

# SAFETY DATA SHEET

According to EC Regulation 1907/2006 (REACH), Attachment II

Date of issue: 01/01/2005

Last change:01/01/2015

## Reagent XW for Idro-Pol Pava / Idro-Gel Pava

### SECTION 1: Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

Reagent XW for Idro-Pol Pava / Idro-Gel Pava

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

##### Use:

Hardener for coating materials or adhesives for industrial and trade applications

For details of the identified uses according to REACH-Regulation (EU) No. 1907/2006 refer to the annex of this safety data sheet.

##### Uses advised against:

Not suitable for use in homemaker (DIY) applications.

#### 1.3 Details of the supplier of the safety data sheet

Pava Resine Srl  
Via Dolomiti, 6/1  
35018 S.Martino di L.(PD) IT

Tel.: +39 049 5953085  
e-mail: info@pavaresine.it

#### 1.4 Emergency telephone number

In case of emergency: +39 049 5953085

### SECTION 2: Hazards identification

#### 2.1 Classification of the substance or mixture

Acute toxicity, Inhalative, Category 4 (H332)

Sensitization of the skin, Category 1 (H317)

Specific target organ toxicity (single exposure), Category 3 (H335)

#### 2.2 Label elements



Warning

##### Hazardous components which must be listed on the label

hexamethylene-1,6-diisocyanate homopolymer

Hydrophilic aliphatic polyisocyanate based on HDI

##### Hazard statements:

H317 May cause an allergic skin reaction.

H332 Harmful if inhaled.

H335 May cause respiratory irritation.

##### Precautionary statements:

P280 Wear protective gloves.

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.  
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.

**Supplementary hazardous characteristics and labeling elements:**

EUH204 Contains isocyanates. May produce an allergic reaction.

**2.3 Other hazards**

No information available.

**SECTION 3: Composition/information on ingredients**

**Type of product:** Mixture

**3.2 Mixtures**

hydrophilic aliphatic polyisocyanate

**Hazardous components**

hexamethylene-1,6-diisocyanate homopolymer

Concentration [wt.-%]: ca. 80

EC-No.: 500-060-2

REACH Registration Number: 01-2119488934-20-0000

CAS-No.: 28182-81-2

Classification (1272/2008/CE): Acute Tox. 4 Inhalative H332 Skin Sens. 1 H317 STOT SE 3 H335

Hydrophilic aliphatic polyisocyanate based on HDI

Concentration [wt.-%]: ca. 20

CAS-No.: 666723-27-9

Classification (1272/2008/CE): Acute Tox. 3 Inhalative H331 Skin Sens. 1 H317 STOT SE 3 H335 Aquatic Chronic 3 H412

This contains:

Hexamethylene diisocyanate, oligomerisation product (uretdione type)

Concentration [wt.-%]: ca. 16

EC-No.: 500-060-2

REACH Registration Number: 01-2119488177-26-0000

CAS-No.: 28182-81-2

Classification (1272/2008/CE): Acute Tox. 3 Inhalative H331 Skin Sens. 1 H317 STOT SE 3 H335

Hexamethylene-1,6-diisocyanate

Concentration [wt.-%]: < 0.5

Index-No.: 615-011-00-1

REACH Registration Number: 01-2119457571-37-0000, 01-2119457571-37-0005, 01-2119457571-37-0006

CAS-No.: 822-06-0

Classification (1272/2008/CE): Acute Tox. 4 Oral H302 Acute Tox. 1 Inhalative H330 Skin Irrit. 2 H315 Eye Irrit. 2 H319 Resp. Sens. 1 H334 Skin Sens. 1 H317 STOT SE 3 H335

Specific threshold concentration (GHS):

Resp. Sens. 1 H334 >= 0.5 %

Skin Sens. 1 H317 >= 0.5 %

The polymer or the polymers including their impurities are exempted from the provisions on registration according to article 2(9) of the REACH Regulation (EC) No 1907/2006, hence no exposure scenarios are provided. The necessary information about operational conditions and Risk Management Measures (RMM) can be found in chapter 8 of this SDS.

