SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006, as amended by
Commission Regulation (EU) 2020/878

Carsystem 2K Premium Hardener standard

Version		Revision Date:	Date of last issue: 17.10.2023
1.2	DE / EN	10.09.2024	Date of first issue: 19.07.2022

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

1.1 Product identifier

Trade name : Carsystem 2K Premium Hardener standard

Product code : 147.019

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

Use of the Sub-stance/Mixture : Curing chemical

Recommended restrictions on use : Restricted to professional users. Attention - Avoid exposure - obtain special instructions before use.

1.3 Details of the supplier of the safety data sheet

Company : JASA AG
Müslistrasse 43
8957 Spreitenbach
Schweiz

info@jasa-ag.ch, www.jasa-ag.ch

Telephone : +41 (0)44 431 60 70
Telefax : +41 (0)44 432 63 17

Responsible Department : Productmanagement, Tel: +41 (0)44 431 60 70, sds@jasa-ag.ch

1.4 Emergency telephone

Telephone : Tox Info Suisse (STIZ), Tel: 145

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Flammable liquids, Category 3	H226: Flammable liquid and vapor.
Acute toxicity, Category 4	H332: Harmful if inhaled.
Skin sensitization, Category 1	H317: May cause an allergic skin reaction.
Specific target organ toxicity - single exposure, Category 3, Central nervous system	H336: May cause drowsiness or dizziness.
Specific target organ toxicity - single exposure, Category 3, Respiratory system	H335: May cause respiratory irritation.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :

Signal Word : Warning

Hazard Statements :

H226	Flammable liquid and vapor.
H317	May cause an allergic skin reaction.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.

Supplemental Hazard Statements : EUH066 Repeated exposure may cause skin dryness or cracking.

Precautionary Statements :

Prevention:

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P261	Avoid breathing mist or vapors.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P333 + P313	If skin irritation or rash occurs: Get medical advice/ attention.

Disposal:

P501 Dispose of contents/ container to an approved facility in accordance with local, regional, national and international regulations.

Hazardous ingredients which must be listed on the label:

hexamethylene-1,6-diisocyanate homopolymer
n-butyl acetate
heptan-2-one
hexamethylene-di-isocyanate

Additional Labeling

EUH204 Contains isocyanates. May produce an allergic reaction.

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Chemical nature : Mixture
contains
Isocyanates

Paint related material

Components

Chemical name	CAS-No. EC-No. Index-No. Registration number	Classification	Concentration (% w/w)
hexamethylene-1,6-diisocyanate homopolymer	28182-81-2 500-060-2 01-2119488934-20	Acute Tox. 4; H332 Skin Sens. 1; H317 STOT SE 3; H335 (Respiratory system) --- Acute toxicity estimate	>= 50 - <= 75

		Acute inhalation toxicity (dust/mist): 1,5 mg/l Acute inhalation toxicity (vapor): 11 mg/l	
n-butyl acetate	123-86-4 204-658-1 607-025-00-1 01-2119485493-29	Flam. Liq. 3; H226 STOT SE 3; H336 (Central nervous system) EUH066	>= 10 - < 25
heptan-2-one	110-43-0 203-767-1 606-024-00-3 01-2119902391-49	Flam. Liq. 3; H226 Acute Tox. 4; H302 Acute Tox. 4; H332 STOT SE 3; H336 (Central nervous system) --- Acute toxicity estimate Acute inhalation toxicity (vapor): 16,71 mg/l	>= 15 - <= 25
hexamethylene-di-isocyanate	822-06-0 212-485-8 615-011-00-1 01-2119457571-37	Acute Tox. 4; H302 Acute Tox. 1; H330 Skin Irrit. 2; H315 Eye Irrit. 2; H319 Resp. Sens. 1; H334 Skin Sens. 1; H317 STOT SE 3; H335 (Respiratory system) --- specific concentration limit Resp. Sens. 1; H334 >= 0,5 % Skin Sens. 1; H317 >= 0,5 % --- Acute toxicity estimate Acute oral toxicity: 746 mg/kg Acute inhalation toxicity (vapor): 0,124 mg/l	< 0,1

For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice : In the case of accident or if you feel unwell, seek medical advice immediately.
Move out of dangerous area.
Take off contaminated clothing and shoes immediately.
Wash contaminated clothing before re-use.
Do not leave the victim unattended.
Symptoms of poisoning may appear several hours later.
Show this material safety data sheet to the doctor in attendance.

