

### SAFETY DATA SHEET

Circular no. 32/2017/TT-BCT

# HBF 4

SDS #: 082937

### Section 1. Identification

CAS number	: Not applicable.
UN number	: Not regulated.
EC number	: Mixture.
GHS product identifier	: HBF 4

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

Identified uses	
Brake fluids.	

Supplier's details	
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### Section 2. Hazard identification

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: TOXIC TO REPRODUCTION - Category 2 **Classification of the** 

substance or mixture

**GHS label elements** 

Hazard pictograms



Signal word Hazard statements <u>Precautionary statements</u>	<ul><li>Warning</li><li>Suspected of damaging fertility or the unborn child.</li></ul>
General	: If medical advice is needed, have product container or label at hand. Keep out of reach of children. Read label before use.
Prevention	: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves, protective clothing and eye or face protection.
Response	: IF exposed or concerned: Get medical advice or attention.



Storage	Store loo	cked up.
Disposal	•	of contents and container in accordance with all local, regional, national rnational regulations.
Other hazards which do not result in classification	None kn	own.

## Section 3. Composition/information on ingredients

Substance/mixture	: Mixture
Other means of	: Not available.
identification	

Ingredient name	CAS number	% (w/w)
tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl] orthoborate	30989-05-0	≥75 - ≤90
2-[2-(2-butoxyethoxy)ethoxy]ethanol	143-22-6	≤10
Poly(oxy-1,2-ethanediyl), α-butyl-ω-hydroxy-	9004-77-7	≤10
2-(2-methoxyethoxy)ethanol	111-77-3	<3

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment 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 fir	<u>st aid measures</u>
Eye contact	: 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 if irritation occurs.
Inhalation	: Remove victim to fresh air and keep at rest in a position comfortable for breathing. 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 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.
Skin contact	: Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. 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/e	
Potential acute health effe	
Eye contact	: No known significant effects or critical hazards.

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Inhalation	: No known significant effects or critical hazards.
Skin contact	: No known significant effects or critical hazards.
Ingestion	: No known significant effects or critical hazards.
Over-exposure signs	/symptoms
Eye contact	: No specific data.
Inhalation	: Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations
Skin contact	: Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations
Ingestion	: Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations

indication of infinediate med	incal attention and special treatment needed, in necessary
Notes to physician	<ul> <li>Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.</li> </ul>
Specific treatments	: No specific treatment.
Protection of first-aiders	: No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

# Section 5. Fire-fighting measures

Extinguishing media	
Suitable extinguishing media	: Use dry chemical, CO <sub>2</sub> , water spray (fog) or foam.
Unsuitable extinguishing media	: Do not use water jet.
Specific hazards arising from the chemical	: In a fire or if heated, a pressure increase will occur and the container may burst.
Hazardous thermal decomposition products	: Carbon dioxide. carbon monoxide
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 mode.



## 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 co	ont	<u>ainment and cleaning up</u>
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.
Large spill	:	Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

# Section 7. Handling and storage

### Precautions for safe handling

Protective measures	:	Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. 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. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. 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.
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 limit	<u>ts</u>	
None.		
Biological exposure indices	2	
No exposure indices known.		
Appropriate engineering controls	:	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.
Advisory OEL	:	No known significant effects or critical hazards.
Individual protection measure	<u>es</u>	
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. 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: safety glasses with side-shields.
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. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated. Hydrocarbon-proof gloves Fluorinated rubber nitrile rubber Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts,
		abrasion, and the contact time.
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.
Respiratory protection	:	Ensure adequate ventilation and check that a safe, breathable atmosphere is present before entry into confined spaces In case of inadequate ventilation wear respiratory protection: Type A/P2 Warning ! filters have a limited use duration The use of breathing apparatus must comply strictly with the manufacturer's instructions and the regulations governing their choices and uses



