

SAFETY DATA SHEET

according to Regulation (EC) No. 453/2010

Wyoming Bentonite

Revision Date: 07-Sep-2015

Revision Number: 4

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

1.1. Product Identifier **Product Name Internal ID Code** Contains Crystalline silica, quartz

Wyoming Bentonite HM008070

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

Recommended Use	Weight Additive
Sector of use	SU2 - Mining, (including offshore industries)
Product category	PC20 - Products such as pH-regulators, flocculants, precipitants, neutralization agents,
	other unspecific
Process categories	PROC 26 - Handling of solid inorganic substances at ambient temperature

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 fdunexchem@halliburton.com E-Mail address: 1.4. Emergency telephone number

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

Emergency telephone - §4	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	
Carcinogenicity	Category 2 - H351
Specific Target Organ Toxicity - (Repeated Exposure)	Category 2 - H373

2.2. Label Elements

Hazard Pictograms



Signal Word

Warning

Hazard Statements

H351 - Suspected of causing cancer if inhaled H373 - May cause damage to organs through prolonged or repeated exposure if inhaled

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

P201 - Obtain special instructions before use
P202 - Do not handle until all safety precautions have been read and understood
P260 - Do not breathe dust/fume/gas/mist/vapors/spray
P281 - Use personal protective equipment as required
P308 + P313 - IF exposed or concerned: Get medical advice/attention
P314 - Get medical attention/advice if you feel unwell

Contains Substance

Substances	CAS Number
Crystalline silica, quartz	14808-60-7
Crystalline silica, cristobalite	14464-46-1
Crystalline silica, tridymite	15468-32-3

2.3. Other Hazards

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT). This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

SECTION 3: Composition/information on Ingredients

3.1. Substances

Substance

Substances	EINECS	CAS Number	PERCENT (w/w)	EU - CLP Substance Classification	REACH No.
Crystalline silica, quartz	238-878-4	14808-60-7	1 - 5%	Carc. 2 (H351) STOT RE 1 (H372)	No data available
Crystalline silica, cristobalite	238-455-4	14464-46-1	0.1 - 1%	Carc. 2 (H351) STOT RE 1 (H372)	No data available
Crystalline silica, tridymite	239-487-1	15468-32-3	0.1 - 1%	Carc. 2 (H351) STOT RE 1 (H372)	No data available

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, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.
Eyes	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.
Skin Ingestion	Wash with soap and water. Get medical attention if irritation persists. Under normal conditions, first aid procedures are not required.

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

Breathing crystalline silica can cause lung disease, including silicosis and lung cancer. Crystalline silica has also been associated with scleroderma and kidney disease. Carcinogen. May cause damage to internal 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 All standard fire fighting media 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

None anticipated

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. Avoid creating and breathing dust.

See Section 8 for additional information

6.2. Environmental precautions

None known.

6.3. Methods and material for containment and cleaning up

Collect using dustless method and hold for appropriate disposal. Consider possible toxic or fire hazards associated with contaminating substances and use appropriate methods for collection, storage and disposal.

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

This product contains quartz, cristobalite, and/or tridymite which may become airborne without a visible cloud. Avoid breathing dust. Avoid creating dusty conditions. Use only with adequate ventilation to keep exposure below recommended exposure limits. Wear a NIOSH certified, European Standard En 149, or equivalent respirator when using this product. Material is slippery when wet.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Use good housekeeping in storage and work areas to prevent accumulation of dust. Close container when not in use. Do not reuse empty container.