**Candidate List of Substances of Very High Concern for Authorisation**

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This product does not contain substances of very high concern (Regulation (EC) No 1907/2006 (REACH), Article 57).

#### **SECTION 4: First aid measures**

##### **4.1 Description of first aid measures**

**General advice:** Take off all contaminated clothing immediately.

**If inhaled:** Take the person into the fresh air and keep him warm, let him rest; if there is difficulty in breathing, medical advice is required.

**In case of skin contact:** In case of skin contact wash affected areas thoroughly with soap and plenty of water. Consult a doctor in the event of a skin reaction.

**In case of eye contact:** Hold the eyes open and rinse with preferably lukewarm water for a sufficiently long period of time (at least 10 minutes). Contact an ophthalmologist.

**If swallowed:** DO NOT induce the patient to vomit, medical advice is required.

##### **4.2 Most important symptoms and effects, both acute and delayed**

**Notes to physician:** Basic first aid, decontamination, symptomatic treatment.

##### **4.3 Indication of any immediate medical attention and special treatment needed**

**Therapeutic measures:** No information available.

#### **SECTION 5: Firefighting measures**

##### **5.1 Extinguishing media**

**Suitable extinguishing media:** Carbon dioxide (CO<sub>2</sub>), Foam, extinguishing powder, in cases of larger fires, water spray should be used.

**Unsuitable extinguishing media:** High volume water jet

##### **5.2 Special hazards arising from the substance or mixture**

Burning releases carbon monoxide, carbon dioxide, oxides of nitrogen, isocyanate vapors and traces of hydrogen cyanide. In the event of fire and/or explosion do not breathe fumes.

##### **5.3 Advice for fire-fighters**

During fire-fighting respirator with independent air-supply and airtight garment is required.

Do not allow contaminated extinguishing water to enter the soil, ground-water or surface waters.

#### **SECTION 6: Accidental release measures**

##### **6.1 Personal precautions, protective equipment and emergency procedures**

Put on protective equipment (see section 8). Ensure adequate ventilation/exhaust extraction. Keep unauthorized persons away.

##### **6.2 Environment related measures**

Do not allow to escape into waterways, wastewater or soil.

### 6.3 Methods and material for containment and cleaning up

Remove mechanically; cover the remainder with wet, absorbent material (e.g. sawdust, chemical binder based on calcium silicate hydrate, sand). After approx. one hour transfer to waste container and do not seal (evolution of CO<sub>2</sub>!). Keep damp in a safe ventilated area for several days.

### 6.4 Reference to other sections

For further disposal measures see section 13.

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

If an annex according to REACH-Regulation (EU) No. 1907/2006 is attached to this MSDS, the general conditions of use are further specified in the corresponding exposure scenarios.

Provide sufficient air exchange and/or exhaust in work rooms. Exhaust ventilation necessary if product is sprayed.

The threshold limit values noted in section 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 section 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.

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.

### 7.2 Conditions for safe storage, including any incompatibilities

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 information sheet.

Storage class (TRGS 510) : 10: Combustible liquids

### 7.3 Specific end use(s)

No information available.

## SECTION 8: Exposure controls/personal protection

If an annex according to Regulation (EU) No. 1907/2006 is attached to this MSDS, the general RMMs are further specified in the corresponding exposure scenarios.

UK Workplace Exposure Limits (WEL), per EH40 document (Health & Safety Executive). If no UK value exists, EU exposure limits given where available.

### 8.1 Control parameters

#### Components with workplace control parameters

Substance	CAS-No.	Basis	Type	Value	Ceiling Limit Value	Remarks
Hexamethylene-1,6-diisocyanate	822-06-0	EH40 WEL	STEL	0.07 mg/m <sup>3</sup>		, measured as NCO
Hexamethylene-1,6-diisocyanate	822-06-0	EH40 WEL	TWA	0.02 mg/m <sup>3</sup>		, measured as NCO

Exposition assessment value (EBW) per TGRS 430:Polyisocyanate content (HDI oligomers and/or prepolymers) 100 %. Use an exposition assessment value of 0,5 mg/m<sup>3</sup>.

