

SAFETY DATA SHEET

according to Regulation (EC) No 1907/2006 (REACH) as amended



U7012 HARDENER For Polyurethane and Acryl Urethane Coating Compositions

Creation date	07th October 2016	Version	3.0
Revision date	29th June 2023		

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

1.1. Product identifier

Substance / mixture

Number

UFI

Other mixture names

U7002 Tužidlo do uretanových nátěrových hmot

U7012 HARDENER For Polyurethane and Acryl Urethane Coating Compositions

mixture

U7012-A-C0000

9D19-9912-6107-1Y44

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

Mixture's intended use

HARDENER U7012 is used to harden two-component polyurethane or acrylic urethane coatings.

Main intended use

PC-PNT-7

Paint removers, thinners and related auxiliaries

Mixture uses advised against

The product should not be used in ways other than those referred in Section 1.

1.3. Details of the supplier of the safety data sheet

Manufacturer

Name or trade name

Address

Identification number (CRN)

VAT Reg No

Phone

E-mail

Web address

COLORLAK, a.s.

Tovární 1076, Staré Město, 686 03

Czech Republic

49444964

CZ49444964

+420 572527111

colorlak@colorlak.cz

www.colorlak.cz

Competent person responsible for the safety data sheet

Name

E-mail

Ing. Veronika Chytilová

chytilova@colorlak.cz

1.4. Emergency telephone number

European emergency number: 112

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification of the mixture in accordance with Regulation (EC) No 1272/2008

The mixture is classified as dangerous.

Flam. Liq. 3, H226

Skin Sens. 1, H317

Acute Tox. 4, H332

STOT SE 3, H335

Aquatic Chronic 3, H412

Full text of all classifications and hazard statements is given in the section 16.

Most serious adverse physico-chemical effects

Flammable liquid and vapour.

Most serious adverse effects on human health and the environment

May cause an allergic skin reaction. Harmful if inhaled. May cause respiratory irritation. Harmful to aquatic life with long lasting effects.

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2.2. Label elements

Hazard pictogram



Signal word

Warning

Hazardous substances

Hexamethylene diisocyanate, oligomers
Hydrocarbons, C9, aromatic
hexamethylene-di-isocyanate

Hazard statements

H226	Flammable liquid and vapour.
H317	May cause an allergic skin reaction.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H412	Harmful to aquatic life with long lasting effects.

Precautionary statements

P101	If medical advice is needed, have product container or label at hand.
P102	Keep out of reach of children.
P103	Read label before use.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P261	Avoid breathing vapours/spray.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352	IF ON SKIN: Wash with plenty of water and soap.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
P370+P378	In case of fire: Use foam (alcohol resistant), carbon dioxide, a spray mist, powder to extinguish.
P403+P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.
P501	Dispose of contents/container to by handing over to a person authorized to dispose of waste or a site designated by the town.

Supplemental information

EUH204	Contains isocyanates. May produce an allergic reaction. As from 24 August 2023 adequate training is required before industrial or professional use.
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Requirements for child-resistant fastenings and tactile warning of danger

Container must carry a tactile warning of danger.

2.3. Other hazards

The mixture does not contain substances with endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605. Mixture does not contain any substance meet the criteria for PBT or vPvB in accordance with Annex XIII of Regulation (EC) No. 1907/2006 (REACH) as amended. Carbon dioxide is released when it comes into contact with water.

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SECTION 3: Composition/information on ingredients

3.2. Mixtures

Chemical characterization

HARDENER U7012 is a solution of polyisocyanate resin in organic solvents. Mixture of substances and additives specified below.

Mixture contains these hazardous substances and substances with the highest permissible concentration in the working environment

Identification numbers	Substance name	Content in % weight	Classification according to Regulation (EC) No 1272/2008	Note
CAS: 28182-81-2 EC: 931-274-8 Registration number: 01-2119485796-17	Hexamethylene diisocyanate, oligomers	89-91	Skin Sens. 1, H317 Acute Tox. 4, H332 STOT SE 3, H335 EUH204 Specific concentration limit: ATE Inhalation (dust/mist) = 1,5 mg/l	
Index: 607-025-00-1 CAS: 123-86-4 EC: 204-658-1 Registration number: 01-2119485493-29	n-butyl acetate	3-6	Flam. Liq. 3, H226 STOT SE 3, H336 EUH066	2
EC: 918-668-5 Registration number: 01-2119455851-35	Hydrocarbons, C9, aromatic	3-6	Flam. Liq. 3, H226 Asp. Tox. 1, H304 STOT SE 3, H335, H336 Aquatic Chronic 2, H411 EUH066	4
Index: 615-011-00-1 CAS: 822-06-0 EC: 212-485-8 Registration number: 01-2119457571-37	hexamethylene-di-isocyanate	<0,15	Acute Tox. 4, H302 Skin Irrit. 2, H315 Skin Sens. 1, H317 Eye Irrit. 2, H319 Acute Tox. 1, H330 Resp. Sens. 1, H334 STOT SE 3, H335 Specific concentration limit: Resp. Sens. 1, H334: C ≥ 0.5 % Skin Sens. 1, H317: C ≥ 0.5 % ATE Oral = 746 mg/kg bw ATE Inhalation (vapor) = 0,124 mg/l	1, 3

Notes

- Note 2: The concentration of isocyanate stated is the percentage by weight of the free monomer calculated with reference to the total weight of the mixture.
- A substance for which exposure limits are set.
- The use of the substance is restricted by Annex XVII of REACH Regulation
- Substance of unknown or variable composition, complex reaction products or biological materials - UVCB.

