

SAFETY DATA SHEET

according to Regulation (EC) No. 453/2010

HAI-303

Revision Date: 18-Sep-2015

Revision Number: 27

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

1.1. Product Identifier

Product Name HAI-303
Internal ID Code HM005905

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

Recommended Use	Corrosion Inhibitor
Sector of use	SU2 - Mining, (including offshore industries) SU3 - Industrial Manufacturing (all)
Product category	PC20 - Products such as pH-regulators, flocculants, precipitants, neutralization agents, other unspecific
Process categories	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC5 - Mixing or blending in batch processes for formulation of mixtures and articles (multistage and/or significant contact) PROC8a - Transfer of substance or mixture (charging/discharging) from/to vessels/large containers at non dedicated facilities PROC 8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

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

Acute Oral Toxicity	Category 4 - H302
Skin Corrosion / irritation	Category 2 - H315
Serious Eye Damage / Eye Irritation	Category 1 - H318
Skin Sensitization	Category 1 - H317
Specific Target Organ Toxicity - (Repeated Exposure)	Category 2 - H373
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

H373 - May cause damage to organs through prolonged or repeated exposure

Precautionary Statements - EU (§28, 1272/2008)

P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking

P280 - Wear protective gloves/eye protection/face protection

P301+ P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell

P302 + P352 - IF ON SKIN: Wash with plenty of soap and water

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

P314 - Get medical attention/advice if you feel unwell

Contains

Substances

Diethylene glycol

Cinnamaldehyde

Amine oxides, cocoalkyldimethyl

Methanol

Aromatic aldehyde

Alcohols, C12-16, ethoxylated

Sodium iodide

CAS Number

111-46-6

104-55-2

61788-90-7

67-56-1

Proprietary

68551-12-2

7681-82-5

2.3. Other Hazards

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.
Diethylene glycol	203-872-2	111-46-6	30 - 60%	Acute Tox. 4 (H302) STOT RE 2 (H373)	No data available
Cinnamaldehyde	203-213-9	104-55-2	30 - 60%	Acute Tox. 4 (H312) Skin Irrit. 2 (H315)	No data available

Amine oxides, cocoalkyldimethyl	263-016-9	61788-90-7	10 - 30%	Skin Sens. 1 (H317) Acute Tox. 4 (H302) Skin Irrit. 2 (H315) Eye Corr. 1 (H318) Aquatic Acute 1 (H400)	No data available
Methanol	200-659-6	67-56-1	10 - 30%	Acute Tox. 3 (H301) Acute Tox. 3 (H311) Acute Tox. 3 (H331) STOT SE 1 (H370) Flam. Liq. 2 (H225)	01-2119433307-44
Aromatic aldehyde	Listed	Proprietary	5 - 10%	Acute Tox. 4 (H302) Acute Tox. 4 (H332)	No data available
Alcohols, C12-16, ethoxylated	500-221-7	68551-12-2	1 - 5%	Acute Tox. 4 (H302) Skin Irrit. 2 (H315) Eye Corr. 1 (H318) Aquatic Acute 1 (H400) Aquatic Chronic 3 (H412)	No data available
Sodium iodide	231-679-3	7681-82-5	1 - 5%	Skin Irrit. 2 (H315) Eye Irrit. 2 (H319) STOT SE 3 (H335) STOT RE 1 (H372)	No data available

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

ACN No.	18-0000000333-85-0000
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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, 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	Wash off immediately with soap and plenty of water for at least 15 minutes while removing all contaminated clothing and shoes
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 eye irritation which may damage tissue. Causes skin irritation. May cause allergic skin reaction. Harmful if swallowed. 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 Treat symptomatically

SECTION 5: Firefighting Measures

5.1. Extinguishing media

Suitable Extinguishing Media

Carbon dioxide, dry chemical, foam.

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 be ignited by heat, sparks or flames. Use water spray to cool fire exposed surfaces. Closed containers may explode in fire. Decomposition in fire may produce harmful gases. Runoff to sewer may cause fire or explosion hazard.

