Material Safety Data Sheet (MSDS)

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Supplier:
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1. Identification of the substance/mixture and of the company/undertaking
· 1.1 Product identifier
- Commercial description : Enovio Poly-Agua Hardener (component B)
- Product code : xxxxxx
- Product description : Hardener for Enovio Poly-Agua
· 1.2 Relevant identified uses of the substance or mixture and uses advised against
· Application of the substance/the preparation
- Use : Hardener for coating materials or adhesives for industrial and trade applications
- Use(s) advised against : Not suitable for use in homeworker (DIY) applications.
· 1.3 Details of the supplier of the safety data sheet
· Company identification : See heading of Material Safety Data Sheet.
· 1.4 Emergency telephone number
: - 0031 77 465 10 95

2. Hazards identification
· 2.1 Classification of the substance or mixture
- Product Description : Mixture
· Classification according to Regulation (EC) No 1272/2008
Flammable liquid and vapour , Category 3 (H226) Sensitization of the skin, Sub-category 1B (H317) Eye Irrit. Causes serious eye irritation, Category 2 (H319) Specific target organ toxicity (single exposure), Category 3 (H335) Chronically hazardous to the aquatic environment, Category 3 (H412)
· Classification according to Directive 67/548/EEC or 1999/45/EC
Flammable. Irritating to eyes and skin. Risk of serious damage to eyes. May cause sensitisation by skin contact Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment
· 2.2 Label elements
· Label in accordance with Regulation (EC) No 1272/2008
- Dangerous ingredient(s) : Hydrophilic aliphatic polyisocyanate
· **Hazard pictogram(s)** : GHS02, GHS07
Flammable liquid, Category 3
GHS02 Flam
Flam. Liq. 3 H226: Flammable liquid GHS07 Warning
· **Signal word** Warning
· Hazard statements
H226: Flammable liquid and vapour
H317: May cause an allergic skin reaction
H319: Causes serious eye irritation
H335: May cause respiratory irritation
H412: Harmful to aquatic life with long lasting effects
- Precautionary statements
P210: Keep away from heat/sparks/open flames/hot surfaces – No smoking
P271: Use only outdoors or in a well-ventilated area
P273 Avoid release to the environment.
P280: Wear protective gloves/protective clothing/eye protection/face protection

- Response precautionary statements
P303+P361+P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P312 Call a POISON CENTER or doctor/ physician if you feel unwell.
- Storage precautionary statements
P403+235: Store in a well ventilated place. Keep cool
- Other EU hazard statements:
EUH204: Contains isocyanates. May produce an allergic reaction.
· Labeling according to Directive 67/548/EEC or Directive 1999/45/EC
- Dangerous ingredient(s) : Hydrophilic aliphatic polyisocyanate
· **Hazard pictogram(s)** : Xi; Irritating
R10 Flammable
Xi; Irritating
R36/38
- R-phrase(s)
R10: Flammable
R36/38: Irritating to eyes and skin
R41: Risk of serious damage to eyes
R43: May cause sensitisation by skin contact
R52/53: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment
- S-phrase(s)
S16: Keep away from sources of ignition - No smoking
S23: Do not breathe gas/fumes/vapour/spray
S24: Avoid contact with skin
S37: Wear suitable gloves
S51: Use only in well-ventilated areas
· 2.3 Other hazards
Contains : Contains isocyanates. May produce an allergic reaction.

3. Composition/information on ingredients
- Product Description: Preparation
Hydrophilic aliphatic polyisocyanate
· 3.1 Substances
· CAS nr. - Name component(s) 28182-81-2 hexamethylene-1,6-diisocyanate homopolymer
Concentration [wt.-%]: 50 - 60%
Classification (1272/2008/CE): Skin Sens. 1 H317
Classification (67/548/EEC): Xi R43
Classification/labeling according to Directive 2006/121 Annex VI
· CAS nr. - Name component(s) 53880-05-0 Isoforondiisocyanaat (Oligomere)
Concentration [wt.-%]: ca. 12,6
Self-classification.
Classification (1272/2008/CE): Skin Sens. 1 H317
Classification (67/548/EEC): Xi R43
Classification/labeling according to Directive 2006/121 Annex VI
· CAS nr. - Name component(s) 4098-71-9 Isoforondiisocyanaat
· Identification number (s)
EINECS nr.: 223-861-6 **· EC annex nr.:** 615-008-00-5
- Concentration [wt.-%]: < 0,3
Classification (1272/2008/CE): Acute tox. 1 Inhalatief H330 Skin Irrit. 2 H315 Eye Irrit. 2 H319 Sens. Sens. Resp. 1 H334 Skin Sens. 1 H317 STOT SE 3 H335 Aq. chron. 2 H411
Specific threshold concentration (GHS):
Sens. Resp. 1 H334 >= 0,5 %
Skin Sens. 1 >= 0,5 %
Classification (67/548/EEC): T R23 Xn R42/43 Xi R36/37/38 N R51/53
Specific threshold concentration