Full text of all classifications and hazard statements is given in the section 16.

SECTION 4: First aid measures

4.1. Description of first aid measures

Take care of your own safety. If any health problems are manifested or if in doubt, inform a doctor and show him information from this safety data sheet. If unconscious, put the person in the stabilized (recovery) position on his side with his head slightly bent backwards and make sure that airways are free; never induce vomiting. If the person vomits by himself, make sure that the vomit is not inhaled. In life threatening conditions first of all provide resuscitation of the affected person and ensure medical assistance. Respiratory arrest - provide artificial respiration immediately. Cardiac arrest - provide indirect cardiac massage immediately.

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If inhaled

Terminate the exposure immediately; move the affected person to fresh air. Protect the person against growing cold. Provide medical treatment if irritation, dyspnoea or other symptoms persist.

If on skin

Remove contaminated clothes. Wash the affected area with plenty of water, lukewarm if possible. Soap, soap solution or shampoo should be used if there is no skin injury. Provide medical treatment if skin irritation persists. Rinse skin with water or shower.

If in eyes

Rinse eyes immediately with a flow of running water, open the eyelids (also using force if needed); remove contact lenses immediately if worn by the affected person. Rinsing should continue at least for 10 minutes.

If swallowed

Provide medical treatment.

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

If inhaled

Cough, headache. May cause respiratory irritation.

If on skin

May cause an allergic skin reaction.

If in eyes

Not expected.

If swallowed

Irritation, nausea.

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

Symptomatic treatment.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

Alcohol-resistant foam, carbon dioxide, powder, water spray jet, water mist.

Unsuitable extinguishing media

Water - full jet.

5.2. Special hazards arising from the substance or mixture

In the event of fire, carbon monoxide, carbon dioxide and other toxic gases may arise. Inhalation of hazardous degradation (pyrolysis) products may cause serious health damage.

5.3. Advice for firefighters

Self-Contained Breathing Apparatus (SCBA) with a chemical protection suit only where personal (close) contact is likely. Use a self-contained breathing apparatus and full-body protective clothing. Closed containers with the product near the fire should be cooled with water. Do not allow run-off of contaminated fire extinguishing material to enter drains or surface and ground water.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Provide sufficient ventilation. Flammable liquid and vapour. Remove all ignition sources. Use personal protective equipment for work. Follow the instructions in the Sections 7 and 8. Do not inhale mist/vapours/spray. Prevent contact with skin and eyes.

6.2. Environmental precautions

Prevent contamination of the soil and entering surface or ground water.

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6.3. Methods and material for containment and cleaning up

Spilled product should be covered with suitable (non-flammable) absorbing material (sand, diatomaceous earth, earth and other suitable absorption materials); to be contained in well closed containers and removed as per the Section 13. In the event of leakage of the substantial amount of the product, inform fire brigade and other competent bodies. After removal of the product, wash the contaminated site with plenty of water. Do not use solvents. Remove mechanically; cover the rest with a moist, liquid-binding material (e.g. wood flour, chemical binders based on calcium silicate hydrate, sand). After approx. 1 hour, collect in the waste container, do not close it (evolution of CO₂!). Keep it moist and let it stand for several days in a safe, free place. The area affected by the spill can be decontaminated using the following recommended decontamination solution: Decontamination solution 1: 8-10% sodium carbonate and 2% liquid soap in water. Decontamination solution 2: Liquid/yellow soap (potassium soap containing ~15% anionic surfactant): 20 ml; water: 700 ml; polyethylene glycol (PEG 400): 350 ml. Decontaminant 3: 30% commercial liquid detergent (contains monoethanolamine), 70% water.

6.4. Reference to other sections

See the Section 7, 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Prevent formation of gases and vapours in flammable or explosive concentrations and concentrations exceeding the occupational exposure limits. The product should be used only in the areas where it is not in contact with open fire and other ignition sources. Use non-sparking tools. Use of antistatic clothes and footwear is recommended. Do not inhale mist/vapours/spray. Prevent contact with skin and eyes. No smoking. Contaminated work clothing should not be allowed out of the workplace. Use only outdoors or in a well-ventilated area. Use personal protective equipment as per Section 8. Observe valid legal regulations on safety and health protection. Ground and bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment. Take action to prevent static discharges. Avoid release to the environment.

7.2. Conditions for safe storage, including any incompatibilities

Store in tightly closed containers in cold, dry and well ventilated areas designated for this purpose. Do not expose to sunlight. Store locked up. Keep container tightly closed. Keep cool.

Content	Packaging type	Material of package
0,21 kg	can / tin	FE
0,3 kg	can / tin	FE
0,9 kg	can / tin	FE
3 kg	can / tin	FE

Storage class 3B - Flammable liquids (VbF hazard class A III)

Storage temperature +5-25 °C

The specific requirements or rules relating to the substance/mixture

Solvent vapours are heavier than air and accumulate especially near the floor where they may form an explosive mixture with the air.

7.3. Specific end use(s)

not available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

The mixture contains substances for which occupational exposure limits are set.

