

SAFETY DATA SHEET

FR4-45 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 : FR4-45 HARDENER
SDS code : 64000000D

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 4
ACUTE TOXICITY (inhalation) - Category 4
SKIN SENSITIZATION - Category 1
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
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

Symbol :



Signal word :

Warning

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1/13

Section 2. Hazards identification

Hazard statements : H227 - Combustible liquid.
H317 - May cause an allergic skin reaction.
H332 - Harmful if inhaled.
H335 - May cause respiratory irritation.

Precautionary statements

Prevention : P280 - Wear protective gloves.
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P261 - Avoid breathing vapor.

Response : P304 + P312 - IF INHALED: Call a POISON CENTER or doctor if you feel unwell.
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.

Storage : P403 + P233 - Store in a well-ventilated place. Keep container tightly closed.

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 | ≥30 - ≤35 |
| 1,3,5-Triazine-2,4,6(1H,3H,5H)-trione, 1,3,5-tris(6-isocyanatohexyl)-, reaction products with polyethylene glycol monomethyl ether | Hexamethylenediisocyanate and ethyleneoxide polymer | CAS: 129217-88-5 | ≥20 - ≤25 |
| Polyisocyanate, aliphatic | Polyisocyanate, aliphatic | - | ≤10 |
| n-butyl acetate | n-butyl acetate | CAS: 123-86-4 | ≤5 |
| pentane-2,4-dione | Acetylacetone | CAS: 123-54-6 | ≤5 |
| hexamethylene-di-isocyanate | hexamethylene-di-isocyanate | CAS: 822-06-0 | ≤5 |

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 if irritation occurs.

Section 4. First aid measures

- 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 adverse health effects persist or are severe. 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, CO₂, water spray (fog) or foam.
- Unsuitable extinguishing media** : Do not use water jet.
- B. Specific hazards arising from the chemical** : Combustible liquid. 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
metal oxide/oxides

Section 5. Fire-fighting measures

- 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. Avoid breathing 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 ingest. Avoid breathing vapor or mist. 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. 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.

Section 7. Handling and storage

- 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 |
|-----------------------------|--|
| n-butyl acetate | Ministry of Employment and Labor (Republic of Korea, 1/2020). STEL: 200 ppm 15 minutes. TWA: 150 ppm 8 hours. |
| pentane-2,4-dione | ACGIH TLV (United States, 1/2022). Absorbed through skin. TWA: 25 ppm 8 hours. |
| hexamethylene-di-isocyanate | Ministry of Employment and Labor (Republic of Korea, 1/2020). TWA: 0.005 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: safety glasses with side-shields.
- 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.

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.

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: 66°C (150.8°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"/> Polyisocyanate, aliphatic | <825 | <110 | | | | |
| n-butyl acetate | 11.25 | 1.5 | DIN EN 13016-2 | | | |
| DPG-DME | 7 | 0.93 | | | | |
| pentane-2,4-dione | 6.98 | 0.93 | | | | |
| Hexamethylene diisocyanate | 0.01 | 0.0013 | | | | |
| [3-(2,3-epoxypropoxy)propyl] triethoxysilane | 0.00053 | 0.000071 | | | | |
| Hexamethylene diisocyanate, oligomers | 0.000018 | 0.0000024 | EU A.4 | | | |
| dibutyltin dilaurate | 0.000000058 | 0.0000000077 | OECD 104 | | | |

L. Solubility(ies) :

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

Solubility in water : Not available.

M. Vapor density :

N. Density : 1.065 g/cm³ [DIN EN ISO 2811-1]

O. Partition coefficient: n-octanol/water : Not applicable.

P. Auto-ignition temperature :

Section 9. Physical and chemical properties

| Ingredient name | °C | °F | Method |
|----------------------------|-----|-------|---------|
| DPG-DME | 165 | 329 | |
| pentane-2,4-dione | 340 | 644 | |
| dibutyltin dilaurate | 400 | 752 | EU A.15 |
| n-butyl acetate | 415 | 779 | EU A.15 |
| Hexamethylene diisocyanate | 454 | 849.2 | |

Q. Decomposition temperature : Not available.

R. Viscosity : Kinematic (room temperature): 56 mm²/s (56 cSt) [DIN EN ISO 3219]
Kinematic (40°C (104°F)): 101 mm²/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 : Harmful if inhaled. May cause respiratory irritation.

Ingestion : No known significant effects or critical hazards.

Skin contact : May cause an allergic skin reaction.

Eye contact : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing

Ingestion : No specific data.

Skin contact : Adverse symptoms may include the following:
irritation
redness

Eye contact : No specific data.

B. Health hazards

Acute toxicity

Section 11. Toxicological information

| Product/ingredient name | Result | Species | Dose | Exposure |
|--|---------------------------------|--------------|-------------------------|----------|
| Hexamethylene diisocyanate, oligomers n-butyl acetate | LC50 Inhalation Dusts and mists | Rat | 18500 mg/m ³ | 1 hours |
| | LC50 Inhalation Gas. | Rat | 390 ppm | 4 hours |
| | LC50 Inhalation Vapor | Mouse | 6 g/m ³ | 2 hours |
| | LD50 Dermal | Rabbit | >17600 mg/kg | - |
| | LD50 Intraperitoneal | Mouse | 1230 mg/kg | - |
| | LD50 Oral | Guinea pig | 4700 mg/kg | - |
| | LD50 Oral | Mouse | 6 g/kg | - |
| | LD50 Oral | Rabbit | 3200 mg/kg | - |
| | LD50 Oral | Rat | 10768 mg/kg | - |
| | LD50 Oral | Rat | 5.1 mg/l | 4 hours |
| pentane-2,4-dione | LC50 Inhalation Vapor | Rat | 790 mg/kg | - |
| hexamethylene-diisocyanate | LD50 Dermal | Rat - Female | 570 mg/kg | - |
| | LD50 Oral | Rat | 124 mg/m ³ | 4 hours |
| | LC50 Inhalation Dusts and mists | Rat | 462 mg/m ³ | 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 | - | |

