

SAFETY DATA SHEET

according to Regulation (EC) No. 453/2010

Inhibited Clay-Safe H

Revision Date: 23-Dec-2015

Revision Number: 1

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product Identifier

Product Name Inhibited Clay-Safe H
Internal ID Code HM008234

1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended Use	Acid
Sector of use	Refer to the Annex for a listing of uses.
Product category	Not applicable
Process categories	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC15 - Use as a laboratory reagent
Article categories	Not applicable
Environmental release category	ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles ERC8b - Wide dispersive indoor use of reactive substances in open systems
Sector of use	SU2a - Mining, (without offshore industries) SU2b - Offshore industries SU3 - Industrial uses
Process categories	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises

1.3. Details of the supplier of the safety data sheet

Halliburton Energy Services
 Halliburton House, Howemoss Place
 Kirkhill Industrial Estate
 Dyce
 Aberdeen, AB21 0GN
 United Kingdom

www.halliburton.com

For further information, please contact

E-Mail address: fdunexchem@halliburton.com

1.4. Emergency telephone number

+44 8 08 189 0979 / 1-760-476-3961

Emergency telephone - §45 - (EC)1272/2008	
Europe	112
Croatia	Centar za kontrolu otrovanja (CKO): (+385 1) 23-48-342 (Poison Control Center (PCC) - Institute for Medical Research and Occupational Health)
Cyprus	+210 7793777
Denmark	Poison Control Hotline (DK): +45 82 12 12 12
France	ORFILA (FR): + 01 45 42 59 59
Germany	Poison Center Berlin (DE): +49 030 30686 790
Italy	Poison Center, Milan (IT): +39 02 6610 1029
Netherlands	National Poisons Information Center (NL): +31 30 274 88 88 (NB: this service is only available to health professionals)
Norway	Poisons Information (NO): + 47 22 591300
Poland	Poison Control and Information Centre, Warsaw (PL): +48 22 619 66 54; +48 22 619 08 97
Romania	+40 21 318 36 06

Spain	Poison Information Service (ES): +34 91 562 04 20
United Kingdom	NHS Direct (UK): +44 0845 46 47

SECTION 2: Hazards Identification

2.1. Classification of the substance or mixture

REGULATION (EC) No 1272/2008

Skin Corrosion / irritation	Category 1 A - H314
Serious Eye Damage / Eye Irritation	Category 1 - H318
Specific Target Organ Toxicity - (Single Exposure)	Category 3 - H335
Substances/mixtures corrosive to metal.	Category 1 - H290

2.2. Label Elements

Hazard Pictograms



Signal Word

Danger

Hazard Statements

H290 - May be corrosive to metals

H314 - Causes severe skin burns and eye damage

H335 - May cause respiratory irritation

Precautionary Statements

P260 - Do not breathe dust/fume/gas/mist/vapors/spray

P280 - Wear protective gloves/protective clothing/eye protection/face protection

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/shower

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

Contains

Substances

Ethylene glycol monobutyl ether

Formic acid

Hydrochloric acid

Methanol

Acetic acid

CAS Number

111-76-2

64-18-6

7647-01-0

67-56-1

64-19-7

2.3. Other Hazards

Chronic exposure to corrosive fumes/gases may cause erosion of the teeth followed by jaw necrosis. Bronchial irritation with chronic cough and frequent attacks of pneumonia are common. Gastrointestinal disturbances may also be seen. This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).

This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

SECTION 3: Composition/information on Ingredients

3.2. Mixtures

Mixture

Substances	EINECS	CAS Number	PERCENT (w/w)	EU - CLP Substance Classification	REACH No.
Ethylene glycol monobutyl ether	203-905-0	111-76-2	5 - 10%	Acute Tox. 4 (H302) Acute Tox. 4 (H312) Acute Tox. 4 (H332) Skin Irrit. 2 (H315) Eye Irrit. 2 (H319)	01-2119475108-36
Formic acid	200-579-1	64-18-6	5 - 10%	Acute Tox. 4 (H302)	01-2119491174-37

				Acute Tox. 3 (H331) Skin Corr. 1A (H314) Eye Corr. 1 (H318) STOT SE 3 (H335) Flam. Liq. 3 (H226) Met. Corr. 1 (H290)	
Hydrochloric acid	231-595-7	7647-01-0	1 - 5%	Skin Corr. 1A (H314) Eye Corr. 1 (H318) STOT SE 3 (H335) Met. Corr. 1 (H290)	01-2119484862-27
Methanol	200-659-6	67-56-1	< 0.1%	Acute Tox. 3 (H301) Acute Tox. 3 (H311) Acute Tox. 3 (H331) STOT SE 1 (H370) Flam. Liq. 2 (H225)	01-2119433307-44
Acetic acid	200-580-7	64-19-7	10 - 30%	Skin Corr. 1A (H314) Eye Corr. 1 (H318) STOT SE 3 (H335) Flam. Liq. 3 (H226)	01-2119475328-30

For the full text of the H-phrases mentioned in this Section, see Section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation	If inhaled, move victim to fresh air and seek medical attention.
Eyes	In case of contact, or suspected contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately after flushing.
Skin	In case of contact, immediately flush skin with plenty of soap and water for at least 15 minutes. Get medical attention. Remove contaminated clothing and launder before reuse.
Ingestion	Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

4.2. Most Important symptoms and effects, both acute and delayed

Causes severe skin burns and eye damage. May cause respiratory irritation.