Protection of first-aiders : First Aid responders should pay attention to self-protection and use the recommended protective clothing

If inhaled : Move to fresh air.
Keep patient warm and at rest.
If breathing is irregular or stopped, administer artificial respiration.
Call a physician immediately.

In case of skin contact : Wash off immediately with soap and plenty of water.
Call a physician if irritation develops or persists.

In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Keep eye wide open while rinsing.
If easy to do, remove contact lens, if worn.
Consult a physician.

If swallowed : Rinse mouth with water.
Do NOT induce vomiting.
Call a physician immediately.

4.2 Most important symptoms and effects, both acute and delayed

Risks : May cause an allergic skin reaction.
Harmful if inhaled.
May cause respiratory irritation.
May cause drowsiness or dizziness.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Treat symptomatically.
Keep under medical supervision for at least 48 hours.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Carbon dioxide (CO2)
Dry powder

Alcohol-resistant foam
Water spray in large fire situations
Water spray jet

Unsuitable extinguishing media : High volume water jet

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire fighting : Build-up of dangerous/toxic fumes possible in cases of fire/high temperature.
If the temperature rises there is danger of the vessels bursting due to the high vapor pressure.
Cool closed containers exposed to fire with water spray.

Hazardous combustion products : Hazardous decomposition products due to incomplete combustion
Carbon monoxide, carbon dioxide and unburned hydrocarbons (smoke).
Nitrogen oxides (NOx)
Isocyanates

5.3 Advice for firefighters

Special protective equipment for fire-fighters : In the event of fire and/or explosion do not breathe fumes. In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment. Complete suit protecting against chemicals

Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Wear personal protective equipment.
Evacuate personnel to safe areas.
Ensure adequate ventilation, especially in confined areas.
Avoid contact with skin, eyes and clothing.
In the case of vapor formation use a respirator with an approved filter.

6.2 Environmental precautions

Environmental precautions : Do not flush into surface water or sanitary sewer system.
Local authorities should be advised if significant spillages cannot be contained.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up	:	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Sweep up and shovel into suitable containers for disposal. After approximately one hour, transfer to waste container and do not seal, due to evolution of carbon dioxide. Waste must NOT be included in a tight way.

6.4 Reference to other sections

For personal protection see section 8., For disposal considerations see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Local/Total ventilation	:	Use only with adequate ventilation.
Advice on safe handling	:	Avoid exposure - obtain special instructions before use. All processes must be supervised by specialists or authorized personnel. Provide sufficient air exchange and/or exhaust in work rooms. Keep container closed when not in use. Wear personal protective equipment. Avoid formation of aerosol. Do not breathe vapours, aerosols. Persons allergic to isocyanates, and particularly those suffering from asthma or other respiratory conditions, should not work with isocyanates.
Advice on protection against fire and explosion	:	Keep away from sources of ignition - No smoking. Take precautionary measures against static discharge. Vapors may form explosive mixture with air.
Hygiene measures	:	General industrial hygiene practice. Persons already sensitized to diisocyanates may develop allergic reactions when using this product. Persons suffering from asthma, eczema or skin problems should avoid contact, including dermal contact, with this product. Take off all contaminated clothing immediately. Wash contaminated clothing before re-use.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	:	Store in original container. Keep containers tightly closed in a dry, cool and well-ventilated place.
Further information on storage conditions	:	Storage must be in accordance with the BetrSichV (Germany). Keep locked up or in an area accessible only to qualified or authorized persons. Protect from moisture.
Advice on common storage	:	Keep away from food and drink. Incompatible with acids and bases.
Storage class (TRGS 510)	:	3