Xn R42/43 >= 0,5 %
X R20 0,5 - < 2 %
T R23 >= 2 %
· **CAS nr. - Name component(s)** 822-06-0 hexamethylene-1,6-diisocyanate
· **Identification number (s)**
· **EINECS nr.:** 212-485-8 · **EC annex nr.:** 615-011-00-1
· **Reach nr.** : 01-2119488216-32 **- Concentration [wt.-%]:** < 0,3
Classification (1272/2008/CE): Acute Tox. 4 Oral H302 Acute Tox. 1 Inhalatief H330 Skin Irrit. 2 H315 Eye Irrit. 2 H319 Sens. Resp. 1 H334 Skin Sens. 1 H317 STOT SE 3 H335
Specific threshold concentration (GHS):
Sens. Resp. 1 H334 >= 0,5 %
Skin Sens. 1 H317 >= 0,5 %
Classification (67/548/EEC): T R23 Xi R36/37/38 R42/43
Specific threshold concentration
Xn R20, R42/43 0,5 - < 2 %
T R23, R42/43 2 - < 20 %
T R23, R36/37/38, R42/43 >= 20 %
mitigation means as salt bound:
· **CAS nr. - Name component(s)** 98-94-2 N,N-dimethylcyclohexylamine
· **Identification number (s)**
EINECS nr.: 202-715-5 **- Concentration [wt.-%]:** < 1
Classification (1272/2008/CE): Flam. Liq. 3 H226 Met. corr. 1 H290 Acute Tox. 3 Oral H301 Acute Tox. 3 Dermal H311 Acute Tox. 3 Inhalatief H331 Skin Corr. 1B H314
Classification (67/548/EEC): R10 C R34 Xn R20/21/22
· **CAS nr. - Name component(s)** 9046-01-9 Polyoxyethylene tridecyl ether phosphate
Concentration [wt.-%]: ca. 7,2
Self-classification.
Classification (1272/2008/CE): Skin Irrit. 2 H315 Eye Irrit. 1 H318 Aquatic Chronic 2 H411
Classification (67/548/EEC): Xi; R38-R41 - N; R51/53
Classification/labeling according to Directive 2006/121 Annex VI
· **CAS nr. - Name component(s)** 123-86-4 n-Butylacetaat
· **Identification number (s)**
· **EINECS nr.:** 204-658-1 · **EC annex nr.:** 607-025-00-1
· **Reach nr.** : 01-2119485493-29 **- Concentration [wt.-%]:** < 10
· Classification Regulation (EC) No 1272/2008
Flammable liquid and vapour , Category 3 - Warning (Flam. Liq. 3; H226)
May cause drowsiness or dizziness - (single exposure), Category 3 - Warning (STOT SE 3; H336)
Repeated exposure may cause skin dryness or cracking (STOT RE; EUH066)
- Classification Directive 67/548/EEC of 1999/45/CE
Flammable liquid (R10) (R66) (R67)

4. First Aid Measures
· 4.1 Description of first aid measures
· General:
Take off immediately all contaminated clothing.
· Inhalation :
Avoid further exposure. Persons who provide assistance must make sure that they expose themselves or others. Remove victim to fresh air and keep at rest in a position comfortable for breathing. Seek medical attention if symptoms occur.
· Skin Contact :
Remove contaminated clothing. Wash contaminated clothing before re-use. Rinse skin immediately with plenty of water. (shower if necessary). Consult doctor if irritation develops.
· Eye contact :
Rinse the eyes immediately with large amounts of water, occasionally lifting the upper and lower eyelids. Check for contact lenses be worn, if so remove if possible. Consult a doctor if irritation occurs.
· Ingestion :
Rinse mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing.

Not to put to vomiting unless medical personnel indicates that this should. Seek medical attention if symptoms occur.

Protection of first aiders

There should be no action be taken if there is risk of personal accidents or in case of insufficient training.

· Information for the doctor :

· 4.2 Most important symptoms and effects, both acute and delayed

See section 11. *

· 4.3 Indication of any immediate medical attention and special treatment needed

For specialist advice doctors should contact the NVCI or the Poison center.

5. Firefighting measures

· 5.1 Extinguishing media

· Suitable :

Powder , Alcohol resistant foam , Carbon dioxide , Water spray.

· In suitable : Do not use a heavy water stream, in order to avoid the fire to extend.

· 5.2 Special hazards arising from the substance or mixture

Risks of the substance or mixture

In case of fire or heating runs the press and the holder may burst.

Hazardous combustion There may be nitrous gases formed.

products

· 5.3 Advice for firefighters

Fire Fighting Instructions

Flammable. Evacuate area. If a leak or spill has not ignited, use water spray to disperse the vapours and to protect personnel attempting to stop a leak. Prevent run-off from fire control or dilution from entering streams, sewers or drinking water supply. Fire-fighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Unusual Fire Hazards

Flammable. Vapour is flammable and heavier than air. Vapour may travel across the ground and reach remote ignition sources, causing a flashback fire danger. Firefighters should consider protective equipment indicated in Section 8.

· Further data

The endangered tanks with cooling water jet-held. Fire residues and contaminated fire extinguishing water must be salvaged in accordance with government regulations. Firefighters protective equipment specified in section 8.

6. Accidental release measures

· 6.1 Personal precautions, protective equipment and emergency procedures

Reporting procedures

In the event of contamination or accidental discharge, inform the competent authorities and all regulations in force.

Protective actions

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 spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Wear recommended personal protective equipment. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment. 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". Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain. Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for firefighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protectionfor chemical incidents.

For the emergency services

See also the information under the heading "for persons other than the emergency services".

· 6.2 Environmental precautions :
Shut off leaks if without risks. Dike in the spilled product as much as possible with inert material. Prevent entry of product in public water, sewers or soil. Notify authorities if product enters sewers or public waters.
· 6.3 Methods and material for containment and cleaning up :
Small spills
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.
Extensive spills
Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. 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. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product.
Note See section 1 for emergency and contact addresses
section 13: disposal.
· 6.4 Reference to other sections
For personal protection, see section 8.

7. Handling and storage
· handling:
· 7.1 Precautions for safe handling
Protective measures
Provide sufficient air exchange and/or exhaust in work rooms. Exhaust ventilation necessary if product is sprayed. The threshold limit values noted in Chapter 8 must be monitored. In all areas where isocyanate aerosols and/or vapor concentrations are produced in elevated concentrations, exhaust ventilation must be provided in such a way that the workplace exposure limits (WEL) is not exceeded. The air should be drawn away from the personnel handling the product The personal protective measures described in Chapter 8 must be observed. The precautions required in the handling of isocyanates must be taken. Avoid contact with skin and eyes and the inhalation of vapor.
Advice on general industrial hygiene
Keep away from foodstuffs, drinks and tobacco. Wash hands before breaks and at end of work and use skin-protecting ointment. Keep working clothes separately. Take off all contaminated clothing immediately. Emergency eye wash fountains and showers should be available in the immediate
· Protection against Fire and Explosion:
Remove all sources of ignition (open fire, sparks, smoking, ...).
· 7.2 Conditions for safe storage, including any incompatibilities
· storage:
· Further information about storage conditions :
Keep container dry and tightly closed in a cool and well ventilated place. Further information on the storage conditions which must be observed to preserve quality can be found in our product Please save your packaging tightly closed and sealed until use.
· Further information about storage conditions :
Remove all sources of ignition (open fire, sparks, smoking, ...). Vapours are heavier than air and spread along the ground. With a temperature equal to or higher than flashpoint, the mixture steam-air can create an inflammable and explosive mixture. Keep away from : Oxidizing agents , Strong acids , Strong bases .
· 7.3 Specific end use(s): see §1.2