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

Notes to Physician Treat symptomatically

SECTION 5: Firefighting 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

None known.

5.2. Special hazards arising from the substance or mixture

Special Exposure Hazards

May form explosive mixtures with strong alkalis. Decomposition in fire may produce harmful gases. Reaction with steel and certain other metals generates flammable hydrogen gas. Do not allow runoff to enter waterways.

Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases

The product causes burns of eyes, skin and mucous membranes

5.3. Advice for firefighters

Special Protective Equipment for Fire-Fighters

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

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use appropriate protective equipment. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing. Avoid breathing vapors. Evacuate all persons from the area.
See Section 8 for additional information

6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas. Consult local authorities.

6.3. Methods and material for containment and cleaning up

Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Neutralize to pH of 6-8. Scoop up and remove.

6.4. Reference to other sections

See Section 8 and 13 for additional information.

SECTION 7: Handling and Storage

7.1. Precautions for Safe Handling

Avoid contact with eyes, skin, or clothing. Avoid breathing vapors. Ensure adequate ventilation. Wash hands after use. Launder contaminated clothing before reuse. 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

Store away from alkalis. Store in a cool well ventilated area. Keep container closed when not in use. Store locked up. Product has a shelf life of 24 months.

7.3. Specific End Use(s)

Exposure Scenario

Please refer to the attached Annex for a listing of exposure scenarios.

Other Guidelines

No information available

SECTION 8: Exposure Controls/Personal Protection

8.1. Control parameters

Exposure Limits

Substances	CAS Number	EU	UK	Netherlands	France
Ethylene glycol monobutyl ether	111-76-2	Not applicable	TWA: 25 ppm TWA: 123 mg/m ³ STEL: 50 ppm STEL: 246 mg/m ³	TWA: 100 mg/m ³ STEL: 246 mg/m ³	2 ppm
Formic acid	64-18-6	TWA: 5 ppm TWA: 9 mg/m ³	TWA: 5 ppm TWA: 9.6 mg/m ³ STEL: 15 ppm STEL: 28.8 mg/m ³	STEL: 5 mg/m ³	5 ppm
Hydrochloric acid	7647-01-0	Not applicable	TWA: 1 ppm TWA: 2 mg/m ³ STEL: 5 ppm STEL: 8 mg/m ³	TWA: 8 mg/m ³ STEL: 15 mg/m ³	STEL: 5 ppm STEL: 7.6 mg/m ³
Methanol	67-56-1	TWA: 200 ppm TWA: 260 mg/m ³	TWA: 200 ppm TWA: 266 mg/m ³ STEL: 250 ppm STEL: 333 mg/m ³	TWA: 133 mg/m ³ TWA: 100 ppm	200 ppm
Acetic acid	64-19-7	10 ppm	Not applicable	Not applicable	10 ppm

Substances	CAS Number	Germany	Spain	Portugal	Finland
Ethylene glycol monobutyl ether	111-76-2	TWA: 10 ppm TWA: 49 mg/m ³	TWA: 20 ppm TWA: 98 mg/m ³ 50 ppm STEL [VLA-EC]; 245 mg/m ³ STEL [VLA-EC]	TWA: 20 ppm TWA: 98 mg/m ³ STEL: 50 ppm STEL: 246 mg/m ³	TWA: 20 ppm TWA: 98 mg/m ³ STEL: 50 ppm STEL: 250 mg/m ³
Formic acid	64-18-6	TWA: 5 ppm TWA: 9.5 mg/m ³	TWA: 5 ppm TWA: 9 mg/m ³	TWA: 5 ppm TWA: 9 mg/m ³ STEL: 10 ppm	TWA: 3 ppm TWA: 5 mg/m ³ STEL: 10 ppm STEL: 19 mg/m ³
Hydrochloric acid	7647-01-0	TWA: 2 ppm TWA: 3 mg/m ³ TWA: 3.0 mg/m ³	TWA: 5 ppm TWA: 7.6 mg/m ³ 10 ppm STEL [VLA-EC]; 15 mg/m ³ STEL [VLA-EC]	TWA: 5 ppm TWA: 8 mg/m ³ STEL: 10 ppm STEL: 15 mg/m ³	STEL: 5 ppm STEL: 7.6 mg/m ³
Methanol	67-56-1	TWA: 200 ppm TWA: 270 mg/m ³	TWA: 200 ppm TWA: 266 mg/m ³	TWA: 200 ppm TWA: 260 mg/m ³ STEL: 250 ppm	TWA: 200 ppm TWA: 270 mg/m ³ STEL: 250 ppm