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

Remove sources of ignition. Use appropriate protective equipment. Wear self-contained breathing apparatus in enclosed areas. Avoid breathing vapors. Avoid contact with skin, eyes and clothing. 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

Isolate spill and stop leak where safe. Remove ignition sources and work with non-sparking tools. Contain spill with sand or other inert materials. 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

Remove sources of ignition. Avoid contact with eyes, skin, or clothing. Wash hands after use. Launder contaminated clothing before reuse. Avoid breathing vapors. Ensure adequate ventilation. Ground and bond containers when transferring from one container to another. 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 oxidizers. Keep from heat, sparks, and open flames. Store in a well ventilated area. Store locked up. Keep container closed when not in use. Product has a shelf life of 60 months.

7.3. Specific End Use(s)

Exposure Scenario No information available

Other Guidelines No information available

SECTION 8: Exposure Controls/Personal Protection

8.1. Control parameters

Exposure Limits

Substances	CAS Number	EU	UK	Netherlands	France
Diethylene glycol	111-46-6	Not applicable	TWA: 23 ppm TWA: 101 mg/m ³ STEL: 69 ppm STEL: 303 mg/m ³	Not applicable	Not applicable
Cinnamaldehyde	104-55-2	Not applicable	Not applicable	Not applicable	Not applicable
Amine oxides, cocoalkyldimethyl	61788-90-7	Not applicable	Not applicable	Not applicable	Not applicable
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
Aromatic aldehyde	Proprietary	Not applicable	Not applicable	Not applicable	Not applicable
Alcohols, C12-16, ethoxylated	68551-12-2	Not applicable	Not applicable	Not applicable	Not applicable
Sodium iodide	7681-82-5	Not applicable	Not applicable	Not applicable	Not applicable

Substances	CAS Number	Germany	Spain	Portugal	Finland
Diethylene glycol	111-46-6	TWA: 10 ppm TWA: 44 mg/m ³	Not applicable	Not applicable	Not applicable
Cinnamaldehyde	104-55-2	Not applicable	Not applicable	Not applicable	Not applicable
Amine oxides, cocoalkyldimethyl	61788-90-7	Not applicable	Not applicable	Not applicable	Not applicable
Methanol	67-56-1	TWA: 200 ppm TWA: 270 mg/m ³ Peak: 800 ppm Peak: 1080 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 STEL: 330 mg/m ³

Aromatic aldehyde	Proprietary	Not applicable	Not applicable	Not applicable	TWA: 1 ppm TWA: 4.4 mg/m ³ STEL: 4 ppm STEL: 17.4 mg/m ³
Alcohols, C12-16, ethoxylated	68551-12-2	Not applicable	Not applicable	Not applicable	Not applicable
Sodium iodide	7681-82-5	Not applicable	Not applicable	Not applicable	Not applicable

Substances	CAS Number	Austria	Ireland	Switzerland	Norway
Diethylene glycol	111-46-6	TWA: 10 ppm TWA: 44 mg/m ³ STEL" 40 ppm STEL" 176 mg/m ³	23 ppm TWA; 100 mg/m ³ TWA 69 ppm STEL (calculated); 300 mg/m ³ STEL (calculated)	TWA: 10 ppm TWA: 44 mg/m ³ STEL: 40 ppm STEL: 176 mg/m ³	Not applicable
Cinnamaldehyde	104-55-2	Not applicable	Not applicable	Not applicable	Not applicable
Amine oxides, cocoalkyldimethyl	61788-90-7	Not applicable	Not applicable	Not applicable	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
Aromatic aldehyde	Proprietary	Not applicable	Not applicable	Not applicable	Not applicable
Alcohols, C12-16, ethoxylated	68551-12-2	Not applicable	Not applicable	Not applicable	Not applicable
Sodium iodide	7681-82-5	Not applicable	Not applicable	Not applicable	Not applicable

Substances	CAS Number	Italy	Poland	Hungary	Czech Republic
Diethylene glycol	111-46-6	Not applicable	TWA: 10 mg/m ³	Not applicable	Not applicable
Cinnamaldehyde	104-55-2	Not applicable	Not applicable	Not applicable	Not applicable
Amine oxides, cocoalkyldimethyl	61788-90-7	Not applicable	Not applicable	Not applicable	Not applicable
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
Aromatic aldehyde	Proprietary	Not applicable	TWA: 10 mg/m ³ STEL: 40 mg/m ³	TWA: 5 mg/m ³ STEL: 10 mg/m ³	Not applicable
Alcohols, C12-16, ethoxylated	68551-12-2	Not applicable	Not applicable	Not applicable	Not applicable
Sodium iodide	7681-82-5	Not applicable	Not applicable	Not applicable	Not applicable