European Union

Commission Directive 2000/39/EC

Substance name (component)	Type	Value
n-butyl acetate (CAS: 123-86-4)	OEL 8 hours	241 mg/m ³
	OEL 8 hours	50 ppm
	OEL 15 minutes	723 mg/m ³
	OEL 15 minutes	150 ppm

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DNEL

Hexamethylene diisocyanate, oligomers

Workers / consumers	Route of exposure	Value	Effect	Value determination	Source
Workers	Inhalation	0.5 mg/m ³	Chronic effects local		BL dodavatele
Consumers	Inhalation	1 mg/m ³	Acute effects systemic		BL dodavatele

hexamethylene-di-isocyanate

Workers / consumers	Route of exposure	Value	Effect	Value determination	Source
Workers	Inhalation	0.07 mg/m ³	Acute effects local		BL dodavatele
Workers	Inhalation	0.07 mg/m ³	Acute effects systemic		BL dodavatele
Workers	Inhalation	0.035 mg/m ³	Chronic effects systemic		BL dodavatele
Workers	Inhalation	0.035 mg/m ³	Chronic effects local		BL dodavatele

Hydrocarbons, C9, aromatic

Workers / consumers	Route of exposure	Value	Effect	Value determination	Source
Workers	Inhalation	150 mg/m ³	Chronic effects systemic		echa
Workers	Dermal	25 mg/kg bw/day	Chronic effects systemic		echa
Consumers	Inhalation	32 mg/m ³	Chronic effects systemic		echa
Consumers	Dermal	11 mg/kg bw/day	Chronic effects systemic		echa
Consumers	Oral	11 mg/kg bw/day	Chronic effects systemic		echa

n-butyl acetate

Workers / consumers	Route of exposure	Value	Effect	Value determination	Source
Workers	Inhalation	600 mg/m ³	Acute effects local		BL dodavatele
Consumers	Inhalation	300 mg/m ³	Acute effects local		BL dodavatele
Workers	Inhalation	300 mg/m ³	Chronic effects local		BL dodavatele
Consumers	Inhalation	35.7 mg/m ³	Chronic effects local		BL dodavatele
Workers	Dermal	11 mg/kg	Chronic effects systemic		BL dodavatele
Workers	Dermal	11 mg/kg	Acute effects systemic		BL dodavatele
Consumers	Dermal	6 mg/kg	Chronic effects systemic		BL dodavatele
Consumers	Dermal	6 mg/kg	Acute effects systemic		BL dodavatele
Consumers	Oral	2 mg/kg	Chronic effects systemic		BL dodavatele
Consumers	Oral	2 mg/kg	Acute effects systemic		BL dodavatele

PNEC

Hexamethylene diisocyanate, oligomers

Route of exposure	Value	Value determination	Source
Microorganisms in sewage treatment	6.46 mg/l		BL dodavatele

hexamethylene-di-isocyanate

Route of exposure	Value	Value determination	Source
Freshwater environment	0.0774 mg/l		BL dodavatele
Marine water	0.00774 mg/l		BL dodavatele
Water (intermittent release)	0.774 mg/l		BL dodavatele

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hexamethylene-di-isocyanate

Route of exposure	Value	Value determination	Source
Freshwater sediment	0.01334 mg/kg		BL dodavatele
Sea sediments	0.001334 mg/kg		BL dodavatele
Soil (agricultural)	0.0026 mg/kg		BL dodavatele

n-butyl acetate

Route of exposure	Value	Value determination	Source
Freshwater environment	0.18 mg/l		BL dodavatele
Marine water	0.018 mg/l		BL dodavatele
Water (intermittent release)	0.36 mg/l		BL dodavatele
Microorganisms in sewage treatment	35.6 mg/l		BL dodavatele
Freshwater sediment	0.981 mg/kg		BL dodavatele
Sea sediments	0.0981 mg/kg		BL dodavatele
Soil (agricultural)	0.0903 mg/kg		BL dodavatele

8.2. Exposure controls

Take off contaminated clothing and wash before reuse. Follow the usual measures intended for health protection at work and especially for good ventilation. This can be achieved only by local suction or efficient general ventilation. If exposure limits cannot be observed in this mode, suitable protection of airways must be used. Do not eat, drink and smoke during work. Wash your hands thoroughly with water and soap after work and before breaks for a meal and rest.

Eye/face protection

It is not needed.

Skin protection

Hand protection: Protective gloves resistant to the product. When choosing appropriate thickness, material and permeability of the gloves, observe recommendations of their particular manufacturer. Contaminated skin should be washed thoroughly.

Respiratory protection

Halfmask with a filter against organic vapours or a self-contained breathing apparatus as appropriate if exposure limit values of substances are exceeded or in a poorly ventilated environment.

Thermal hazard

Not available.

Environmental exposure controls

Observe usual measures for protection of the environment, see Section 6.2.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	liquid
Colour	colourless, clear
Odour	after organic solvents
Melting point/freezing point	data not available
Hydrocarbons, C9, aromatic	<-30 °C (BL dodavatele)
n-butyl acetate (CAS: 123-86-4)	-78 °C (BL dodavatele)
Boiling point or initial boiling point and boiling range	data not available
Hydrocarbons, C9, aromatic	140-200 °C (BL dodavatele)
n-butyl acetate (CAS: 123-86-4)	124-126,5 °C (BL dodavatele)
Flammability	Flammable liquid of risk class II (ČSN 65 0201)
n-butyl acetate (CAS: 123-86-4)	inflammable (odvozeno od bodu vzplanutí)
Lower and upper explosion limit	
bottom	0,7 % (for Hydrocarbons, C9, aromatic)
Hydrocarbons, C9, aromatic	0,7 % (BL dodavatele)
n-butyl acetate (CAS: 123-86-4)	1,2 % (literatura)