		Peak: 800 ppm Peak: 1080 mg/m ³			STEL: 330 mg/m ³
Acetic acid	64-19-7	TWA: 10 ppm TWA: 25 mg/m ³	TWA: 10 ppm TWA: 25 mg/m ³ 15 ppm STEL [VLA-EC]; 37 mg/m ³ STEL [VLA-EC]	TWA: 10 ppm TWA: 25 mg/m ³ STEL: 15 ppm	TWA: 5 ppm TWA: 13 mg/m ³ STEL: 10 ppm STEL: 25 mg/m ³

Substances	CAS Number	Austria	Ireland	Switzerland	Norway
Ethylene glycol monobutyl ether	111-76-2	TWA: 20 ppm TWA: 98 mg/m ³ STEL" 40 ppm STEL" 200 mg/m ³	20 ppm TWA; 98 mg/m ³ TWA 50 ppm STEL; 246 mg/m ³ STEL	TWA: 10 ppm TWA: 49 mg/m ³ STEL: 20 ppm STEL: 98 mg/m ³	TWA: 10 ppm TWA: 50 mg/m ³ STEL: 20 ppm STEL: 75 mg/m ³
Formic acid	64-18-6	TWA: 5 ppm TWA: 9 mg/m ³ STEL" 5 ppm STEL" 9 mg/m ³	5 ppm TWA; 9 mg/m ³ TWA 15 ppm STEL (calculated); 27 mg/m ³ STEL (calculated)	TWA: 5 ppm TWA: 9.5 mg/m ³ STEL: 10 ppm STEL: 19 mg/m ³	TWA: 5 ppm TWA: 9 mg/m ³ STEL: 10 ppm STEL: 18 mg/m ³
Hydrochloric acid	7647-01-0	TWA: 5 ppm TWA: 8 mg/m ³ STEL" 10 ppm STEL" 15 mg/m ³	5 ppm TWA; 8 mg/m ³ TWA 10 ppm STEL (as F); 15 mg/m ³ STEL	TWA: 2 ppm TWA: 3.0 mg/m ³ STEL: 4 ppm STEL: 6 mg/m ³	Not applicable
Methanol	67-56-1	TWA: 200 ppm TWA: 260 mg/m ³ STEL" 800 ppm STEL" 1040 mg/m ³	200 ppm TWA; 260 mg/m ³ TWA 600 ppm STEL (calculated); 780 mg/m ³ STEL (calculated)	TWA: 200 ppm TWA: 260 mg/m ³ STEL: 800 ppm STEL: 1040 mg/m ³	TWA: 100 ppm TWA: 130 mg/m ³ STEL: 100 ppm STEL: 130 mg/m ³
Acetic acid	64-19-7	TWA: 10 ppm TWA: 25 mg/m ³ STEL" 20 ppm STEL" 50 mg/m ³	10 ppm TWA; 25 mg/m ³ TWA 15 ppm STEL; 37 mg/m ³ STEL	TWA: 10 ppm TWA: 25 mg/m ³ STEL: 20 ppm STEL: 50 mg/m ³	TWA: 10 ppm TWA: 25 mg/m ³ STEL: 20 ppm STEL: 37.5 mg/m ³

Substances	CAS Number	Italy	Poland	Hungary	Czech Republic
Ethylene glycol monobutyl ether	111-76-2	TWA: 20 ppm TWA: 98 mg/m ³ STEL: 50 ppm STEL: 246 mg/m ³	TWA: 98 mg/m ³ STEL: 200 mg/m ³	TWA: 98 mg/m ³ STEL: 246 mg/m ³	TWA: 100 mg/m ³
Formic acid	64-18-6	TWA: 5 ppm TWA: 9 mg/m ³	TWA: 5 mg/m ³ STEL: 15 mg/m ³	TWA: 9 mg/m ³	TWA: 9 mg/m ³
Hydrochloric acid	7647-01-0	TWA: 5 ppm TWA: 8 mg/m ³ STEL: 10 ppm STEL: 15 mg/m ³	TWA: 5 mg/m ³ STEL: 10 mg/m ³	TWA: 8 mg/m ³ STEL: 16 mg/m ³	TWA: 8 mg/m ³
Methanol	67-56-1	TWA: 200 ppm TWA: 260 mg/m ³	TWA: 100 mg/m ³ STEL: 300 mg/m ³	TWA: 260 mg/m ³	TWA: 250 mg/m ³
Acetic acid	64-19-7	10 ppm	TWA: 15 mg/m ³ STEL: 30 mg/m ³	TWA: 25 mg/m ³ STEL: 25 mg/m ³	TWA: 25 mg/m ³

