

# SAFETY DATA SHEET

FRS HARDENER

In accordance with the Standard for Classification and Labeling of Chemical Substance and Safety Data Sheet,  
Article 10 Paragraph 1

## Section 1. Chemical product and company identification

**A. Product name** : FRS HARDENER  
**SDS code** : 21040000D

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

#### Identified uses

Paint. Professional use Industrial use

#### Uses advised against

All other uses

**Product use** : Filler for interior use


### C. Supplier's details

MAPAERO SAS  
10, Avenue de la Rijole CS30098  
09103 PAMIERS Cedex  
France

**e-mail address of person responsible for this SDS** : PSRA\_PAMIERS@akzonobel.com

**Emergency telephone number (with hours of operation)** : +33 (0)5 34 01 34 01  
+33 (0)5 61 60 23 30

## Section 2. Hazards identification




**A. Hazard classification** :  **FLAMMABLE LIQUIDS** - Category 3  
ACUTE TOXICITY (inhalation) - Category 3  
SKIN IRRITATION - Category 2  
EYE IRRITATION - Category 2A  
SKIN SENSITIZATION - Category 1  
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3  
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3  
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1  
This product is classified in accordance with the Industrial Safety and Health Act and the Chemical Control Act.

### B. GHS label elements, including precautionary statements

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**Version** : 2  
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## Section 2. Hazards identification

- Symbol** :   
- Signal word** : Danger
- Hazard statements** : H226 - Flammable liquid and vapor.  
H315 - Causes skin irritation.  
H317 - May cause an allergic skin reaction.  
H319 - Causes serious eye irritation.  
H331 - Toxic if inhaled.  
H335 - May cause respiratory irritation.  
H336 - May cause drowsiness or dizziness.  
H372 - Causes damage to organs through prolonged or repeated exposure.

### Precautionary statements

- Prevention** : P280 - Wear protective gloves. Wear eye or face protection.  
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
P260 - Do not breathe vapor.  
P270 - Do not eat, drink or smoke when using this product.  
P264 - Wash hands thoroughly after handling.
- Response** : P314 - Get medical advice or attention if you feel unwell.  
P304 + P340 + P311 - IF INHALED: Remove person to fresh air and keep comfortable for breathing. 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** : P403 + P233 - Store in a well-ventilated place. Keep container tightly closed.  
P403 + P235 - Keep cool.
- Disposal** : P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

- C. Other hazards which do not result in classification** : None known.

## Section 3. Composition/information on ingredients

**Substance/mixture** : Mixture

Ingredient name	Common name	Identifiers	%
Hexamethylene diisocyanate, oligomers	hexamethylene-1.6-diisocyanate homopolymer	CAS: 28182-81-2	≥70 - ≤75
2-methoxy-1-methylethyl acetate	2-methoxy-1-methylethyl acetate	CAS: 108-65-6	≥10 - ≤15
xylene	xylene	CAS: 1330-20-7	≥10 - ≤15
ethylbenzene	ethylbenzene	CAS: 100-41-4	≤5
hexamethylene-di-isocyanate	hexamethylene-di-isocyanate	CAS: 822-06-0	≤5
toluene	toluene	CAS: 108-88-3	≤5

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## Section 3. Composition/information on ingredients

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

- A. 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.
- B. 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.
- C. 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.
- D. 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. If necessary, call a poison center or physician. 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.
- E. 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

- A. 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.

## Section 5. Fire-fighting measures

- B. Specific hazards arising from the chemical** : Flammable liquid and vapor. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:  
carbon dioxide  
carbon monoxide  
nitrogen oxides
- C. 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.
- Special precautions 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. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

## Section 6. Accidental release measures

- A. Personal precautions, protective equipment and emergency procedures** : 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. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- B. 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).
- C. Methods and materials for containment and cleaning up**
- Small spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. 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. Use spark-proof tools and explosion-proof equipment. 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

- A. Precautions for safe handling**
- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

## Section 7. Handling and storage

**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.

**B. Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in a segregated and approved area. 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. Eliminate all ignition sources. Separate from oxidizing materials. 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