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upper	7,6 % (for BUTYL ACETATE)
Hydrocarbons, C9, aromatic	7 % (BL dodavatele)
n-butyl acetate (CAS: 123-86-4)	7,6 % (literatura)
Flash point	55 °C (PND ISO 3679)
Hydrocarbons, C9, aromatic	>35 °C (BL dodavatele)
n-butyl acetate (CAS: 123-86-4)	27 °C (BL dodavatele)
Auto-ignition temperature	data not available
Hydrocarbons, C9, aromatic	>400 °C (BL dodavatele)
n-butyl acetate (CAS: 123-86-4)	415 °C (BL dodavatele)
Decomposition temperature	data not available
pH	5-6 (undiluted at 23 °C) (practical exam)
Kinematic viscosity	>20,5 mm ² /s at 40 °C
Kinematic viscosity	data not available
n-butyl acetate (CAS: 123-86-4)	0,83 mm ² /s at 20 °C (BL dodavatele)
Solubility in water	reacts with water
n-butyl acetate (CAS: 123-86-4)	5,3 g/l při 20 °C (pH 6) (BL dodavatele)
Partition coefficient n-octanol/water (log value)	log Pow 1,73 - 6 (range of substances contained)
n-butyl acetate (CAS: 123-86-4)	2,3 (BL dodavatele)
Vapour pressure	10 - 21 hPa at 20 °C (range of substances contained)
Hydrocarbons, C9, aromatic	<1 kPa at 20 °C (BL dodavatele)
n-butyl acetate (CAS: 123-86-4)	11,6 hPa at 20 °C (BL dodavatele)
Density and/or relative density	
Density	1,11-1,16 g/cm ³ at 23 °C (manufacturer's methodology B5/TD1-5 (ČSN EN ISO 2811-2))
Hydrocarbons, C9, aromatic	0,801-0,951 g/cm ³ at 15 °C (BL dodavatele)
n-butyl acetate (CAS: 123-86-4)	0,8812 g/cm ³ at 20 °C (BL dodavatele)
Relative vapour density	data not available
Particle characteristics	data not available
Form	liquid
VOC content in product: category and subcategory of products	- not classified

9.2. Other information

Appearance	medium viscous liquid without extraneous, mechanical impurities (manufacturer's methodology B5/TD1-17 (ČSN EN ISO 1513))
Combustion temperature	97 °C (PND 65 6212)
Ignition temperature	440 °C (PND 33 0371)
Molar weight	data not available
Hydrocarbons, C9, aromatic	125 g/mol (BL dodavatele)
Content of organic solvents (VOC)	0,100 kg/kg (calculation)
Total organic carbon (TOC)	0,076 kg/kg (calculation)
Solid content (dry matter)	89-91 % volume (manufacturer's methodology B5/TD1-12B (ČSN EN ISO 3251))
Flammability - temperature class: T2 (PND 33 0371); Calorific value: 26,01 MJ/kg (PND 65 6169); Heat of combustion: 27,72 MJ/kg (PND 65 6169).	

SECTION 10: Stability and reactivity

10.1. Reactivity

not available

10.2. Chemical stability

The product is stable under normal conditions.

10.3. Possibility of hazardous reactions

Unknown.

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10.4. Conditions to avoid

The product is stable and no degradation occurs under normal use. Protect against flames, sparks, overheating and against frost.

10.5. Incompatible materials

Protect against strong acids, bases and oxidizing agents.

10.6. Hazardous decomposition products

Not developed under normal uses. Dangerous outcomes such as carbon monoxide and carbon dioxide are formed at high temperature and in fire.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Inhalation of solvent vapors above values exceeding exposure limits for working environment may result in acute inhalation poisoning, depending on the level of concentration and exposure time. No toxicological data is available for the mixture.

Acute toxicity

Harmful if inhaled.

Hexamethylene diisocyanate, oligomers

Route of exposure	Parameter	Method	Value	Exposure time	Species	Sex	Value determination	Source
Oral	LD ₅₀	OECD 401	>5000 mg/kg		Rat			BL dodavatele
Inhalation (dust/mist)	LC ₅₀		0.554 mg/l	4 hours	Rat			BL dodavatele
Dermal	LD ₅₀		>2000 mg/kg		Rabbit			BL dodavatele
Inhalation (dust/mist)	ATE		1.5 mg/l					

hexamethylene-di-isocyanate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Sex	Value determination	Source
Oral	LD ₅₀	OECD 423	746 mg/kg		Rat			BL dodavatele
Dermal	LD ₅₀	OECD 402	599 mg/kg	24 hours	Rabbit			BL dodavatele
Inhalation	LC ₅₀	OECD 403	0.124 mg/l	4 hours	Rat			BL dodavatele
Oral	ATE		746 mg/kg bw					
Inhalation (vapor)	ATE		0.124 mg/l					

Hydrocarbons, C9, aromatic

Route of exposure	Parameter	Method	Value	Exposure time	Species	Sex	Value determination	Source
Oral	LD ₅₀		4-8 ml/kg bw		Rat (Rattus norvegicus)			echa
Dermal	LD ₅₀		3160 mg/kg bw		Rabbit			echa

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n-butyl acetate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Sex	Value determination	Source
Oral	LD ₅₀		10736 mg/kg		Rat (Rattus norvegicus)			BL dodavatele
Inhalation	LC ₅₀	OECD 403	>21.1 mg/l	4 hours	Rat (Rattus norvegicus)			BL dodavatele
Dermal	LD ₅₀		>14000 mg/kg		Rabbit			BL dodavatele
Inhalation	LC ₀		>38.32 mg/l	6 hours	Rat (Rattus norvegicus)			BL dodavatele

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Route of exposure	Parameter	Method	Value	Exposure time	Species	Sex	Value determination	Source
Oral	ATE		497400 mg/kg				Calculation of value	
Inhalation (vapor)	ATE		>10.65 mg/l				Calculation of value	

Skin corrosion/irritation

Based on available data the classification criteria are not met.