7.3. Specific End Use(s) Exposure Scenario

Other Guidelines

No information available No information available

SECTION 8: Exposure Controls/Personal Protection

8.1. Control parameters Exposure Limits

Exposure Emmes					
Substances	CAS Number	EU	UK	Netherlands	France
Crystalline silica, quartz	14808-60-7	Not applicable	TWA: 0.1 mg/m ³	TWA: 0.075 mg/m ³	TWA: 0.1 mg/m ³
Crystalline silica, cristobalite	14464-46-1	Not applicable	Not applicable	TWA: 0.075 mg/m ³	TWA: 0.05 mg/m ³
Crystalline silica, tridymite	15468-32-3	Not applicable	Not applicable	TWA: 0.075 mg/m ³	TWA: 0.05 mg/m ³

Substances	CAS Number	Germany	Spain	Portugal	Finland
Crystalline silica, quartz	14808-60-7	Not applicable	TWA: 0.1 mg/m ³	TWA: 0.025 mg/m ³	TWA: 0.05 mg/m ³
Crystalline silica, cristobalite	14464-46-1	Not applicable	TWA: 0.05 mg/m ³	TWA: 0.025 mg/m ³	TWA: 0.05 mg/m ³
Crystalline silica, tridymite	15468-32-3	Not applicable	Not applicable	Not applicable	TWA: 0.05 mg/m ³
Substances	CAS Number	Austria	Ireland	Switzerland	Norway

Substances	CAS Number	Austria	Ireland	Switzerland	Norway
Crystalline silica, quartz	14808-60-7	TWA: 0.15 mg/m ³	0.1 mg/m ³ TWA (respirable dust) 0.3 mg/m ³ STEL (calculated, respirable dust)	TWA: 0.15 mg/m ³	TWA: 0.3 mg/m ³ TWA: 0.1 mg/m ³ STEL: 0.9 mg/m ³ STEL: 0.3 mg/m ³
Crystalline silica, cristobalite	14464-46-1	TWA: 0.15 mg/m ³	0.1 mg/m ³ TWA (respirable dust) 0.3 mg/m ³ STEL (calculated, respirable dust)	TWA: 0.15 mg/m ³	TWA: 0.15 mg/m ³ TWA: 0.05 mg/m ³ STEL: 0.45 mg/m ³ STEL: 0.15 mg/m ³
Crystalline silica, tridymite	15468-32-3	TWA: 0.15 mg/m ³	0.1 mg/m ³ TWA (respirable dust) 0.3 mg/m ³ STEL (calculated, respirable dust)	TWA: 0.15 mg/m ³	TWA: 0.15 mg/m ³ TWA: 0.05 mg/m ³ STEL: 0.45 mg/m ³ STEL: 0.15 mg/m ³

Substances	CAS Number	Italy	Poland	Hungary	Czech Republic
Crystalline silica, quartz	14808-60-7	Not applicable	TWA: 2 mg/m ³	TWA: 0.15 mg/m ³	TWA: 0.1 mg/m ³
			TWA: 0.3 mg/m ³		
			TWA: 4.0 mg/m ³		
			TWA: 1.0 mg/m ³		
Crystalline silica,	14464-46-1	Not applicable	TWA: 2 mg/m ³	TWA: 0.15 mg/m ³	TWA: 0.1 mg/m ³
cristobalite			TWA: 0.3 mg/m ³	_	_
			TWA: 4.0 mg/m ³		
			TWA: 1.0 mg/m ³		
Crystalline silica, tridymite	15468-32-3	Not applicable	TWA: 2 mg/m ³	TWA: 0.15 mg/m ³	TWA: 0.1 mg/m ³
			TWA: 0.3 mg/m ³	_	_
			TWA: 4.0 mg/m ³		
			TWA: 1.0 mg/m ³		

Substances	CAS Number	Denmark	Romania	Croatia	Cyprus
Crystalline silica, quartz	14808-60-7	TWA: 0.3 mg/m ³ TWA: 0.1 mg/m ³	TWA: 0.1 mg/m ³	TWA: 0.1 mg/m ³	Not applicable
Crystalline silica, cristobalite	14464-46-1	TWA: 0.15 mg/m ³ TWA: 0.05 mg/m ³	TWA: 0.05 mg/m ³	TWA: 0.05 mg/m ³	Not applicable
Crystalline silica, tridymite	15468-32-3	TWA: 0.15 mg/m ³ TWA: 0.05 mg/m ³	TWA: 0.05 mg/m ³	TWA: 0.05 mg/m ³	Not applicable