Substances	CAS Number	Denmark	Romania	Croatia	Cyprus
Diethylene glycol	111-46-6	TWA: 2.5 ppm TWA: 11 mg/m ³	TWA: 115 ppm TWA: 500 mg/m ³ STEL: 184 ppm STEL: 800 mg/m ³	TWA: 23 ppm TWA: 101 mg/m ³	Not applicable
Cinnamaldehyde	104-55-2	Not applicable	Not applicable	Not applicable	Not applicable
Amine oxides, cocoalkyldimethyl	61788-90-7	Not applicable	Not applicable	Not applicable	Not applicable
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
Aromatic aldehyde	Proprietary	Not applicable	Not applicable	Not applicable	Not applicable
Alcohols, C12-16, ethoxylated	68551-12-2	Not applicable	Not applicable	Not applicable	Not applicable
Sodium iodide	7681-82-5	Not applicable	Not applicable	Not applicable	Not applicable

Derived No Effect Level (DNEL)

No information available.

Worker

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	Hazards for the eyes - local effects
Diethylene glycol	Not available	Not available	60 mg/m ³	Not available	106 mg/kg bw/day	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)

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
Diethylene glycol	Not available	Not available	12 mg/m ³	Not available	53 mg/kg bw/day	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)

Predicted No Effect Concentration (PNEC)

No information available.

Substances	Freshwater	Marine water	Intermittent release	Sewage treatment plant	Sediment (freshwater)	Sediment (marine water)	Air	Soil	Secondary poisoning
Diethylene glycol	10 mg/L	1 mg/L	10 mg/L	199.5 mg/L	20.9 mg/kg sediment dw	2.09 mg/kg sediment dw	Not available	1.53 mg/kg soil dw	No potential for bioaccumulation
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

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

Positive pressure self-contained breathing apparatus if methanol is released.

Hand Protection

Impervious rubber gloves.

Skin Protection

Rubber apron.

Eye Protection

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: Yellow-orange

Odor: Cinnamon

Odor Threshold: No information available

Property**Values**

Remarks/ - Method

pH:

6.85 (10%)

Freezing Point/Range

-21 °C

Melting Point/Range

No data available

Boiling Point/Range

No data available

Flash Point

28.9 °C / 84 °F PMCC

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

1.015

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

Keep away from heat, sparks and flame.

10.5. Incompatible Materials

Strong oxidizers.

10.6. Hazardous Decomposition Products

Ammonia. Oxides of nitrogen. Hydrocarbons. Carbon monoxide and carbon dioxide.

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

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

Eye Contact

Causes severe eye irritation which may damage tissue.

Skin Contact

Causes skin irritation. May cause an allergic skin reaction.

Ingestion

Harmful if swallowed. May cause central nervous system depression including headache, dizziness, drowsiness, muscular weakness, incoordination, slowed reaction time, fatigue blurred vision, slurred speech, giddiness, tremors and convulsions. May cause liver and kidney damage.

Chronic Effects/Carcinogenicity

Prolonged or repeated exposure may cause eye, blood, lung, liver, kidney, heart, central nervous system and spleen damage. Prolonged or repeated exposure may cause reproductive system damage. Prolonged or repeated exposure may cause embryo and fetus toxicity.