#### Derived No Effect Level (DNEL) or Derived Minimal Effect Level (DMEL)

Value type	Route of exposure	Health Effects	Value	Remarks
Hexamethylene diisocyanate, oligomerisation product (uretdione type)				
Worker (short-term)				
DNEL	Dermal	- local effects		No quantitative risk assessment possible. Most sensitive endpoint: Sensitisation (skin)
DNEL	Inhalation	- local effects	0.7 mg/m <sup>3</sup> air	Most sensitive endpoint: Irritation (respiratory tract)
Worker (long-term)				
DNEL	Dermal	- local effects		No quantitative risk assessment possible. Most sensitive endpoint: Sensitisation (skin)
DNEL	Inhalation	- local effects	0.35 mg/m <sup>3</sup> air	Most sensitive endpoint: Irritation (respiratory tract)
hexamethylene-1,6-diisocyanate homopolymer				
Worker (short-term)				
DNEL	Dermal	- local effects		No quantitative risk assessment possible. Most sensitive endpoint: Sensitisation (skin)
DNEL	Inhalation	- local effects	1 mg/m <sup>3</sup> air	Most sensitive endpoint: Irritation (respiratory tract)
Worker (long-term)				
DNEL	Dermal	- local effects		No quantitative risk assessment possible. Most sensitive endpoint: Sensitisation (skin)
DNEL	Inhalation	- local effects	0.5 mg/m <sup>3</sup> air	Most sensitive endpoint: Irritation (respiratory tract)

#### Predicted No Effect Concentration (PNEC)

Compartment	Value	Remarks
Hexamethylene diisocyanate, oligomerisation product (uretdione type)		
Freshwater	> 0.05 mg/l	
Marine water	> 0.005 mg/l	
Fresh water sediment	> 1.33 mg/kg dry weight	
Marine sediment	> 0.133 mg/kg dry weight	
Soil	> 0.066 mg/kg dry weight	
STP (sewage-treatment plant)	55.6 mg/l	
Oral		Not relevant

hexamethylene-1,6-diisocyanate homopolymer		
Freshwater	0.199 mg/l	
Marine water	0.0199 mg/l	
Fresh water sediment	44551 mg/kg dry weight	
Marine sediment	4455 mg/kg dry weight	
Soil	8884 mg/kg dry weight	
STP (sewage-treatment plant)	100 mg/l	
Oral		Not relevant

## 8.2 Exposure controls

### Respiratory protection

Respiratory protection required in insufficiently ventilated working areas and during spraying. An air-fed mask, or for short periods of work, a combination of charcoal filter and particulate filter is recommended.

Further recommendations regarding respiratory protection can be found in the individual exposure scenarios in the appendix.

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.

### Hand protection

Suitable materials for safety gloves; EN 374:

Butyl rubber - IIR: thickness  $\geq 0,5\text{mm}$ ; breakthrough time  $\geq 480\text{min}$ .

Fluorinated rubber - FKM: thickness  $\geq 0,4\text{mm}$ ; breakthrough time  $\geq 480\text{min}$ .

Laminate glove - PE/EVAL/PE; breakthrough time  $\geq 480\text{ min}$ .

Recommendation: contaminated gloves should be disposed of.

### Eye protection

Wear eye/face protection.

