SAFETY DATA SHEET



according to WHMIS 2015 and ANSI Z400.1-2010

Urethane 85 Hardener

Section 1. Identification

Product identifier : Frethane 85 Hardener

Product code : 108012

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

Identified uses

Hardener for resins.

Supplier's details : WEICON GmbH & Co. KG

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number TRANSPORT EMERGENCY CONTACT :+1 866 928 0789 ((24h - Toll free)

Section 2. Hazard identification

Classification of the : EYE IRRITATION - Category 2A

substance or mixture RESPIRATORY SENSITIZATION - Category 1

SKIN SENSITIZATION - Category 1 CARCINOGENICITY - Category 2

GHS label elements

Hazard pictograms :



Signal word : Danger

Hazard statements : H317 - May cause an allergic skin reaction.

H319 - Causes serious eye irritation.

H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled.

H351 - Suspected of causing cancer.

Precautionary statements

Date of issue/Date of revision : 2/17/2023 Date of previous issue : 2/17/2023 Version : 1.01 1/12

Section 2. Hazard identification

Prevention: P201 - Obtain special instructions before use.

P202 - Do not handle until all safety precautions have been read and understood.

P280 - Wear protective gloves, protective clothing and eye or face protection.

P284 - Wear respiratory protection. P261 - Avoid breathing vapor.

P264 - Wash thoroughly after handling.

Response: P308 + P313 - IF exposed or concerned: Get medical advice or attention.

P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for

breathing.

P342 + P311 - If experiencing respiratory symptoms: Call a POISON CENTER or

doctor.

P362 + P364 - Take off contaminated clothing and wash it before reuse.

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

P333 + P313 - If skin irritation or rash occurs: Get medical advice or attention. P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do. Continue rinsing. P337 + P313 - If eye irritation persists: Get medical advice or attention.

Storage: P405 - Store locked up.

Disposal : P501 - Dispose of waste according to applicable legislation.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	% (w/w)	CAS number
Poly[oxy(methyl-1,2-ethanediyl)], α-hydro-ω-hydroxy-, polymer with 2,4-diisocyanato-1-methylbenzene	≥80	37273-56-6
2-methoxy-1-methylethyl acetate	≥1 - ≤5	108-65-6
4-isocyanatosulphonyltoluene	≥0.1 - ≤1	4083-64-1
4-methyl-m-phenylene diisocyanate	≥0.1 - ≤1	584-84-9
hexahydro-4-methylphthalic anhydride	≥0.1 - ≤1	19438-60-9

Ranges if listed above for hazardous ingredient(s) are prescribed ranges. The actual concentration(s) or actual concentration range(s) are being withheld as a trade secret.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First-aid measures

Description of necessary first aid measures

Eye contact : Immediately

: Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10

minutes. Get medical attention.

Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing.If it is suspected that fumes are still present, the rescuer should wear an appropriate

mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may

be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. In the event of any complaints or symptoms, avoid further exposure.

Date of issue/Date of revision : 2/17/2023 Date of previous issue : 2/17/2023 Version : 1.01 2/12

Section 4. First-aid measures

Skin contact: Wash with plenty of soap and water. Remove contaminated clothing and shoes.

Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before

reuse. Clean shoes thoroughly before reuse.

ingestion : Wash out mouth with water. Remove dentures if any. If material has been

swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open

airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Skin contact: May cause an allergic skin reaction.

Ingestion: No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:

pain or irritation watering redness

Inhalation : Adverse symptoms may include the following:

wheezing and breathing difficulties

asthma

Skin contact: Adverse symptoms may include the following:

irritation redness

Ingestion: No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed.

The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments: No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it

is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing

thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing

media

: Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing

media

: None known.

Specific hazards arising from the chemical

: In a fire or if heated, a pressure increase will occur and the container may burst.