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Diethylene glycol	111-46-6	12565 - 19600 mg/kg (Rat)	11890 - 13300 mg/kg (Rabbit)	> 4.6 mg/L (Rat) 4h
Cinnamaldehyde	104-55-2	2200 mg/kg (Rat) 340 mg/kg (Guinea pig) 1160 ng/kg (Rat) 1600 mg/kg (Rat)	2000 mg/kg (Rabbit) 2000 mg/kg (Rat) 1260 mg/kg (Rabbit)	QSAR: 68.86 ppm (Rat) 4h 68.88 ppm (Rat) 4h (QSAR)
Amine oxides, cocoalkyldimethyl	61788-90-7	846 - 3873 mg/kg (Rat) 1000-1250 mg/kg (Rat)	4290 mg/kg (Rabbit)	No data available
Methanol	67-56-1	< 790 mg/kg (rat) mg/kg (mouse) mg/kg (rabbit) mg/kg (Human) 6200 mg/kg (Rat)	15800 mg/kg (Rabbit) mg/kg bw (primates) mg/kg (Human) 15800 mg/kg (Rabbit)	10 mg/L (Human) 4h (vapor) 22,500 ppm (Rat) 8h 64,000 ppm (Rat) 4h mg/L (rat) 4h 128.8 mg/L (rat) 4h
Aromatic aldehyde	Proprietary	800 mg/kg (Rat) 1375 mg/kg (Rat)	>1250 mg/kg (Rabbit) >20000 mL/kg (Guinea Pig)	1 - 5 mg/L (Rat) 4h
Alcohols, C12-16, ethoxylated	68551-12-2	1400 mg/kg (Rat)	2000 - 5000 mg/kg (Rabbit) (similar substances) 1.78 mL/kg (Rabbit) 2.14 mL/kg (1990 mg/kg) (Rabbit)	No data available
Sodium iodide	7681-82-5	4340 mg/kg (Rat) 3118 mg/kg (Rats) (Similar substance)	No data available	LCLo: 50000 mg/m ³ (Mouse) 2h

Substances	CAS	Skin corrosion/irritation
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	Number	
Diethylene glycol	111-46-6	Non-irritating to the skin (Rabbit)
Cinnamaldehyde	104-55-2	Causes severe irritation and or burns (human)
Amine oxides, cocoalkyldimethyl	61788-90-7	Skin, rabbit: Causes moderate skin irritation.
Methanol	67-56-1	Non-irritating to the skin (Rabbit)
Aromatic aldehyde		Non-irritating to the skin (Rabbit)
Alcohols, C12-16, ethoxylated	68551-12-2	Irritating to skin. (Rabbit) (similar substances)
Sodium iodide	7681-82-5	Moderate dermal irritant (Rabbit)

Substances	CAS Number	Eye damage/irritation
Diethylene glycol	111-46-6	Non-irritating to the eye (Rabbit)
Cinnamaldehyde	104-55-2	Mild eye irritant. (human) (8 % solution)
Amine oxides, cocoalkyldimethyl	61788-90-7	Corrosive to eyes
Methanol	67-56-1	Non-irritating to the eye (Rabbit)
Aromatic aldehyde		Non-irritating to the eye (Rabbit)
Alcohols, C12-16, ethoxylated	68551-12-2	Severe eye irritant (Rabbit) (similar substances)
Sodium iodide	7681-82-5	Moderately irritating to the eyes (Rabbit)

Substances	CAS Number	Skin Sensitization
Diethylene glycol	111-46-6	Did not cause sensitization on laboratory animals (guinea pig)
Cinnamaldehyde	104-55-2	Skin sensitizer in guinea pig.
Amine oxides, cocoalkyldimethyl	61788-90-7	No information available
Methanol	67-56-1	Did not cause sensitization on laboratory animals (guinea pig)
Aromatic aldehyde		Not sensitizing in Guinea Pigs (Guinea Pig Maximisation Test and Open Epicutaneous Test, Sensitizing in Draize Test and Freund's Complete Adjuvant Test)
Alcohols, C12-16, ethoxylated	68551-12-2	Did not cause sensitization on laboratory animals (guinea pig) (similar substances)
Sodium iodide	7681-82-5	Patch test on human volunteers did not demonstrate sensitization properties

Substances	CAS Number	Respiratory Sensitization
Diethylene glycol	111-46-6	No information available
Cinnamaldehyde	104-55-2	No information available
Amine oxides, cocoalkyldimethyl	61788-90-7	No information available
Methanol	67-56-1	No information available
Aromatic aldehyde		No information available
Alcohols, C12-16, ethoxylated	68551-12-2	No information available
Sodium iodide	7681-82-5	No information available