Substances	CAS Number	Denmark	Romania	Croatia	Cyprus
Ethylene glycol monobutyl ether	111-76-2	TWA: 20 ppm TWA: 98 mg/m ³	TWA: 30 ppm TWA: 150 mg/m ³ STEL: 50 ppm STEL: 250 mg/m ³ STEL: 246 mg/m ³	TWA: 20 ppm TWA: 98 mg/m ³ STEL: 50 ppm STEL: 246 mg/m ³	TWA: 20 ppm TWA: 98 mg/m ³ STEL: 50 ppm STEL: 246 mg/m ³
Formic acid	64-18-6	TWA: 5 ppm TWA: 9 mg/m ³	TWA: 5 ppm TWA: 9 mg/m ³	TWA: 5 ppm TWA: 9 mg/m ³	TWA: 5 ppm TWA: 9 mg/m ³
Hydrochloric acid	7647-01-0	Not applicable	TWA: 5 ppm TWA: 8 mg/m ³ STEL: 10 ppm STEL: 15 mg/m ³	TWA: 5 ppm TWA: 8 mg/m ³ STEL: 10 ppm STEL: 15 mg/m ³	TWA: 5 ppm TWA: 8 mg/m ³ STEL: 10 ppm STEL: 15 mg/m ³
Methanol	67-56-1	TWA: 200 ppm TWA: 260 mg/m ³	TWA: 200 ppm TWA: 260 mg/m ³ STEL: 5 ppm	TWA: 200 ppm TWA: 260 mg/m ³	TWA: 200 ppm TWA: 260 mg/m ³
Acetic acid	64-19-7	TWA: 10 ppm TWA: 25 mg/m ³	TWA: 10 ppm TWA: 25 mg/m ³	TWA: 10 ppm TWA: 25 mg/m ³	TWA: 10 ppm TWA: 25 mg/m ³

Derived No Effect Level (DNEL)**Worker**

Substances	Long-term exposure -	Acute / short term	Long-term exposure -	Acute / short term	Long-term exposure -	Acute / short term	Long-term exposure -	Acute / short term	Hazards for the eyes -
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	systemic effects, Inhalation	exposure - systemic effects, Inhalation	local effects, Inhalation	exposure - local effects, Inhalation	systemic effects, Dermal	exposure - systemic effects, Dermal	local effects, Dermal	exposure - local effects, Dermal	local effects
Ethylene glycol monobutyl ether	98 mg/m ³	663 mg/m ³	Not available	246 mg/m ³	75 mg/kg bw/day	89 mg/kg bw/day	Not available	Not available	Not available
Formic acid	Not available	Not available	9.5 mg/m ³	19 mg/m ³	Not available	Not available	Not available	Not available	Not available
Hydrochloric acid	Not available	Not available	8 mg/m ³	15 mg/m ³	Not available	Not available	Not available	Not available	Not available
Methanol	260 mg/m ³	260 mg/m ³	260 mg/m ³	260 mg/m ³	40 mg/kg bw/day	40 mg/kg bw/day	Low hazard (no threshold derived)	Low hazard (no threshold derived)	Low hazard (no threshold derived)
Acetic acid	Not available	Not available	25 mg/m ³	25 mg/m ³	Not available	Not available	Not available	Not available	Not available

General Population

Substances	Long-term exposure - systemic effects, Inhalation	Acute / short term exposure - systemic effects, Inhalation	Long-term exposure - local effects, Inhalation	Acute / short term exposure - local effects, Inhalation	Long-term exposure - systemic effects, Dermal	Acute / short term exposure - systemic effects, Dermal	Long-term exposure - local effects, Dermal	Acute / short term exposure - local effects, Dermal	Long-term exposure - systemic effects, Oral	Acute / short term exposure - local effects, Oral	Hazards for the eyes - local effects
Ethylene glycol monobutyl ether	49 mg/m ³	426 mg/m ³	Not available	123 mg/m ³	38 mg/kg bw/day	44.5 mg/kg bw/day	Not available	Not available	3.2 mg/kg bw/day	13.4 mg/kg bw/day	Not available
Formic acid	Not available	Not available	3 mg/m ³	9.5 mg/m ³	Not available	Not available	Not available	Not available	Not available	Not available	Not available
Methanol	50 mg/m ³	50 mg/m ³	50 mg/m ³	50 mg/m ³	8 mg/kg bw/day	8 mg/kg bw/day	Low hazard (no threshold derived)	Low hazard (no threshold derived)	Other toxicological threshold	Other toxicological threshold	Low hazard (no threshold derived)
Acetic acid	Not available	Not available	25 mg/m ³	25 mg/m ³	Not available	Not available	Not available	Not available	Not available	Not available	Not available

Predicted No Effect Concentration (PNEC)