# Section 9. Physical and chemical properties

The conditions of measurement of all properties are at standard temperature (20°C / 68°F) and pressure (1013 hPa) unless otherwise indicated

<u>Appearance</u>				
Physical state	: Liq	: Liquid.		
Color	: Am	Amber.		
Odor	: Mil	d.		
Odor threshold	: No	t available.		
рН	: 7 to	o 10.5		
Melting point/freezing point	: <-5	50°C (<-58°F)		
Boiling point	: >20	60°C (>500°F)		
Flash point	: Op	en cup: >120°C (>248°F)		
Evaporation rate	: No	t available.		
Flammability (solid, gas)	: No	t available.		
Lower and upper explosive (flammable) limits	: No	: Not available.		
Vapor pressure	: Not available.			
Vapor density	: No	t available.		
Relative density	: 1.0	: 1.02 to 1.07 [ASTM D 4052]		
Density	: 1.0	: 1.02 to 1.07 g/cm <sup>3</sup> [20°C] [ASTM D 4052]		
Solubility(ies)	:			
Media		Result		
cold water hot water		Easily soluble Easily soluble		
Miscible with water	: Ye	S.		
Solubility in water	: No	t available.		
Partition coefficient: n-	: No	t applicable.		
octanol/water				
Auto-ignition temperature		80°C (>536°F)		
Decomposition temperature		0°C (572°F)		
Viscosity		ematic (40°C (104°F)): 880 mm²/s (880 cSt) [ASTM D 445]		
Flow time (ISO 2431)	: No	t available.		
Particle characteristics				
Median particle size	: 1	Not applicable.		

## Section 10. Stability and reactivity

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Conditions to avoid	:	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Possibility of hazardous reactions	:	Under normal conditions of storage and use, hazardous reactions will not occur.
Chemical stability	:	Stable under recommended storage and handling conditions (see Section 7).
Reactivity	:	No specific test data related to reactivity available for this product or its ingredients.



Incompatible materials	1	strong acids	Strong bases	Strong oxidizing agents	Reducing agents

Hazardous decomposition	: Carbon dioxide.
products	carbon monoxide

# Section 11. Toxicological information

### Information on toxicological effects

### Acute toxicity

Product/substance	Result	Species	Dose	Exposure	Test
tris[2-[2-(2-methoxyethoxy) ethoxy]ethyl] orthoborate	LD50 Dermal	Rat	>2000 mg/kg	-	402
	LD50 Oral	Rat	>2000 mg/kg	-	401
2-[2-(2-butoxyethoxy)ethoxy] ethanol	LD50 Dermal	Rabbit	3480 mg/kg	-	-
	LD50 Oral	Rat	5300 mg/kg	-	-
Poly(oxy-1,2-ethanediyl), α- butyl-ω-hydroxy-	LD50 Dermal	Rabbit	3540 mg/kg	-	-
, , ,	LD50 Oral	Rat	2630 mg/kg	-	-
2-(2-methoxyethoxy)ethanol	LD50 Dermal	Rabbit	9404 mg/kg	-	OECD 402
	LD50 Oral	Rat	7128 mg/kg	-	OECD 401