Hexamethylene diisocyanate, oligomers

Route of exposure	Result	Method	Exposure time	Species	Source
Dermal	Slightly irritating			Rabbit	BL dodavatele

hexamethylene-di-isocyanate

Route of exposure	Result	Method	Exposure time	Species	Source
Dermal	Sensitizing	OECD 404		Rabbit	BL dodavatele

Serious eye damage/irritation

Based on available data the classification criteria are not met.

Hexamethylene diisocyanate, oligomers

Route of exposure	Result	Method	Exposure time	Species	Source
Eye	Sensitizing			Rat	BL dodavatele

hexamethylene-di-isocyanate

Route of exposure	Result	Method	Exposure time	Species	Source
Eye	Sensitizing	OECD 405		Rabbit	BL dodavatele

Respiratory or skin sensitisation

May cause an allergic skin reaction.

Hexamethylene diisocyanate, oligomers

Route of exposure	Result	Method	Exposure time	Species	Sex	Source
Dermal	Irritating	OECD 406		Guinea-pig (Cavia aperea f. porcellus)		BL dodavatele

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Hexamethylene diisocyanate, oligomers

Route of exposure	Result	Method	Exposure time	Species	Sex	Source
Dermal	Positive, Sensitizing	OECD 406		Guinea-pig (Cavia aperea f. porcellus)		BL dodavatele

hexamethylene-di-isocyanate

Route of exposure	Result	Method	Exposure time	Species	Sex	Source
Dermal	Sensitizing	OECD 406		Guinea-pig (Cavia aperea f. porcellus)		BL dodavatele
Inhalation	Sensitizing	OECD 406		Guinea-pig (Cavia aperea f. porcellus)		BL dodavatele

Germ cell mutagenicity

Based on available data the classification criteria are not met.

hexamethylene-di-isocyanate

Result	Method	Exposure time	Specific target organ	Species	Sex	Source
Negative				Bacteria (Salmonella typhimurium)		BL dodavatele
Negative	OECD 474	6 hours		Mouse		BL dodavatele

Carcinogenicity

Based on available data the classification criteria are not met.

hexamethylene-di-isocyanate

Route of exposure	Parameter	Method	Value	Exposure time	Result	Species	Sex	Source
Inhalation (vapor)	NOAEC	OECD 453	1.15 mg/m ³	2 years		Rat		BL dodavatele

Reproductive toxicity

Based on available data the classification criteria are not met.

Hexamethylene diisocyanate, oligomers

Effect	Parameter	Method	Value	Exposure time	Result	Species	Sex	Source
Developmental toxicity		in vitro			Negative			BL dodavatele
Developmental toxicity		in vivo			Negative	Mouse		BL dodavatele

hexamethylene-di-isocyanate

Effect	Parameter	Method	Value	Exposure time	Result	Species	Sex	Source
	NOAEL	OECD 414	0.3 ppm	20 days		Rat		BL dodavatele
	NOAEL	OECD 414	0.005 ppm			Rat		BL dodavatele

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Toxicity for specific target organ - single exposure

May cause respiratory irritation.

Hexamethylene diisocyanate, oligomers

Route of exposure	Parameter	Value	Specific target organ	Result	Species	Sex	Source
Inhalation			Lungs	Sensitizing			BL dodavatele
				Positive			BL dodavatele

Toxicity for specific target organ - repeated exposure

Based on available data the classification criteria are not met.

hexamethylene-di-isocyanate

Route of exposure	Parameter	Method	Value	Exposure time	Result	Species	Sex	Source
Oral	LOAEL		300 mg/kg	2 weeks		Rat		BL dodavatele
Inhalation (vapor)	NOAEC	OECD 453	0.035 mg/kg	2 years		Rat		

Repeated dose toxicity

Hexamethylene diisocyanate, oligomers

Route of exposure	Parameter	Result	Method	Value	Exposure time	Species	Sex	Source
Inhalation	NOEL	No effect	OECD 412	3.7 mg/m ³	3 weeks (6 hour/day, 5 days/week)	Rat (Rattus norvegicus)		BL dodavatele

Hydrocarbons, C9, aromatic

Route of exposure	Parameter	Result	Method	Value	Exposure time	Species	Sex	Source
Oral	NOAEL			600 mg/kg bw/day		Rat (Rattus norvegicus)		echa
Inhalation	NOAEC			900-1800 mg/m ³ of air		Rat (Rattus norvegicus)		echa

Aspiration hazard

Based on available data the classification criteria are not met.

11.2. Information on other hazards

The mixture does not contain substances with endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605. Additional information Special properties/effects: In case of over-exposure - especially when spray-on washing lacquers containing isocyanate without protective measures - there is a risk of concentration-dependent irritant effects on the eyes, nose, larynx and respiratory tract. Later manifestations of difficulties and the development of hypersensitivity (breathing difficulties, cough, asthma) are possible. In hypersensitive persons, a reaction can be triggered already at low concentrations of isocyanate, also at concentrations below the limit value of occupational exposure. Prolonged contact with the skin may cause drying and irritation effects. Skin contact with diisocyanate may affect skin sensitization to isocyanate and affect respiratory tract reactions. Danger of absorption through the skin. Aromatic hydrocarbons irritate the skin and mucous membranes and have a narcotic effect when inhaled in high concentrations. More frequent or prolonged contact may cause irritation and dermatitis.

SECTION 12: Ecological information

12.1. Toxicity

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Acute toxicity

Harmful to aquatic life with long lasting effects.