Substances	CAS Number	Mutagenic Effects
Diethylene glycol	111-46-6	In vitro tests did not show mutagenic effects In vivo tests did not show mutagenic effects.
Cinnamaldehyde	104-55-2	In vitro tests did not show mutagenic effects
Amine oxides, cocoalkyldimethyl	61788-90-7	In vitro tests did not show mutagenic effects In vivo tests did not show mutagenic effects. (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.
Aromatic aldehyde		Not mutagenic in AMES Test. Negative in the chromosomal aberration assay In vitro tests have shown mutagenic effects In vivo tests did not show mutagenic effects.
Alcohols, C12-16, ethoxylated	68551-12-2	In vitro tests did not show mutagenic effects. In vivo tests did not show mutagenic effects. (similar substances)
Sodium iodide	7681-82-5	In vitro tests did not show mutagenic effects (similar substances)

Substances	CAS Number	Carcinogenic Effects
Diethylene glycol	111-46-6	Did not show carcinogenic effects in animal experiments (Rat)
Cinnamaldehyde	104-55-2	No information available.
Amine oxides, cocoalkyldimethyl	61788-90-7	No information available.
Methanol	67-56-1	No data of sufficient quality are available.
Aromatic aldehyde		Did not show carcinogenic effects in animal experiments (Rat) There was some evidence of carcinogenic activity in the forestomachs of mice.
Alcohols, C12-16, ethoxylated	68551-12-2	Did not show carcinogenic effects in animal experiments (similar substances)

Sodium iodide	7681-82-5	No information available.
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Substances	CAS Number	Reproductive toxicity
Diethylene glycol	111-46-6	Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments.
Cinnamaldehyde	104-55-2	Did not show teratogenic effects in animal experiments.
Amine oxides, cocoalkyldimethyl	61788-90-7	Did not show teratogenic effects in animal experiments. When tested at maternally toxic doses, no adverse effects on teratogenicity or development were observed.
Methanol	67-56-1	Experiments have shown reproductive toxicity effects on laboratory animals
Aromatic aldehyde		Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments. (similar substances)
Alcohols, C12-16, ethoxylated	68551-12-2	Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments. (similar substances)
Sodium iodide	7681-82-5	Animal testing did not show any effects on fertility.

Substances	CAS Number	STOT - single exposure
Diethylene glycol	111-46-6	No significant toxicity observed in animal studies at concentration requiring classification.
Cinnamaldehyde	104-55-2	No information available
Amine oxides, cocoalkyldimethyl	61788-90-7	May cause respiratory irritation.
Methanol	67-56-1	May cause disorder and damage to the Central Nervous System (CNS)
Aromatic aldehyde		May cause respiratory irritation.
Alcohols, C12-16, ethoxylated	68551-12-2	No information available
Sodium iodide	7681-82-5	No information available

Substances	CAS Number	STOT - repeated exposure
Diethylene glycol	111-46-6	Causes damage to organs through prolonged or repeated exposure: (Kidney)
Cinnamaldehyde	104-55-2	No significant toxicity observed in animal studies at concentration requiring classification.
Amine oxides, cocoalkyldimethyl	61788-90-7	No data of sufficient quality are available.
Methanol	67-56-1	No data of sufficient quality are available.
Aromatic aldehyde		No significant toxicity observed in animal studies at concentration requiring classification.
Alcohols, C12-16, ethoxylated	68551-12-2	No significant toxicity observed in animal studies at concentration requiring classification.
Sodium iodide	7681-82-5	Causes damage to organs through prolonged or repeated exposure: (Thyroid)