Substances	Freshwater	Marine water	Intermittent release	Sewage treatment plant	Sediment (freshwater)	Sediment (marine water)	Air	Soil	Secondary poisoning
Ethylene glycol monobutyl ether	8.8 mg/L	0.88 kg/L	9.1 mg/L	463 mg/L	34.6 mg/kg	3.46 mg/kg	Not available	3.13 mg/kg soil dw	0.02 g/kg food
Formic acid	2 mg/L	0.2 mg/L	1 mg/L	7.2 mg/L	13.4 mg/kg sediment dw	1.34 mg/kg sediment dw	Not available	1.5 mg/kg soil dw	Not available
Hydrochloric acid	36 ug/L	36 ug/L	45 ug/L	36 ug/L	Not available	Not available	Not available	Not available	Not available
Methanol	20.8 mg/L	2.08 mg/L	1540 mg/L	100 mg/L	77 mg/kg sediment dw	7.7 mg/kg sediment dw	Not available	3.18 mg/kg soil dw	Not available
Acetic acid	3.06 mg/l	0.306 mg/l	30.58 mg/l	85 mg/l	11.4 mg/kg	1.14 mg/kg	Not available	0.478 mg/kg	Not available

8.2. Exposure controls**Engineering Controls**

Use in a well ventilated area. Local exhaust ventilation should be used in areas without good cross ventilation.

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.

Acid gas respirator.

Hand Protection

Chemical-resistant protective gloves (EN 374) Suitable materials for longer, direct contact (recommended: protection index 6, corresponding to > 480 minutes permeation time as per EN 374): Butyl rubber gloves. (>= 0.7 mm thickness)

This information is based on literature references and on information provided by glove manufacturers, or is derived by analogy with similar substances. Please note that in practice the working life of chemical-resistant protective gloves may be considerably shorter than the permeation time determined in accordance with EN 374 as a result of the many influencing factors (e.g. temperature). If signs of wear and tear are noticed then the gloves should be replaced. Manufacturer's directions for use should be observed because of great diversity of types.

**Skin Protection
Eye Protection**

Full protective chemical resistant clothing. Rubber boots
Chemical goggles; also wear a face shield if splashing hazard exists.

Other Precautions

Eyewash fountains and safety showers must be easily accessible.

Environmental Exposure Controls Do not allow material to contaminate ground water system**SECTION 9: Physical and Chemical Properties****9.1. Information on basic physical and chemical properties**

Physical State: Liquid **Color:** Not determined
Odor: Not determined **Odor Threshold:** No information available

<u>Property</u>	<u>Values</u>
<u>Remarks/ - Method</u>	
pH:	No data available
Freezing Point/Range	No data available
Melting Point/Range	No data available
Boiling Point/Range	

Flash Point	> 70 °C
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	1.065
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

SECTION 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

None anticipated

10.5. Incompatible Materials

Strong alkalis.

10.6. Hazardous Decomposition Products

Flammable hydrogen gas. Chlorine. Hydrogen sulfide.

SECTION 11: Toxicological Information**11.1. Information on Toxicological Effects****Acute Toxicity**

Inhalation	Causes severe respiratory irritation.
Eye Contact	Causes serious eye damage.
Skin Contact	Causes severe burns.
Ingestion	Causes burns of the mouth, throat and stomach.

Chronic Effects/Carcinogenicity Prolonged, excessive exposure may cause erosion of the teeth.

Toxicology data for the components

Substances	CAS	LD50 Oral	LD50 Dermal	LC50 Inhalation
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	Number			
Ethylene glycol monobutyl ether	111-76-2	470 mg/kg (Rat) 1414 mg/kg (Guinea pig) 1746 mg/kg (Rat) 320 mg/kg (Rabbit) 530 mg/kg (Rat) 560 mg/kg (Rat) 3000 mg/kg (Rat) 2400 mg/kg (Rat)	220 mg/kg (Rabbit) 2270 mg/kg (Rat) 200 mg/kg (Guinea pig) >2000 mg/kg (Rabbit) 841 mg/kg (Rabbit) 435 mg/kg (Rabbit) >2000 mg/kg (Guinea pig) >2000 mg/kg (Rat) 100 mg/kg (Rabbit) 207 mg/kg (Guinea pig) 400-500 mg/kg (Rabbit)	450 mg/L (Rat) 4h 2.174 mg/L (Rat) 4h 2.21 mg/L (Rat) 4h 450-486 mg/L (Rat) 4h 925 mg/L (Rat) 4h >633 mg/L (Guinea pig) 1h
Formic acid	64-18-6	730 mg/kg (Rat)	> 2000 mg/kg (Rat) (Similar substance)	7.4 mg/L (Rat) 4h 15 mg/L (Rat) 15m
Hydrochloric acid	7647-01-0	No data available	5010 mg/kg (Rabbit) > 5010 mg/kg (Rabbit) 1449 mg/kg (Mouse)	3124 mg/L (Rat) 1h 3.2 mg/L (Mouse) 8.3 mg/L (Rat) 1405 mg/L (Rat) 554 mg/L (Mouse)
Methanol	67-56-1	< 790 mg/kg (rat) 7300 mg/kg (mouse) 14200 mg/kg (rabbit) 300 mg/kg (Human) 6200 mg/kg (Rat)	15800 mg/kg (Rabbit) 393 mg/kg bw (primates) 1000 mg/kg (Human) 15800 mg/kg (Rabbit)	10 mg/L (Human) 4h (vapor) 22,500 ppm (Rat) 8h 64,000 ppm (Rat) 4h 83.2 mg/L (rat) 4h 128.8 mg/L (rat) 4h
Acetic acid	64-19-7	3310 mg/kg (Rat) 600 mg/kg (Rabbit) 4960 mg/kg (Mouse)	1060 mg/kg (Rabbit)	11.4 mg/L (Rat) 4h