7.3 Specific end use(s)

Specific use(s) : No data available

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
n-butyl acetate	123-86-4	STEL	150 ppm 723 mg/m3	2019/1831/EU
	Further information: Indicative			
		TWA	50 ppm 241 mg/m3	2019/1831/EU
	Further information: Indicative			
		AGW	62 ppm 300 mg/m3	DE TRGS 900
	Peak-limit category: 2;(I)			
	Further information: When there is compliance with the OEL and biological tolerance values, there is no risk of harming the unborn child			
		MAK	100 ppm 480 mg/m3	DE DFG MAK
	Further information: Damage to the embryo or foetus is unlikely when the MAK value or the BAT value is observed			
heptan-2-one	110-43-0	TWA	50 ppm 238 mg/m3	2000/39/EC
	Further information: Identifies the possibility of significant uptake through the skin, Indicative			
		STEL	100 ppm 475 mg/m3	2000/39/EC
	Further information: Identifies the possibility of significant uptake through the skin, Indicative			
		AGW	238 mg/m3	DE TRGS 900
	Peak-limit category: 2;(I)			
	Further information: Skin absorption			
hexamethylene-di-isocyanate	822-06-0	AGW	0,005 ppm 0,035 mg/m3	TRGS 430
	Peak-limit category: 1;=2=(I)			
	Further information: In well-founded cases also a momentary value can be established, that never can be exceeded. This substance will be indicated by = = in combination with an exceeding value., airway sensitizing substance			
		AGW (Vapour and aerosols)	0,005 ppm 0,035 mg/m3	DE TRGS 900
	Peak-limit category: 1;=2=(I)			
	Further information: In well-found cases also a momentary value can be established, that never can be exceeded. This substance will be indicated by = =			

	in combination with an exceeding value., Substance sensitizing through the respiratory system			
		MAK	0,005 ppm 0,035 mg/m3	DE DFG MAK
	Further information: Danger of sensitization of the airways and the skin, Either there are no data for an assessment of damage to the embryo or foetus, including developmental neurotoxicity, or the currently available data are not sufficient for classification in one of the groups A - C			
		Mow	0,01 ppm 0,07 mg/m3	DE DFG MAK
	Further information: Danger of sensitization of the airways and the skin, Either there are no data for an assessment of damage to the embryo or foetus, including developmental neurotoxicity, or the currently available data are not sufficient for classification in one of the groups A - C			

Biological occupational exposure limits

Substance name	CAS-No.	Control parameters	Sampling time	Basis
hexamethylene-di-isocyanate	822-06-0	hexamethylendiamine: 15 µg/g creatinine (Urine)	Immediately after exposure or after working hours	TRGS 903
		hexamethylenediamine: 15 µg/g creatinine (Urine)	Immediately after exposition or after working hours	DE DFG BAT

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

Substance name	End Use	Routes of exposure	Potential health effects	Value
hexamethylene-1,6-diisocyanate homopolymer	Workers	Inhalation	Long-term local effects	0,5 mg/m3
	Workers	Inhalation	Acute local effects	1 mg/m3
n-butyl acetate	Workers	Inhalation	Long-term systemic effects, Long-term local effects	300 mg/m3
	Workers	Inhalation	Acute systemic effects	600 mg/m3
	Workers	Dermal	Long-term systemic effects, Acute systemic effects	11 mg/kg bw/day
	Consumers	Inhalation	Long-term systemic effects, Long-term local effects	35,7 mg/m3
	Consumers	Inhalation	Acute systemic effects	300 mg/m3
	Consumers	Dermal	Long-term systemic effects, Acute systemic effects	6 mg/kg bw/day
	Consumers	Oral	Long-term systemic effects, Acute systemic effects	2 mg/kg bw/day

heptan-2-one	Workers	Inhalation	Long-term systemic effects	394,25 mg/m3
	Workers	Dermal	Long-term systemic effects	54,27 mg/kg bw/day
	Consumers	Inhalation	Long-term systemic effects	84,31 mg/m3
	Consumers	Oral	Long-term systemic effects	23,32 mg/kg bw/day
	Consumers	Dermal	Long-term systemic effects	23,32 mg/kg bw/day
hexamethylene-di-isocyanate	Workers	Inhalation	Long-term local effects	0,035 mg/m3
	Workers	Inhalation	Acute local effects	0,07 mg/m3

