



## Safety data sheet

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

#### 1.1. Product identifier

Code: YC---M403/-----  
Product name: HARDENER FOR WATERBORNE COATINGS

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

Intended use: HARDENER FOR WATERBORNE COATINGS

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

Name: RENNER ITALIA S.p.A.  
Full address: Via Ronchi Inferiore, 34  
District and Country: 40061 Minerbio BO  
Italia  
Tel.: +39 051-6618211  
Fax: +39 051-6606312

e-mail address of the competent person responsible for the Safety Data Sheet: sds@renneritalia.com

Product distribution by:

#### 1.4. Emergency telephone number

For urgent inquiries refer to:  
RENNER ITALIA S.p.A. - Tel. +39 051-6618211 (dal lunedì al venerdì dalle 8.30 - 13.00 e dalle 14.00 - 17.30)  
ITALIA  
Centro antiveneni Milano - Tel. +39 02-66101029  
Centro antiveneni Firenze - Tel. +39 055-7947819  
CROATIA  
Služba za izvanredna stanja (112)  
Centar za kontrolu otrovanja (01/2348-342)  
HUNGARY  
Egészségügyi Toxikológiai Tájékoztató Szolgálat (ETTSZ)  
1096 Budapest, Nagyvárad tér 2.  
Telefon: +36 1 476 6464 (8-16 óráig), +36 80 201 199 (éjjel-nappal hívható) magyar nyelven  
LATVIA  
Valsts ugunsdzēsības un glabšanas dienests: (+371) 112  
Saindešanas un zalu informācijas centrs: (+371) 67042473 (visu diennakti)  
LITHUANIA  
Apsinuodijimų kontrolės ir Informacijos biuras visą parą tel. (8 5) 236 2052  
Bendras pagalbos telefonas: 112  
NORWAY  
Emergency number: 113  
POLSKA  
Numer telefonu alarmowego: +48 22 615 27 51  
PORTUGAL  
Centro de Informação Anti-Venenos: +351 808 250 143  
BULGARIA - България  
Национален център по токсикология, МБАЛСМ "Пирогов"  
телефон: +359 2 9154 233

### SECTION 2. Hazards identification

#### 2.1. Classification of the substance or mixture

The product is classified as hazardous pursuant to the provisions set forth in EC Regulation 1272/2008 (CLP) (and subsequent amendments and supplements). The product thus requires a safety datasheet that complies with the provisions of EC Regulation 1907/2006 and subsequent amendments.

**SECTION 2. Hazards identification ... / >>**

Any additional information concerning the risks for health and/or the environment are given in sections 11 and 12 of this sheet.

**Hazard classification and indication:**

Acute toxicity, category 4	H332	Harmful if inhaled.
Serious eye damage, category 1	H318	Causes serious eye damage.
Skin irritation, category 2	H315	Causes skin irritation.
Specific target organ toxicity - single exposure, category 3	H335	May cause respiratory irritation.
Skin sensitization, category 1	H317	May cause an allergic skin reaction.
Hazardous to the aquatic environment, chronic toxicity, category 3	H412	Harmful to aquatic life with long lasting effects.

**2.2. Label elements**

Hazard labelling pursuant to EC Regulation 1272/2008 (CLP) and subsequent amendments and supplements.

**Hazard pictograms:**

Signal words: Danger

**Hazard statements:**

<b>H332</b>	Harmful if inhaled.
<b>H318</b>	Causes serious eye damage.
<b>H315</b>	Causes skin irritation.
<b>H335</b>	May cause respiratory irritation.
<b>H317</b>	May cause an allergic skin reaction.
<b>H412</b>	Harmful to aquatic life with long lasting effects.
<b>EUH204</b>	Contains isocyanates. May produce an allergic reaction.
<b>EUH208</b>	Contains: ISOPHORONE DIISOCYANATE HEXAMETHYLENE-DI-ISOCYANATE May produce an allergic reaction.

**Precautionary statements:**

<b>P261</b>	Avoid breathing dust / fume / gas / mist / vapours / spray.
<b>P264</b>	Wash hands thoroughly after handling.
<b>P280</b>	Wear protective gloves / eye protection / face protection.
<b>P305+P351+P338</b>	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
<b>P310</b>	Immediately call a POISON CENTER / doctor
<b>P403+P233</b>	Store in a well-ventilated place. Keep container tightly closed.

**Contains:** (Ethoxylated Tridecyl Alcohol) Phosphate  
HDI oligomers, isocyanurate  
OLIGO(ISOPHORONE DIISOCYANATE)  
N,N-DIMETHYLCYCLOHEXYLAMINE

**2.3. Other hazards**

On the basis of available data, the product does not contain any PBT or vPvB in percentage greater than 0,1%.