Hexamethylene diisocyanate, oligomers

Parameter	Method	Value	Exposure time	Species	Environment	Source
LC ₅₀		>100 mg/l	96 hours	Fish (Danio rerio)		BL dodavatel e
EC ₅₀		>100 mg/l	48 hours	Daphnia (Daphnia magna)		BL dodavatel e
EC ₅₀		>100 mg/l	72 hours	Algae (Scenedesmus subspicatus)		BL dodavatel e
EC ₅₀	OECD 209	>100 mg/l	3 hours	Bacteria	Activated sludge	BL dodavatel e

hexamethylene-di-isocyanate

Parameter	Method	Value	Exposure time	Species	Environment	Source
LC ₅₀	EU C.1 (84/449/EEC)	22 mg/l	96 hours	Fish (Oncorhynchus mykiss)		BL dodavatel e
EC ₅₀	EU C.2 (84/449/EEC)	89.1 mg/l	48 hours	Daphnia (Daphnia magna)		BL dodavatel e
EC ₅₀	EU C.3 (87/302/EEC)	77.4 mg/l	72 hours	Algae (Selenastrum capricornutum)		BL dodavatel e

Hydrocarbons, C9, aromatic

Parameter	Method	Value	Exposure time	Species	Environment	Source
LL ₅₀		5.491-9.2 mg/l	96 hours	Fish (Oncorhynchus mykiss)		echa
EL ₅₀		3.2-9.586 mg/l	48 hours	Aquatic invertebrates		echa
EC ₅₀		290-420 µg/l	72 hours	Algae and other aquatic plants		echa
EC ₅₀		99 mg/l	10 minutes	Microorganisms (Photobacterium phosphoreum)		echa

n-butyl acetate

Parameter	Method	Value	Exposure time	Species	Environment	Source
LC ₅₀		18 mg/l	96 hours	Fish (Pimephales promelas)		BL dodavatel e
EC ₅₀		44 mg/l	48 hours	Aquatic invertebrates (Daphnia sp.)		BL dodavatel e
EC ₅₀		397 mg/l	72 hours	Algae and other aquatic plants (Pseudokirchneriella subcapitata)		BL dodavatel e

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n-butyl acetate

Parameter	Method	Value	Exposure time	Species	Environment	Source
EC ₅₀		356 mg/l	40 hours	Microorganisms (Tetrahymena pyriformis)		BL dodavatel e
EC ₅₀	OECD 208	>1000 mg/kg	14 days	Algae (Selenastrum capricornutum)		BL dodavatel e

Chronic toxicity

hexamethylene-di-isocyanate

Parameter	Method	Value	Exposure time	Species	Environment	Source
LOEC	OECD 209	12.6 mg/l	72 hours	Algae (Selenastrum capricornutum)		BL dodavatel e
NOEC	EU C.3 (87/302/EEC)	11.7 mg/l	72 hours	Algae (Selenastrum capricornutum)		BL dodavatel e

n-butyl acetate

Parameter	Method	Value	Exposure time	Species	Environment	Source
NOEC	OECD 211	23 mg/l	21 days	Daphnia (Daphnia magna)		BL dodavatel e

12.2. Persistence and degradability

Biodegradability

Hexamethylene diisocyanate, oligomers

Parameter	Value	Exposure time	Environment	Result	Source
Biologické odbourávání	1 %	28 days		Hardly biodegradable	BL dodavatele

not available

12.3. Bioaccumulative potential

Not available.

12.4. Mobility in soil

Not available.

12.5. Results of PBT and vPvB assessment

Product does not contain any substance meeting the criteria for PBT or vPvB in accordance with the Annex XIII of Regulation (EC) No 1907/2006 (REACH) as amended.

12.6. Endocrine disrupting properties

The mixture does not contain substances with endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605.

12.7. Other adverse effects

Isocyanate reacts with water at the interface with the evolution of CO₂ and the formation of a solid insoluble substance with a high melting point (polyurea). This reaction is strongly supported by surfactants (eg liquid soaps) or water-soluble solvents. According to the experience presented so far, polyurea is inert and non-degradable.

SECTION 13: Disposal considerations

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13.1. Waste treatment methods

Hazard of environmental contamination; dispose of the waste in accordance with the local and/or national regulations. Proceed in accordance with valid regulations on waste disposal. Any unused product and contaminated packaging should be put in labelled containers for waste collection and submitted for disposal to a person authorised for waste removal (a specialized company) that is entitled for such activity. Do not empty unused product in drainage systems. The product must not be disposed of with municipal waste. Empty containers may be used at waste incinerators to produce energy or deposited in a dump with appropriate classification. Perfectly cleaned containers can be submitted for recycling.

Waste management legislation

Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste, as amended. Decision 2000/532/EC establishing a list of wastes, as amended.

Waste type code

08 01 11 waste paint and varnish containing organic solvents or other hazardous substances *

Packaging waste type code

15 01 10 packaging containing residues of or contaminated by hazardous substances *

(*) - Hazardous waste according to Directive 2008/98/EC on hazardous waste

SECTION 14: Transport information

14.1. UN number or ID number

UN 1866

14.2. UN proper shipping name

RESIN SOLUTION

14.3. Transport hazard class(es)

3 Flammable liquids

14.4. Packing group

III - substances presenting low danger

14.5. Environmental hazards

No.

14.6. Special precautions for user

Reference in the Sections 4 to 8.

14.7. Maritime transport in bulk according to IMO instruments

not relevant

Additional information

Hazard identification No.