### A. Control parameters

#### Occupational exposure limits

Ingredient name	Exposure limits
xylene	<b>Ministry of Employment and Labor (Republic of Korea, 1/2020). [Xylene]</b> STEL: 150 ppm 15 minutes. TWA: 100 ppm 8 hours.
ethylbenzene	<b>Ministry of Employment and Labor (Republic of Korea, 1/2020).</b> STEL: 125 ppm 15 minutes. TWA: 100 ppm 8 hours.
hexamethylene-di-isocyanate	<b>Ministry of Employment and Labor (Republic of Korea, 1/2020).</b> TWA: 0.005 ppm 8 hours.
toluene	<b>Ministry of Employment and Labor (Republic of Korea, 1/2020).</b> STEL: 150 ppm 15 minutes. TWA: 50 ppm 8 hours.

**B. Appropriate engineering controls** : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

**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.

### C. Personal protective equipment

**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.

**Eye 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.

## Section 8. Exposure controls/personal 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.
- 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. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.
- 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.

## Section 9. Physical and chemical properties

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

- A. Appearance**
- Physical state** : Liquid.
- Color** : Colorless.
- B. Odor** : Characteristic.
- C. Odor threshold** : Not available.
- D. pH** :  Not available. [DIN EN 1262]
- E. Melting/freezing point** : Not available.
- F. Boiling point, initial boiling point, and boiling range** : Not available.
- G. Flash point** :  Closed cup: 37°C (98.6°F) [Pensky-Martens]
- H. Evaporation rate** : Not available.
- I. Flammability (solid, gas)** : Not available.
- J. Lower and upper explosive (flammable) limits** : Not available.
- K. Vapor pressure** :

Ingredient name	Vapor Pressure at 20°C			Vapor pressure at 50°C		
	mm Hg	kPa	Method	mm Hg	kPa	Method
<input checked="" type="checkbox"/> Toluene	23.17	3.1				
ethylbenzene	9.3	1.2				
Xylene	6.7	0.89				
2-methoxy-1-methylethyl acetate	2.7	0.36				
Hexamethylene diisocyanate	0.01	0.0013				
2,6-di-tert-butyl-p-cresol	0.01	0.0013				
Hexamethylene diisocyanate, oligomers	0.000018	0.0000024	EU A.4			

- L. Solubility(ies)** :

## Section 9. Physical and chemical properties

Media	Result
<input checked="" type="checkbox"/> Cold water	Not soluble [OESO (TG 105)]

**Solubility in water** : Not available.

- M. Vapor density** :  
**N. Density** :  1.07 g/cm<sup>3</sup> [DIN EN ISO 2811-1]  
**O. Partition coefficient: n-octanol/water** :  Not applicable.  
**P. Auto-ignition temperature** :

Ingredient name	°C	°F	Method
<input checked="" type="checkbox"/> methoxy-1-methylethyl acetate	333	631.4	
Xylene	432	809.6	
ethylbenzene	432.22	810	
Hexamethylene diisocyanate	454	849.2	
Toluene	480	896	

- Q. Decomposition temperature** : Not available.  
**R. Viscosity** :  Kinematic (room temperature): 290 mm<sup>2</sup>/s (290 cSt) [DIN EN ISO 3219]  
 Kinematic (40°C (104°F)): 101 mm<sup>2</sup>/s (101 cSt) [DIN EN ISO 3219]  
**S. Molecular weight** : Not applicable.

### Particle characteristics

**Median particle size** :  Not applicable.

## Section 10. Stability and reactivity

- A. Chemical stability** : The product is stable.  
**Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.
- B. Conditions to avoid** : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.
- C. Incompatible materials** : Reactive or incompatible with the following materials:  
 oxidizing materials
- D. Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## Section 11. Toxicological information

- A. Information on the likely routes of exposure** : Not available.

### Potential acute health effects

- Inhalation** : Toxic if inhaled. Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness. May cause respiratory irritation.
- Ingestion** : Can cause central nervous system (CNS) depression.
- Skin contact** : Causes skin irritation. May cause an allergic skin reaction.
- Eye contact** : Causes serious eye irritation.