**Conclusion/Summary** : Based on available data, the classification criteria are not met.

### Irritation/Corrosion

Product/substance	Result	Species	Score	Exposure	Test		
2-[2-(2-butoxyethoxy)ethoxy] ethanol	Eyes - Moderate irritant	Rabbit	-	24 hours 20 mg	-		
	Eyes - Severe irritant	Rabbit	-	50 mg	-		
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-		
Skin	: Based on available data,	the classification	on criteria ar	e not met.			
Eyes	Based on available data, the classification criteria are not met. The supplier of one or more of the components contained within this formulation has indicated that he has data on the components and/or similar mixtures, which confirms that at the concentration used, classification is not required						
Respiratory	: Based on available data,	the classification	on criteria ar	e not met.			
Sensitization							
Skin	Based on available data, t	he classificatio	n criteria are	e not met.			
Respiratory	Based on available data, t	he classificatio	n criteria are	e not met.			
<u>Mutagenicity</u>							
Conclusion/Summary	Based on available data, t	he classificatio	n criteria are	e not met.			
Carcinogenicity							
Conclusion/Summary	Based on available data, t	he classificatio	n criteria are	e not met.			
Reproductive toxicity							
Conclusion/Summary	Based on available data, t	he classificatio	n criteria are	e not met.			
<u>Feratogenicity</u>							
Conclusion/Summary	Based on available data, t	he classificatio	n criteria are	e met.			
Specific target organ toxicity	<u>y (single exposure)</u>						
Conclusion/Summary	: Based on available data,	the classificati	on criteria a	re not met.			

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Specific target organ toxicit	hv (	repeated exposure)
Conclusion/Summary	-	Based on available data, the classification criteria are not met.
Aspiration hazard	•	
Conclusion/Summary	:	Based on available data, the classification criteria are not met.
Information on the likely routes of exposure	:	Not available.
Potential acute health effects	5	
Eye contact	1	No known significant effects or critical hazards.
Inhalation	1	No known significant effects or critical hazards.
Skin contact	1	No known significant effects or critical hazards.
Ingestion	:	No known significant effects or critical hazards.
Symptoms related to the phy	sic	cal, chemical and toxicological characteristics
Eye contact	1	No specific data.
Inhalation	:	Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations
Skin contact	:	Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations
Ingestion	:	Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations
Delayed and immediate effect	ts	and also chronic effects from short and long term exposure
<u>Short term exposure</u>		
Potential immediate effects	1	Not available.
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	: No known significant effects or critical hazards.
Carcinogenicity	: No known significant effects or critical hazards.
Mutagenicity	: No known significant effects or critical hazards.
Reproductive toxicity	: Suspected of damaging fertility or the unborn child.

Numerical measures of toxicity Acute toxicity estimates



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Product/substance	Oral (mg/ kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
HBF 4	52600.0	23489.3	N/A	N/A	N/A
2-[2-(2-butoxyethoxy)ethoxy]ethanol	5300	3480	N/A	N/A	5.1
Poly(oxy-1,2-ethanediyl), α-butyl-ω-hydroxy-	2630	3540	N/A	N/A	N/A
2-(2-methoxyethoxy)ethanol	7128	9404	N/A	20.1	N/A

#### Other information

Not available.

# Section 12. Ecological information

Toxicity				
Product/substance	Result	Species	Exposure	Test
tris[2-[2-(2-methoxyethoxy) ethoxy]ethyl] orthoborate	Acute EC50 >224 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours	201
	Acute EC50 >211 mg/l	Crustaceans - Daphnia magna	48 hours	202
	Acute LC50 >222.2 mg/l	Fish - Oncorhynchus mykiss	96 hours	203
	Chronic NOEC >224 mg/l	Algae	72 hours	OECD 201
2-[2-(2-butoxyethoxy)ethoxy] ethanol	Acute EC50 500 mg/l	Algae - Desmodesmus subspicatus	72 hours	-
	Acute EC50 500 mg/l	Daphnia - Daphnia magna	48 hours	-
	Acute LC50 2182 mg/l	Fish	96 hours	-
Poly(oxy-1,2-ethanediyl), α- butyl-ω-hydroxy-	Acute EC50 2490 mg/l	Algae - Scenedesmus capricornutum	72 hours	OECD 201
	Acute EC50 3200 mg/l	Daphnia - Daphnia magna	48 hours	OECD 202
	Acute LC50 1800 mg/l	Fish	96 hours	-
2-(2-methoxyethoxy)ethanol	Acute EC50 >1000 mg/l	Algae - Pseudokirchnerella subcapitata	96 hours	OECD 201
	Acute EC50 1192 mg/l	Daphnia - Daphnia magna	48 hours	-
	Acute EC50 5741 mg/l	Fish	96 hours	-
	Acute EC50 >10000 mg/l	Micro-organism	17 hours	-