Derived No Effect Level (DNEL) Worker		No information available.	
General Population			
Predicted No Effect Concentration	(PNEC)	No information available.	
below applicable exposu Personal protective equipment If engineering controls and work practices cannot prevent e		ventilation and local exhaust as required to maintain exposures re limits. excessive exposures, the selection and proper use of personal I hygienist or other qualified professional based on the specific	
Respiratory Protection	Wear a NIOSH certified, European Standard EN 149 (FFP2/FFP3), AS/NZS 1715, or equivalent respirator when using this product.		
Hand Protection Skin Protection Eye Protection Other Precautions	Normal work gloves. Wear clothing appropriate for the work environment. Dusty clothing should be laundere before reuse. Use precautionary measures to avoid creating dust when removing or laundering clothing. Wear safety glasses or goggles to protect against exposure. None known.		

Environmental Exposure Controls No information available

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State: Solid	Color: Various
Odor: Odorless	Odor Threshold: No information available
Property	Values
Remarks/ - Method	
pH:	9.9
Freezing Point/Range	No data available
Melting Point/Range	No data available
Boiling Point/Range	No data available
Flash Point	No data available
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	2.65
Water Solubility	Insoluble 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

 Hydrofluoric acid.

10.6. Hazardous Decomposition Products

Amorphous silica may transform at elevated temperatures to tridymite (870 C) or cristobalite (1470 C).

SECTION 11: Toxicological Information

11.1. Information on Toxicological Effects

Acute Toxicity Inhalation	Inhaled crystalline silica in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (IARC, Group 1). There is sufficient evidence in experimental animals for the carcinogenicity of tridymite (IARC, Group 2A).
	Breathing silica dust may cause irritation of the nose, throat, and respiratory passages. Breathing silica dust may not cause noticeable injury or illness even though permanent lung damage may be occurring. Inhalation of dust may also have serious chronic health effects (See "Chronic Effects/Carcinogenicity" subsection below).
Eye Contact Skin Contact Ingestion	May cause mechanical irritation to eye. May cause mechanical skin irritation. None known.

Chronic Effects/Carcinogenicity

Silicosis: Excessive inhalation of respirable crystalline silica dust may cause a progressive, disabling, and sometimes-fatal lung disease called silicosis. Symptoms include cough, shortness of breath, wheezing, non-specific chest illness, and reduced pulmonary function. This disease is exacerbated by smoking. Individuals with silicosis are predisposed to develop tuberculosis.

Cancer Status: The International Agency for Research on Cancer (IARC) has determined that crystalline silica inhaled in the form of quartz or cristobalite from occupational sources can cause lung cancer in humans (Group 1 - carcinogenic to humans) and has determined that there is sufficient evidence in experimental animals for the carcinogenicity of tridymite (Group 2A - possible carcinogen to humans). Refer to IARC Monograph 68, Silica, Some Silicates and Organic Fibres (June 1997) in conjunction with the use of these minerals. The National Toxicology Program classifies respirable crystalline silica as "Known to be a human carcinogen". Refer to the 9th Report on Carcinogens (2000). The American Conference of Governmental Industrial Hygienists (ACGIH) classifies crystalline silica, quartz, as a suspected human carcinogen (A2). There is some evidence that breathing respirable crystalline silica or the disease silicosis is associated with an increased incidence of significant disease endpoints such as scleroderma (an immune system disorder manifested by scarring of the lungs, skin, and other internal organs) and kidney disease.