**SECTION 3. Composition/information on ingredients****3.1. Substances**

Information not relevant

**SECTION 3. Composition/information on ingredients ... / >>****3.2. Mixtures****Contains:****Identification                      x = Conc. %                      Classification 1272/2008 (CLP)****HDI oligomers, isocyanurate**

CAS                      35 &lt;= x &lt; 50                      Acute Tox. 4 H332, STOT SE 3 H335, Skin Sens. 1 H317

EC                      931-274-8

INDEX

Reg. no. 01-2119485796-17-XXXX

**OLIGO(ISOPHORONE DIISOCYANATE)**

CAS                      53880-05-0                      15 &lt;= x &lt; 20                      STOT SE 3 H335, Skin Sens. 1 H317

EC                      500-125-5

INDEX

Reg. no. 01-2119488734-24-xxxx

**(Ethoxylated Tridecyl Alcohol) Phosphate**

CAS                      9046-01-9                      5 &lt;= x &lt; 10                      Eye Dam. 1 H318, Skin Irrit. 2 H315, Aquatic Chronic 2 H411

EC

INDEX

Reg. no.

**N,N-DIMETHYLCYCLOHEXYLAMINE**CAS                      98-94-2                      1 <= x < 2,5                      Flam. Liq. 3 H226, Acute Tox. 3 H301, Acute Tox. 3 H311, Acute Tox. 3 H331,  
Skin Corr. 1B H314, Aquatic Chronic 2 H411

EC                      202-715-5

INDEX

Reg. no. 01-2119533030-60-xxxx

**ISOPHORONE DIISOCYANATE**CAS                      4098-71-9                      0,1 <= x < 0,25                      Acute Tox. 2 H330, Eye Irrit. 2 H319, Skin Irrit. 2 H315, STOT SE 3 H335, Resp. Sens. 1 H334,  
Skin Sens. 1 H317, Aquatic Chronic 2 H411, Note 2

EC                      223-861-6

INDEX                      615-008-00-5

Reg. no. 01-2119490408-31-xxxx

**HEXAMETHYLENE-DI-ISOCYANATE**CAS                      822-06-0                      0,1 <= x < 0,25                      Acute Tox. 1 H330, Acute Tox. 4 H302, Eye Irrit. 2 H319, Skin Irrit. 2 H315, STOT SE 3 H335,  
Resp. Sens. 1 H334, Skin Sens. 1 H317, Note 2

EC                      212-485-8

INDEX                      615-011-00-1

Reg. no. 01-2119457571-37-xxxx

The full wording of hazard (H) phrases is given in section 16 of the sheet.

**SECTION 4. First aid measures****4.1. Description of first aid measures**

EYES: Remove contact lenses, if present. Wash immediately with plenty of water for at least 30-60 minutes, opening the eyelids fully.

Get medical advice/attention.

SKIN: Remove contaminated clothing. Rinse skin with a shower immediately. Get medical advice/attention.

INGESTION: Have the subject drink as much water as possible. Get medical advice/attention. Do not induce vomiting unless explicitly authorised by a doctor.

INHALATION: Get medical advice/attention immediately. Remove victim to fresh air, away from the accident scene. If the subject stops breathing, administer artificial respiration. Take suitable precautions for rescue workers.

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

Specific information on symptoms and effects caused by the product are unknown.

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

Information not available



## SECTION 5. Firefighting measures

### 5.1. Extinguishing media

#### SUITABLE EXTINGUISHING EQUIPMENT

Extinguishing substances are: carbon dioxide, foam, chemical powder. For product loss or leakage that has not caught fire, water spray can be used to disperse flammable vapours and protect those trying to stem the leak.

#### UNSUITABLE EXTINGUISHING EQUIPMENT

Do not use jets of water. Water is not effective for putting out fires but can be used to cool containers exposed to flames to prevent explosions.

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

#### HAZARDS CAUSED BY EXPOSURE IN THE EVENT OF FIRE

Excess pressure may form in containers exposed to fire at a risk of explosion. Do not breathe combustion products.

### 5.3. Advice for firefighters

#### GENERAL INFORMATION

Use jets of water to cool the containers to prevent product decomposition and the development of substances potentially hazardous for health. Always wear full fire prevention gear. Collect extinguishing water to prevent it from draining into the sewer system. Dispose of contaminated water used for extinction and the remains of the fire according to applicable regulations.