8. Exposure controls/personal protection
· 8.1 Control parameters
Occupational exposure limits
123-86-4 n-Butyl acetate
n-Butyl acetate : Limit value (BE) : 150 ppm (723 mg/m³) (2011)
n-Butyl acetate : Short time value (BE) : 200 ppm (964 mg/m³) (2011)
- Biological limit values : They will be included when available.
- Derived No Effect Level (DNEL) or Derived Minimal Effect Level (DMEL):
n-Butyl acetate : Worker, acute - local effects, inhalation : 960 mg/m³

n-Butyl acetate : Worker, acute - systemic effects, inhalation : 960 mg/m³
n-Butyl acetate : Worker, long-term - local effects, inhalation : 480 mg/m³
n-Butyl acetate : Worker, long-term - systemic effects, inhalation : 480 mg/m³
n-Butyl acetate : Consumer, acute - local effects, inhalation : 859,7 mg/m³
n-Butyl acetate : Consumer, acute - systemic effects, inhalation : 859,7 mg/m³
n-Butyl acetate : Consumer, long-term - local effects, inhalation : 102,34 mg/m³
n-Butyl acetate : Consumer, long-term - systemic effects, inhalation : 102,34 mg/m³
hexamethylene-1,6-diisocyanate homopolymer
Worker (short-term) :
DNEL Dermal-toxicity local effects:
No quantitative risk assessment possible. Most sensitive end point: sensitization (skin).
DNEL Inhalation-toxicity local effects: 1 mg/m³ air
Most sensitive end point: irritation (Airways)
Worker (long-term) :
DNEL Dermal-toxicity local effects:
No quantitative risk assessment possible. Most sensitive end point: sensitization (skin).
DNEL Inhalation-toxicity local effects: 0,5 mg/m³ air
Most sensitive end point: irritation (Airways)
hexamethylene-1,6-diisocyanate homopolymer
Worker (short-term) :
DNEL Dermal-toxicity local effects:
No quantitative risk assessment possible. Most sensitive end point: sensitization (skin).
DNEL Inhalation-toxicity local effects: 1 mg/m³ air
Most sensitive end point: irritation (Airways)
Worker (long-term) :
DNEL Dermal-toxicity local effects:
No quantitative risk assessment possible. Most sensitive end point: sensitization (skin).
DNEL Inhalation-toxicity local effects: 0,5 mg/m³ air
Most sensitive end point: irritation (Airways)
hexamethylene-1,6-diisocyanate
Worker (short-term) :
DNEL Dermal - systemic effects:
No quantitative risk assessment possible. Most sensitive end point: sensitization (Airways).
DNEL Inhalation - systemic effects: 0,07 mg/m³ air
Most sensitive end point: irritation (Airways)
Worker (long-term) :
DNEL Dermal - systemic effects:
No quantitative risk assessment possible. Most sensitive end point: sensitization (Airways).
DNEL Inhalation - systemic effects: 0,035 mg/m³ air
Most sensitive end point: irritation (Airways)
DNEL Dermal-toxicity local effects:
No quantitative risk assessment possible. Most sensitive end point: sensitization (Airways).
DNEL Inhalation-toxicity local effects: 0,035 mg/m³ air
Most sensitive end point: irritation (Airways)
- Predicted No Effect Concentration (PNEC):
n-Butyl acetate : Fresh water : 0,18 mg/l
n-Butyl acetate : Marine water : 0,018 mg/l
n-Butyl acetate : Fresh water sediment : 0,981 mg/kg
n-Butyl acetate : Marine water sediment : 0,0981 mg/kg
n-Butyl acetate : Soil : 0,0903 mg/kg
n-Butyl acetate : Intermittent release : 0,36 mg/l
n-Butyl acetate : Sewage treatment plant : 35,6 mg/l
hexamethylene-1,6-diisocyanate homopolymer
Fresh water: 0,127 mg/l

Marine water: 0,0127 mg/l
Fresh water sediment: 266700 mg/kg Dry weight
Soil: 53182 mg/kg Dry weight
Sewage treatment plant: 38,28 mg/l
Oral:
Not derived
hexamethylene-1,6-diisocyanate homopolymer
Fresh water: 0,199 mg/l
Marine water: 0,0199 mg/l
Fresh water sediment: 44551 mg/kg Dry weight
Marine water sediment: 4455 mg/kg Dry weight
Soil: 8884 mg/kg Dry weight
Sewage treatment plant: 100 mg/l
Oral:
Not derived
hexamethylene-1,6-diisocyanate
Fresh water: > 0,0774 mg/l
Marine water: > 0,00774 mg/l
Fresh water sediment: > 0,01334 mg/kg Dry weight
Marine water sediment: > 0,001334 mg/kg Dry weight
Soil: > 0,0026 mg/kg Dry weight
Sewage treatment plant: 8,42 mg/l
Oral:
Not derived
· **Additional data:** Used as basis lists that were valid during Setup.
- 8.2 Exposure controls
Adequate technical management measures
The level of protection and types of controls necessary will vary depending upon potential exposure conditions.
Control measures to consider:
Adequate ventilation should be provided so that exposure limits are not exceeded.
Use explosion proof ventilation equipment.
Ventilation (Through the floor), Local exhaust .
- Individual protection measures
- General protection and health measures:
Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage. The usual precautions when handling chemicals shall be observed. Keep away from food, drink. Appropriate techniques should be used to remove potentially contaminated clothing. Emergency eye wash fountains and showers should be available in the immediate vicinity of any potential exposure. Wash your hands after handling chemical products, forearms and face thoroughly before you eat, drink or go to the toilet and at the end of the working day. Wash contaminated clothing before re-use.
Respiratory Protection:
Respiratory protection required in insufficiently ventilated working areas and during spraying. If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include: CE-approved mask for organic vapours and solvents (type A, brown). In case of hypersensitivity of the respiratory tract and skin (e.g. asthmatics and those who suffer from chronic bronchitis and chronic skin complaint) it is inadvisable to work with the product. For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapour warning properties are poor, or if air purifying filter capacity/rating may be exceeded.
- Hand Protection:
Safety Gloves
Any specific glove information provided is based on published literature and glove manufacturer data.
Glove suitability and breakthrough time will differ depending on the specific use conditions.

Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves.
- The types of gloves to be considered for this material include
Chemical resistant gloves are recommended. If contact with forearms is likely wear gauntlet style gloves. Nitrile, CEN standards EN 420 and EN 374 provide general requirements and lists of glove types.
- Penetration time of glove material
Conditionally suitable materials for protective gloves (EN 374)
Butyl rubber : penetration time 60' - thickness 0,3-0,7 mm
Nitril rubber : penetration time 30' - thickness 0,9 mm
Only suitable as splash protection. Only suitable for brief exposure. In the event of contamination: Recommendation: contaminated gloves should be disposed of.
- Eye Protection:
Slim fit safety glasses
If contact is likely, safety glasses with side shields are recommended.
- Skin and Body Protection:
Any specific clothing information provided is based on published literature or manufacturer data.
The types of clothing to be considered for this material include: Chemical / oil resistant clothing if contact with material is likely.
- Specific Hygiene Measures:
Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.
Advice on personal protection, applies to high exposure levels. Vote per situation an appropriate level of personal protection off on a risk assessment.
- Environmental exposure controls see § 6, 7, 12 en 13.

9. Physical and chemical properties
· 9.1 Information on basic physical and chemical properties
Physical State (20°C) : Liquid.
Form/Color : Colorless to yellowish
Odour : Mild odour.
Odour threshold : No data available.
pH value : 7 à 8,5 (20°C)
Congealing/Melting point : 0 °C
Boiling Point/Range (1013 hPa) : 100 °C
Softening Area : No data available.
Evaporation rate : No data available.
Flash point ca. 40 °C DIN 53213
Flammability (solid, gas) : No data available.
Combustion Time : Do not apply.
Burning Rate : Do not apply.
Explosion limits in air
hexamethylene-1,6-diisocyanate upper: 9.5% (V) / lower: 0.9% (V)
n-Butyl acetate upper: 7.5% (V) / lower: 1,2% (V)
Vapour pressure : approx. 17 hPa at 20 ° c EG A4
approx. 26 hPa at 50 ° c EG A4
approx. 28 hPa at 55 ° c EG A4
Vapor pressure of file parts :
hexamethylene-1,6-diisocyanate approx. 0,007 hPa at 20 °C
hexamethylene-1,6- < 0,0001 hPa bat 20 °C
diisocyanate homopolymer (vapour pressure balance/OECD Nr.104)
hexamethylene-1,6- < 0,00001 hPa at 20 °C
diisocyanate homopolymer (vapour pressure balance/OECD Nr.104)
Relative vapour density (air=1) : No data available.
Relative density (water=1) approx. 1,053 g/cm3 at 20 °C DIN 51757
Solubility

Solubility in water Not miscible at 15 °C
Log P Octanol/Water (20°C) : No data available.
Auto-ignition temperature Not been established
Ignition temperature ca. 425 °C DIN 51794
Decomposition temperature : No data available.
Explosive Properties Not been established
Dust Explosion Class : Not applicable.
Oxidizing properties Not been established
· 9.2 Other information
Comments No other relevant information available.

10. Stability and reactivity
· 10.1 Reactivity
Reacts violently with oxidizing agents, strong acids and strong lyes.
· 10.2 Chemical stability
Stable at normal circumstances.
· 10.3 Possibility of hazardous reactions
Possibility of hazardous reactions: Exothermic reaction with amines and alcohols; reacts slowly with water forming CO2,
in closed containers risk of bursting owing to increase of pressure.
· 10.4 Conditions to avoid
Heat, sparks, open flames and other sources of ignition.
· 10.5 Incompatible materials
Oxidizing agents , Strong acids , Strong bases
· 10.6 Hazardous decomposition products
No hazardous decomposition products at professional storage and treatment.
Fire may liberate carbon oxides (CO) and smoke.

11. Toxicological information
Toxicological studies on the product are not yet available.
Please find below the data available to us:
· 11.1 Information on toxicological effects
- Acute toxicity, oral:
hexamethylene-1,6-diisocyanate homopolymer
LD50 rat: >= 5.000 mg/kg
Method: OECD Test Guideline 423
Toxicological studies of a comparable product.
n-Butyl acetate : LD50 (Rat, oral) : 10760 mg/kg
- Acute toxicity, dermal:
hexamethylene-1,6-diisocyanate homopolymer
LD50 rat, male/female: > 2.000 mg/kg
Method: OECD Test Guideline 402
LD50 (Rabbit, female, dermal) : > 2000 mg/kg
hexamethylene-1,6-diisocyanate homopolymer
LD50 rat, male/female: > 2.000 mg/kg
Method: OECD Test Guideline 402
Toxicological studies of a comparable product.
LD50 (Rabbit, female, dermal) : > 2000 mg/kg
Toxicological studies of a comparable product.
hexamethylene-1,6-diisocyanate
LD50 rat, male/female: > 7.000 mg/kg
Method: OECD Test Guideline 402
n-Butyl acetate : LD50 (Rabbit, dermal) : > 14000 mg/kg
- Acute toxicity, inhalation:
hexamethylene-1,6-diisocyanate homopolymer
LC50 rat, female: 390 mg/m³, 4 h
Test atmosphere: dust/mist

Method: OECD Test Guideline 403
The substance was tested in a form (i.e. specific particle size distribution) that is different from the forms in which the substance is placed on the market and in which it can reasonably be expected to be used. Based on the “split-entry” concept and available data on particle size during end-use of the substance a modified classification for acute inhalation toxicity is justified. hexamethylene-1,6-diisocyanate homopolymer
LC50 rat, female: 390 mg/m³, 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403
Toxicological studies of a comparable product.
The substance was tested in a form (i.e. specific particle size distribution) that is different from the forms in which the substance is placed on the market and in which it can reasonably be expected to be used. Based on the “split-entry” concept and available data on particle size during end-use of the substance a modified classification for acute inhalation toxicity is justified.
hexamethylene-1,6-diisocyanate
LC50 rat, male/female: 124 mg/m³, 4 h
Test atmosphere: mist
Method: OECD Test Guideline 403
n-Butyl acetate : LC50 (Rat, inhalation, 4 h) : > 20 mg/l
- Primary skin irritation:
Species: rabbit
Result: An irritant effect cannot be distinguished from a mechanical load caused by the removal of the test specimen.
Method: OECD Test Guideline 404
Toxicological studies of a comparable product.
- Primary mucosa irritation:
Species: rabbit
Result: slight irritant
Method: OECD Test Guideline 405
Toxicological studies of a comparable product.
- sensitization:
Skin sensitization (local lymph node assay (LLNA)):
Species: mouse
Result: positive
Method: OECD Test Guideline 429
Toxicological studies of a comparable product.
No pulmonary sensitization observed in animal tests.
No pulmonary sensitization potential was observed in guinea pigs after either intradermal or inhalative induction with polyisocyanate based on hexamethylene diisocyanate.
- Subacute, subchronic and prolonged toxicity:
hexamethylene-1,6-diisocyanate homopolymer
Method of application: Inhalatief
Species: rat, male/female
Dose Levels: 0 - 0,5 - 3,3 - 26,4 mg/m³
Exposure Time: 90 d
Frequency of treatment: 6h / day, 5 d./Week
NOAEL: 3,3 mg/m³ Air
Test substance: as aerosol
Method: OECD Test Guideline 413
There are no instructions on other tissue damage than to the respiratory organs.
hexamethylene-1,6-diisocyanate homopolymer
Method of application: Inhalatief
Species: rat, male/female
Dose Levels: 0 - 0,5 - 3,3 - 26,4 mg/m³
Exposure Time: 90 d
Frequency of treatment: 6h / day, 5 d./Week
NOAEL: 3,3 mg/m³ Air
Test substance: as aerosol