Substances	CAS Number	Skin corrosion/irritation
Ethylene glycol monobutyl ether	111-76-2	Causes moderate skin irritation. (Rabbit)
Formic acid	64-18-6	Corrosive to skin (Rabbit)
Hydrochloric acid	7647-01-0	Causes severe burns
Methanol	67-56-1	Non-irritating to the skin (Rabbit)
Acetic acid	64-19-7	Corrosive to skin

Substances	CAS Number	Eye damage/irritation
Ethylene glycol monobutyl ether	111-76-2	Causes moderate eye irritation. (Rabbit)
Formic acid	64-18-6	Corrosive to eyes (Rabbit)
Hydrochloric acid	7647-01-0	Causes severe burns
Methanol	67-56-1	Non-irritating to the eye (Rabbit)
Acetic acid	64-19-7	Corrosive to eyes

Substances	CAS Number	Skin Sensitization
Ethylene glycol monobutyl ether	111-76-2	Did not cause sensitization on laboratory animals (guinea pig)
Formic acid	64-18-6	Did not cause sensitization on laboratory animals (guinea pig)
Hydrochloric acid	7647-01-0	Did not cause sensitization on laboratory animals (guinea pig)
Methanol	67-56-1	Did not cause sensitization on laboratory animals (guinea pig)
Acetic acid	64-19-7	Not regarded as a sensitizer.

Substances	CAS Number	Respiratory Sensitization
Ethylene glycol monobutyl ether	111-76-2	No information available
Formic acid	64-18-6	No information available
Hydrochloric acid	7647-01-0	No information available
Methanol	67-56-1	No information available
Acetic acid	64-19-7	No information available

Substances	CAS Number	Mutagenic Effects
Ethylene glycol monobutyl ether	111-76-2	In vivo tests did not show mutagenic effects. In vitro tests did not show mutagenic effects
Formic acid	64-18-6	In vitro tests did not show mutagenic effects In vivo tests did not show mutagenic effects.
Hydrochloric acid	7647-01-0	Not regarded as mutagenic.
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.
Acetic acid	64-19-7	In vivo tests did not show mutagenic effects. In vitro tests did not show mutagenic effects

Substances	CAS Number	Carcinogenic Effects
Ethylene glycol monobutyl ether	111-76-2	Not regarded as carcinogenic.
Formic acid	64-18-6	Did not show carcinogenic effects in animal experiments (similar substances)
Hydrochloric acid	7647-01-0	No data of sufficient quality are available.
Methanol	67-56-1	No data of sufficient quality are available.
Acetic acid	64-19-7	Did not show carcinogenic effects in animal experiments

Substances	CAS Number	Reproductive toxicity
Ethylene glycol monobutyl ether	111-76-2	Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments.
Formic acid	64-18-6	Did not show teratogenic effects in animal experiments. (similar substances) Animal testing did not show any effects on fertility.
Hydrochloric acid	7647-01-0	Embryo and fetotoxicity has been observed in female rats exposed to maternally toxic levels of hydrogen chloride (450 mg/m ³ , 1hr.).
Methanol	67-56-1	Experiments have shown reproductive toxicity effects on laboratory animals
Acetic acid	64-19-7	Did not show teratogenic effects in animal experiments. Animal testing did not show any effects on fertility.

Substances	CAS Number	STOT - single exposure
Ethylene glycol monobutyl ether	111-76-2	No data of sufficient quality are available.
Formic acid	64-18-6	May cause respiratory irritation.
Hydrochloric acid	7647-01-0	May cause respiratory irritation.
Methanol	67-56-1	May cause disorder and damage to the Central Nervous System (CNS)
Acetic acid	64-19-7	May cause respiratory irritation.

Substances	CAS Number	STOT - repeated exposure
Ethylene glycol monobutyl ether	111-76-2	No data of sufficient quality are available.
Formic acid	64-18-6	No significant toxicity observed in animal studies at concentration requiring classification.
Hydrochloric acid	7647-01-0	No significant toxicity observed in animal studies at concentration requiring classification.
Methanol	67-56-1	No data of sufficient quality are available.
Acetic acid	64-19-7	Not applicable due to corrosivity of the substance.