#### SPECIAL PROTECTIVE EQUIPMENT FOR FIRE-FIGHTERS

Normal fire fighting clothing i.e. fire kit (BS EN 469), gloves (BS EN 659) and boots (HO specification A29 and A30) in combination with self-contained open circuit positive pressure compressed air breathing apparatus (BS EN 137).

## SECTION 6. Accidental release measures

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

Block the leakage if there is no hazard.

Wear suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing. These indications apply for both processing staff and those involved in emergency procedures.

### 6.2. Environmental precautions

The product must not penetrate into the sewer system or come into contact with surface water or ground water.

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

Collect the leaked product into a suitable container. If the product is flammable, use explosion-proof equipment. Evaluate the compatibility of the container to be used, by checking section 10. Absorb the remainder with inert absorbent material.

Make sure the leakage site is well aired. Contaminated material should be disposed of in compliance with the provisions set forth in point 13.

### 6.4. Reference to other sections

Any information on personal protection and disposal is given in sections 8 and 13.

## SECTION 7. Handling and storage

### 7.1. Precautions for safe handling

Keep away from heat, sparks and naked flames; do not smoke or use matches or lighters. Without adequate ventilation, vapours may accumulate at ground level and, if ignited, catch fire even at a distance, with the danger of backfire. Avoid bunching of electrostatic charges. Do not eat, drink or smoke during use. Remove any contaminated clothes and personal protective equipment before entering places in which people eat. Avoid leakage of the product into the environment.

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

Store only in the original container. Store in a well ventilated place, keep far away from sources of heat, naked flames and sparks and other sources of ignition. Keep containers away from any incompatible materials, see section 10 for details.



# RENNER ITALIA S.p.A.

YC---M403/----- - HARDENER FOR WATERBORNE COATINGS

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Page n. 5 / 14

EN

## SECTION 7. Handling and storage ... / >>

### 7.3. Specific end use(s)

Information not available

## SECTION 8. Exposure controls/personal protection

### 8.1. Control parameters

Regulatory References:

BGR	България	МИНИСТЕРСТВО НА ТРУДА И СОЦИАЛНАТА ПОЛИТИКА МИНИСТЕРСТВО НА ЗДРАВЕОПАЗВАНЕТО НАРЕДБА No 13 от 30 декември 2003 г
CZE	Česká Republika	Nařízení vlády č. 361/2007 Sb. kterým se stanoví podmínky ochrany zdraví při práci
DEU	Deutschland	MAK-und BAT-Werte-Liste 2012
DNK	Danmark	Graensevaerdier per stoffer og materialer
ESP	España	INSHT - Límites de exposición profesional para agentes químicos en España 2015
EST	Eesti	Töökeskonna keemiliste ohutegurite piirnormid 1. Vastu võetud 18.09.2001 nr 293 RT I 2001, 77, 460 - Redaktsiooni jõustumise kp: 01.01.2008
FRA	France	JORF n°0109 du 10 mai 2012 page 8773 texte n° 102
GBR	United Kingdom	EH40/2005 Workplace exposure limits
GRC	Ελλάδα	ΕΦΗΜΕΡΙΣ ΤΗΣ ΚΥΒΕΡΝΗΣΕΩΣ - ΤΕΥΧΟΣ ΠΡΩΤΟ Αρ. Φύλλου 19 - 9 Φεβρουαρίου 2012
HUN	Magyarország	50/2011. (XII. 22.) NGM rendelet a munkahelyek kémiai biztonságáról
LTU	Lietuva	DĖL LIETUVOS HIGIENOS NORMOS HN 23:2007 CHEMINIŲ MEDŽIAGŲ 2007 m. spalio 15 d. Nr. V-827/A1-287
LVA	Latvija	Ķīmisko vielu aroda ekspozīcijas robežvērtības (AER) darba vides gaisā 2012
NLD	Nederland	Databank of the social and Economic Council of Netherlands (SER) Values, AF 2011:18
NOR	Norge	Veiledning om Administrative normer for forurensning i arbeidsatmosfære
POL	Polska	ROZPORZĄDZENIE MINISTRA PRACY I POLITYKI SPOŁECZNEJ z dnia 16 grudnia 2011r
SVK	Slovensko	NARIADENIE VLÁDY Slovenskej republiky z 20. júna 2007
SVN	Slovenija	Uradni list Republike Slovenije 15. 6. 2007
SWE	Sverige	Occupational Exposure Limit Values, AF 2011:18
	TLV-ACGIH	ACGIH 2016

