

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Carsystem 2K Hardener Air Plus

Version		Revision Date:	Date of last issue: 12.10.2023
3.0	DE / EN	08.11.2023	Date of first issue: 18.07.2022

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

1.1 Product identifier

Trade name : Carsystem 2K Hardener Air Plus
Product code : 152.419

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

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SECTION 2: Hazards identification



2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Flammable liquids, Category 2	H225: Highly flammable liquid and vapor.
Eye irritation, Category 2	H319: Causes serious eye irritation.
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.

2.2 Label elements

Labeling (REGULATION (EC) No 1272/2008)

Hazard pictograms	:	 
Signal Word	:	Danger
Hazard Statements	:	H225 Highly flammable liquid and vapor. H317 May cause an allergic skin reaction. H319 Causes serious eye 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.

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Hazardous ingredients which must be listed on the label:

n-butyl acetate
Hexamethylene-di-isocyanate, polymer
aromatic polyisocyanate
4-isocyanatosulphonyltoluene
m-tolylidene diisocyanate

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

Components

Chemical name	CAS-No. EC-No. Index-No. Registration number	Classification	Concentration (% w/w)
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	>= 25 - <= 50
2-methoxy-1-methylethyl acetate	108-65-6 203-603-9 607-195-00-7 01-2119475791-29	Flam. Liq. 3; H226 STOT SE 3; H336 (Central nervous system)	>= 10 - < 20
Hexamethylene-di-isocyanate, polymer	28182-81-2 500-060-2 01-2119485796-17	Acute Tox. 4; H332 Skin Sens. 1; H317 STOT SE 3; H335 (Respiratory system)	>= 10 - < 20

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		Acute toxicity estimate Acute inhalation toxicity (dust/mist): 1,5 mg/l	
aromatic polyisocyanate	53317-61-6 500-120-8	Eye Irrit. 2; H319 Skin Sens. 1B; H317 specific concentration limit Skin Sens. 1B 1 % Acute toxicity estimate Acute oral toxicity: > 2.000 mg/kg Acute inhalation toxicity (dust/mist): > 5 mg/l Acute dermal toxicity: > 2.000 mg/kg	>= 10 - < 20
ethyl acetate	141-78-6 205-500-4 607-022-00-5 01-2119475103-46	Flam. Liq. 2; H225 Eye Irrit. 2; H319 STOT SE 3; H336 (Central nervous system) EUH066	>= 1 - <= 7,5
4-isocyanatosulphonyltoluene	4083-64-1 223-810-8 615-012-00-7 01-2119980050-47	Skin Irrit. 2; H315 Eye Irrit. 2; H319 Resp. Sens. 1; H334 STOT SE 3; H335 (Respiratory system) EUH014 specific concentration limit Eye Irrit. 2; H319 >= 5 % STOT SE 3; H335 >= 5 % Skin Irrit. 2; H315 >= 5 %	>= 0,1 - < 1
m-tolyldiene diisocyanate	26471-62-5 247-722-4 615-006-00-4 01-2119454791-34	Acute Tox. 2; H330 Skin Irrit. 2; H315 Eye Irrit. 2; H319 Resp. Sens. 1; H334	>= 0,01 - < 0,05

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		Skin Sens. 1; H317 Carc. 2; H351 STOT SE 3; H335 (Respiratory system) Aquatic Chronic 3; H412	
		specific concentration limit Resp. Sens. 1; H334 >= 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 : 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.
Causes serious eye irritation.

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May cause drowsiness or dizziness.
Repeated exposure may cause skin dryness or cracking.

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
Sand
Alcohol-resistant foam

Unsuitable extinguishing media : Water
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.

Vapors may form explosive mixtures with air.

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

In the event of fire and/or explosion do not breathe fumes.

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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.

Do not flush with water.

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 vapors, 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 : Vapors may form explosive mixture with air. Vapors are heavier than air and may spread along floors. Use explosion-proof equipment. No sparking tools should be used. Take measures to prevent the build up of electrostatic charge. Keep away

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from open flames, hot surfaces and sources of ignition.

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.