### Skin and body protection

Wear suitable protective clothing.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

Appearance:	liquid	
Colour:	yellowish	
Odour:	almost odourless	
Odour Threshold:	not established	
pH:	not established	
Pour point:	ca. $-45\text{ }^{\circ}\text{C}$	ISO 3016
Boiling point/boiling range:	not applicable, decomposition	DIN 53171
Flash point:	ca. $185\text{ }^{\circ}\text{C}$	DIN EN 22719
Evaporation rate:	not established	
Flammability (solid, gas):	not applicable	
Burning number:	not applicable	
Vapour pressure:	ca. 5 hPa at $20\text{ }^{\circ}\text{C}$	EG A4
	ca. 9 hPa at $50\text{ }^{\circ}\text{C}$	EG A4
	ca. 10 hPa at $55\text{ }^{\circ}\text{C}$	EG A4
Vapour pressure of ingredients:		
Hexamethylene-1,6-diisocyanate	ca. 0.007 hPa at $20\text{ }^{\circ}\text{C}$	
hexamethylene-1,6-diisocyanate homopolymer	$< 0.00001\text{ hPa}$ at $20\text{ }^{\circ}\text{C}$ (vapor pressure balance/OECD No.104)	

Hexamethylene diisocyanate, oligomerisation product (uretdione type)	ca. 0.0029 hPa at 20 °C	
Vapour density:	not established	
Density:	ca. 1.15 g/cm <sup>3</sup> at 20 °C	DIN 51757
Miscibility with water:	immiscible at 15 °C	
Surface tension:	not established	
Partition coefficient (n-octanol/water):	not established	
Auto-ignition temperature:	not applicable	
Ignition temperature:	ca. 445 °C	DIN 51794
Decomposition temperature:	ca. 181 °C	
Viscosity, dynamic:	570 - 730 mPa.s at 23 °C	DIN EN ISO 3219/A.3
Explosive properties:	not established	
Dust explosion class:	not applicable	
Oxidising properties:	not established	

## 9.2 Other information

The indicated values do not necessarily correspond to the product specification. Please refer to the technical information sheet for specification data.

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

This information is not available.

### 10.2 Chemical stability

This information is not available.

### 10.3 Possibility of hazardous reactions

Exothermic reaction with amines and alcohols; reacts slowly with water forming CO<sub>2</sub>, in closed containers risk of bursting owing to increase of pressure.

### 10.4 Conditions to avoid

This information is not available.

### 10.5 Incompatible materials

This information is not available.

### 10.6 Hazardous decomposition products

No hazardous decomposition products when stored and handled correctly.

## SECTION 11: Toxicological information

Toxicological studies on the product are not yet available.

Please find below the toxicological data available to us for the components.

### 11.1 Information on toxicological effects

#### Acute toxicity, oral

hexamethylene-1,6-diisocyanate homopolymer

LD50 rat, female:  $\geq$  5,000 mg/kg

Method: OECD Test Guideline 423

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Hydrophilic aliphatic polyisocyanate based on HDI  
LD50 rat:  $\geq$  5,000 mg/kg  
Method: OECD Test Guideline 423  
Toxicological studies of a comparable product.

**Acute toxicity, dermal**

hexamethylene-1,6-diisocyanate homopolymer  
LD50 rat, male/female: > 2,000 mg/kg  
Method: OECD Test Guideline 402  
Studies of a comparable product.

LD50 rabbit, male/female: > 2,000 mg/kg  
Studies of a comparable product.

Hydrophilic aliphatic polyisocyanate based on HDI  
LD50 rat, male/female: > 2,000 mg/kg  
Method: OECD Test Guideline 402  
Studies of a comparable product.

**Acute toxicity, inhalation**

ATEmix (inhal.): 1.07 mg/l, 4 h  
Test atmosphere: dust/mist  
Method: Calculation method

hexamethylene-1,6-diisocyanate homopolymer  
LC50 rat, female: 0.390 mg/l, 4 h  
Test atmosphere: dust/mist  
Method: OECD Test Guideline 403  
Toxicological studies of a comparable product.

The test atmosphere generated in the animal study is not representative of workplace environments, how the substance is placed on the market, and how it can reasonably be expected to be used. Therefore the test result cannot be directly applied for the purpose of assessing hazard. Based on expert judgment and the weight of the evidence, a modified classification for acute inhalation toxicity is justified.