#### HDI oligomers, isocyanurate

##### Predicted no-effect concentration - PNEC

Normal value in fresh water	0,127	mg/l
Normal value in marine water	0,0127	mg/l
Normal value for fresh water sediment	266700	mg/kg
Normal value for marine water sediment	266700	mg/kg
Normal value for water, intermittent release	1,27	mg/l
Normal value of STP microorganisms	38,3	mg/l
Normal value for the terrestrial compartment	53182	mg/kg

##### Health - Derived no-effect level - DNEL / DMEL

Route of exposure	Effects on consumers				Effects on workers			
	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Inhalation					1 mg/m3	VND	0,5 mg/m3	VND

#### OLIGO(ISOPHORONE DIISOCYANATE)

##### Predicted no-effect concentration - PNEC

Normal value in fresh water	0,0015	mg/l
Normal value in marine water	0,00015	mg/l
Normal value for water, intermittent release	0,015	mg/l
Normal value of STP microorganisms	100	mg/l

##### Health - Derived no-effect level - DNEL / DMEL

Route of exposure	Effects on consumers				Effects on workers			
	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Inhalation					0,58 mg/m3	VND	0,29 mg/m3	VND

### SECTION 8. Exposure controls/personal protection ... / >>

#### N,N-DIMETHYLCYCLOHEXYLAMINE

##### Predicted no-effect concentration - PNEC

Normal value in fresh water	0,002	mg/l
Normal value in marine water	0,0002	mg/l
Normal value for fresh water sediment	0,0211	mg/kg
Normal value for marine water sediment	0,00211	mg/kg
Normal value of STP microorganisms	20,6	mg/l
Normal value for the terrestrial compartment	0,003	mg/l

##### Health - Derived no-effect level - DNEL / DMEL

Route of exposure	Effects on consumers		Chronic local	Chronic systemic	Effects on workers			
	Acute local	Acute systemic			Acute local	Acute systemic	Chronic local	Chronic systemic
Inhalation					8,3 mg/m3	VND	8,3 mg/m3	0,53 mg/m3
Skin								0,6 mg/kg bw/d

#### HEXAMETHYLENE-DI-ISOCYANATE

##### Threshold Limit Value

Type	Country	TWA/8h mg/m3	ppm	STEL/15min mg/m3	ppm
TLV	BGR	0,1			
TLV	CZE	0,035		0,07	
AGW	DEU	0,035	0,005	0,035	0,005
MAK	DEU	0,035	0,005	0,035	0,005
TLV	DNK	0,035	0,005		
VLA	ESP	0,035	0,005		
TLV	EST	0,03	0,005	0,07 (C)	0,01 (C)
VLEP	FRA	0,075	0,01	0,15	0,02
WEL	GBR	0,02		0,07	
AK	HUN	0,035		0,035	
RD	LTU	0,03	0,005	0,07 (C)	0,01 (C)
RV	LVA	0,05			
TLV	NOR	0,035	0,005		
NDS	POL	0,04		0,08	
NPHV	SVK	0,035	0,005	0,035	
MV	SVN	0,035	0,005		
MAK	SWE	0,02	0,002	0,03 (C)	0,005 (C)
TLV-ACGIH		0,034	0,005		

##### Predicted no-effect concentration - PNEC

Normal value in fresh water	0,0774	mg/l
Normal value in marine water	0,00774	mg/l
Normal value for fresh water sediment	0,01334	mg/kg
Normal value for marine water sediment	0,001334	mg/kg
Normal value of STP microorganisms	8,42	mg/l
Normal value for the terrestrial compartment	0,0026	mg/kg

##### Health - Derived no-effect level - DNEL / DMEL

Route of exposure	Effects on consumers		Chronic local	Chronic systemic	Effects on workers			
	Acute local	Acute systemic			Acute local	Acute systemic	Chronic local	Chronic systemic
Inhalation					0,07 mg/m3		0,035 mg/m3	VND

### SECTION 8. Exposure controls/personal protection ... / >>

#### ISOPHORONE DIISOCYANATE

##### Threshold Limit Value

Type	Country	TWA/8h		STEL/15min		
		mg/m3	ppm	mg/m3	ppm	
TLV	BGR	0,1				SKIN
AGW	DEU	0,046	0,005	0,046	0,005	
MAK	DEU	0,046	0,005	0,046	0,005	
TLV	DNK	0,045	0,005			
VLA	ESP	0,046	0,005			
TLV	EST	0,05	0,005	0,09 (C)	0,01 (C)	
VLEP	FRA	0,09	0,01	0,18	0,02	
WEL	GBR	0,02		0,07		
TLV	GRC	0,09		0,18		
RD	LTU	0,05	0,005	0,09 (C)	0,01 (C)	
RV	LVA	0,05	0,005			
OEL	NLD	0,05	5	0,19	20	
TLV	NOR	0,045	0,005			
NDS	POL	0,04				
MV	SVN	0,092	0,01			
MAK	SWE	0,018	0,002	0,046 (C)	0,005 (C)	
TLV-ACGIH		0,045	0,005			