30

UN number

1866

Classification code

F1

Safety signs

3



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Road transport - ADR

Special provisions	640E
Limited quantities	5 L
Excepted quantities	E2

Packaging

Packing instructions	P001, IBC03, LP01, R001
Special packing provisions	PP1,
Mixed packing provisions	MP19

Portable tanks and bulk containers

Guidelines	T2
Special provisions	TP1

ADR tank

Tank code	LGBF
Vehicles for tank carriage	FL
Transport category	3
Tunnel restriction code	(D/E)

Special provision for

packages	V12
operation	S2

Railway transport - RID

Special provisions	640E
Excepted quantities	E2

Packaging

Packing instructions	P001, IBC03, LP01, R001
Special packing provisions	PP1,
Mixed packing provisions	MP19

Portable tanks and bulk containers

Guidelines	T2
Special provisions	TP1

RID Tanks

Tank code	LGBF
Transport category	3

Special provision for

packages	W 12
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Air transport - ICAO/IATA

Packaging instructions for limited amount	Y344
Packaging instructions passenger	355
Cargo packaging instructions	366

Marine transport - IMDG

EmS (emergency plan)	F-E, S-E
MFAG	300

SECTION 15: Regulatory information

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

Regulation (EC) No. 1907/2006 of the European Parliament and of the Council of 18th December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing the European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No. 793/93 and Commission Regulation (EC) No. 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, as amended. REGULATION (EC) No. 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL as amended. Commission Regulation (EU) 2020/878 of 18 June 2020 amending Annex II to Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

Restrictions pursuant to Annex XVII of Regulation (EC) No. 1907/2006 (REACH), as amended

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hexamethylene-di-isocyanate

Restriction	Conditions of restriction
74	1. Shall not be used as substances on their own, as a constituent in other substances or in mixtures for industrial and professional use(s) after 24 August 2023, unless: (a) the concentration of diisocyanates individually and in combination is less than 0,1 % by weight, or (b) the employer or self-employed ensures that industrial or professional user(s) have successfully completed training on the safe use of diisocyanates prior to the use of the substance(s) or mixture (s). 2. Shall not be placed on the market as substances on their own, as a constituent in other substances or in mixtures for industrial and professional use(s) after 24 February 2022, unless: (a) the concentration of diisocyanates individually and in combination is less than 0,1 % by weight, or (b) the supplier ensures that the recipient of the substance(s) or mixture(s) is provided with information on the requirements referred to in point (b) of paragraph 1 and the following statement is placed on the packaging, in a manner that is visibly distinct from the rest of the label information: "As from 24 August 2023 adequate training is required before industrial or professional use". 3. For the purpose of this entry "industrial and professional user(s)" means any worker or self-employed worker handling diisocyanates on their own, as a constituent in other substances or in mixtures for industrial and professional use(s) or supervising these tasks. 4. The training referred to in point (b) of paragraph 1 shall include the instructions for the control of dermal and inhalation exposure to diisocyanates at the workplace without prejudice to any national occupational exposure limit value or other appropriate risk management measures at national level. Such training shall be conducted by an expert on occupational safety and health with competence acquired by relevant vocational training. That training shall cover as a minimum: (a) the training elements in point (a) of paragraph 5 for all industrial and professional use(s). (b) the training elements in points (a) and (b) of paragraph 5 for the following uses: — handling open mixtures at ambient temperature (including foam tunnels); — spraying in a ventilated booth; — application by roller; — application by brush; — application by dipping and pouring; — mechanical post treatment (e.g. cutting) of not fully cured articles which are not warm anymore; — cleaning and waste; — any other uses with similar exposure through the dermal and/or inhalation route; (c) the training elements in points (a), (b) and (c) of paragraph 5 for the following uses: — handling incompletely cured articles (e.g. freshly cured, still warm); — foundry applications; — maintenance and repair that needs access to equipment; — open handling of warm or hot formulations (> 45 °C); — spraying in open air, with limited or only natural ventilation (includes large industry working halls) and spraying with high energy (e.g. foams, elastomers); — and any other uses with similar exposure through the dermal and/or inhalation route. 5. Training elements: (a) general training, including on-line training, on: — chemistry of diisocyanates; — toxicity hazards (including acute toxicity); — exposure to diisocyanates; — occupational exposure limit values; — how sensitisation can develop; — odour as indication of hazard; — importance of volatility for risk; — viscosity, temperature, and molecular weight of diisocyanates; — personal hygiene; — personal protective equipment needed, including practical instructions for its correct use and its limitations; — risk of dermal contact and inhalation exposure; — risk in relation to application process used; — skin and inhalation protection scheme; — ventilation; — cleaning, leakages, maintenance; — discarding empty packaging;

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Restriction	Conditions of restriction
	— protection of bystanders; — identification of critical handling stages; — specific national code systems (if applicable); — behaviour-based safety; — certification or documented proof that training has been successfully completed (b) intermediate level training, including on-line training, on: — additional behaviour-based aspects; — maintenance; — management of change; — evaluation of existing safety instructions; — risk in relation to application process used; — certification or documented proof that training has been successfully completed (c) advanced training, including on-line training, on: — any additional certification needed for the specific uses covered; — spraying outside a spraying booth; — open handling of hot or warm formulations (> 45 °C); — certification or documented proof that training has been successfully completed 6. The training shall comply with the provisions set by the Member State in which the industrial or professional user(s) operate. Member States may implement or continue to apply their own national requirements for the use of the substance(s) or mixture(s), as long as the minimum requirements set out in paragraphs 4 and 5 are met. 7. The supplier referred to in point (b) of paragraph 2 shall ensure that the recipient is provided with training material and courses pursuant to paragraphs 4 and 5 in the official language(s) of the Member State(s) where the substance(s) or mixture(s) are supplied. The training shall take into consideration the specificity of the products supplied, including composition, packaging, and design. 8. The employer or self-employed shall document the successful completion of the training referred to in paragraphs 4 and 5. The training shall be renewed at least every five years. 9. Member States shall include in their reports pursuant to Article 117(1) the following information: (a) any established training requirements and other risk management measures related to the industrial and professional uses of diisocyanates foreseen in national law; (b) the number of cases of reported and recognised occupational asthma and occupational respiratory and dermal diseases in relation to diisocyanates; (c) national exposure limits for diisocyanates, if there are any; (d) information about enforcement activities related to this restriction. 10. This restriction shall apply without prejudice to other Union legislation on the protection of safety and health of workers at the workplace.