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

Substance name	Environmental Compartment	Value
hexamethylene-1,6-diisocyanate homopolymer	Fresh water	0,1 mg/l
	Sea water	0,01 mg/l
	Sewage treatment plant (STP)	100 mg/l
	Fresh water sediment	2530 mg/kg
	Sea sediment	253 mg/kg
	Soil	505 mg/kg
n-butyl acetate	Fresh water	0,18 mg/l
	Sea water	0,018 mg/l
	Fresh water sediment	0,981 mg/kg dry weight (d.w.)
	Sea sediment	0,098 mg/kg dry weight (d.w.)
	Sewage treatment plant (STP)	35,6 mg/l
	Soil	0,09 mg/kg dry weight (d.w.)
heptan-2-one	Fresh water	0,098 mg/l
	Sea water	0,01 mg/l
	Fresh water sediment	1,89 mg/kg dry weight (d.w.)
	Sea sediment	0,189 mg/kg dry weight (d.w.)
	Sewage treatment plant (STP)	12,5 mg/l
	Soil	0,321 mg/kg dry weight (d.w.)
hexamethylene-di-isocyanate	Sewage treatment plant (STP)	8,42 mg/l

8.2 Exposure controls

Personal protective equipment

Eye/face protection : Safety glasses with side-shields conforming to EN166

Hand protection
Material : Nitrile rubber

Material : butyl-rubber
Break through time : > 480 min

Glove thickness	:	>= 0,7 mm
Directive	:	DIN EN 374
Protective index	:	Class 6
Remarks	:	Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough. The data about break through time/strength of material are standard values! The exact break through time/strength of material has to be obtained from the producer of the protective glove. The choice of an appropriate glove does not only depend on its material but also on other quality features and is different from one producer to the other.
Skin and body protection	:	Please wear suitable protective clothing, e.g. made of cotton or heat-resistant synthetic fibres. Long sleeved clothing
Respiratory protection	:	In order to avoid inhalation of spray-mist and sanding dust, all spraying and sanding must be done wearing adequate respirator. Apply technical measures to comply with the occupational exposure limits. Equipment should conform to EN 14387
Filter type	:	Combined particulates and organic vapor type (A-P)
Protective measures	:	Ensure that eye flushing systems and safety showers are located close to the working place. Handle in accordance with good industrial hygiene and safety practice.

Environmental exposure controls

Soil	:	Avoid subsoil penetration.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	:	liquid
Color	:	colorless, light yellow
Odor	:	characteristic
Odor Threshold	:	not determined
Melting point/range	:	not determined

Boiling point/boiling range	:	124 °C
Upper explosion limit / Upper flammability limit	:	Upper explosion limit 15 %(V)
Lower explosion limit / Lower flammability limit	:	Lower explosion limit 1,2 %(V)
Flash point	:	27 °C
Autoignition temperature	:	not determined
pH	:	Not applicable substance/mixture reacts with water
Viscosity		
Viscosity, dynamic	:	not determined
Viscosity, kinematic	:	not determined
Solubility(ies)		
Water solubility	:	Reacts with water.
Partition coefficient: n-octanol/water	:	No data available
Vapor pressure	:	10,7 hPa (20 °C)
Density	:	1,0 g/cm3 (20 °C)

9.2 Other information

Explosives	:	Not explosive In use, may form flammable/explosive vapour-air mixture.

SECTION 10: Stability and reactivity

10.1 Reactivity

No decomposition if used as directed.

10.2 Chemical stability

No decomposition if stored and applied as directed.

10.3 Possibility of hazardous reactions

Hazardous reactions : Amines and alcohols cause exothermic reactions.
Mixture reacts slowly with water resulting in evolution of CO2.
Evolution of CO2 in closed containers causes overpressure and produces a risk of bursting.

10.4 Conditions to avoid

Conditions to avoid : Avoid moisture.

10.5 Incompatible materials

Materials to avoid : Amines
Alcohols
Acids and bases
Water

10.6 Hazardous decomposition products

Build-up of dangerous/toxic fumes possible in cases of fire/high temperature.
Carbon monoxide, carbon dioxide and unburned hydrocarbons (smoke).
Nitrogen oxides (NOx)
Isocyanates

SECTION 11: Toxicological information

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

Acute toxicity

Harmful if inhaled.