##### Predicted no-effect concentration - PNEC

Normal value in fresh water	0,06	mg/l
Normal value in marine water	0,006	mg/l
Normal value for fresh water sediment	218,9	mg/kg
Normal value for marine water sediment	21,89	mg/kg
Normal value for water, intermittent release	0,04	mg/l
Normal value of STP microorganisms	10,6	mg/l
Normal value for the terrestrial compartment	44,01	mg/kg

##### Health - Derived no-effect level - DNEL / DMEL

Route of exposure	Effects on consumers		Chronic local	Chronic systemic	Effects on workers			
	Acute local	Acute systemic			Acute local	Acute systemic	Chronic local	Chronic systemic
Inhalation					0,0456 mg/m3	VND	0,0453 mg/m3	VND

##### Legend:

(C) = CEILING ; INHAL = Inhalable Fraction ; RESP = Respirable Fraction ; THORA = Thoracic Fraction.

VND = hazard identified but no DNEL/PNEC available ; NEA = no exposure expected ; NPI = no hazard identified.

### 8.2. Exposure controls

Take the normal precautions for handling chemicals and apply an adequate standard of workplace hygiene.

Users must assess the risks in their workplace and adopt:

- Primary collective protective measures such as adequate natural ventilation and local extraction
- Personal protective equipment to manage the combination of residual risks

Personal protective equipment varies according to the possible exposure and hazardousness of the working conditions, so the final choice depends on the risk assessment.

#### HAND PROTECTION

Use category III chemical resistant gloves according to the EN 374 standard

Brief contact (splash protection) – non-exhaustive list

Suitable material: NITRILE RUBBER (NBR)

Glove thickness: greater than 0.4 mm

Breakthrough time: from 30 to 60 minutes

Breakthrough index: at least 2

The gloves must be replaced if there are signs of deterioration. In any case, users must assess the risks to determine the most suitable type of glove for the conditions of use.

#### SKIN PROTECTION

Wear work clothes and safety footwear that complies with EN ISO 20344

#### EYE PROTECTION

Wear safety mask glasses (EN 166).



## SECTION 8. Exposure controls/personal protection ... / >>

### RESPIRATORY PROTECTION

Use a mask with EN140 and/or EN136 approval, with an ABEK type filter (EN 14387)

### ENVIRONMENTAL EXPOSURE CONTROLS

The emissions generated by manufacturing processes, including those generated by ventilation equipment, should be checked to ensure compliance with environmental standards.

Product residues must not be indiscriminately disposed of with waste water or by dumping in waterways.

## SECTION 9. Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Appearance	Liquid
Colour	clear
Odour	pungent
Odour threshold	Not available
pH	Not applicable
Melting point / freezing point	Not available
Initial boiling point	> 65 °C
Boiling range	Not available
Flash point	76 °C
Evaporation speed	Not available
Flammability (solid, gas)	not applicable
Lower inflammability limit	Not available
Upper inflammability limit	Not available
Lower explosive limit	Not available
Upper explosive limit	Not available
Vapour pressure	Not available
Vapour density	Not available
Relative density	1,08
Solubility	soluble in water
Partition coefficient: n-octanol/water	Not available
Auto-ignition temperature	Not available
Decomposition temperature	Not available
Viscosity	Not available
Explosive properties	not applicable
Oxidising properties	not applicable

### 9.2. Other information

Total solids (250°C / 482°F)	70,40 %
VOC (Directive 2010/75/EC) :	0
VOC (volatile carbon) :	0

## SECTION 10. Stability and reactivity

### OLIGO(ISOPHORONE DIISOCYANATE)

OLIGO(ISOPHORONE DIISOCYANATE) - Incompatible materials: water, amines, strong bases, strong oxidising agents, heavy metal salts, alcohols. Be careful: dangerous polymerization.

### 10.1. Reactivity

The product may react exothermically on contact with strong oxidising or reducing agents, strong acids or bases.

### HEXAMETHYLENE-DI-ISOCYANATE

Decomposes at 255°C/491°F. Polymerises at temperatures above 200°C/392°F.