Method: OECD Test Guideline 413
Toxicological studies of a comparable product.
There are no instructions on other tissue damage than to the respiratory organs.
hexamethylene-1,6-diisocyanate
Method of application: Inhalatief
Species: rat, male/female
Dose Levels: 0 - 0,035 - 0,175 - 1,23 mg/m3
Exposure Time: 2 a
Frequency of treatment: 6h / day, 5 d./Week
NOAEL: 0,035 mg/m3
LOAEL: 0,175 mg/m3
Target Organs: Nasal Cavity
Test substance: as aerosol
Method: OECD Test Guideline 453
Outcome: irritation to nasal cavity and lungs.

- Carcinogenicity:

hexamethylene-1,6-diisocyanate homopolymer
No data available.
hexamethylene-1,6-diisocyanate homopolymer
No data available.
hexamethylene-1,6-diisocyanate
Species: rat, male/female
Method of application: Inhalatief
Dose Levels: 0 - 0,035 - 0,175 - 1,23 mg/m3
Exposure Time: 2 a
Frequency of treatment: 6h / day, 5 d./Week
Test substance: as aerosol
Method: OECD Test Guideline 453
Showed no carcinogenic effects in animal studies.

- Reproduction toxicity/fertility:

hexamethylene-1,6-diisocyanate homopolymer
Available data show no indication for reproductive toxicity.
hexamethylene-1,6-diisocyanate homopolymer
Available data show no indication for reproductive toxicity.
hexamethylene-1,6-diisocyanate
Species: rat, male/female
Method of application: Inhalatief
Dose Levels: 0 - 0,005 - 0,050 - 0,300 ppm
Exposure Time: male: 28 days, female: 50 days
Frequency of treatment: 6h / day, 7 d./Week
Exposure time before mating-male: 14 d.
Exposure time before mating-female: 14 d.
Test substance: as aerosol
NOAEL (no-effect)-parents: 0.005 ppm
NOAEL (no-effect) – F1: 0,3 ppm
Method: OECD Test Guideline 422
Fertility and so-called "organic" disability studies showed no effect on fertility.

- Reproductive Toxicity/Teratogenicity:

hexamethylene-1,6-diisocyanate homopolymer
Experiments with animals with structurally similar compounds show no indication of specific reproductive toxicity.
hexamethylene-1,6-diisocyanate homopolymer
Experiments with animals with structurally similar compounds show no indication of specific reproductive toxicity.
hexamethylene-1,6-diisocyanate
NOAEL (teratogenic): 0,3 ppm
NOAEL (maternal): 0,005 ppm

Species: rat, female
Method of application: Inhalatief
Dose Levels: 0 - 0,005 - 0,050 - 0,300 ppm
Frequency of treatment: 6 hours/day (exposure time: day 0-19 of gestation time)
Test substance: as aerosol
Method: OECD Test Guideline 414
Did not show teratogenic effects in animal experiments.
- Genotoxicity in vitro:
Test type: Salmonella/microsome test (Ames test)
Result: No indication of mutagenic effects.
Method: OECD Test Guideline 471
Toxicological studies of a comparable product.
- Genotoxicity in vivo:
hexamethylene-1,6-diisocyanate
Test type: micronucleus test
Species: mouse, male/female
Method of application: Inhalatief
Exposure Time: 6 h
Result: negative
Method: OECD Test Guideline 474
Test substance: as aerosol
- STOT-assessment – single exposure:
hexamethylene-1,6-diisocyanate homopolymer
Routes Of Exposure: Inhalatief
May cause respiratory irritation.
hexamethylene-1,6-diisocyanate homopolymer
Routes Of Exposure: Inhalatief
May cause respiratory irritation.
hexamethylene-1,6-diisocyanate
Routes Of Exposure: Inhalatief
Target Organs: Respiratory System
May cause respiratory irritation.
- STOT-assessment – repeated exposure:
hexamethylene-1,6-diisocyanate homopolymer
Based on available data; to the classification criteria is not met.
hexamethylene-1,6-diisocyanate homopolymer
Based on available data; to the classification criteria is not met.
hexamethylene-1,6-diisocyanate
Based on available data; to the classification criteria is not met.
- Aspiration Toxicity:
hexamethylene-1,6-diisocyanate homopolymer
Based on available data; to the classification criteria is not met.
hexamethylene-1,6-diisocyanate homopolymer
Based on available data; to the classification criteria is not met.
hexamethylene-1,6-diisocyanate
Based on available data; to the classification criteria is not met.
- CMR - rating:
hexamethylene-1,6-diisocyanate homopolymer
Carcinogenicity: based on available data; to the classification criteria is not met.
Mutagenicity: in-vitro testing did not show mutagenic effects.
Teratogenicity: based on available data; to the classification criteria is not met.
Reproduction toxicity/fertility: based on available data; to the classification criteria is not met.
hexamethylene-1,6-diisocyanate homopolymer
Carcinogenicity: based on available data; to the classification criteria is not met.
Mutagenicity: in-vitro testing did not show mutagenic effects.
Teratogenicity: based on available data; to the classification criteria is not met.
Reproduction toxicity/fertility: based on available data; to the classification criteria is not met.