Keep away from direct sunlight. Keep away from heat and sources of ignition.

Advice on common storage : Keep away from food and drink. Incompatible with oxidizing agents.

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	AGW	62 ppm 300 mg/m ³	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		
		STEL	150 ppm 723 mg/m ³	2019/1831/EU
		Further information: Indicative		
		TWA	50 ppm 241 mg/m ³	2019/1831/EU
		Further information: Indicative		
2-methoxy-1-methylethyl acetate	108-65-6	STEL	100 ppm 550 mg/m ³	2000/39/EC

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	Further information: Identifies the possibility of significant uptake through the skin, Indicative			
		TWA	50 ppm 275 mg/m ³	2000/39/EC
	Further information: Identifies the possibility of significant uptake through the skin, Indicative			
		AGW	50 ppm 270 mg/m ³	DE TRGS 900
	Peak-limit category: 1;(l)			
	Further information: When there is compliance with the OEL and biological tolerance values, there is no risk of harming the unborn child			
ethyl acetate	141-78-6	STEL	400 ppm 1.468 mg/m ³	2017/164/EU
	Further information: Indicative			
		TWA	200 ppm 734 mg/m ³	2017/164/EU
	Further information: Indicative			
		AGW	200 ppm 730 mg/m ³	DE TRGS 900
	Peak-limit category: 2;(l)			
	Further information: When there is compliance with the OEL and biological tolerance values, there is no risk of harming the unborn child			
m-tolylidene diisocyanate	26471-62-5	AGW	0,005 ppm 0,035 mg/m ³	TRGS 430
	Peak-limit category: 1;=4=(l)			
	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/m ³	DE TRGS 900
	Peak-limit category: 1;=4=(l)			
	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			

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

Substance name	End Use	Routes of exposure	Potential health effects	Value
n-butyl acetate	Workers	Inhalation	Long-term systemic effects, Long-term local effects	300 mg/m ³
	Workers	Inhalation	Acute systemic effects	600 mg/m ³
	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/m ³
	Consumers	Inhalation	Acute systemic effects	300 mg/m ³

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	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
2-methoxy-1-methylethyl acetate	Workers	Inhalation	Long-term systemic effects	275 mg/m ³
	Workers	Skin contact	Long-term systemic effects	796 mg/kg bw/day
	Consumers	Inhalation	Long-term systemic effects	33 mg/m ³
	Consumers	Skin contact	Long-term systemic effects	320 mg/kg bw/day
	Consumers	Oral	Long-term systemic effects	36 mg/kg bw/day
Hexamethylene-diisocyanate, polymer	Workers	Inhalation	Long-term local effects	0,5 mg/m ³
	Workers	Inhalation	Acute local effects	1 mg/m ³
ethyl acetate	Workers	Inhalation	Long-term systemic effects, Long-term local effects	734 mg/m ³
	Workers	Inhalation	Acute systemic effects, Acute local effects	1468 mg/m ³
	Workers	Skin contact	Long-term systemic effects	63 mg/kg bw/day
	Consumers	Inhalation	Long-term systemic effects, Long-term local effects	367 mg/m ³
	Consumers	Inhalation	Acute systemic effects, Acute local effects	734 mg/m ³
	Consumers	Skin contact	Long-term systemic effects	37 mg/kg bw/day
	Consumers	Ingestion	Long-term systemic effects	4,5 mg/kg bw/day
4-isocyanatosulphonyltoluene	Workers	Inhalation	Long-term systemic effects	3,24 mg/m ³
	Workers	Skin contact	Long-term systemic effects	0,92 mg/kg
	Consumers	Inhalation	Long-term systemic effects	0,8 mg/m ³
	Consumers	Skin contact	Long-term systemic effects	0,46 mg/kg
	Consumers	Oral	Long-term systemic effects	0,46 mg/kg

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

Substance name	Environmental Compartment	Value
n-butyl acetate	Fresh water	0,18 mg/l