### 10.2. Chemical stability

Excessively high temperatures can cause thermal decomposition.

### 10.3. Possibility of hazardous reactions

See paragraph 10.1.

### HEXAMETHYLENE-DI-ISOCYANATE

May form explosive mixtures with: alcohols, bases. May react violently with: alcohols, amines, strong bases, oxidising agents, strong acids, water.



**SECTION 10. Stability and reactivity ... / >>****10.4. Conditions to avoid**

Avoid overheating.

HEXAMETHYLENE-DI-ISOCYANATE

Avoid exposure to: high temperatures, moisture.

**10.5. Incompatible materials**

Oxidising or reducing agents. Strong acids or bases.

HEXAMETHYLENE-DI-ISOCYANATE

Incompatible with: alcohols, carboxylic acids, amines, strong bases.

**10.6. Hazardous decomposition products**

In the event of thermal decomposition or fire, gases and vapours that are potentially dangerous to health may be released.

HEXAMETHYLENE-DI-ISOCYANATE

May develop: nitric oxide, hydrogen cyanide.

**SECTION 11. Toxicological information**

OLIGO(ISOPHORONE DIISOCYANATE)

OLIGO(ISOPHORONE DIISOCYANATE) - It may cause skin allergic reactions and respiratory allergic reactions. Target organs: kidneys, liver, nerves. Chronic exposure: it may cause problems to the reproductive system

**11.1. Information on toxicological effects**

Metabolism, toxicokinetics, mechanism of action and other information

Information not available

Information on likely routes of exposure

Information not available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Information not available

Interactive effects

Information not available

**ACUTE TOXICITY**

LC50 (Inhalation - vapours) of the mixture:	> 20 mg/l
LC50 (Inhalation - mists / powders) of the mixture:	3,0 mg/l
LD50 (Oral) of the mixture:	>2000 mg/kg
LD50 (Dermal) of the mixture:	>2000 mg/kg

ISOPHORONE DIISOCYANATE	
LD50 (Oral)	4814 mg/kg
LC50 (Inhalation)	0,04 mg/l/4h

HEXAMETHYLENE-DI-ISOCYANATE	
LD50 (Oral)	959 mg/kg
LD50 (Dermal)	> 7000 mg/kg
LC50 (Inhalation)	0,124 mg/l/4h

N,N-DIMETHYLCYCLOHEXYLAMINE	
LD50 (Oral)	> 272 mg/kg
LD50 (Dermal)	380 mg/kg
LC50 (Inhalation)	4,45 mg/l/4h

**SECTION 11. Toxicological information** ... / >>

HDI oligomers, isocyanurate  
LD50 (Oral) > 2500 mg/kg ratto - rat  
LD50 (Dermal) > 2000 mg/kg ratto - rat  
LC50 (Inhalation) 0,39 mg/l ratto - rat

SKIN CORROSION / IRRITATION

Causes skin irritation

SERIOUS EYE DAMAGE / IRRITATION

Causes serious eye damage

RESPIRATORY OR SKIN SENSITISATION

Sensitising for the skin  
May produce an allergic reaction.  
Contains:  
ISOPHORONE DIISOCYANATE  
HEXAMETHYLENE-DI-ISOCYANATE

GERM CELL MUTAGENICITY

Does not meet the classification criteria for this hazard class

CARCINOGENICITY

Does not meet the classification criteria for this hazard class

REPRODUCTIVE TOXICITY

Does not meet the classification criteria for this hazard class

STOT - SINGLE EXPOSURE

May cause respiratory irritation

STOT - REPEATED EXPOSURE

Does not meet the classification criteria for this hazard class

ASPIRATION HAZARD

Does not meet the classification criteria for this hazard class

**SECTION 12. Ecological information**

This product is dangerous for the environment and the aquatic organisms. In the long term, it have negative effects on aquatic environment.

**12.1. Toxicity**

HEXAMETHYLENE-DI-ISOCYANATE  
LC50 - for Fish > 22 mg/l/96h Danio rerio  
EC50 - for Crustacea > 89,1 mg/l/48h Daphnia magna  
EC50 - for Algae / Aquatic Plants > 77,4 mg/l/72h Desmodesmus subspicatus  
  
N,N-DIMETHYLCYCLOHEXYLAMINE  
EC50 - for Crustacea 75 mg/l/48h Daphnia magna  
EC50 - for Algae / Aquatic Plants > 2 mg/l/72h Algae  
LC10 for Fish < 46 mg/l/96h Fish