Toxicology data for the components

cristobalite

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Crystalline silica, quartz	14808-60-7	>15,000 mg/kg (Human)	No data available	No data available
Crystalline silica, cristobalite	14464-46-1	>15,000 mg/kg (Human)	No data available	No data available
Crystalline silica, tridymite	15468-32-3	>15,000 mg/kg (Human)	No data available	No data available
Substances	CAS Number	Skin corrosion/irritation		
Crystalline silica, quartz	14808-60-7	Non-irritating to the skin		
Crystalline silica, cristobalite	14464-46-1	Non-irritating to the skin		
Crystalline silica, tridymite	15468-32-3	Non-irritating to the skin		
Substances	CAS Number	Eye damage/irritation		
Crystalline silica, quartz	14808-60-7	Mechanical irritation of the eyes is	possible.	
Crystalline silica, cristobalite	14464-46-1	Mechanical irritation of the eyes is possible.		
Crystalline silica, tridymite	15468-32-3	Mechanical irritation of the eyes is possible.		
Substances	CAS Number	Skin Sensitization		
Crystalline silica, quartz	14808-60-7	No information available.		
Crystalline silica, cristobalite	14464-46-1	No information available		
Crystalline silica, tridymite	15468-32-3	No information available		
Substances	CAS Number	Respiratory Sensitization		
Crystalline silica, quartz	14808-60-7	No information available		
Crystalline silica, cristobalite	14464-46-1	No information available		
Crystalline silica, tridymite	15468-32-3	No information available		
Substances	CAS Number	Mutagenic Effects		
Crystalline silica, quartz	14808-60-7	Not regarded as mutagenic.		
Crystalline silica,	14464-46-1	Not regarded as mutagenic.		

Crystalline silica, tridymite	15468-32-3	Not regarded as mutagenic.	
	1		
	CAS Number	Carcinogenic Effects	

Crystalline silica, quartz	14808-60-7	Contains crystalline silica which may cause silicosis, a delayed and progressive lung disease. The IARC and NTP have determined there is sufficient evidence in humans of the carcinogenicity of crystalline silica with repeated respiratory exposure. Based on available scientific evidence, this substance is a threshold carcinogen with a mode of action involving indirect genotoxicity secondary to lung injury.
Crystalline silica, cristobalite	14464-46-1	Contains crystalline silica which may cause silicosis, a delayed and progressive lung disease. The IARC and NTP have determined there is sufficient evidence in humans of the carcinogenicity of crystalline silica with repeated respiratory exposure. Based on available scientific evidence, this substance is a threshold carcinogen with a mode of action involving indirect genotoxicity secondary to lung injury.
Crystalline silica, tridymite	15468-32-3	Contains crystalline silica which may cause silicosis, a delayed and progressive lung disease. The IARC and NTP have determined there is sufficient evidence in humans of the carcinogenicity of crystalline silica with repeated respiratory exposure. Based on available scientific evidence, this substance is a threshold carcinogen with a mode of action involving indirect genotoxicity secondary to lung injury.

	CAS Number	Reproductive toxicity
Crystalline silica, quartz	14808-60-7	No information available
Crystalline silica, cristobalite	14464-46-1	No information available
Crystalline silica, tridymite	15468-32-3	No information available

Substances	CAS Number	STOT - single exposure
Crystalline silica, quartz	14808-60-7	No significant toxicity observed in animal studies at concentration requiring classification.
Crystalline silica, cristobalite	14464-46-1	No significant toxicity observed in animal studies at concentration requiring classification.
Crystalline silica, tridymite	15468-32-3	No significant toxicity observed in animal studies at concentration requiring classification.