### Over-exposure signs/symptoms

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## Section 11. Toxicological information

<b>Inhalation</b>	: Adverse symptoms may include the following: respiratory tract irritation coughing nausea or vomiting headache drowsiness/fatigue dizziness/vertigo unconsciousness
<b>Ingestion</b>	: No specific data.
<b>Skin contact</b>	: Adverse symptoms may include the following: irritation redness
<b>Eye contact</b>	: Adverse symptoms may include the following: pain or irritation watering redness

### B. Health hazards

#### Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure	
Hexamethylene diisocyanate, oligomers xylene	LC50 Inhalation Dusts and mists	Rat	18500 mg/m <sup>3</sup>	1 hours	
	LC50 Inhalation Gas.	Rat	6700 ppm	4 hours	
	LC50 Inhalation Gas.	Rat	5000 ppm	4 hours	
	LC50 Inhalation Gas.	Rat	6670 ppm	4 hours	
	LD50 Intraperitoneal	Mouse	1548 mg/kg	-	
	LD50 Intraperitoneal	Mouse	1548 mg/kg	-	
	LD50 Intraperitoneal	Rat	2459 mg/kg	-	
	LD50 Oral	Mouse	2119 mg/kg	-	
	LD50 Oral	Rat	4300 mg/kg	-	
	LD50 Oral	Rat	4300 mg/kg	-	
	LD50 Subcutaneous	Rat	1700 mg/kg	-	
	ethylbenzene	LC50 Inhalation Gas.	Rabbit	4000 ppm	4 hours
		LC50 Inhalation Vapor	Mouse	35500 mg/m <sup>3</sup>	2 hours
		LC50 Inhalation Vapor	Rat	55000 mg/m <sup>3</sup>	2 hours
LD50 Dermal		Rabbit	>5000 mg/kg	-	
LD50 Dermal		Rabbit	17800 uL/kg	-	
LD50 Intraperitoneal		Mouse	2624 uL/kg	-	
LD50 Oral		Rat	3500 mg/kg	-	
LD50 Oral		Rat	3500 mg/kg	-	
hexamethylene-diisocyanate	LC50 Inhalation Dusts and mists	Rat	124 mg/m <sup>3</sup>	4 hours	
	LC50 Inhalation Dusts and mists	Rat	462 mg/m <sup>3</sup>	4 hours	
	LD50 Dermal	Rabbit	570 uL/kg	-	
	LD50 Intravenous	Mouse	5600 µg/kg	-	
	LD50 Oral	Mouse	350 mg/kg	-	
	LD50 Oral	Rat	710 uL/kg	-	
toluene	LC50 Inhalation Gas.	Mouse	400 ppm	24 hours	
	LC50 Inhalation Vapor	Mouse	30000 mg/m <sup>3</sup>	2 hours	
	LC50 Inhalation Vapor	Mouse	19900 mg/m <sup>3</sup>	7 hours	
	LC50 Inhalation Vapor	Rat	49 g/m <sup>3</sup>	4 hours	
	LD50 Dermal	Rabbit	14100 uL/kg	-	
	LD50 Intraperitoneal	Guinea pig	500 mg/kg	-	
	LD50 Intraperitoneal	Mouse	59 mg/kg	-	
	LD50 Intraperitoneal	Rat	1332 mg/kg	-	
	LD50 Intravenous	Rat	1960 mg/kg	-	
	LD50 Oral	Rat	636 mg/kg	-	
	LD50 Route of exposure	Mouse	2 g/kg	-	



## Section 11. Toxicological information

	unreported LD50 Route of exposure	Rat	6900 mg/kg	-
	unreported LD50 Subcutaneous	Mouse	2250 mg/kg	-

### Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Hexamethylene diisocyanate, oligomers	Eyes - Moderate irritant	Rabbit	-	100 mg	-
	Skin - Moderate irritant	Rabbit	-	500 mg	-
	Eyes - Mild irritant	Rabbit	-	87 mg	-
	Eyes - Severe irritant	Rabbit	-	24 hours 5 mg	-
xylene	Skin - Mild irritant	Rat	-	8 hours 60 UI	-
	Skin - Moderate irritant	Rabbit	-	100 %	-
	Skin - Moderate irritant	Rabbit	-	24 hours	-
	Eyes - Severe irritant	Rabbit	-	500 mg	-
ethylbenzene	Skin - Mild irritant	Rabbit	-	500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 15 mg	-
toluene	Eyes - Mild irritant	Rabbit	-	0.5 minutes	-
	Eyes - Mild irritant	Rabbit	-	100 mg	-
	Eyes - Severe irritant	Rabbit	-	870 ug	-
	Eyes - Severe irritant	Rabbit	-	24 hours 2 mg	-
	Skin - Mild irritant	Rabbit	-	435 mg	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 mg	-
	Skin - Moderate irritant	Rabbit	-	500 mg	-

### Sensitization

Not available.

### CMR - ISHA Article 42 Occupational Exposure Limits

Product/ingredient name	Identifiers	Classification
ethylbenzene toluene	CAS: 100-41-4 CAS: 108-88-3	CARCINOGENICITY - Category 2 TOXIC TO REPRODUCTION - Category 2

### Mutagenicity

Not available.

### Carcinogenicity

Not available.

### Classification

Product/ingredient name	OSHA	IARC	NTP	ACGIH
xylene	-	3	-	A4
ethylbenzene	-	2B	-	A3
toluene	-	3	-	A4

### Reproductive toxicity

Not available.

### Teratogenicity

Not available.

### Specific target organ toxicity (single exposure)

## Section 11. Toxicological information

Name	Category	Route of exposure	Target organs
Hexamethylene diisocyanate, oligomers	Category 3	-	Respiratory tract irritation
2-methoxy-1-methylethyl acetate	Category 3	-	Narcotic effects
xylene	Category 3	-	Narcotic effects
hexamethylene-di-isocyanate	Category 3	-	Respiratory tract irritation
toluene	Category 3	-	Narcotic effects

### Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
xylene	Category 1	-	-
ethylbenzene	Category 2	-	hearing organs
toluene	Category 2	-	-

### Aspiration hazard

Name	Result
ethylbenzene	ASPIRATION HAZARD - Category 1
toluene	ASPIRATION HAZARD - Category 1

### Potential chronic health effects

#### Chronic toxicity

Not available.

- General** : Causes damage to organs through prolonged or repeated exposure. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.
- Carcinogenicity** :  No known significant effects or critical hazards.
- Mutagenicity** : No known significant effects or critical hazards.
- Reproductive toxicity** : No known significant effects or critical hazards.

## Section 12. Ecological information

### A. Ecotoxicity

Product/ingredient name	Result	Species	Exposure
xylene	Acute EC50 90 mg/l Fresh water	Crustaceans - Cypris subglobosa	48 hours
	Acute LC50 8.5 ppm Marine water	Crustaceans - Palaemonetes pugio - Adult	48 hours
	Acute LC50 8500 µg/l Marine water	Crustaceans - Palaemonetes pugio	48 hours
	Acute LC50 16940 µg/l Fresh water	Fish - Carassius auratus	96 hours
	Acute LC50 15700 µg/l Fresh water	Fish - Lepomis macrochirus - Juvenile (Fledgling, Hatchling, Weanling)	96 hours
	Acute LC50 20870 µg/l Fresh water	Fish - Lepomis macrochirus	96 hours
	Acute LC50 19000 µg/l Fresh water	Fish - Lepomis macrochirus	96 hours
	Acute LC50 13400 µg/l Fresh water	Fish - Pimephales promelas	96 hours
	Acute EC50 4600 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 5400 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
ethylbenzene	Acute EC50 3600 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
	Acute EC50 4900 µg/l Marine water	Algae - Skeletonema costatum	72 hours