Converted acute toxicity point estimate 1.5 mg/l  
Test atmosphere: dust/mist  
Method: Expert judgement

Assessment: Harmful if inhaled.

Hydrophilic aliphatic polyisocyanate based on HDI  
LC50 rat, male/female: 0.158 mg/l, 4 h  
Test atmosphere: dust/mist  
Method: OECD Test Guideline 403  
Studies of a comparable product.

The test atmosphere generated in the animal study is not representative of workplace environments, how the substance is placed on the market, and how it can reasonably be expected to be used. Therefore the test result cannot be directly applied for the purpose of assessing hazard. Based on expert judgment and the weight of the evidence, a modified classification for acute inhalation toxicity is justified.

Converted acute toxicity point estimate 0.5 mg/l  
Test atmosphere: dust/mist  
Method: Expert judgement



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### **Primary skin irritation**

hexamethylene-1,6-diisocyanate homopolymer  
Species: rabbit  
Result: slight irritant  
Classification: No skin irritation  
Method: OECD Test Guideline 404

Hydrophilic aliphatic polyisocyanate based on HDI  
Species: rabbit  
Result: An irritant effect cannot be distinguished from a mechanical load caused by the removal of the test specimen.  
Classification: No skin irritation  
Method: OECD Test Guideline 404  
Toxicological studies of a comparable product.

### **Primary mucosae irritation**

hexamethylene-1,6-diisocyanate homopolymer  
Species: rabbit  
Result: slight irritant  
Classification: No eye irritation  
Method: OECD Test Guideline 405

Hydrophilic aliphatic polyisocyanate based on HDI  
Species: rabbit  
Result: slight irritant  
Classification: No eye irritation  
Method: OECD Test Guideline 405  
Toxicological studies of a comparable product.

### **Sensitisation**

hexamethylene-1,6-diisocyanate homopolymer  
Skin sensitization (local lymph node assay (LLNA)):  
Species: Mouse  
Result: positive  
Classification: May cause sensitization by skin contact.  
Method: OECD Test Guideline 429

#### Respiratory sensitization

Classification: No classification according to EC Directives 2006/121/EC or 1999/45/EC as respiratory sensitizer.  
No pulmonary sensitisation observed in animal tests.  
No pulmonary sensitisation potential was observed in guinea pigs after either intradermal or inhalative induction with polyisocyanate based on hexamethylene diisocyanate.

Hydrophilic aliphatic polyisocyanate based on HDI  
Skin sensitization (local lymph node assay (LLNA)):  
Species: Mouse  
Result: positive  
Classification: May cause sensitization by skin contact.  
Method: OECD Test Guideline 429  
Toxicological studies of a comparable product.

#### Respiratory sensitization

Classification: No classification according to EC Directives 2006/121/EC or 1999/45/EC as respiratory sensitizer.  
No pulmonary sensitisation observed in animal tests.  
No pulmonary sensitisation potential was observed in guinea pigs after either intradermal or inhalative induction with polyisocyanate based on isophorone diisocyanate.

### **Subacute, subchronic and prolonged toxicity**

hexamethylene-1,6-diisocyanate homopolymer  
NOAEL: 3,3 mg/m<sup>3</sup> air  
Application Route: Inhalative  
Species: rat, male/female  
Dose Levels: 0 - 0,5 - 3,3 - 26,4 mg/m<sup>3</sup>

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Exposure duration: 90 d  
Frequency of treatment: 6 hours a day, 5 days a week  
Test substance: as aerosol  
Method: OECD Test Guideline 413  
Toxicological studies of a comparable product.  
Evidence of damage to organs other than the organs of respiration was not found.

#### **Carcinogenicity**

hexamethylene-1,6-diisocyanate homopolymer  
No data available.

#### **Reproductive toxicity/Fertility**

hexamethylene-1,6-diisocyanate homopolymer  
Available data show no indications for reproductive toxicity.