Date of issue/Date of revision : 2/17/2023 Date of previous issue : 2/17/2023 Version : 1.01 3/12

Section 5. Fire-fighting measures

Hazardous thermal decomposition products

Decomposition products may include the following materials: carbon dioxide

carbon monoxide nitrogen oxides

Hydrogen cyanide (HCN).

Special protective actions for fire-fighters

: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without

suitable training.

Special protective equipment for fire-fighters Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

: No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders: If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions

: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill

: Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Section 7. Handling and storage

Precautions for safe handling

Protective measures

: Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems or asthma, allergies or chronic or recurrent respiratory disease should not be employed in any process in which this product is used. Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapor or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Date of issue/Date of revision : 2/17/2023 : 2/17/2023 Version: 1.01 Date of previous issue

Section 7. Handling and storage

Conditions for safe storage, including any incompatibilities

: Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
2-methoxy-1-methylethyl acetate	CA British Columbia Provincial (Canada, 6/2021). TWA: 50 ppm 8 hours. STEL: 75 ppm 15 minutes. CA Ontario Provincial (Canada, 6/2019). TWA: 270 mg/m³ 8 hours. TWA: 50 ppm 8 hours.
4-methyl-m-phenylene diisocyanate	CA Alberta Provincial (Canada, 6/2018). 8 hrs OEL: 0.04 mg/m³ 8 hours. C: 0.02 ppm 8 hrs OEL: 0.005 ppm 8 hours. C: 0.1 mg/m³ CA British Columbia Provincial (Canada, 6/2021). Absorbed through skin. Skin sensitizer. Inhalation sensitizer. TWA: 0.005 ppm 8 hours. C: 0.01 ppm CA Quebec Provincial (Canada, 6/2021). [Toluene diisocyanate] Skin sensitizer. TWAEV: 0.005 ppm 8 hours. TWAEV: 0.036 mg/m³ 8 hours. STEV: 0.02 ppm 15 minutes. STEV: 0.14 mg/m³ 15 minutes. CA Ontario Provincial (Canada, 6/2019). [Isocyanates, organic compounds] Ceiling Limit: 0.02 ppm TWA: 0.005 ppm 8 hours. CA Saskatchewan Provincial (Canada, 7/2013). Skin sensitizer. STEL: 0.02 ppm 15 minutes. TWA: 0.005 ppm 8 hours.

Appropriate engineering controls

: Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Environmental exposure controls

: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Date of issue/Date of revision: 2/17/2023Date of previous issue: 2/17/2023Version: 1.015/12

Section 8. Exposure controls/personal protection

Hygiene measures

: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection

: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection

: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. Recommended:; Viton®, Butyl rubber gloves.

Body protection

: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection

Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection

Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. Recommended: inorganic gases/vapors filter (Type B)

Section 9. Physical and chemical properties

<u>Appearance</u>

Physical state : Liquid. Color : White. Odor : Odorless. : Not available. Odor threshold Hq : Not applicable. Melting point/freezing point : Not available. Boiling point, initial boiling : Not available. point, and boiling range

: Closed cup: 190°C (374°F) Flash point

Evaporation rate : Not available. : Not available. **Flammability** Lower and upper explosion : Not available.

limit/flammability limit

Vapor pressure

		Vapor Pressure at 20°C		\	Vapor pressure at 50°C		
Ingredient name	mm Hg	kPa	Method	mm Hg	kPa	Method	
2-methoxy-1-methylethyl acetate	2.7	0.36	OECD 104				
octamethylcyclotetrasiloxane	0.99	0.13					
decamethylcyclopentasiloxane	0.25	0.033					
4-methyl-m-phenylene diisocyanate	0.01	0.0013	EU A.4				
4-isocyanatosulphonyltoluene	0	0					

Date of issue/Date of revision : 2/17/2023 : 2/17/2023 Version : 1.01 Date of previous issue

Section 9. Physical and chemical properties

hexahydro-4-methylphthalic anhydride	0	0			
tosyl chloride	0	0			l

Relative vapor density : Not available.
Relative density : Not available.