## Section 12. Ecological information

toluene	Acute EC50 7700 µg/l Marine water	Algae - Skeletonema costatum	96 hours
	Acute EC50 6.53 mg/l Marine water	Crustaceans - Artemia sp. - Nauplii	48 hours
	Acute EC50 13.3 mg/l Marine water	Crustaceans - Artemia sp. - Nauplii	48 hours
	Acute EC50 2.97 mg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute EC50 2.93 mg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 8.78 mg/l Marine water	Crustaceans - Artemia sp. - Nauplii	48 hours
	Acute LC50 13.3 mg/l Marine water	Crustaceans - Artemia sp. - Nauplii	48 hours
	Acute LC50 40000 µg/l Marine water	Crustaceans - Cancer magister - Zoea	48 hours
	Acute LC50 18.4 mg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 13.9 mg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 75000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 5100 µg/l Marine water	Fish - Menidia menidia	96 hours
	Acute LC50 4.3 ul/L Marine water	Fish - Morone saxatilis - Juvenile (Fledgling, Hatchling, Weanling)	96 hours
	Acute LC50 4200 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
	Acute LC50 9090 µg/l Fresh water	Fish - Pimephales promelas	96 hours
	Acute LC50 9100 µg/l Fresh water	Fish - Pimephales promelas	96 hours
	Acute EC50 12500 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 16500 µg/l Fresh water	Crustaceans - Gammarus pseudolimnaeus - Adult	48 hours
	Acute EC50 11600 µg/l Fresh water	Crustaceans - Gammarus pseudolimnaeus - Adult	48 hours
	Acute EC50 6.88 mg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute EC50 6.56 mg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute EC50 19600 µg/l Fresh water	Daphnia - Daphnia magna - Larvae	48 hours
	Acute EC50 6000 µg/l Fresh water	Daphnia - Daphnia magna - Juvenile (Fledgling, Hatchling, Weanling)	48 hours
	Acute EC50 6780 µg/l Fresh water	Fish - Oncorhynchus mykiss - Juvenile (Fledgling, Hatchling, Weanling)	96 hours
	Acute LC50 56.3 ppm Marine water	Crustaceans - Americamysis bahia	48 hours
	Acute LC50 15.5 ppm Marine water	Crustaceans - Palaemonetes pugio - Adult	48 hours
	Acute LC50 15500 µg/l Marine water	Crustaceans - Palaemonetes pugio	48 hours
	Acute LC50 86.3 mg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 6410 µg/l Marine water	Fish - Oncorhynchus gorbuscha - Fry	96 hours
	Acute LC50 5500 µg/l Fresh water	Fish - Oncorhynchus kisutch - Fry	96 hours
	Acute LC50 5800 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
	Acute LC50 6780 µg/l Fresh water	Fish - Oncorhynchus mykiss - Juvenile (Fledgling, Hatchling, Weanling)	96 hours
Chronic NOEC 2 mg/l Fresh water	Daphnia - Daphnia magna	21 days	

## Section 12. Ecological information

Chronic NOEC 1000 µg/l Fresh water	Daphnia - Daphnia magna	21 days
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### B. Persistence and degradability

Not available.

### C. Bioaccumulative potential

Product/ingredient name	LogP <sub>ow</sub>	BCF	Potential
Hexamethylene diisocyanate, oligomers	5.54	367.7	low
2-methoxy-1-methylethyl acetate	1.2	-	low
xylene	3.12	8.1 to 25.9	low
ethylbenzene	3.6	-	low
hexamethylene-diisocyanate	0.02	57.63	low
toluene	2.73	90	low

### D. Mobility in soil

Soil/water partition coefficient (K<sub>oc</sub>) : Not available.




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

## Section 13. Disposal considerations

**A. 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.

**B. Disposal precautions** : 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. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

## Section 14. Transport information

	UN	IMDG	IATA
<b>A. UN number</b>	UN1263	UN1263	UN1263
<b>B. UN proper shipping name</b>	PAINT	PAINT	PAINT
<b>C. Transport hazard class(es)</b>	3 	3 	3 
<b>D. Packing group</b>	III	III	III

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## Section 14. Transport information

E. Environmental hazards	No.	No.	No.
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### Additional information

UN	: <b>Viscous liquid exception</b> This class 3 viscous liquid is not subject to regulation in packagings up to 450 L according to 2.3.2.5.1.
IMDG	: <b>Emergency schedules</b> F-E, _S-E_ <b>Viscous liquid exception</b> This class 3 viscous liquid is not subject to regulation in packagings up to 450 L according to 2.3.2.5. <b>IMDG Code Segregation group</b> Not applicable
F. Special precautions for user	: <b>Transport within user's premises:</b> 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 to IMO instruments : Not available.