Substances	CAS Number	Aspiration hazard
Diethylene glycol	111-46-6	No information available
Cinnamaldehyde	104-55-2	Not applicable
Amine oxides, cocoalkyldimethyl	61788-90-7	No information available
Methanol	67-56-1	Not applicable
Aromatic aldehyde		Not applicable
Alcohols, C12-16, ethoxylated	68551-12-2	Not applicable
Sodium iodide	7681-82-5	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
Diethylene glycol	111-46-6	TGK (8d) 2700 mg/L (Scenedesmus quadricauda)	LC50 75200 mg/L (Pimephales promelas)	EC20 (30m) > 1995 mg/L (domestic activated sludge)	EC50 84000 mg/L (Daphnia magna) EC50 >10000 mg/L (Daphnia magna)
Cinnamaldehyde	104-55-2	EC50 0.13 mg/L (Chlorella vulgaris)	LC50 (47h) 122 mg/L (Cyprinus carpio)	IC50 (48h) 131.2 mg/L (Tetrahymena pyriformis)	LC50 (48h) 107 mg/L (Daphnia magna)
Amine oxides, cocoalkyldimethyl	61788-90-7	ErC50 (72h) 0.29 mg/L (Selenastrum capricornutum) ErC50 (72h) 0.0235	LC50 (96h) 1.0–3.4 mg/L (Brachydanio rerio) LC50 (96h) 13.0 (Salmo gairdneri)	EC50 (3h) 240 mg/L (Pseudomonas putida) EC50 (3h) 13 mg/L (Activated sludge)	EC50 (48h) 2.9 mg/L (Daphnia magna) EC50 (48h) 0.083 mg/L (Daphnia magna)

		mg/L (<i>Scenedesmus subspicatus</i>) (similar substance)	LC50 (96h) 0.1-1 mg/L (<i>Brachydanio rerio</i>)		(similar substance)
Methanol	67-56-1	ErC50 (96h) 22000 mg/L (<i>Pseudokirchnerella subcapitata</i>)	LC50 28200 mg/L (<i>Pimephales promelas</i>) LC50 (96h) 12700 – 15400 mg/L (<i>Lepomis macrochirus</i>)	IC50 (3h) > 1000 mg/L (activated sludge)	EC50 (96h) 18260 mg/L (<i>Daphnia magna</i>) NOEC (21d) 122 mg/L (<i>Daphnia magna</i> , Reproduction)
Aromatic aldehyde	Proprietary	NOEC (8d) 20 mg/L (<i>Microcystis aeruginosa</i>) NOEC (8d) 132 mg/L	LC50: 10.6 - 11.8 mg/L (<i>Oncorhynchus mykiss</i>) LC50 (96h) 12.4 mg/L (<i>Pimephales promelas</i>) LC50 (96h) 11.2 mg/L (<i>Salmo gairdneri</i>) LC50 (96h) 13.8 mg/L (<i>Carassius auratus</i>) LC50 (96h) 5.39 mg/L (<i>Ictalurus punctatus</i>) LC50 (96h) 1.07 mg/L (<i>Lepomis macrochirus</i>)	IC50 (3h) 740 mg/L	EC50: 50 mg/L (<i>Daphnia magna</i>)
Alcohols, C12-16, ethoxylated	68551-12-2	EC50 (72h) 0.5 mg/L (<i>Scenedesmus subspicatus</i>) (similar substance) EC50 (72h) 0.85 mg/L (<i>Selenastrum capricornutum</i>) (similar substance)	LC50 (96h) 1.2 – 6.4 (<i>Brachydanio rerio</i>) (similar substance)	EC50 (30m) >10000 mg/L (<i>Pseudomonas putida</i>) (similar substance)	EC50 (48h) 0.5 – 1.9 mg/L (similar substance)
Sodium iodide	7681-82-5	7 d Tox threshold: 2370 mg/L (<i>Scenedesmus quadricauda</i> , biomass) EC50(72h): 2588.7 mg/L (<i>Skeletonema costatum</i>)	LC50(96h): 3780 mg/L (<i>Oncorhynchus mykiss</i>) LC50(96h): > 100 mg/L (<i>Scophthalmus maximus</i>)	No information available	EC50(48h): 1.27 mg/L (<i>Daphnia magna</i>) EC50(48h): 575 mg/L (<i>Acartia tonsa</i>)

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Diethylene glycol	111-46-6	Readily biodegradable (90-100% @ 28d)
Cinnamaldehyde	104-55-2	Predicted to be readily biodegradable.
Amine oxides, cocoalkyldimethyl	61788-90-7	Readily biodegradable (81% @ 28d)
Methanol	67-56-1	(95-97% @ 20d)
Aromatic aldehyde	Proprietary	Readily biodegradable (>=95% @ 28d)
Alcohols, C12-16, ethoxylated	68551-12-2	Expected to be readily biodegradable (similar substances)
Sodium iodide	7681-82-5	Not applicable