Product:

Acute oral toxicity : Acute toxicity estimate: > 2.000 mg/kg
Method: Calculation method

Acute inhalation toxicity : Acute toxicity estimate: 1,0 - < 5 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Calculation method

Components:

hexamethylene-1,6-diisocyanate homopolymer:

Acute oral toxicity : LD50 Oral (Rat): > 2.000 mg/kg
Method: OECD Test Guideline 423

Acute inhalation toxicity : Acute toxicity estimate: 1,5 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Expert judgment

Acute toxicity estimate: 11 mg/l
Exposure time: 4 h
Test atmosphere: vapor
Method: Expert judgment

Acute dermal toxicity : LD50 Dermal (Rat): > 2.000 mg/kg
Method: OECD Test Guideline 402

n-butyl acetate:

Acute oral toxicity : LD50 (Rat): 10.760 mg/kg
Method: OECD Test Guideline 423

Acute inhalation toxicity : LD50 (Rat): > 21 mg/l
Exposure time: 4 h
Test atmosphere: vapor
Method: OECD Test Guideline 403

Acute dermal toxicity : LD50 Dermal (Rabbit): 14.112 mg/kg
Method: OECD Test Guideline 402

heptan-2-one:

Acute inhalation toxicity : LC50 (Rat): > 16,7 mg/l
Exposure time: 4 h
Test atmosphere: vapor

Acute dermal toxicity : LD50 Dermal (Rat): > 2.000 mg/kg

hexamethylene-di-isocyanate:

Acute oral toxicity : LD50 Oral (Rat): 746 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC50 (Rat): 0,124 mg/l
Exposure time: 4 h
Test atmosphere: vapor
Method: OECD Test Guideline 403

Acute dermal toxicity : LD50 Dermal (Rat): > 7.000 mg/kg
Method: OECD Test Guideline 402

Skin corrosion/irritation

Not classified due to lack of data.

Components:

hexamethylene-1,6-diisocyanate homopolymer:

Species : Rabbit
Assessment : No skin irritation
Method : OECD Test Guideline 404

hexamethylene-di-isocyanate:

Species	:	Rabbit
Method	:	OECD Test Guideline 404
Result	:	Skin irritation

Serious eye damage/eye irritation

Not classified due to lack of data.

Components:

hexamethylene-1,6-diisocyanate homopolymer:

Species	:	Rabbit
Assessment	:	No eye irritation
Method	:	OECD Test Guideline 405

hexamethylene-di-isocyanate:

Species	:	Rabbit
Method	:	OECD Test Guideline 405
Result	:	Moderate eye irritation

Respiratory or skin sensitization

Skin sensitization

May cause an allergic skin reaction.

Respiratory sensitization

Not classified due to lack of data.

Components:

hexamethylene-1,6-diisocyanate homopolymer:

Test Type	:	Local lymph node assay (LLNA)
Routes of exposure	:	Skin contact
Species	:	Mouse
Assessment	:	May cause sensitization by skin contact.
Method	:	OECD Test Guideline 429
Result	:	positive

hexamethylene-di-isocyanate:

Species	:	Guinea pig
Method	:	OECD Test Guideline 406
Result	:	The product is a skin sensitizer, sub-category 1B.
Species	:	Guinea pig
Result	:	The product is a respiratory sensitizer, sub-category 1B.

Germ cell mutagenicity

Not classified due to lack of data.

Components:

hexamethylene-1,6-diisocyanate homopolymer:

Genotoxicity in vitro : Test Type: Microbial mutagenesis assay (Ames test)
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: Not mutagenic in Ames Test.

Carcinogenicity

Not classified due to lack of data.

Reproductive toxicity

Not classified due to lack of data.

STOT-single exposure

May cause respiratory irritation.
May cause drowsiness or dizziness.

Components:

hexamethylene-1,6-diisocyanate homopolymer:

Routes of exposure : Inhalation
Assessment : May cause respiratory irritation.

n-butyl acetate:

Assessment : May cause drowsiness or dizziness.

heptan-2-one:

Assessment : May cause drowsiness or dizziness.

hexamethylene-di-isocyanate:

Assessment : May cause respiratory irritation.

STOT-repeated exposure

Not classified due to lack of data.

Repeated dose toxicity

Components:

hexamethylene-1,6-diisocyanate homopolymer:

Species : Rat, male and female
NOAEL : 0,0033 mg/l
Application Route : Inhalation
Test atmosphere : dust/mist
Exposure time : 90d
Number of exposures : 6h / d
Dose : 0 - 0,0005 - 0,003 - 0,0264
Method : OECD Test Guideline 413

Aspiration toxicity

Not classified due to lack of data.

11.2 Information on other hazards

Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Further information

Product:

Remarks : Persons allergic to isocyanates, and particularly those suffering from asthma or other respiratory conditions, should not work with isocyanates.