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	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.)
2-methoxy-1-methylethyl acetate	Fresh water	0,635 mg/l
	Sea water	0,064 mg/l
	Sewage treatment plant (STP)	100 mg/l
	Fresh water sediment	3,29 mg/kg dry weight (d.w.)
	Sea sediment	0,329 mg/kg dry weight (d.w.)
	Soil	0,29 mg/kg dry weight (d.w.)
Hexamethylene-di-isocyanate, polymer	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
ethyl acetate	Fresh water	0,24 mg/l
	Sea water	0,024 mg/l
	Fresh water sediment	1,15 mg/kg dry weight (d.w.)
	Sea sediment	0,115 mg/kg dry weight (d.w.)
	Sewage treatment plant (STP)	650 mg/l
	Soil	0,148 mg/kg dry weight (d.w.)
	Oral (Secondary Poisoning)	200 mg/kg food
4-isocyanatosulphonyltoluene	Fresh water	0,03 mg/l
	Sea water	0,003 mg/l
	Sewage treatment plant (STP)	0,4 mg/l
	Fresh water sediment	0,172 mg/kg
	Sea sediment	0,017 mg/kg

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

Material : PVA

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Break through time : > 480 min
Glove thickness : $\geq 0,7$ 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.
When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
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.

In case of insufficient ventilation, wear suitable respiratory equipment.
Avoid contact with the skin and the eyes.
Do not breathe vapors or spray mist.
When using do not eat, drink or smoke.

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
Odor : characteristic

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Melting point/freezing point	:	not determined
Boiling point/boiling range	:	77 °C
Upper explosion limit / Upper flammability limit	:	15 %(V)
Lower explosion limit / Lower flammability limit	:	1,2 %(V)
Flash point	:	< 23 °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., Decomposition
Partition coefficient: n-octanol/water	:	not determined
Vapor pressure	:	98 hPa (20 °C) 55 hPa (50 °C)
Density	:	0,99 - 1,02 g/cm ³ (20 °C)

9.2 Other information

Explosives	:	Not explosive In use, may form flammable/explosive vapor-air mixture.
Flammability (liquids)	:	Flammable
Self-ignition	:	not auto-flammable

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

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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.
Incompatible with oxidizing agents.
Incompatible with strong acids and bases.
Vapors may form explosive mixture with air.

10.4 Conditions to avoid

Conditions to avoid : Avoid moisture.

Extremes of temperature and direct sunlight.

10.5 Incompatible materials

Materials to avoid : Amines
Alcohols
Acids and bases
Water

Oxidizing agents

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 (NO_x)
Isocyanates

SECTION 11: Toxicological information

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

Acute toxicity

Not classified based on available information.

Product:

Acute inhalation toxicity : Acute toxicity estimate: > 5 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Calculation method

Components:

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

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

2-methoxy-1-methylethyl acetate:

Acute oral toxicity : LD50 Oral (Rat): 6.190 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity : Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 Dermal (Rabbit): > 5.000 mg/kg
Method: OECD Test Guideline 402

Hexamethylene-di-isocyanate, polymer:

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

LC50 (Rat): 0,39 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403

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

aromatic polyisocyanate:

Acute oral toxicity : Acute toxicity estimate: > 2.000 mg/kg
Method: Acute toxicity estimate according to Regulation (EC) No. 1272/2008

Acute inhalation toxicity : Acute toxicity estimate: > 5 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Acute toxicity estimate according to Regulation (EC) No. 1272/2008

Acute dermal toxicity : Acute toxicity estimate: > 2.000 mg/kg
Method: Acute toxicity estimate according to Regulation (EC) No. 1272/2008

ethyl acetate:

Acute oral toxicity : LD50 Oral (Rat): 4.934 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC0 (Rat): 22,5 mg/l, > 6000 ppm

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Exposure time: 6 h
Test atmosphere: vapor
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 Dermal (Rabbit): > 20.000 mg/kg

4-isocyanatosulphonyltoluene:

Acute oral toxicity : LD50 Oral (Rat): 2.330 mg/kg
Method: OECD Test Guideline 401

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

m-tolyldiene diisocyanate:

Acute oral toxicity : LD50 Oral (Rat): 5.110 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC50: 66 ppm
Exposure time: 1 h
Test atmosphere: vapor
Method: OECD Test Guideline 403

Acute dermal toxicity : LD50 Dermal (Rabbit): > 9.400 mg/kg
Method: OECD Test Guideline 402

Skin corrosion/irritation

Repeated exposure may cause skin dryness or cracking.

