 and 150). Given its very low Henry's constant (3.3E-08 atm*m3/mole; 25 °C Measured), volatilization from natural bodies of water or moist soil is not expected to be an important fate process.
Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	68424-85-1	No information available

## 12.5 Other adverse effects

No information available

## 13. Disposal Considerations

### 13.1. Waste treatment methods

**Disposal methods** Follow all applicable community, national or regional regulations regarding waste management methods.

**Contaminated Packaging** Dispose of container according to national or local regulations.

## 14. Transport Information

### US DOT

**UN Number** UN3265  
**UN proper shipping name:** Corrosive Liquid, Acidic, Organic, N.O.S. (Contains Glutaraldehyde, Quaternary ammonium compound)  
**Transport Hazard Class(es):** 8  
**Packing Group:** III  
**Environmental Hazards:** Marine Pollutant  
**NAERG:** NAERG 153

### Canadian TDG



**UN Number** UN3265  
**UN proper shipping name:** Corrosive Liquid, Acidic, Organic, N.O.S. (Contains Glutaraldehyde, Quaternary ammonium compound )  
**Transport Hazard Class(es):** 8  
**Packing Group:** III  
**Environmental Hazards:** Marine Pollutant

**IMDG/IMO**

**UN Number** UN3265  
**UN proper shipping name:** Corrosive Liquid, Acidic, Organic, N.O.S. (Contains Glutaraldehyde, Quaternary ammonium compound )  
**Transport Hazard Class(es):** 8  
**Packing Group:** III  
**Environmental Hazards:** Marine Pollutant  
**EMS:** EmS F-A, S-B

**IATA/ICAO**

**UN Number** UN3265  
**UN proper shipping name:** Corrosive Liquid, Acidic, Organic, N.O.S. (Contains Glutaraldehyde, Quaternary ammonium compound )  
**Transport Hazard Class(es):** 8  
**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

<b>15. Regulatory Information</b>
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**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	TSCA Section 5(E) Consent Orders
Glutaraldehyde	111-30-8	Not applicable	Not applicable
Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	68424-85-1	Not applicable	Not applicable

**EPA SARA Title III Extremely Hazardous Substances**

Substances	CAS Number	EPA SARA Title III Extremely Hazardous Substances
Glutaraldehyde	111-30-8	Not applicable
Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	68424-85-1	Not applicable

**EPA SARA (311,312) Hazard Class**

None

**EPA SARA (313) Chemicals**

Substances	CAS Number	Toxic Release Inventory (TRI) - Group I	Toxic Release Inventory (TRI) - Group II
Glutaraldehyde	111-30-8	Not applicable	Not applicable
Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	68424-85-1	Not applicable	Not applicable

**EPA CERCLA/Superfund Reportable Spill Quantity**

Substances	CAS Number	CERCLA RQ
Glutaraldehyde	111-30-8	Not applicable

Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	68424-85-1	Not applicable
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**EPA RCRA Hazardous Waste Classification**

Corrosivity D002

**Federal Insecticide, Fungicide and Rodenticide Act:**

This product complies with FIFRA.

**FIFRA Information**

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

**Signal Word:** DANGER  
**Hazard Statements** Causes irreversible eye damage.  
 May be fatal if swallowed.  
 Causes skin irritation.  
 Harmful if inhaled or absorbed through skin.

This product is toxic to fish.

**California Proposition 65**

Substances	CAS Number	California Proposition 65
Glutaraldehyde	111-30-8	Not applicable
Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	68424-85-1	Not applicable

**U.S. State Right-to-Know Regulations**

Substances	CAS Number	MA Right-to-Know Law	NJ Right-to-Know Law	PA Right-to-Know Law
Glutaraldehyde	111-30-8	Present	Present	Present
Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	68424-85-1	Not applicable	Not applicable	Not applicable

**NFPA Ratings:** Health 3, Flammability 1, Reactivity 0  
**HMIS Ratings:** Health 3\*, Flammability 1, 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:** 08-Feb-2018

**Reason for Revision** Not applicable

**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/m<sup>3</sup> - 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**

OSHA

ECHA C&L

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)

**Disclaimer Statement**

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**End of Safety Data Sheet**