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 | - |
| n-butyl acetate | Eyes - Moderate irritant | Rabbit | - | 100 mg | - |
| | Skin - Moderate irritant | Rabbit | - | 24 hours | - |
| pentane-2,4-dione | Eyes - Severe irritant | Rabbit | - | 500 mg | - |
| | Skin - Mild irritant | Rabbit | - | 20 mg | - |
| | | | | 6 hours 11.2 MI I | - |
| | Skin - Mild irritant | Rabbit | - | 488 mg | - |
| | Skin - Moderate irritant | Rabbit | - | 48 hours | - |
| | Skin - Moderate irritant | Rabbit | - | 11.2 MI I | - |
| | | | 6 hours 33.6 MI I | - | |

Sensitization

Not available.

CMR - ISHA Article 42 Occupational Exposure Limits

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

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 |
| n-butyl acetate | Category 3 | - | Narcotic effects |
| hexamethylene-di-isocyanate | Category 3 | - | Respiratory tract irritation |

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Potential chronic health effects

Chronic toxicity

Not available.

- General** : 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 | |
|-----------------------------------|-------------------------------------|-----------------------------------|--|----------|
| n-butyl acetate | Acute LC50 32 mg/l Marine water | Crustaceans - Artemia salina | 48 hours | |
| | Acute LC50 62000 µg/l Fresh water | Fish - Danio rerio | 96 hours | |
| | Acute LC50 100000 µg/l Fresh water | Fish - Lepomis macrochirus | 96 hours | |
| | Acute LC50 185000 µg/l Marine water | Fish - Menidia beryllina | 96 hours | |
| | pentane-2,4-dione | Acute LC50 18000 µg/l Fresh water | Fish - Pimephales promelas | 96 hours |
| | | Acute EC50 75000 µg/l Fresh water | Crustaceans - Ceriodaphnia reticulata - Larvae | 48 hours |
| | | Acute EC50 75000 µg/l Fresh water | Daphnia - Daphnia magna - Larvae | 48 hours |
| | | Acute EC50 75000 µg/l Fresh water | Daphnia - Daphnia pulex - Larvae | 48 hours |
| | | Acute LC50 35400 µl/L Fresh water | Daphnia - Daphnia magna | 48 hours |
| | | Acute LC50 47600 µg/l Fresh water | Daphnia - Daphnia magna - Neonate | 48 hours |
| | | Acute LC50 74300 µg/l Fresh water | Fish - Lepomis macrochirus | 96 hours |
| | | Acute LC50 66900 µg/l Fresh water | Fish - Lepomis macrochirus | 96 hours |
| | | Acute LC50 60100 µg/l Fresh water | Fish - Lepomis macrochirus | 96 hours |
| | | Acute LC50 71600 µg/l Fresh water | Fish - Oncorhynchus mykiss | 96 hours |
| Acute LC50 71700 µg/l Fresh water | Fish - Oncorhynchus mykiss | 96 hours | | |

B. Persistence and degradability

Not available.

C. Bioaccumulative potential

Section 12. Ecological information

| Product/ingredient name | LogP _{ow} | BCF | Potential |
|---------------------------------------|--------------------|-------|-----------|
| Hexamethylene diisocyanate, oligomers | 5.54 | 367.7 | low |
| n-butyl acetate | 2.3 | - | low |
| pentane-2,4-dione | 0.68 | - | low |
| hexamethylene-diisocyanate | 0.02 | 57.63 | low |

D. Mobility in soil

Soil/water partition coefficient (K_{oc}) : 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 |
|-------------------------------|----------------|----------------|----------------|
| A. UN number | Not regulated. | Not regulated. | Not regulated. |
| B. UN proper shipping name | - | - | - |
| C. Transport hazard class(es) | - | - | - |
| D. Packing group | - | - | - |
| E. Environmental hazards | No. | No. | No. |

Additional information

IMDG : **IMDG Code Segregation group** Not applicable

F. 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.

Section 14. Transport information

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:

n-butyl acetate
 pentane-2,4-dione
 hexamethylene-di-isocyanate

ISHA Enforcement Regs Annex 19 (Exposure standards established for harmful factors) : None of the components are listed.

ISHA Enforcement Regs Annex 21 (Harmful factors subject to Work Environment Measurement) : The following components are listed: n-butyl acetate

ISHA Enforcement Regs Annex 22 (Harmful Factors Subject to Special Health Check-up) : None of the components are listed.

Standard of Industrial Safety and Health Annex 12 (Hazardous substances subject to control) : The following components are listed: n-butyl acetate

B. Regulation according to Chemicals Control Act

Article 11 (TRI) : None of the components are listed.

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.

Section 15. Regulatory information

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

**Existing Chemical
Substances Subject to
Registration** : The following components are listed: Hexamethylene diisocyanate

**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 :

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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12/13

Section 16. Other information

FOR PROFESSIONAL USE ONLY

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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