HDI oligomers, isocyanurate  
EC10 for Algae / Aquatic Plants 370 mg/l/72h Desmodesmus subspicatus

**12.2. Persistence and degradability**

**SECTION 12. Ecological information ... / >>**

ISOPHORONE DIISOCYANATE  
NOT rapidly biodegradable

HEXAMETHYLENE-DI-ISOCYANATE  
NOT rapidly biodegradable

**12.3. Bioaccumulative potential**

ISOPHORONE DIISOCYANATE  
Partition coefficient: n-octanol/water 0,99

HEXAMETHYLENE-DI-ISOCYANATE  
Partition coefficient: n-octanol/water 3,2  
BCF 3,2

**12.4. Mobility in soil**

Information not available

**12.5. Results of PBT and vPvB assessment**

On the basis of available data, the product does not contain any PBT or vPvB in percentage greater than 0,1%.

**12.6. Other adverse effects**

Information not available

**SECTION 13. Disposal considerations****13.1. Waste treatment methods**

For disposal or recovery in EU countries , use the relevant waste code (EWC code) identified in the European Waste Catalogue. The producer of the waste must assign the EWC code according to the sector and type of process. Disposal must be carried out by an authorised waste management company.

After the producer of the waste has assigned the EWC code, the contaminated packaging must be sent for recovery or disposal in compliance with the European waste management regulations. Disposal must be carried out by an authorised waste management company.

For waste disposal or recovery in countries outside the EU, comply with the national or local regulations in force. For disposal or recovery of contaminated packaging in countries outside the EU, comply with the national or local regulations in force.

Waste transportation may be subject to regulations on transportation of hazardous goods.

**SECTION 14. Transport information**

The product is not dangerous under current provisions of the Code of International Carriage of Dangerous Goods by Road (ADR) and by Rail (RID), of the International Maritime Dangerous Goods Code (IMDG), and of the International Air Transport Association (IATA) regulations.

**14.1. UN number**

Not applicable

**14.2. UN proper shipping name**

Not applicable

**14.3. Transport hazard class(es)**

Not applicable

**14.4. Packing group**

Not applicable

**14.5. Environmental hazards**

Not applicable

**SECTION 14. Transport information ... / >>****14.6. Special precautions for user**

Not applicable

**14.7. Transport in bulk according to Annex II of Marpol and the IBC Code**

Information not relevant

**SECTION 15. Regulatory information**

Only for uses exempt from EU DIRECTIVE 2004/42/CE.

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

Seveso Category - Directive 2012/18/EC: None

Restrictions relating to the product or contained substances pursuant to Annex XVII to EC Regulation 1907/2006

Product  
Point 3

Substances in Candidate List (Art. 59 REACH)

On the basis of available data, the product does not contain any SVHC in percentage greater than 0,1%.

Substances subject to authorisation (Annex XIV REACH)

None

Substances subject to exportation reporting pursuant to (EC) Reg. 649/2012:

None

Substances subject to the Rotterdam Convention:

None

Substances subject to the Stockholm Convention:

None

Healthcare controls

Workers exposed to this chemical agent must not undergo health checks, provided that available risk-assessment data prove that the risks related to the workers' health and safety are modest and that the 98/24/EC directive is respected.

**15.2. Chemical safety assessment**

No chemical safety assessment has been processed for the mixture and the substances it contains.

**SECTION 16. Other information**

Text of hazard (H) indications mentioned in section 2-3 of the sheet:

<b>Flam. Liq. 3</b>	Flammable liquid, category 3
<b>Acute Tox. 1</b>	Acute toxicity, category 1
<b>Acute Tox. 2</b>	Acute toxicity, category 2
<b>Acute Tox. 3</b>	Acute toxicity, category 3
<b>Acute Tox. 4</b>	Acute toxicity, category 4
<b>Skin Corr. 1B</b>	Skin corrosion, category 1B
<b>Eye Dam. 1</b>	Serious eye damage, category 1
<b>Eye Irrit. 2</b>	Eye irritation, category 2
<b>Skin Irrit. 2</b>	Skin irritation, category 2
<b>STOT SE 3</b>	Specific target organ toxicity - single exposure, category 3
<b>Resp. Sens. 1</b>	Respiratory sensitization, category 1
<b>Skin Sens. 1</b>	Skin sensitization, category 1
<b>Aquatic Chronic 2</b>	Hazardous to the aquatic environment, chronic toxicity, category 2
<b>Aquatic Chronic 3</b>	Hazardous to the aquatic environment, chronic toxicity, category 3
<b>H226</b>	Flammable liquid and vapour.
<b>H330</b>	Fatal if inhaled.
<b>H301</b>	Toxic if swallowed.
<b>H311</b>	Toxic in contact with skin.
<b>H331</b>	Toxic if inhaled.
<b>H302</b>	Harmful if swallowed.