SECTION 12: Ecological information

12.1 Toxicity

Components:

hexamethylene-1,6-diisocyanate homopolymer:

Toxicity to fish : LC0 (Danio rerio (zebra fish)): >= 100 mg/l
End point: mortality
Exposure time: 96 h
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC0 (Daphnia magna (Water flea)): >= 100 mg/l
End point: Immobilization
Exposure time: 48 h
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : NOEC (Desmodesmus subspicatus (green algae)): 50 mg/l
End point: Growth rate
Exposure time: 72 h
Method: OECD Test Guideline 201

n-butyl acetate:

Toxicity to fish : (Pimephales promelas (fathead minnow)): 18 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 44 mg/l
Exposure time: 48 h

Toxicity to algae/aquatic plants : EC50 (Desmodesmus subspicatus (green algae)): 647,7 mg/l
Exposure time: 72 h

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 23 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Method: OECD Test Guideline 211

heptan-2-one:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 131 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 100 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

hexamethylene-di-isocyanate:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): >= 82,8 mg/l
End point: mortality
Exposure time: 96 h
Method: Regulation (EC) No. 440/2008, Annex, C.1

Toxicity to daphnia and other aquatic invertebrates : EC0 (Daphnia magna (Water flea)): >= 89,1 mg/l
End point: Immobilization
Exposure time: 48 h
Method: Regulation (EC) No. 440/2008, Annex, C.2

Toxicity to algae/aquatic plants : EC50 (Desmodesmus subspicatus (green algae)): 77,4 mg/l
Exposure time: 72 h

Toxicity to microorganisms : EC50 (Bacteria): 842 mg/l
Exposure time: 3 h

Ecotoxicology Assessment

Chronic aquatic toxicity : This product has no known ecotoxicological effects.

12.2 Persistence and degradability

Components:

hexamethylene-1,6-diisocyanate homopolymer:

Biodegradability : Result: Not rapidly biodegradable
Biodegradation: 2 %
Exposure time: 28 d
Method: Regulation (EC) No. 440/2008, Annex, C.4-E

n-butyl acetate:

Biodegradability : Result: Readily biodegradable.
Biodegradation: 83 %
Exposure time: 28 d

heptan-2-one:

Biodegradability : Result: Readily biodegradable.
Biodegradation: 100 %
Method: OECD Test Guideline 310

hexamethylene-di-isocyanate:

Biodegradability : Biodegradation: 42 %
Exposure time: 28 d

12.3 Bioaccumulative potential

Components:

hexamethylene-1,6-diisocyanate homopolymer:

Bioaccumulation : Bioconcentration factor (BCF): 706

Partition coefficient: n-octanol/water : log Pow: 8,38

n-butyl acetate:

Partition coefficient: n-octanol/water : log Pow: 2,3 (25 °C)
Method: OECD Test Guideline 117

heptan-2-one:

Partition coefficient: n-octanol/water : log Pow: 2,26 (30 °C)

hexamethylene-di-isocyanate:

Bioaccumulation : Bioconcentration factor (BCF): 59,6

Partition coefficient: n-octanol/water : log Pow: 3,2 (20 °C)

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

Product:

Assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation

(EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects

Product:

Additional ecological information : No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : Do not dispose of with domestic refuse.
Do not empty into drains, dispose of this material and its container at hazardous or special waste collection point.
Dispose of in accordance with local regulations.
Dispose of wastes in an approved waste disposal facility.
Send to a licensed waste management company.

Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.
Store containers and offer for recycling of material when in accordance with the local regulations.
Packaging that is not properly emptied must be disposed of as the unused product.
Dispose of in accordance with local regulations.

Waste Code : The following Waste Codes are only suggestions:
08 05 01, waste isocyanates

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

SECTION 14: Transport information

14.1 UN number or ID number

ADN : UN 1263

ADR : UN 1263

RID : UN 1263

IMDG : UN 1263

IATA : UN 1263

14.2 UN proper shipping name

ADN : PAINT RELATED MATERIAL

ADR : PAINT RELATED MATERIAL

RID	:	PAINT RELATED MATERIAL
IMDG	:	PAINT RELATED MATERIAL
IATA	:	Paint related material