## Section 15. Regulatory information

### A. Regulation according to ISHA

ISHA article 117 (Harmful substances prohibited from manufacture) : None of the components are listed.

ISHA article 118 (Harmful substances requiring permission) : None of the components are listed.

Article 2 of Youth Protection Act on Substances Hazardous to Youth : Not applicable.

### Exposure Limits of Chemical Substances and Physical Factors

The following components have an OEL:

xylene  
ethylbenzene  
hexamethylene-di-isocyanate  
toluene

ISHA Enforcement Regs Annex 19 (Exposure standards established for harmful factors) : The following components are listed: toluene

ISHA Enforcement Regs Annex 21 (Harmful factors subject to Work Environment Measurement) :  The following components are listed: xylene, ethyl benzene

ISHA Enforcement Regs Annex 22 (Harmful Factors Subject to Special Health Check-up) :  The following components are listed: Xylene, Ethyl benzene

## Section 15. Regulatory information

**Standard of Industrial Safety and Health Annex 12 (Hazardous substances subject to control)** : The following components are listed: xylene, ethyl benzene

### B. Regulation according to Chemicals Control Act

**Article 11 (TRI)** : The following components are listed: Xylene including o-,m-,p- isomer, Ethylbenzene

**Article 18 Prohibited (K-Reach Article 27)** : None of the components are listed.

**Article 19 Subject to authorization (K-Reach Article 25)** : None of the components are listed.

**Article 20 Toxic Chemicals (K-Reach Article 20)** : Not applicable

**Article 20 Restricted (K-Reach Article 27)** : None of the components are listed.

**Article 39 (Accident Precaution Chemicals)** : None of the components are listed.

**Existing Chemical Substances Subject to Registration** : The following components are listed: Xylene; Dimethylbenzene, Hexamethylene diisocyanate, Toluene

**C. Dangerous Materials Safety Management Act** : **Class:** Class 4 - Flammable Liquid  
**Item:** 4. Class 2 petroleums - Water-insoluble liquid  
**Threshold:** 1000 L  
**Danger category:** III  
**Signal word:** Contact with sources of ignition prohibited

**D. Wastes regulation** : Dispose of contents and container in accordance with all local, regional, national and international regulations.

### E. Regulation according to other foreign laws

#### 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.

## Section 16. Other information

- A. References** : - Registry of Toxic Effects of Chemical Substances  
- United States Environmental Protection Agency ECOTOX
- B. Date of issue/Date of revision** : 9 December 2022
- C. Version** : 2
- Unique ID** :

## Section 16. Other information

**Date of printing** : 9 December 2022

### D. Other

Indicates information that has changed from previously issued version.

**Key to abbreviations** :

- ATE = Acute Toxicity Estimate
- BCF = Bioconcentration Factor
- GHS = Globally Harmonized System of Classification and Labelling of Chemicals
- 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

### Notice to reader

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**IMPORTANT NOTE** The information in this data sheet is not intended to be exhaustive and is based on the present state of our knowledge and on current laws: any person using the product for any purpose other than that specifically recommended in the technical data sheet without first obtaining written confirmation from us as to the suitability of the product for the intended purpose does so at his own risk. It is always the responsibility of the user to take all necessary steps to fulfill the demands set out in the local rules and legislation. Always read the Material Data Sheet and the Technical Data Sheet for this product if available. All advice we give or any statement made about the product by us (whether in this data sheet or otherwise) is correct to the best of our knowledge but we have no control over the quality or the condition of the substrate or the many factors affecting the use and application of the product. Therefore, unless we specifically agree in writing otherwise, we do not accept any liability whatsoever for the performance of the product or for any loss or damage arising out of the use of the product. All products supplied and technical advice given are subject to our standard terms and conditions of sale. You should request a copy of this document and review it carefully. The information contained in this data sheet is subject to modification from time to time in the light of experience and our policy of continuous development. It is the user's responsibility to verify that this data sheet is current prior to using the product.

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