Density : 1.1 g/cm³ [20°C (68°F)]

Solubility(ies)

Not available.

Solubility in water : Not available.

Partition coefficient: n- : Not applicable.

octanol/water

Auto-ignition temperature :

Ingredient name	°C	°F	Method
2-methoxy-1-methylethyl acetate	333	631.4	DIN 51794
decamethylcyclopentasiloxane	3/2	701.6	ASTM E 659-78

octamethylcyclotetrasiloxane 384 to 387 723.2 to 728.6 ASTM E 659

4-methyl-m-phenylene diisocyanate 620 1148

Decomposition temperature: Not available.

Viscosity : Dynamic: 7000 mPa·s (7000 cP)

Flow time (ISO 2431) : Not available.

Particle characteristics

Median particle size : Not applicable.

Section 10. Stability and reactivity

Reactivity: No specific test data related to reactivity available for this product or its ingredients.

Chemical stability: The product is stable.

Possibility of hazardous

reactions

: Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials: No specific data.

Hazardous decomposition

products

: Under normal conditions of storage and use, hazardous decomposition products

should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Poly[oxy(methyl- 1,2-ethanediyl)], α-hydro-ω- hydroxy-, polymer with 2,4-diisocyanato- 1-methylbenzene	LC50 Inhalation Dusts and mists	Rat	3.82 mg/l	4 hours
4-isocyanatosulphonyltoluene	LD50 Oral	Rat	2234 mg/kg	-
4-methyl-m-phenylene	LC50 Inhalation Gas.	Rat	14 ppm	4 hours

Date of issue/Date of revision : 2/17/2023 Date of previous issue : 2/17/2023 Version : 1.01 7/12

Section 11. Toxicological information

diisocyanate				
	LC50 Inhalation Vapor	Rat	0.47 mg/l	1 hours
	LC50 Inhalation Vapor	Rat - Male, Female	0.107 mg/l	4 hours

Acute toxicity estimates

Route

Not available.

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
4-isocyanatosulphonyltoluene	Eyes - Moderate irritant	Rabbit	-	100 uL	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 uL	-
4-methyl-m-phenylene diisocyanate	Eyes - Severe irritant	Rabbit	-	100 mg	-
	Skin - Moderate irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Moderate irritant	Rat	-	8 hours 12 mg	-
	Skin - Severe irritant	Rabbit	-	500 mg	-

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Classification

Product/ingredient name	IARC	NTP	ACGIH
4-methyl-m-phenylene diisocyanate		Reasonably anticipated to be a human carcinogen.	A3

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
2-methoxy-1-methylethyl acetate	Category 3	-	Narcotic effects
4-isocyanatosulphonyltoluene	Category 3		Respiratory tract irritation
4-methyl-m-phenylene diisocyanate	Category 3		Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Date of issue/Date of revision : 2/17/2023 Date of previous issue : 2/17/2023 Version : 1.01 8/12

Section 11. Toxicological information

Not available

Aspiration hazard

Not available.

Information on the likely

: Not available.

routes of exposure

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Skin contact: May cause an allergic skin reaction.

Ingestion: No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact: Adverse symptoms may include the following:

pain or irritation watering redness

Inhalation : Adverse symptoms may include the following:

wheezing and breathing difficulties

asthma

Skin contact: Adverse symptoms may include the following:

irritation redness

Ingestion: No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate

: Not available.

effects

Potential delayed effects : Not available.

Long term exposure

Potential immediate

: Not available.

effects

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : Once sensitized, a severe allergic reaction may occur when subsequently exposed

to very low levels.

Carcinogenicity: Suspected of causing cancer. Risk of cancer depends on duration and level of

exposure.