Substances	CAS Number	Aspiration hazard
Ethylene glycol monobutyl ether	111-76-2	No adverse health effects are expected from swallowing.
Formic acid	64-18-6	Not applicable
Hydrochloric acid	7647-01-0	Not applicable
Methanol	67-56-1	Not applicable
Acetic acid	64-19-7	Not applicable

SECTION 12: Ecological Information

12.1. Toxicity Ecotoxicity Effects

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Ethylene glycol monobutyl ether	111-76-2	EC50 839.56 mg/L (Skeletonema costatum) EbC50 (72h) 911 mg/L EC50 > 500 mg/L (Scenedesmus subspicatus) NOEC (72h) 88 mg/L (biomass)(Pseudokirchnerella subcapitata)	LC50 > 1000 mg/L (Scophthalmus maximus, juvenile) LC50 (96h) 1474 mg/L (Oncorhynchus mykiss) NOEC (21d) > 100mg/L (Danio rerio)	TT/EC3 (48h) 463 mg/L (Uronema parduzci) TT/EC3 (72h) 73 mg/L (Entosiphon sulcatum) TT/EC3 (16h) 700 mg/L (Pseudomonas putida)	No information available
Formic acid	64-18-6	EC50 25 mg/L (Desmodesmus subspicatus) EC50 (72h) 1240 mg/L	LC50 (96h) 175 mg/L (Lepomis Macrochirus) LC50 (96h) 130 mg/L (Danio rerio) (Similar	NOEC (13d) 72 mg/L (activated sludge, domestic)	EC50 (48h) 120 mg/L (Daphnia magna) EC50 (48h) 450 mg/L (Daphnia magna)

		(growth rate) (Pseudokirchnerella subcapitata) (Similar substance)	substance) LC50 (96h) 1720 mg/L (Scophthalmus maximus) (Similar substance) LC50 (96h) 3500 mg/L (Oncorhynchus mykiss) (similar substance)		(similar substance) EC50 (48h) 365 mg/L (Daphnia magna) (Similar substance) LC50 (96h) 1308 mg/L (Crangon crangon) (Similar substance) NOEC (21d) >= 100 mg/L (Daphnia magna)
Hydrochloric acid	7647-01-0	No information available	LC50 282 mg/L (Gambusia affinis) LC50 20.5 mg/L (Lepomis macrochirus) LC50 (96h) 3.25 – 3.5 (pH) (Lepomis macrochirus)	EC50 (3h) >= 5 and <= 5.5 (pH) (Activated sludge, domestic)	EC50 (48h) 4.9 (pH) (Daphnia magna)
Methanol	67-56-1	ErC50 (96h) 22000 mg/L (Pseudokirchnerella subcapitata)	LC50 28200 mg/L (Pimephales promelas) LC50 (96h) 12700 – 15400 mg/L (Lepomis macrochirus)	IC50 (3h) > 1000 mg/L (activated sludge)	EC50 (96h) 18260 mg/L (Daphnia magna) NOEC (21d) 122 mg/L (Daphnia magna, Reproduction)
Acetic acid	64-19-7	EC50 90 mg/L (Microcystis aeruginosa) EC50 (72h) > 1000 mg/L (>300.82 mg/L – acetate ion) (Skeletonema costatum)	LC50 79 mg/L (Pimephales promelas) LC50 75 mg/L (Pimephales promelas) LC50 (96h) > 1000 mg/L (>300.82 mg/L – acetate ion) (Oncorhynchus mykiss)	NOEC (16h) 1150 mg/L (Pseudomonas putida)	EC50 47 mg/L (Daphnia magna) LC50 32 mg/L (Artemia salina) EC50 (48h) > 1000 mg/L (>300.82 mg/L – acetate ion) (Daphnia magna) NOEC (21d) 31.4 - 37.9 mg/L (Daphnia magna) (reproduction)

Effect concentrations in the aquatic environment are attributable to a change in pH value

12.2. Persistence and degradability

The methods for determining biodegradability are not applicable to inorganic substances.

Substances	CAS Number	Persistence and Degradability
Ethylene glycol monobutyl ether	111-76-2	Readily biodegradable (75-88% @ 28d)
Formic acid	64-18-6	Readily biodegradable (100 @ 14d)
Hydrochloric acid	7647-01-0	The methods for determining biodegradability are not applicable to inorganic substances.
Methanol	67-56-1	(95-97% @ 20d)
Acetic acid	64-19-7	Readily biodegradable (99% @ 7d)

12.3. Bioaccumulative potential

Does not bioaccumulate.