15.2. Chemical safety assessment

not available

SECTION 16: Other information

A list of standard risk phrases used in the safety data sheet

H226	Flammable liquid and vapour.
H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H330	Fatal 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.

Guidelines for safe handling used in the safety data sheet

P101	If medical advice is needed, have product container or label at hand.
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P102	Keep out of reach of children.
P103	Read label before use.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P261	Avoid breathing vapours/spray.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352	IF ON SKIN: Wash with plenty of water and soap.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
P370+P378	In case of fire: Use foam (alcohol resistant), carbon dioxide, a spray mist, powder to extinguish.
P403+P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.
P501	Dispose of contents/container to by handing over to a person authorized to dispose of waste or a site designated by the town.

A list of additional standard phrases used in the safety data sheet

EUH204	Contains isocyanates. May produce an allergic reaction.
EUH066	Repeated exposure may cause skin dryness or cracking.

Other important information about human health protection

The product must not be - unless specifically approved by the manufacturer/importer - used for purposes other than as per the Section 1. The user is responsible for adherence to all related health protection regulations.

Key to abbreviations and acronyms used in the safety data sheet

ADR	European agreement concerning the international carriage of dangerous goods by road
BCF	Bioconcentration Factor
CAS	Chemical Abstracts Service
CLP	Regulation (EC) No 1272/2008 on classification, labelling and packaging of substance and mixtures
EC	Identification code for each substance listed in EINECS
EC ₅₀	Concentration of a substance when it is affected 50% of the population
EINECS	European Inventory of Existing Commercial Chemical Substances
EL ₅₀	Effective Loading for 50% of the tested organisms
EmS	Emergency plan
EU	European Union
EuPCS	European Product Categorisation System
IATA	International Air Transport Association
IBC	International Code For The Construction And Equipment of Ships Carrying Dangerous Chemicals
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods
IMO	International Maritime Organization
INCI	International Nomenclature of Cosmetic Ingredients
ISO	International Organization for Standardization
IUPAC	International Union of Pure and Applied Chemistry
LC ₀	Lethal concentration of a substance in which it can be expected death of 0% of the population
LC ₅₀	Lethal concentration of a substance in which it can be expected death of 50% of the population
LD ₅₀	Lethal dose of a substance in which it can be expected death of 50% of the population
LL ₅₀	Lethal Loading for 50% of tested organisms
LOAEL	Lowest observed adverse effect level
log K _{ow}	Octanol-water partition coefficient
NOAEC	No observed adverse effect concentration

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NOAEL	No observed adverse effect level
NOEC	No observed effect concentration
NOEL	No observed effect level
OEL	Occupational Exposure Limits
PBT	Persistent, Bioaccumulative and Toxic
ppm	Parts per million
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	Agreement on the transport of dangerous goods by rail
UN	Four-figure identification number of the substance or article taken from the UN Model Regulations
UVCB	Substances of unknown or variable composition, complex reaction products or biological materials
VOC	Volatile organic compounds
vPvB	Very Persistent and very Bioaccumulative
Acute Tox.	Acute toxicity
Aquatic Chronic	Hazardous to the aquatic environment (chronic)
Asp. Tox.	Aspiration hazard
Eye Irrit.	Eye irritation
Flam. Liq.	Flammable liquid
Resp. Sens.	Respiratory sensitization
Skin Irrit.	Skin irritation
Skin Sens.	Skin sensitization
STOT SE	Specific target organ toxicity - single exposure

Training guidelines

Inform the personnel about the recommended ways of use, mandatory protective equipment, first aid and prohibited ways of handling the product. Further instructions for the safe handling of aliphatic isocyanates (TDI (CAS: 584-84-9) and MDI (CAS: 822-06-0)) can be found on the ALIPA website: ALIPA Safeguard – We care that you care (www.alipa.org) (Product Stewardship "Walk the Talk"). For training on the safe use and handling of diisocyanates after 24 August 2023 see the website: <https://www.safeusediisocyanates.eu/>

Recommended restrictions of use

The product will be used mainly as a hardener for paint materials. Contact with paint materials containing reactive polyisocyanates and residual amounts of HDI monomers require appropriate protective measures (see also this safety data sheet). Therefore, they can only be used in industrial or professional applications. Not suitable for Do-It-Yourself applications.

Information about data sources used to compile the Safety Data Sheet

REGULATION (EC) No. 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL (REACH) as amended. REGULATION (EC) No. 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL as amended. Data from the manufacturer of the substance / mixture, if available - information from registration dossiers.

The changes (which information has been added, deleted or modified)

The version 3.0 replaces the SDS version from 15 June 2018. Changes were made in sections 1, 2, 3, 6, 7, 9, 11, 12, 13, 14, 15 and 16.

More information

Classification procedure - calculation method.

Statement

The safety data sheet provides information aimed at ensuring safety and health protection at work and environmental protection. The provided information corresponds to the current status of knowledge and experience and complies with valid legal regulations. The information should not be understood as guaranteeing the suitability and usability of the product for a particular application.