hexamethylene-1,6-diisocyanate
Carcinogenicity: showed no carcinogenic effects in animal studies.
Mutagenicity: in-vitro testing did not show mutagenic effects.
Teratogenicity: did not show teratogenic effects in animal experiments.
Reproduction toxicity/fertility: animal testing did not show any effects on fertility.
- Toxicology Assessment:
hexamethylene-1,6-diisocyanate homopolymer
Acute effects: harmful by inhalation.
Sensitization: may cause sensitisation by skin contact.
hexamethylene-1,6-diisocyanate homopolymer
Acute effects: harmful by inhalation.
Sensitization: may cause sensitisation by skin contact.
hexamethylene-1,6-diisocyanate
Acute effects: deadly when inhaled. Harmful if swallowed. Causes severe skin burns and eye damage.
Sensitization: may cause sensitisation by inhalation and skin contact.
Repeated dose toxicity: based on available data; to the classification criteria is not met.
- Additional information:
Special properties/effects: Over-exposure entails the risk of concentration-dependent irritating effects on eyes, nose throat, and respiratory tract. Delayed appearance of the complaints and development of hypersensitivity (difficult breathing, coughing, asthma) are possible.
Hypersensitive persons may suffer from these effects even at low isocyanate concentrations, including concentrations below the UK Workplace Exposure Limit (WEL). Prolonged contact with the skin may cause tanning and irritant effects.
Animal tests and other research indicate that skin contact with diisocyanates can play a role in causing isocyanate sensitization and respiratory reaction.

12. Ecological information

Ecotoxicological investigations to the product is not available.
Do not allow to escape into waterways, wastewater or soil.
Please find below the data available to us:
· 12.1 Toxicity
- Acute Fish toxicity:
LC50 35,2 mg/l
Species: Danio rerio (zebra fish)
Exposure duration: 96 h
Method: OECD Test Guideline 203
Ecotoxicological reports on a comparable product
- Acute toxicity for daphnia:
EC50 > 100 mg/l
Species: Daphnia magna (Water flea)
Exposure duration: 48 h
Method: OECD Test Guideline 202
Ecotoxicological reports on a comparable product
- Acute toxicity for algae:
ErC50 72 mg/l
Species: Desmodesmus subspicatus (Green algae)
Exposure duration: 72 h
Method: OECD Test Guideline 201
Ecotoxicological reports on a comparable product
- Acute bacterial toxicity:
EC50 > 10.000 mg/l
Species: activated sludge
Method: OECD Test Guideline 209
Ecotoxicological reports on a comparable product
- Ecotoxicology Rating:
hexamethylene-1,6-diisocyanate homopolymer
Acute aquatic toxicity: based on available data; to the classification criteria is not met.

There is no evidence for a chronic aquatic toxicity. In biological treatment plants on the basis of low toxicity bacteria exists no risk of obstruction of the purification ability.
hexamethylene-1,6-diisocyanate homopolymer
Acute aquatic toxicity: based on available data; to the classification criteria is not met.
There is no evidence for a chronic aquatic toxicity.
In biological treatment plants on the basis of low toxicity bacteria exists no risk of obstruction of the purification ability.
hexamethylene-1,6-diisocyanate
Acute aquatic toxicity: based on available data; to the classification criteria is not met.
There is no evidence for a chronic aquatic toxicity.
In biological treatment plants on the basis of low toxicity bacteria exists no risk of obstruction of the purification ability.

· 12.2 Persistence and degradability

- Biodegradability:

Biodegradation: 0%, i.e. not readily degradable
Method: OECD Test Guideline 301 F
Ecotoxicological investigations to a similar product

- Stability in water:

hexamethylene-1,6-diisocyanate homopolymer
Test type: Hydrolysis
Half Life: 7,7 h at 23 °C
The substance quickly hydrolyzes in water
hexamethylene-1,6-diisocyanate homopolymer
Testtype: Hydrolyse
Half Life: 7,7 h at 23 °C
Method: OECD Test Guideline 111
The substance quickly hydrolyzes in water Surveys of a similar product.
hexamethylene-1,6-diisocyanate
Testtype: Hydrolyse
Half Life: 0,23 h at 23 °C
The substance quickly hydrolyzes in water

- Photo Degradation:

hexamethylene-1,6-diisocyanate homopolymer
Test type: Photo transformation in air
Temperature: 25 °C
Sensitizer: OH-radicals
Half-life photolysis: 10.3 h
Method: SRC-AOP (calculation)
When the product is released or is exposed to air, the product will be quickly broken down by photochemical processes.
Test type: Photo transformation in air
Temperature: 25 °C
Sensitizer: OH-radicals
Half-life photolysis: 3 h
Method: SRC-AOP (calculation)
When the product is released or is exposed to air, the product will be quickly broken down by photochemical processes.
Investigations of the hydrolysis products.
hexamethylene-1,6-diisocyanate homopolymer
Test type: Photo transformation in air
Temperature: 25 °C
Sensitizer: OH-radicals
Half-life photolysis: 11,7 h
Method: SRC-AOP (calculation)
When the product is released or is exposed to air, the product will be quickly broken down by photochemical processes.
Test type: Photo transformation in air

Temperature: 25 °C
Sensitizer: OH-radicals
Half-life photolysis: 3,1 h
Method: SRC-AOP (calculation)
When the product is released or is exposed to air, the product will be quickly broken down by photochemical processes.
Investigations of the hydrolysis products.
hexamethylene-1,6-diisocyanate
Test type: Photo transformation in air
Temperature: 25 °C
Sensitizer: OH-radicals
Half-life photolysis: 48,4 h
Method: SRC-AOP (calculation)
When the product is released or is exposed to air, the product will be moderated degraded by photochemical processes.
Test type: Photo transformation in air
Temperature: 25 °C
Sensitizer: OH-radicals
Half-life photolysis: 5,6 h
Method: SRC-AOP (calculation)
When the product is released or is exposed to air, the product will be quickly broken down by photochemical processes.
Investigations of the hydrolysis products.
- Volatility (Henry constant):
hexamethylene-1,6-diisocyanate homopolymer
Calculated value = < 0.000001 Pa*m3/mol at 25°C
Method: Bond method
The substance should be classified as non-volatile in water.
hexamethylene-1,6-diisocyanate homopolymer
Calculated value = < 0.000001 Pa*m3/mol at 25°C
Method: Bond method
The substance should be classified as non-volatile in water.
Calculated value = < 0.000001 Pa*m3/mol at 25°C
Method: Bond method
The substance should be classified as non-volatile in water.
hexamethylene-1,6-diisocyanate
Calculated value = 5 Pa*m3/mol at 25°C
Method: Bond method
The substance should be classified as non-volatile in water.
· 12.3 Bioaccumulative potential
- Bioaccumulation:
hexamethylene-1,6-diisocyanate homopolymer
Species: value is calculated.
Bioconcentration factor (BCF): 3.2
Method: (calculated)
A growth of aquatic organisms is not to be expected.
Species: value is calculated.
Bioconcentration factor (BCF):367,7
Method: (calculated)
A growth of aquatic organisms is not to be expected.
Investigations of the hydrolysis products.
hexamethylene-1,6-diisocyanate homopolymer
Species: value is calculated.
Bioconcentration factor (BCF): 706,2
Method: (calculated)
The substance quickly hydrolyzes in water.
A growth of aquatic organisms is not to be expected.