Substances	CAS Number	Log Pow
Ethylene glycol monobutyl ether	111-76-2	0.81
Formic acid	64-18-6	-2.1
Hydrochloric acid	7647-01-0	0.25
Methanol	67-56-1	-0.77 BCF = 1.0 – 4.5 (Cyprinus carpio) BCF < 10 (Leuciscus idus melanotus)
Acetic acid	64-19-7	-0.17 BCF = 3.16 (Calculated)

12.4. Mobility in soil

Substances	CAS Number	Mobility
Ethylene glycol monobutyl ether	111-76-2	No information available
Formic acid	64-18-6	KOC = 31
Hydrochloric acid	7647-01-0	No information available
Methanol	67-56-1	No information available
Acetic acid	64-19-7	No information available

12.5. Results of PBT and vPvB assessment

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT). This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

Substances	PBT and vPvB assessment
Ethylene glycol monobutyl ether	Not PBT/vPvB
Formic acid	Not PBT/vPvB

Hydrochloric acid	Not applicable
Methanol	Not PBT/vPvB
Acetic acid	Not PBT/vPvB

12.6. Other adverse effects**Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

SECTION 13: Disposal Considerations
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13.1. Waste treatment methods**Disposal Method**

Disposal should be made in accordance with federal, state, and local regulations. Substance should NOT be deposited into a sewage facility.

Contaminated Packaging

Follow all applicable national or local regulations.

SECTION 14: Transport Information
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IMDG/IMO

UN Number: UN3264
 UN Proper Shipping Name: Corrosive Liquid, Acidic, Inorganic, N.O.S. (Contains Formic Acid, Acetic Acid)
 Transport Hazard Class(es): 8
 Packing Group: II
 Environmental Hazards: Not applicable

RID

UN Number: UN3264
 UN Proper Shipping Name: Corrosive Liquid, Acidic, Inorganic, N.O.S. (Contains Formic Acid, Acetic Acid)
 Transport Hazard Class(es): 8
 Packing Group: II
 Environmental Hazards: Not applicable

ADR

UN Number: UN3264
 UN Proper Shipping Name: Corrosive Liquid, Acidic, Inorganic, N.O.S. (Contains Formic Acid, Acetic Acid)
 Transport Hazard Class(es): 8
 Packing Group: II
 Environmental Hazards: Not applicable

IATA/ICAO

UN Number: UN3264
 UN Proper Shipping Name: Corrosive Liquid, Acidic, Inorganic, N.O.S. (Contains Formic Acid, Acetic Acid)
 Transport Hazard Class(es): 8
 Packing Group: II
 Environmental Hazards: Not applicable

14.1. UN Number: UN3264

14.2. UN Proper Shipping Name: Corrosive Liquid, Acidic, Inorganic, N.O.S. (Contains Formic Acid, Acetic Acid)

14.3. Transport Hazard Class(es): 8

14.4. Packing Group: II

14.5. Environmental Hazards: Not applicable

14.6. Special Precautions for User: None

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

SECTION 15: Regulatory Information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**International Inventories****EINECS Inventory**

This product, and all its components, complies with EINECS

US TSCA Inventory

All components listed on inventory or are exempt.

Canadian DSL Inventory

All components listed on inventory or are exempt.

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

DSL/NDL - Canadian Domestic Substances List/Non-Domestic Substances List

**Germany, Water Endangering
Classes (WGK)**

WGK 1: Low hazard to waters.

15.2. Chemical Safety Assessment

Yes

SECTION 16: Other Information**Full text of H-Statements referred to under sections 2 and 3**

H225 - Highly flammable liquid and vapor

H226 - Flammable liquid and vapor

H290 - May be corrosive to metals

H301 - Toxic if swallowed

H302 - Harmful if swallowed

H311 - Toxic in contact with skin

H312 - Harmful in contact with skin

H314 - Causes severe skin burns and eye damage

H315 - Causes skin irritation

H318 - Causes serious eye damage

H319 - Causes serious eye irritation

H331 - Toxic if inhaled

H332 - Harmful if inhaled

H335 - May cause respiratory irritation

H370 - Causes damage to organs

Key or legend to abbreviations and acronyms

bw – body weight

CAS – Chemical Abstracts Service

CLP – REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on Classification, Labelling and Packaging of substances and mixtures

EC – European Commission

EC10 – Effective Concentration 10%

EC50 – Effective Concentration 50%

EEC – European Economic Community

ErC50 – Effective Concentration growth rate 50%

IBC Code – International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk

LC50 – Lethal Concentration 50%

LD50 – Lethal Dose 50%

LL0 – Lethal Loading 0%

LL50 – Lethal Loading 50%

MARPOL – International Convention for the Prevention of Pollution from Ships

mg/kg – milligram/kilogram

mg/L – milligram/liter

NIOSH – National Institute for Occupational Safety and Health

NOEC – No Observed Effect Concentration

NTP – National Toxicology Program

OEL – Occupational Exposure Limit

PBT – Persistent Bioaccumulative and Toxic

PC – Chemical Product category

PEL – Permissible Exposure Limit

ppm – parts per million

PROC – Process category

REACH – REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals

STEL – Short Term Exposure Limit

SU – Sector of Use category

Key literature references and sources for data

www.ChemADVISOR.com/

NZ CCID

Revision Date: 21-Sep-2015

Revision Note

Not applicable

This safety data sheet complies with the requirements of Regulation (EC) No. 453/2010

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End of Safety Data Sheet