Hydrophilic aliphatic polyisocyanate based on HDI  
Available data show no indications for reproductive toxicity.

#### **Reproductive toxicity/Teratogenicity**

hexamethylene-1,6-diisocyanate homopolymer  
Animal experiments on structurally similar compounds showed no indication of specific reproductive toxicity.

Hydrophilic aliphatic polyisocyanate based on HDI  
Animal experiments on structurally similar compounds showed no indication of specific reproductive toxicity.

#### **Genotoxicity in vitro**

hexamethylene-1,6-diisocyanate homopolymer  
Test type: Salmonella/microsome test (Ames test)  
Metabolic activation: with/without  
Result: No indication of mutagenic effects.  
Method: OECD Test Guideline 471

Test type: Point mutation in mammalian cells (HPRT test)  
Metabolic activation: with/without  
Result: negative  
Method: OECD Test Guideline 476  
Toxicological studies of a comparable product.

Test type: Chromosome aberration test in vitro  
Test system: Chinese hamster V79 cell line  
Metabolic activation: with/without  
Result: negative  
Method: OECD Test Guideline 473  
Toxicological studies of a comparable product.

Hydrophilic aliphatic polyisocyanate based on HDI  
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**

No data available.

#### **STOT evaluation – one-time exposure**

hexamethylene-1,6-diisocyanate homopolymer  
Route of exposure: Inhalative  
May cause respiratory irritation.

Hydrophilic aliphatic polyisocyanate based on HDI  
May cause respiratory irritation.

#### **STOT evaluation – repeated exposure**

hexamethylene-1,6-diisocyanate homopolymer  
Based on available data, the classification criteria are not met.

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Hydrophilic aliphatic polyisocyanate based on HDI  
Based on available data, the classification criteria are not met.

#### **Aspiration toxicity**

hexamethylene-1,6-diisocyanate homopolymer  
Based on available data, the classification criteria are not met.

Hydrophilic aliphatic polyisocyanate based on HDI  
Based on available data, the classification criteria are not met.

#### **CMR Assessment**

hexamethylene-1,6-diisocyanate homopolymer  
Carcinogenicity: Based on available data, the classification criteria are not met.  
Mutagenicity: In vitro tests did not show mutagenic effects Based on available data, the classification criteria are not met.  
Teratogenicity: Based on available data, the classification criteria are not met.  
Reproductive toxicity/Fertility: Based on available data, the classification criteria are not met.

#### **Toxicology Assessment**

hexamethylene-1,6-diisocyanate homopolymer  
Acute effects: Harmful if inhaled.  
Sensitization: May cause sensitization by skin contact.

#### **Additional information**

Special properties/effects: Over-exposure, especially when spraying coatings containing isocyanate without the necessary precautions, 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.

## **SECTION 12: Ecological information**

Do not allow to escape into waterways, wastewater or soil.

Please find below the data available to us:

### **12.1 Toxicity**

#### **Acute Fish toxicity**

hexamethylene-1,6-diisocyanate homopolymer  
LC50 > 100 mg/l  
Species: Danio rerio (zebra fish)  
Exposure duration: 96 h  
Method: Directive 67/548/EEC, Annex V, C.1.  
Sample preparation on account of the reactivity of the substance with water:  
Ultra turrax: 60 sec. 8000 rpm; 24h magnetic stirrer; Filtration.

Hydrophilic aliphatic polyisocyanate based on HDI  
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

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### **Acute toxicity for daphnia**

hexamethylene-1,6-diisocyanate homopolymer

EC50 > 100 mg/l

Species: *Daphnia magna* (Water flea)

Exposure duration: 48 h

Method: Directive 67/548/EEC, Annex V, C.2.

Sample preparation on account of the reactivity of the substance with water:

Ultra turrax: 60 sec. 8000 rpm; 24h magnetic stirrer; Filtration.