Species: value is calculated.
Bioconcentration factor (BCF): 10,11
Method: (calculated)
A growth of aquatic organisms is not to be expected.
Investigations of the hydrolysis products.
hexamethylene-1,6-diisocyanate
Species: value is calculated.
Bioconcentration factor (BCF): 57,6
Method: (calculated)
A growth of aquatic organisms is not to be expected.
Species: value is calculated.
Bioconcentration factor (BCF): 3,2
Method: (calculated)
A growth of aquatic organisms is not to be expected.
Investigations of the hydrolysis products.

· 12.4 Mobility in soil

- Distribution between environmental compartments:

hexamethylene-1,6-diisocyanate homopolymer
Adsorbsion/soil
not apply
hexamethylene-1,6-diisocyanate homopolymer
Adsorbsion/soil
not apply
hexamethylene-1,6-diisocyanate
Adsorbsion/soil
not apply

- Distribution in the environment:

hexamethylene-1,6-diisocyanate homopolymer
not apply
hexamethylene-1,6-diisocyanate homopolymer
not apply
hexamethylene-1,6-diisocyanate
not apply

· 12.5 Results of PBT and vPvB assessment

hexamethylene-1,6-diisocyanate homopolymer
This substance does not meet the criteria for classification as PBT or vPvB.
hexamethylene-1,6-diisocyanate homopolymer
This substance does not meet the criteria for classification as PBT or vPvB.
hexamethylene-1,6-diisocyanate
This substance does not meet the criteria for classification as PBT or vPvB.

· 12.6 Other adverse effects

- Further comments regarding ecotoxicological aspects:

The resin is with water at the surface under formation of carbon dioxide is converted into a fixed, not soluble reaction product (poly-urea) with high melting point. This reaction is strongly promoted by surfactants (e.g. liquid soap) or water-soluble substances. Poly urea is to experience right now inert and not biodegradable.

13. Disposal considerations

The waste removal recommendations apply to the products in the condition in which it is delivered.
At elimination the laws and regulations in force are complied with and take account of the condition in which the product is to drain.

· 13.1 Waste treatment methods

Waste from residues/Unused products

Disposal Methods

Producing waste should always be avoided as far as possible or be limited to a minimum. Product residues may not be disposed of through the sewer, but need to be processed in an appropriate waste water treatment plant. Let excess not to recycle products drains by a reputable licensed waste disposal plant. Disposal of this product, solutions and all by-products must always be made in accordance with the applicable legislation in the

field of environmental protection and waste treatment and with all the other regional or locally applicable regulations. The empty packaging should be recycled. Incineration or landfill should only be considered when recycling is not possible. The product and its container must be disposed of in a safe way. Empty drums or inliner can contain any residual product. Avoid dissemination of spilled material and waste material and prevent that this comes into contact with soil, waterways, drains and sewers.

Hazardous Waste & Packaging

: Producing waste should always be avoided as far as possible or be limited to a minimum. Dispose in accordance with applicable international, national and local laws, ordinances and statutes. For disposal within the EC, the appropriate code according to the European Waste Catalogue (EWC) should be used.
After final product withdrawal, all residues must be removed from containers (drip-free, powder free or paste-free). Once the product residues adhering to the walls of the containers have been rendered harmless, the product and hazard labels must be invalidated. These containers can be returned for recycling to the appropriate centres set up within the framework of the existing takeback scheme of the chemical industry. Containers must be recycled in compliance with national legislation and environmental regulations.

Special precautions

None disposal into waste water.

14. Transport information

- Transport (private)

Transport the materials always in sealed packaging, which stand upright, labeled and secured. Make sure that the persons who carry the product know what they need to do in case of an accident or spillage.

ROAD TRANSPORT (ADR/RID)

14.1 UN number UN 1263

14.2 UN proper shipping name

· **ADR:** UN 1263 Paint- Paint related products, 3, III, ADR

· **IMDG, IATA:** ADR-Klasse, 3, III, (23°C), UN1263, Paint- Paint related products

14.3 Transport hazard classe(s):

· **ADR · IMDG, IATA**

· **Class** 3 Flammable liquids. · **Class** 3 Flammable liquids.

· **Label** 3 · **Label** 3

14.4 Packing group:

· **ADR, IMDG, IATA** III

14.5 Environmental hazards:

- Environmental Hazard NO **- Marine pollution** NO

14.6 Special precautions for user:

Flammable. Protect against moisture.
Separated from food, beverages and tobacco.
Heat-sensitive starting from + 50 °C.

· **Danger number:** 30

- Hazard Label(s): 3

· **EmS-N°:** F-E,S-D

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not available.