Components:

Hexamethylene-di-isocyanate, polymer:

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

m-tolyldiene diisocyanate:

Result : Skin irritation

Serious eye damage/eye irritation

Causes serious eye irritation.

Components:

Hexamethylene-di-isocyanate, polymer:

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

aromatic polyisocyanate:

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Result : Moderate eye irritation

m-tolyldiene diisocyanate:

Result : Risk of serious damage to eyes.

Respiratory or skin sensitization

Skin sensitization

May cause an allergic skin reaction.

Respiratory sensitization

Not classified based on available information.

Components:

Hexamethylene-di-isocyanate, polymer:

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

aromatic polyisocyanate:

Routes of exposure : Skin contact
Assessment : The product is a skin sensitizer, sub-category 1B.

m-tolyldiene diisocyanate:

Assessment : May cause sensitization by inhalation.
Result : May cause sensitization by skin contact.

Germ cell mutagenicity

Not classified based on available information.

Components:

Hexamethylene-di-isocyanate, polymer:

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 based on available information.

Components:

m-tolyldiene diisocyanate:

Carcinogenicity - Assessment : Limited evidence of a carcinogenic effect.

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Reproductive toxicity

Not classified based on available information.

STOT-single exposure

May cause drowsiness or dizziness.

Components:

2-methoxy-1-methylethyl acetate:

Routes of exposure : Oral
Target Organs : Central nervous system
Assessment : May cause drowsiness or dizziness.

Hexamethylene-di-isocyanate, polymer:

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

m-tolyldiene diisocyanate:

Assessment : May cause respiratory irritation.

STOT-repeated exposure

Not classified based on available information.

Repeated dose toxicity

Components:

Hexamethylene-di-isocyanate, polymer:

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 based on available information.

Components:

m-tolyldiene diisocyanate:

No aspiration toxicity classification

11.2 Information on other hazards

Endocrine disrupting properties

Product:

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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:

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

2-methoxy-1-methylethyl acetate:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 130 mg/l
Exposure time: 96 h
Test Type: static test
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 500 mg/l
Exposure time: 48 h
Test Type: static test
Method: Regulation (EC) No. 440/2008, Annex, C.2

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): > 1.000 mg/l
Exposure time: 96 h
Test Type: static test
Method: OECD Test Guideline 201

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Toxicity to fish (Chronic toxicity) : NOEC: 47,5 mg/l
Exposure time: 14 d
Species: *Oryzias latipes* (Orange-red killifish)
Method: OECD Test Guideline 204

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: \geq 100 mg/l
Exposure time: 21 d
Species: *Daphnia magna* (Water flea)
Method: OECD Test Guideline 211

Hexamethylene-di-isocyanate, polymer:

Toxicity to fish : LC0 (*Danio rerio* (zebra fish)): \geq 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)): \geq 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

ethyl acetate:

Toxicity to fish : LC50 (*Pimephales promelas* (fathead minnow)): 230 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (*Daphnia magna* (Water flea)): 610 mg/l
Exposure time: 48 h

Toxicity to algae/aquatic plants : NOEC (*Desmodesmus subspicatus* (green algae)): $>$ 100 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

Toxicity to microorganisms : NOEC (*Pseudomonas putida*): 650 mg/l
Exposure time: 16 h

Toxicity to fish (Chronic toxicity) : NOEC: $>$ 9,65 mg/l
Exposure time: 32 d
Species: *Pimephales promelas* (fathead minnow)
Method: OECD Test Guideline 210

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 2,4 mg/l
Exposure time: 21 d
Species: *Daphnia magna* (Water flea)
Method: OECD Test Guideline 211

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4-isocyanatosulphonyltoluene:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 45 mg/l
End point: mortality
Exposure time: 96 h
Method: OECD Test Guideline 203

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

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): 30 mg/l
End point: Growth rate
Exposure time: 72 h
Method: OECD Test Guideline 201

Ecotoxicology Assessment

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

m-tolylidene diisocyanate:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 133 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 12,5 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

Ecotoxicology Assessment

Chronic aquatic toxicity : Harmful to aquatic life with long lasting effects.