Substances	CAS Number	STOT - repeated exposure
Crystalline silica, quartz	14808-60-7	Causes damage to organs through prolonged or repeated exposure if inhaled: (Lungs)
Crystalline silica, cristobalite	14464-46-1	Causes damage to organs through prolonged or repeated exposure if inhaled: (Lungs)
Crystalline silica, tridymite	15468-32-3	Causes damage to organs through prolonged or repeated exposure if inhaled: (Lungs)

Substances	CAS Number	Aspiration hazard
Crystalline silica, quartz	14808-60-7	Not applicable
Crystalline silica, cristobalite	14464-46-1	Not applicable
Crystalline silica, tridymite	15468-32-3	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
Crystalline silica, quartz	14808-60-7	No information available	LL0 (96h) 10,000 mg/L (Danio rerio) (similar substance)	No information available	LL50 (24h) > 10,000 mg/L (Daphnia magna) (similar substance)
Crystalline silica, cristobalite	14464-46-1	No information available	LL0 (96h) 10,000 mg/L (Danio rerio) (similar substance)	No information available	LL50 (24h) > 10,000 mg/L (Daphnia magna) (similar substance)
Crystalline silica, tridymite	15468-32-3	No information available	LL0 (96h) 10,000 mg/L(Danio rerio) (similar substance)	No information available	LL50 (24h) > 10,000 mg/L (Daphnia magna) (similar substance)

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Crystalline silica, quartz	14808-60-7	No information available
Crystalline silica, cristobalite	14464-46-1	The methods for determining biodegradability are not applicable to inorganic substances.
Crystalline silica, tridymite	15468-32-3	The methods for determining biodegradability are not applicable to inorganic substances.

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Crystalline silica, quartz	14808-60-7	No information available
Crystalline silica, cristobalite	14464-46-1	No information available
Crystalline silica, tridymite	15468-32-3	No information available

12.4. Mobility in soil

Substances	CAS Number	Mobility
Crystalline silica, quartz	14808-60-7	No information available
Crystalline silica, cristobalite	14464-46-1	No information available
Crystalline silica, tridymite	15468-32-3	No information available

12.5. Results of PBT and vPvB assessment

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT). This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

Substances	PBT and vPvB assessment
Crystalline silica, quartz	Not PBT/vPvB
Crystalline silica, cristobalite	Not PBT/vPvB
Crystalline silica, tridymite	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

Contaminated Packaging

Bury in a licensed landfill according to federal, state, and local regulations. Substance should NOT be deposited into a sewage facility.

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:	Not restricted
UN Proper Shipping Name:	Not restricted
Transport Hazard Class(es):	Not applicable
Packing Group:	Not applicable
Environmental Hazards:	Not applicable
RID	N I <i>i i i i i</i>
UN Number:	Not restricted
UN Proper Shipping Name:	Not restricted
Transport Hazard Class(es):	Not applicable
Packing Group:	Not applicable
Environmental Hazards:	Not applicable
ADR	
UN Number:	Not restricted
UN Proper Shipping Name:	Not restricted
Transport Hazard Class(es):	Not applicable
• • • • •	
Packing Group:	Not applicable
Environmental Hazards:	Not applicable
IATA/ICAO	
UN Number:	Not restricted
UN Proper Shipping Name:	Not restricted

Transport Hazard Class(es):	Not applicable
Packing Group:	Not applicable
Environmental Hazards:	Not applicable
14.1. UN Number:	Not restricted
14.2. UN Proper Shipping Name:	Not restricted

- 14.3. Transport Hazard Class(es): Not applicable
- 14.4. Packing Group: Not applicable
- 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	
US TSCA Inventory	
Canadian DSL Inventory	

This product, and all its components, complies with EINECS All components listed on inventory or are exempt. 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/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

Germany, Water Endangering Classes (WGK)

WGK 0: Generally not water endangering.

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

Crystalline silica, quartz Crystalline silcia, cristobilite Crystalline silcia, trydimite

15.2. Chemical Safety Assessment

No information available

SECTION 16: Other Information

Full text of H-Statements referred to under sections 2 and 3

H351 - Suspected of causing cancer if inhaled

H372 - Causes damage to organs through prolonged or repeated exposure if inhaled

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

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:07-Sep-2015Revision Note07-Sep-2015SDS sections updated: 107-Sep-2015

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

Disclaimer Statement

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End of Safety Data Sheet