14.3 Transport hazard class(es)

		Class	Subsidiary risks
ADN	:	3	
ADR	:	3	
RID	:	3	
IMDG	:	3	
IATA	:	3	

14.4 Packing group

ADN

Packing group	:	III
Classification Code	:	F1
Hazard Identification Number	:	30
Labels	:	3

ADR

Packing group	:	III
Classification Code	:	F1
Hazard Identification Number	:	30
Labels	:	3
Tunnel restriction code	:	(D/E)

RID

Packing group	:	III
Classification Code	:	F1
Hazard Identification Number	:	30
Labels	:	3

IMDG

Packing group	:	III
Labels	:	3
EmS Code	:	F-E, S-E

IATA (Cargo)

Packing instruction (cargo aircraft)	:	366
Packing instruction (LQ)	:	Y344
Packing group	:	III
Labels	:	Flammable Liquids

IATA (Passenger)

Packing instruction (passenger aircraft)	:	355
Packing instruction (LQ)	:	Y344
Packing group	:	III
Labels	:	Flammable Liquids

14.5 Environmental hazards

ADN
Environmentally hazardous : no

ADR
Environmentally hazardous : no

RID
Environmentally hazardous : no

IMDG
Marine pollutant : no

14.6 Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

14.7 Maritime transport in bulk according to IMO instruments

Not applicable for product as supplied.

SECTION 15: Regulatory information

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

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII)	:	Conditions of restriction for the following entries should be considered: Number on list 75, 3 If you intend to use this product as tattoo ink, please contact your vendor.
REACH - Candidate List of Substances of Very High Concern for Authorization (Article 59).	:	Not applicable
Regulation (EC) No 1005/2009 on substances that deplete the ozone layer	:	Not applicable
Regulation (EU) 2019/1021 on persistent organic pollutants (recast)	:	Not applicable
REACH - List of substances subject to authorisation (Annex XIV)	:	Not applicable

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.	P5c	FLAMMABLE LIQUIDS

Water hazard class (Germa- : WGK 1 slightly water endangering

ny) Classification according to AwSV, Annex 1 (5.2)

Other regulations:

Take note of Law on the protection of mothers at work, in education and in studies (Maternity Protection Act - MuSchG).

Take note of Directive 94/33/EC on the protection of young people at work or stricter national regulations, where applicable.

15.2 Chemical Safety Assessment

A chemical safety assessment according to (EC) regulation 1907/2006 (REACH) has not been carried out for this product.

SECTION 16: Other information

Full text of H-Statements

H226	:	Flammable liquid and vapor.
H302	:	Harmful if swallowed.
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.
EUH066	:	Repeated exposure may cause skin dryness or cracking.

Full text of other abbreviations

Acute Tox.	:	Acute toxicity
Eye Irrit.	:	Eye irritation
Flam. Liq.	:	Flammable liquids
Resp. Sens.	:	Respiratory sensitization
Skin Irrit.	:	Skin irritation
Skin Sens.	:	Skin sensitization
STOT SE	:	Specific target organ toxicity - single exposure
2000/39/EC	:	Europe. Commission Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values
2019/1831/EU	:	Europe. Commission Directive 2019/1831/EU establishing a fifth list of indicative occupational exposure limit values
DE DFG BAT	:	Germany. MAK BAT Annex XIII
DE DFG MAK	:	Germany. MAK BAT Annex IIa
DE TRGS 900	:	Germany. TRGS 900 - Occupational exposure limit values.
TRGS 430	:	Germany. TRGS 430 - Isocyanates
TRGS 903	:	c - Biological limit values
2000/39/EC / TWA	:	Limit Value - eight hours
2000/39/EC / STEL	:	Short term exposure limit
2019/1831/EU / TWA	:	Limit Value - eight hours
2019/1831/EU / STEL	:	Short term exposure limit

DE DFG MAK / Mow	:	Momentary value
DE DFG MAK / MAK	:	MAK value
DE TRGS 900 / AGW	:	Time Weighted Average
TRGS 430 / AGW	:	Occupational Exposure Limit

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - substance of very high concern; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

Further information

Training advice	:	Provide adequate information, instruction and training for operators.

Classification of the mixture:		**Classification procedure:**
Flam. Liq. 3	H226	Based on product data or assessment
Acute Tox. 4	H332	Calculation method
Skin Sens. 1	H317	Calculation method
STOT SE 3	H336	Calculation method
STOT SE 3	H335	Calculation method

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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