Hydrophilic aliphatic polyisocyanate based on HDI

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**

hexamethylene-1,6-diisocyanate homopolymer

ErC50 199 mg/l

Test type: Growth inhibition

Species: *scenedesmus subspicatus*

Exposure duration: 72 h

Method: Directive 67/548/EEC, Annex V, C.3.

Sample preparation on account of the reactivity of the substance with water:

Ultra turrax: 60 sec. 8000 rpm; 24h magnetic stirrer; Filtration.

Hydrophilic aliphatic polyisocyanate based on HDI

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**

hexamethylene-1,6-diisocyanate homopolymer

EC50 > 10,000 mg/l

Test type: Respiration inhibition

Species: activated sludge

Exposure duration: 3 h

Method: EG-RL 88/302/EEC

Hydrophilic aliphatic polyisocyanate based on HDI

EC50 > 10,000 mg/l

Species: activated sludge

Method: OECD Test Guideline 209

Ecotoxicological reports on a comparable product

### **Ecotoxicology Assessment**

hexamethylene-1,6-diisocyanate homopolymer

Acute aquatic toxicity: Based on available data, the classification criteria are not met.

Chronic aquatic toxicity: There is no evidence of a chronic aquatic toxicity.

Impact on Sewage Treatment: Because of the low bacterial toxicity, there is no risk of an adverse effect on the performance of biological waste water treatment plants.

## **12.2 Persistence and degradability**

### **Biodegradability**

hexamethylene-1,6-diisocyanate homopolymer

Test type: aerobic

Biodegradation: 2 %, 28 d, i.e. not readily degradable

Method: Directive 67/548/EEC Annex V, C.4.E.

Ecotoxicological studies of the product

Test type: aerobic

Biodegradation: 0 %, 28 d, i.e. not inherently degradable

Method: OECD Test Guideline 302 C

Ecotoxicological studies of the product

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Hydrophilic aliphatic polyisocyanate based on HDI  
Biodegradation: 0 %, i.e. not readily degradable  
Method: OECD Test Guideline 301 F  
Ecotoxicological reports on a comparable product

#### **Stability in water**

hexamethylene-1,6-diisocyanate homopolymer  
Test type: Hydrolysis  
Half life: 7.7 h at 23 °C  
Method: OECD Test Guideline 111  
The substance hydrolyzes rapidly in water.  
Studies of a comparable product.

#### **Photodegradation**

hexamethylene-1,6-diisocyanate homopolymer  
Test type: Phototransformation in air  
Temperature: 25 °C  
sensitizer: OH-radicals  
Half-life indirect photolysis: 11.7 h  
Method: SRC - AOP (calculation)  
After evaporation or exposure to the air, the product will be rapidly degraded by photochemical processes.

Test type: Phototransformation in air  
Temperature: 25 °C  
sensitizer: OH-radicals  
Half-life indirect photolysis: 3.1 h  
Method: SRC - AOP (calculation)  
After evaporation or exposure to the air, the product will be rapidly degraded by photochemical processes.  
Studies of hydrolysis products.

#### **Volatility (Henry's Law constant)**

hexamethylene-1,6-diisocyanate homopolymer  
Calculated value = < 0.000001 Pa\*m<sup>3</sup>/mol at 25 °C  
Method: Bond-method  
The substance has to be scored as non-volatile from water.

Calculated value = < 0.000001 Pa\*m<sup>3</sup>/mol at 25 °C  
Method: Bond-method  
The substance has to be scored as non-volatile from water.  
Studies of hydrolysis products.

### **12.3 Bioaccumulative potential**

#### **Bioaccumulation**

hexamethylene-1,6-diisocyanate homopolymer  
Bioconcentration factor (BCF): 706.2  
Method: (calculated)  
The substance hydrolyzes rapidly in water.  
An accumulation in aquatic organisms is not to be expected.

Bioconcentration factor (BCF): 10.11  
Method: (calculated)  
An accumulation in aquatic organisms is not to be expected.  
Studies of hydrolysis products.

