**Material Safety Data Sheet (MSDS)**

Date: 25-06-2013

Supplier:

**GRATCH INTERNATIONAL**

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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.