### Persistence and degradability

Product/substance	Test	Result		Dose	Inoculum
tris[2-[2-(2-methoxyethoxy) ethoxy]ethyl] orthoborate	OECD 301A	>70 % - Readily - 10	) days	-	Activated sludge
Product/substance	Aquatic half-life		Photolysi	s	Biodegradability
tris[2-[2-(2-methoxyethoxy) ethoxy]ethyl] orthoborate 2-[2-(2-butoxyethoxy)ethoxy] ethanol	-		-		Readily Readily
2-(2-methoxyethoxy)ethanol	-		-		Readily

### **Bioaccumulative potential**

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Product/substance	LogKow	BCF	Potential
tris[2-[2-(2-methoxyethoxy) ethoxy]ethyl] orthoborate	1	-	Low
2-[2-(2-butoxyethoxy)ethoxy] ethanol	0.51	-	Low
Poly(oxy-1,2-ethanediyl), α- butyl-ω-hydroxy-	0.436	-	Low
2-(2-methoxyethoxy)ethanol	-0.47	-	Low

<u>Mobility in soil</u>	
Soil/water partition coefficient (Koc)	: Not available.
Mobility in soil	: Given its physical and chemical characteristics, the product generally shows low soil mobility Loss by evaporation is limited Soluble in water

Other adverse effects	: No known significant effects or critical hazards.
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# 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			
	UN	IMDG	ICAO/IATA
UN/ID No	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-
Transport hazard class(es)	-	-	-
Packing group	-	-	-
Environmental hazards	No.	No.	No.

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

Toxic classification (TCVN : 3 3164-79)

### 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

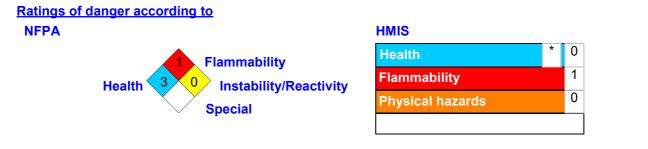
Not listed.

### **Inventory list**

Australia inventory (AIIC)	: Not determined.
Canada inventory (DSL/NDSL)	: Not determined.
China inventory (IECSC)	: Not determined.
Europe inventory (EC)	: All components are listed or exempted.
Japan inventory	: Japan inventory (CSCL): Not determined. Japan inventory (ISHL): Not determined.
New Zealand Inventory of Chemicals (NZIoC)	: Not determined.
Philippines inventory (PICCS)	: Not determined.
Korea inventory (KECI)	: Not determined.
Taiwan Chemical Substances Inventory (TCSI)	: Not determined.
Thailand inventory	: Not determined.
Turkey inventory	: Not determined.
United States inventory (TSCA 8b)	: Not determined.
Vietnam inventory	: Not determined.

The information stated in this section relates solely to the conformity of the chemical product with the countries Inventories. The information used to confirm the inventory status of this product may be based on additional data to the chemical composition shown in Section 3. Other regulations may apply for importation or marketing authorizations.

### Section 16. Other information



Date of revision	: 2023/08/16
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<u>History</u>	
Date of revision	: 2023/08/16
previous revision date	: No previous validation
Version	: 1
Key to abbreviations	<ul> <li>ATE = Acute Toxicity Estimate BCF = Bioconcentration Factor GHS = Globally Harmonized System of Classification and Labelling of Chemicals HMIS = Hazardous Material Information System (U.S.A.) IATA = International Air Transport Association IBC = Internediate 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 NFPA = National Fire Protection Association (U.S.A.) SGG = Segregation Group UN = United Nations</li> </ul>
Procedure used to derive th	e classification

#### Procedure used to derive the classification

Classification	Justification
TOXIC TO REPRODUCTION - 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.