Mutagenicity : No known significant effects or critical hazards.
 Teratogenicity : No known significant effects or critical hazards.
 Developmental effects : No known significant effects or critical hazards.
 Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Date of issue/Date of revision : 2/17/2023 Date of previous issue : 2/17/2023 Version : 1.01 9/12

Section 11. Toxicological information

Product/ingredient name	Oral (mg/ kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
4-isocyanatosulphonyltoluene	2234	N/A	N/A	N/A	N/A
4-methyl-m-phenylene diisocyanate	N/A	N/A	100	0.5	N/A

Section 12. Ecological information

Toxicity

Not available.

Persistence and degradability

Not available.

Bioaccumulative potential

Product/ingredient name	LogPow	BCF	Potential
2-methoxy-1-methylethyl acetate	1.2	-	low
4-methyl-m-phenylene diisocyanate	3.43	-	low
hexahydro-4-methylphthalic anhydride	2.09	-	low

Mobility in soil

Soil/water partition coefficient (Koc)

: Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods

The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

Date of issue/Date of revision : 2/17/2023 Date of previous issue : 2/17/2023 Version : 1.01 10/12

Section 14. Transport information

	TDG Classification	DOT Classification	IMDG	IATA
UN number	Not available.	UN3082	Not available.	Not available.
UN proper shipping name	Not available.	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (4-methyl-m- phenylene diisocyanate)	Not available.	Not available.
Transport hazard class(es)	Not available.	9	Not available.	Not available.
Packing group	-	III	-	-
Environmental hazards	No.	No.	No.	No.

Additional information

DOT Classification

: Reportable quantity 19938.4 lbs / 9052 kg [2173.9 gal / 8229.1 L]. The classification of the product is due solely to the presence of one or more US DOTlisted 'Hazardous substances' that are subject to reportable quantity requirements and only applies to shipments of packages greater than, or equal to, the product reportable quantity. Package sizes less than the product reportable quantity are not regulated as hazardous materials.

Special precautions for user :

Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according : Not available.

to IMO instruments

Section 15. Regulatory information

Canadian lists

Canadian NPRI : The following components are listed: propylene glycol methyl ether acetate; toluene-

2,4-diisocyanate

CEPA Toxic substances : None of the components are listed.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Australia : Not determined.

Date of issue/Date of revision : 2/17/2023 : 2/17/2023 Version : 1.01 11/12 Date of previous issue

Section 15. Regulatory information

Canada : All components are listed or exempted.

China : Not determined.

Eurasian Economic Union: Russian Federation inventory: All components are listed or exempted.

Japan : Japan inventory (CSCL): Not determined.

Japan inventory (ISHL): Not determined.

New Zealand: Not determined.Philippines: Not determined.Republic of Korea: Not determined.

Taiwan: All components are listed or exempted.

Thailand : Not determined.
Turkey : Not determined.
United States : Not determined.
Viet Nam : Not determined.

Section 16. Other information

History

Date of printing : 2/17/2023 Date of issue/Date of : 2/17/2023

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Date of previous issue : 2/17/2023 Version : 1.01

Key to abbreviations : ATE = Acute Toxicity Estimate

BCF = Bioconcentration Factor

GHS = Globally Harmonized System of Classification and Labelling of Chemicals

HPR = Hazardous Products Regulations IATA = International Air Transport Association

IBC = Intermediate Bulk Container

IMDG = International Maritime Dangerous Goods

LogPow = logarithm of the octanol/water partition coefficient

MARPOL = International Convention for the Prevention of Pollution From Ships,

1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)

N/A = Not available SGG = Segregation Group UN = United Nations

Procedure used to derive the classification

Classification	Justification
EYE IRRITATION - Category 2A	Calculation method
RESPIRATORY SENSITIZATION - Category 1	Calculation method
SKIN SENSITIZATION - Category 1	Calculation method
CARCINOGENICITY - Category 2	Calculation method

References: Not available.

▼ Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the abovenamed supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Date of issue/Date of revision : 2/17/2023 Date of previous issue : 2/17/2023 Version : 1.01 12/12