**SECTION 16. Other information ... / >>**

<b>H332</b>	Harmful if inhaled.
<b>H314</b>	Causes severe skin burns and eye damage.
<b>H318</b>	Causes serious eye damage.
<b>H319</b>	Causes serious eye irritation.
<b>H315</b>	Causes skin irritation.
<b>H335</b>	May cause respiratory irritation.
<b>H334</b>	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
<b>H317</b>	May cause an allergic skin reaction.
<b>H411</b>	Toxic to aquatic life with long lasting effects.
<b>H412</b>	Harmful to aquatic life with long lasting effects.
<b>EUH204</b>	Contains isocyanates. May produce an allergic reaction.

**LEGEND:**

- ADR: European Agreement concerning the carriage of Dangerous goods by Road
- CAS NUMBER: Chemical Abstract Service Number
- CE50: Effective concentration (required to induce a 50% effect)
- CE NUMBER: Identifier in ESIS (European archive of existing substances)
- CLP: EC Regulation 1272/2008
- DNEL: Derived No Effect Level
- EmS: Emergency Schedule
- GHS: Globally Harmonized System of classification and labeling of chemicals
- IATA DGR: International Air Transport Association Dangerous Goods Regulation
- IC50: Immobilization Concentration 50%
- IMDG: International Maritime Code for dangerous goods
- IMO: International Maritime Organization
- INDEX NUMBER: Identifier in Annex VI of CLP
- LC50: Lethal Concentration 50%
- LD50: Lethal dose 50%
- OEL: Occupational Exposure Level
- PBT: Persistent bioaccumulative and toxic as REACH Regulation
- PEC: Predicted environmental Concentration
- PEL: Predicted exposure level
- PNEC: Predicted no effect concentration
- REACH: EC Regulation 1907/2006
- RID: Regulation concerning the international transport of dangerous goods by train
- TLV: Threshold Limit Value
- TLV CEILING: Concentration that should not be exceeded during any time of occupational exposure.
- TWA STEL: Short-term exposure limit
- TWA: Time-weighted average exposure limit
- VOC: Volatile organic Compounds
- vPvB: Very Persistent and very Bioaccumulative as for REACH Regulation
- WGK: Water hazard classes (German).

**GENERAL BIBLIOGRAPHY**

1. Regulation (EU) 1907/2006 (REACH) of the European Parliament
  2. Regulation (EC) 1272/2008 (CLP) of the European Parliament
  3. Regulation (EU) 790/2009 (I Atp. CLP) of the European Parliament
  4. Regulation (EU) 2015/830 of the European Parliament
  5. Regulation (EU) 286/2011 (II Atp. CLP) of the European Parliament
  6. Regulation (EU) 618/2012 (III Atp. CLP) of the European Parliament
  7. Regulation (EU) 487/2013 (IV Atp. CLP) of the European Parliament
  8. Regulation (EU) 944/2013 (V Atp. CLP) of the European Parliament
  9. Regulation (EU) 605/2014 (VI Atp. CLP) of the European Parliament
  10. Regulation (EU) 2015/1221 (VII Atp. CLP) of the European Parliament
  11. Regulation (EU) 2016/918 (VIII Atp. CLP) of the European Parliament
- The Merck Index. - 10th Edition
  - Handling Chemical Safety
  - INRS - Fiche Toxicologique (toxicological sheet)
  - Patty - Industrial Hygiene and Toxicology
  - N.I. Sax - Dangerous properties of Industrial Materials-7, 1989 Edition
  - IFA GESTIS website
  - ECHA website
  - Database of SDS models for chemicals - Ministry of Health and ISS (Istituto Superiore di Sanità) - Italy



### SECTION 16. Other information ... / >>

#### Note for users:

The information contained in the present sheet are based on our own knowledge on the date of the last version. Users must verify the suitability and thoroughness of provided information according to each specific use of the product.

This document must not be regarded as a guarantee on any specific product property.

The use of this product is not subject to our direct control; therefore, users must, under their own responsibility, comply with the current health and safety laws and regulations. The producer is relieved from any liability arising from improper uses.

Provide appointed staff with adequate training on how to use chemical products.

#### Changes to previous review:

The following sections were modified:

02 / 03 / 04 / 05 / 08 / 09 / 11 / 12 / 13 / 15 / 16.