12.2 Persistence and degradability

Components:

n-butyl acetate:

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

2-methoxy-1-methylethyl acetate:

Biodegradability : Result: Readily biodegradable.
Biodegradation: 90 %
Exposure time: 28 d
Method: OECD Test Guideline 301F

Hexamethylene-di-isocyanate, polymer:

Biodegradability : Result: Not rapidly biodegradable
Biodegradation: 2 %
Exposure time: 28 d

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Method: Regulation (EC) No. 440/2008, Annex, C.4-E

ethyl acetate:

Biodegradability : Result: Readily biodegradable.
Biodegradation: 79 %
Related to: Biochemical oxygen demand
Exposure time: 20 d
Method: OECD Test Guideline 301D

4-isocyanatosulphonyltoluene:

Biodegradability : Biodegradation: 86 %
Exposure time: 28 d
Method: OECD Test Guideline 301D

m-tolyldiene diisocyanate:

Biodegradability : Result: Not readily biodegradable.

12.3 Bioaccumulative potential

Components:

n-butyl acetate:

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

2-methoxy-1-methylethyl acetate:

Partition coefficient: n-
octanol/water : log Pow: 1,2 (20 °C)
pH: 6,8
Method: OECD Test Guideline 117

Hexamethylene-di-isocyanate, polymer:

Bioaccumulation : Bioconcentration factor (BCF): 706

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

ethyl acetate:

Partition coefficient: n-
octanol/water : log Pow: 0,68 (25 °C)

4-isocyanatosulphonyltoluene:

Partition coefficient: n-
octanol/water : log Pow: 0,6

m-tolyldiene diisocyanate:

Partition coefficient: n-
octanol/water : log Pow: 3,43 (22 °C)
pH: 7

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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.
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

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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 : II
Classification Code : F1
Hazard Identification Number : 33
Labels : 3

ADR
Packing group : II
Classification Code : F1
Hazard Identification Number : 33
Labels : 3
Tunnel restriction code : (D/E)

RID
Packing group : II
Classification Code : F1
Hazard Identification Number : 33
Labels : 3

IMDG

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

IATA (Cargo)

Packing instruction (cargo aircraft) : 364
Packing instruction (LQ) : Y341
Packing group : II
Labels : Flammable Liquids

IATA (Passenger)

Packing instruction (passenger aircraft) : 353
Packing instruction (LQ) : Y341
Packing group : II
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 : Not applicable

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Concern for Authorization (Article 59).

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 (Germany) : WGK 1 slightly water endangering
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

H225	: Highly flammable liquid and vapor.
H226	: Flammable liquid and vapor.
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.
H351	: Suspected of causing cancer.
H412	: Harmful to aquatic life with long lasting effects.
EUH014	: Reacts violently with water.
EUH066	: Repeated exposure may cause skin dryness or cracking.

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Full text of other abbreviations

Acute Tox.	: Acute toxicity
Aquatic Chronic	: Long-term (chronic) aquatic hazard
Carc.	: Carcinogenicity
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
2017/164/EU	: Europe. Commission Directive 2017/164/EU establishing a fourth 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 TRGS 900	: Germany. TRGS 900 - Occupational exposure limit values.
TRGS 430	: Germany. TRGS 430 - Isocyanates
2000/39/EC / TWA	: Limit Value - eight hours
2000/39/EC / STEL	: Short term exposure limit
2017/164/EU / STEL	: Short term exposure limit
2017/164/EU / TWA	: Limit Value - eight hours
2019/1831/EU / TWA	: Limit Value - eight hours
2019/1831/EU / STEL	: Short term exposure limit
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

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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:

Flam. Liq. 2	H225
Eye Irrit. 2	H319
Skin Sens. 1	H317
STOT SE 3	H336

Classification procedure:

Based on product data or assessment
Calculation method
Calculation method
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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