### **12.4 Mobility in soil**

#### **Distribution among environmental compartments**

hexamethylene-1,6-diisocyanate homopolymer  
Adsorption/Soil  
not applicable

#### **Environmental distribution**

hexamethylene-1,6-diisocyanate homopolymer  
not applicable

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## 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.

## 12.6 Other adverse effects

Isocyanate reacts with water at the interface forming CO<sub>2</sub> and a solid insoluble product with high melting point (polyurea). This reaction is accelerated by surfactants (e.g. detergents) or by watersoluble solvents. Previous experience shows that polyurea is inert and non-degradable.

## SECTION 13: Disposal considerations

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.

### 13.1 Waste treatment methods

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 take-back scheme of the chemical industry. Containers must be recycled in compliance with national legislation and environmental regulations.

None disposal into waste water.

## SECTION 14: Transport information

### ADR/RID

14.1 UN number	:	Not dangerous goods
14.2 UN proper shipping name	:	Not dangerous goods
14.3 Transport hazard class(es)	:	Not dangerous goods
14.4 Packing group	:	Not dangerous goods
14.5 Environmental hazards	:	Not dangerous goods

### ADN

14.1 UN number	:	Not dangerous goods
14.2 UN proper shipping name	:	Not dangerous goods
14.3 Transport hazard class(es)	:	Not dangerous goods
14.4 Packing group	:	Not dangerous goods
14.5 Environmental hazards	:	Not dangerous goods

### IATA

14.1 UN number	:	Not dangerous goods
14.2 UN proper shipping name	:	Not dangerous goods
14.3 Transport hazard class(es)	:	Not dangerous goods
14.4 Packing group	:	Not dangerous goods
14.5 Environmental hazards	:	Not dangerous goods

### IMDG

14.1 UN number	:	Not dangerous goods
14.2 UN proper shipping name	:	Not dangerous goods
14.3 Transport hazard class(es)	:	Not dangerous goods
14.4 Packing group	:	Not dangerous goods
14.5 Environmental hazards	:	Not dangerous goods

### 14.6 Special precautions for user

See section 6 - 8.

Additional information	:	Not dangerous cargo. Keep dry. Avoid heat above +50 °C. Keep separated from foodstuffs.
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#### 14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Not applicable.

### SECTION 15: Regulatory information

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

##### Directive 2012/18/EU on the control of major-accident hazards involving dangerous substances.

not applicable

##### 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

##### A Chemical Safety Assessment has been carried out for:

hexamethylene-1,6-diisocyanate homopolymer

### SECTION 16: Other information

#### Full text of hazardous (H) warnings referred to under sections 2, 3 and 10 of the CLP classification (1272/2008/CE).

H302	Harmful if swallowed.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
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.
H412	Harmful to aquatic life with long lasting effects.

#### Safety data Sheet by

PAVA Resine laboratory.

#### Interlocutor

PAVA Resine laboratory.

Interlocutor: Pava Resine laboratory Tel. +39 049/5953085 mail: info@pavaresine.it

#### Note for reader

Information in this safety data sheet have been considered valid by Pava Resine at the moment of preparation or they have been prepared basing on sources considered to be reliable, but user has to investigate and understand other sources of information, follow all laws and procedures about safe handling and use of the product and to define suitability of the product for the expected use. All Pava Resine products are subjected to sell terms and conditions of Pava Resine. PAVA RESINE DO NOT ISSUE ANY WARRANTIES, EXPLICIT OR IMPLICIT, CONCERNING THE PRODUCT OR ITS MERCHANTABILITY OR SUITABILITY FOR ANY PURPOSE OR CONCERNING ACCURACY OF ANY INFORMATION PROVIDED BY PAVA RESINE, except that product consists with specifications. None information in this document represents a sell offer of products. User has to ensure that his activities respect all national and local norms. Since using product conditions cannot be regulated by producer, user has to define conditions that are necessary to use this product safely.