· **Transport/further information:**

· **ADR**

· **Tunnel Restriction code** D/E

15. Regulatory information

· 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Falls under EU Council Directive 96/82/EC (Seveso II directive):

Annex I no. 6

Water contaminating class (Germany): 1 slightly water endangering (in accordance with Annex 4 to the Directive on Water-Hazardous Substances) Any existing national regulations on the handling of isocyanates must be observed. Other regulations: The European Committee of Paint, Printing Ink and Artists' Colours Manufacturers' Associations (CEPE) provides the following information on coatings containing isocyanates: Ready-to-use paints containing isocyanates may have an irritant effect on mucous membranes - especially on breathing organs - and cause hypersensitivity reactions. Inhalation of vapor or spray mist may cause

sensitisation. When handling paints containing isocyanates all precautions required for solvent-containing paints must be followed. Vapor and spray mist in particular should not be inhaled. Allergics and asthmatics as well as people prone to respiratory ailments should not work with isocyanate containing paints.
· 15.2 Chemical Safety Assessment:
Chemical safety assessment is performed for:
hexamethylene-1,6-diisocyanate homopolymer
hexamethylene-1,6-diisocyanate homopolymer
hexamethylene-1,6-diisocyanate

16. Other information
This safety data sheet has been drawn up in accordance with Regulation (EU) No 453/2010.
This safety data sheet is exclusively made for industrial/professional use.
- Changes Changes from the previous revision
Full (according to Regulation (EU) no 453/2010)
- Full text of hazard statements (H-statements) according to section 2 and 3 of the CLPclassificatie (1272/2008/EC).
H226: Flammable liquid and vapour
H290: May be corrosive to metals
H301: Toxic if swallowed
H302: Harmful if swallowed
H311: Toxic in contact with skin
H314: Causes severe skin burns and eye damage
H315: Causes skin irritation
H317: May cause an allergic skin reaction
H318: Causes serious eye damage
H319: Causes serious eye irritation
H330: Fatal if inhaled
H331: Toxic if inhaled
H332: Harmful if inhaled
H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled
H335: May cause respiratory irritation
H336: May cause drowsiness or dizziness
H411: Toxic to aquatic life with long lasting effects
H412: Harmful to aquatic life with long lasting effects
EUH066: Repeated exposure may cause skin dryness or cracking
- Full text of risk phrases according to section 2 and 3 of the EU classification (67/548/EEC, 1999/45/EC).
R10 Flammable
R20 Harmful by inhalation
R20/21/22 Harmful by inhalation, in contact with skin and if swallowed
R23 Toxic by inhalation
R34 Causes burns
R36/37/38 Irritating to eyes, respiratory system and skin
R37 Irritating to respiratory system
R38 Irritating to skin
R41 Risk of serious damage to eyes
R42 May cause sensitisation by inhalation
R42/43 May cause sensitization by inhalation and skin contact
R43 May cause sensitisation by skin contact
R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment
R52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment
R66 Repeated exposure may cause skin dryness or cracking
R67 Vapours may cause drowsiness and dizziness
The product is used mainly as a hardener in coating materials or adhesives. The handling of coating materials or adhesives containing reactive polyisocyanates and residual monomeric HDI requires appropriate protective measures referred to in this safety data sheet. These products

may therefore be used only in industrial or trade applications.
They are not suitable for use in homeworker (DIY) applications.

List of abbreviations and acronyms that could be (but not necessarily are) used in this safety data sheet:

Acronym Full text

ADN (Accord européen relatif au transport international des marchandises Dangereuses par voie de Navigation interieur): European agreement concerning the international carriage of dangerous goods by inland waterways
ADR (Accord européen relatif au transport international des marchandises Dangereuses par Route) : European agreement concerning the international carriage of dangerous goods by road
AICS Australian Inventory of Chemical Substances
AIHA WEEL American Industrial Hygiene Association Workplace Environmental Exposure Limits
ASTM ASTM International, originally known as the American Society for Testing and Materials (ASTM)
ATE Acute Toxicity Estimate
CAS Chemical Abstracts Service (division of the American Chemical Society)
CLP Classification, Labeling and Packaging Regulation [Regulation (EC) No. 1272/2008]
CO Carbon monoxide
DNEL (Derived No Effect Level) : an estimated safe exposure level
DSL Domestic Substance List (Canada)
EINECS European Inventory of Existing Commercial Substances
ELINCS European List of Notified Chemical Substances
EmS (Emergency Schedule) : the first code refers to the relevant fire schedule and
the second code refers to the relevant spillage schedule
ENCS Existing and new Chemical Substances (Japanese inventory)
EUH statement CLP-specific Hazard statement
GHS Globally Harmonized System of Classification and Labeling of Chemicals
IATA International Air Transport Association
ICAO International Civil Aviation Organization
IECSC Inventory of Existing Chemical Substances in China
IMDG International Maritime Code for Dangerous Goods
KECI Korean Existing Chemicals Inventory
LC Lethal Concentration
LD Lethal Dose
N/A Not applicable
N/D Not determined
NE Not established
NDSL Non-Domestic Substances List (Canada)
NFPA (National Fire Protection Association) or fire diamant
NZIoC New Zealand Inventory of Chemicals
PBT Persistent, Bioaccumulative and Toxic
PICCS the Philippines Inventory of Chemical Substances
PNEC (Predicted No Effect Concentration) : concentration below which exposure to
a substance is not expected to cause adverse effects
REACH Registration, Evaluation, Authorisation and restriction of Chemicals
RID Règlement international concernant le transport des marchandises dangereuses par chemin de fer
(Regulations Concerning the International Transport of Dangerous Goods by Rail)
RRN REACH registration number
TLV Threshold Limit Value (American Conference of Governmental Industrial Hygienists)
TSCA Toxic Substances Control Act (list of the United States)
UVCB Substances of Unknown or Variable composition, Complex reaction products or Biological materials
VOC Volatile Organic Compound
zPzB very persistent and very bioaccumulative
WGK (Wassergefahrdungsklasse) : a German classification of substances that
indicate the environmental hazard for surface water

Training Advice :

Staff serves for handling of the substance/the preparation are sufficiently informed by means of this material safety data sheet. The information is possible not or not entirely apply to combination of the product with

other substances or in certain applications. The user is responsible to take the appropriate measures and make sure that the data is arranged and sufficient for the use he makes of the product. Under uncertainty about this it is advised to consult with an appropriate professional or the supplier.

- REFERENCES

: Sources of information used in preparing this SDS included one or more of the following: results from in house or supplier toxicology studies, CONCAWE Product Dossiers, publications from other trade associations, such as the EU Hydrocarbon Solvents REACH Consortium, U.S. HPV Program Robust Summaries, the EU IUCLID Data Base, U.S. NTP publications, and other sources, as appropriate. This information is to our knowledge correct and complete on the date of issue of this safety data sheet. The information only concerns the product and does not give any guarantee for the quality and the completeness of the properties of the product, or in case of mixing or using in any other process. It remains the responsibility of the user to assure himself that the information is suitable and complete concerning the special use he makes of the product.