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Diethylene glycol	111-46-6	BCF: 100 (<i>Leuciscus idus melanotus</i>)
Cinnamaldehyde	104-55-2	1.83 BCF = 8 (Calculated)
Amine oxides, cocoalkyldimethyl	61788-90-7	Log Kow = 7.5
Methanol	67-56-1	-0.77 BCF = 1.0 – 4.5 (<i>Cyprinus carpio</i>) BCF < 10 (<i>Leuciscus idus melanotus</i>)
Aromatic aldehyde	Proprietary	No information available
Alcohols, C12-16, ethoxylated	68551-12-2	No information available
Sodium iodide	7681-82-5	-1.301

12.4. Mobility in soil

Substances	CAS Number	Mobility
Diethylene glycol	111-46-6	No information available
Cinnamaldehyde	104-55-2	No information available
Amine oxides, cocoalkyldimethyl	61788-90-7	No information available
Methanol	67-56-1	No information available
Aromatic aldehyde	Proprietary	No information available
Alcohols, C12-16, ethoxylated	68551-12-2	No information available
Sodium iodide	7681-82-5	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
Diethylene glycol	Not PBT/vPvB
Cinnamaldehyde	Not PBT/vPvB
Amine oxides, cocoalkyldimethyl	Not PBT/vPvB
Methanol	Not PBT/vPvB
Aromatic aldehyde	Not PBT/vPvB
Alcohols, C12-16, ethoxylated	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**13.1. Waste treatment methods****Disposal Method**

Incineration recommended in approved incinerator according to federal, state, and local regulations. Substance should NOT be deposited into a sewage facility.

Contaminated Packaging

Follow all applicable national or local regulations. Contaminated packaging may be disposed of by: rendering packaging incapable of containing any substance, or treating packaging to remove residual contents, or treating packaging to make sure the residual contents are no longer hazardous, or by disposing of packaging into commercial waste collection.

SECTION 14: Transport Information**IMDG/IMO**

UN Number: UN1993
 UN Proper Shipping Name: Flammable Liquid, N.O.S. (Contains Methanol, Aldehydes)
 Transport Hazard Class(es): 3
 Packing Group: III
 Environmental Hazards: Not applicable

RID

UN Number: UN1993
 UN Proper Shipping Name: Flammable Liquid, N.O.S. (Contains Methanol, Aldehydes)
 Transport Hazard Class(es): 3
 Packing Group: III
 Environmental Hazards: Not applicable

ADR

UN Number: UN1993
 UN Proper Shipping Name: Flammable Liquid, N.O.S. (Contains Methanol, Aldehydes)
 Transport Hazard Class(es): 3
 Packing Group: III
 Environmental Hazards: Not applicable

IATA/ICAO

UN Number: UN1993
 UN Proper Shipping Name: Flammable Liquid, N.O.S. (Contains Methanol, Aldehydes)
 Transport Hazard Class(es): 3
 Packing Group: III
 Environmental Hazards: Not applicable

14.1. UN Number: UN1993

14.2. UN Proper Shipping Name: Flammable Liquid, N.O.S. (Contains Methanol, Aldehydes)

14.3. Transport Hazard Class(es): 3

14.4. Packing Group: III

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.

List of the carcinogenic, mutagenic and toxic for reproduction substances SZW

Methanol

15.2. Chemical Safety Assessment

No information available

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

H301 - Toxic if swallowed

H302 - Harmful if swallowed

H311 - Toxic in contact with skin

H312 - Harmful in contact with skin

H315 - Causes skin irritation

H317 - May cause an allergic skin reaction

H318 - Causes serious eye damage

H319 - Causes serious eye irritation

H331 - Toxic if inhaled

H332 - Harmful if inhaled

H335 - May cause respiratory irritation

H372 - Causes damage to organs through prolonged or repeated exposure

H373 - May cause damage to organs through prolonged or repeated exposure

H400 - Very toxic to aquatic life

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

OSHA

ECHA C&L

Revision Date: 18-Sep-2015

Revision Note

SDS sections updated: 1

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

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End of Safety Data Sheet