



Safety data sheet

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 PRODUCT IDENTIFIER

Product name

MITOPUR E45

UFI:

AT1E-4KVF-111G-S8JJ



<https://my.chemius.net/p/MqiKje/en/pd/en>

1.2 RELEVANT IDENTIFIED USES OF THE SUBSTANCE OR MIXTURE AND USES ADVISED AGAINST

Relevant identified uses

One-component adhesive / primer / sealant for industrial, professional and consumer end-use.

Uses advised against

Application with spray is not allowed for general public.

1.3 DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

Manufacturer

MITOL, tovarna lepil, d.o.o., Sežana
Partizanska c. 78
6210 Sežana, Slovenia
+386 5 73 12 300 (8:00-16:00)
lilijana.kocjan@mitol.si

1.4 EMERGENCY TELEPHONE NUMBER

Emergency

112

Manufacturer

+386 5 73 12 300 (8:00-16:00)

SECTION 2: HAZARDS IDENTIFICATION

2.1 CLASSIFICATION OF THE SUBSTANCE OR MIXTURE

Classification according to Regulation (EC) No 1272/2008 (CLP)

Skin Irrit. 2; H315 Causes skin irritation.
Skin Sens. 1; H317 May cause an allergic skin reaction.
Eye Irrit. 2; H319 Causes serious eye irritation.
Acute Tox. 4; H332 Harmful if inhaled.
Resp. Sens. 1; H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
STOT SE 3; H335 May cause respiratory irritation.
Carc. 2; H351 Suspected of causing cancer.
STOT RE 2; H373 May cause damage to organs through prolonged or repeated exposure.
Aquatic Chronic 3; H412 Harmful to aquatic life with long lasting effects.

2.2 LABEL ELEMENTS

Labelling according to Regulation (EC) No 1272/2008 [CLP]



Signal word: DANGER

H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H332 Harmful if inhaled.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335 May cause respiratory irritation.
H351 Suspected of causing cancer.
H373 May cause damage to organs through prolonged or repeated exposure.
H412 Harmful to aquatic life with long lasting effects.
P102 Keep out of reach of children.
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P273 Avoid release to the environment.
P280 Wear protective gloves/eye protection/face protection.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P501 Dispose of contents/container in accordance with national regulation.



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Contains:

Aromatic Polyisocyanate-Prepolymer
diphenylmethane diisocyanate, isomers and homologues
diphenylmethane-2,4'-diisocyanate
'4,4'-methylenediphenyl diisocyanate

Special provisions

Persons already sensitised 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. This product should not be used under conditions of poor ventilation unless a protective mask with an appropriate gas filter (i.e. type A1 according to standard EN 14387) is used.

As from 24 August 2023 adequate training is required before industrial or professional use.

2.3 OTHER HAZARDS

PBT/vPvB

No information.

Endocrine disrupting properties

No information.

Additional information

Persons who have problems with sensitivity of the airways (asthma, chronic bronchitis), should avoid contact with the product.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 SUBSTANCES

For mixtures see 3.2.

3.2 MIXTURES

Name	CAS EC Index Reach	%	Classification according to Regulation (EC) No 1272/2008 (CLP)	Specific Conc. Limits	Notes for substances
Aromatic Polyisocyanate-Prepolymer	67815-87-6 - -	40-60	Skin Irrit. 2; H315 Skin Sens. 1; H317 Eye Irrit. 2; H319 Acute Tox. 4; H332 Resp. Sens. 1; H334 STOT SE 3; H335 STOT RE 2; H373	/	/
diphenylmethane diisocyanate, isomers and homologues	9016-87-9 618-498-9 615-005-00-9	30-40	Skin Irrit. 2; H315 Skin Sens. 1; H317 Eye Irrit. 2; H319 Acute Tox. 4; H332 Resp. Sens. 1; H334 STOT SE 3; H335 Carc. 2; H351 STOT RE 2; H373	/	/



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Name	CAS EC Index Reach	%	Classification according to Regulation (EC) No 1272/2008 (CLP)	Specific Conc. Limits	Notes for substances
diphenylmethane-2,4'-diisocyanate	5873-54-1 227-534-9 615-005-00-9 01-2119480143-45	2,5-5	Skin Irrit. 2; H315 Skin Sens. 1; H317 Eye Irrit. 2; H319 Acute Tox. 4; H332 Resp. Sens. 1; H334 STOT SE 3; H335 Carc. 2; H351 STOT RE 2; H373	Skin Irrit. 2; H315; C ≥ 5% Eye Irrit. 2; H319; C ≥ 5% Resp. Sens. 1; H334; C ≥ 0.1% STOT SE 3; H335; C ≥ 5%	C
'4,4'-methylenediphenyl diisocyanate	101-68-8 202-966-0 615-005-00-9 01-2119457014-47	2,5-5	Skin Irrit. 2; H315 Skin Sens. 1; H317 Eye Irrit. 2; H319 Acute Tox. 4; H332 Resp. Sens. 1; H334 STOT SE 3; H335 Carc. 2; H351 STOT RE 2; H373	Skin Irrit. 2; H315; C ≥ 5% Eye Irrit. 2; H319; C ≥ 5% Resp. Sens. 1; H334; C ≥ 0.1% STOT SE 3; H335; C ≥ 5%	C
bis(isopropyl)naphthalene	38640-62-9 254-052-6 - 01-2119565150-48	<0,9	Asp. Tox. 1; H304 Aquatic Chronic 1; H410; M = 1	/	/
'2,2'-methylenediphenyl diisocyanate	2536-05-2 219-799-4 615-005-00-9 01-2119927323-43	<0,1	Skin Irrit. 2; H315 Skin Sens. 1; H317 Eye Irrit. 2; H319 Acute Tox. 4; H332 Resp. Sens. 1; H334 STOT SE 3; H335 Carc. 2; H351 STOT RE 2; H373	Skin Irrit. 2; H315; C ≥ 5% Eye Irrit. 2; H319; C ≥ 5% Resp. Sens. 1; H334; C ≥ 0.1% STOT SE 3; H335; C ≥ 5%	C

Notes for substances

C	<p>Some organic substances may be marketed either in a specific isomeric form or as a mixture of several isomers.</p> <p>In this case the supplier must state on the label whether the substance is a specific isomer or a mixture of isomers.</p>
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Product description

Polyisocyanate based on diphenylmethane diisocyanate.

SECTION 4: FIRST AID MEASURES

4.1 DESCRIPTION OF FIRST AID MEASURES

General notes



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Never give anything by mouth to an unconscious person. Place patient in recovery position and ensure airway patency.

Following inhalation

Remove patient to fresh air - move out of dangerous area. If symptoms occur, seek medical advice.

Following skin contact

Immediately remove contaminated clothing. Wash affected skin areas immediately with plenty of water and soap. If possible, rinse with polyethylene glycol 400 and plenty of water. If symptoms persist, seek medical attention.

Following eye contact

Immediately flush eyes with running water, keeping eyelids apart. Seek medical help.

Following ingestion

Do not induce vomiting! Consult a physician. Show the physician the safety data sheet or label.

4.2 MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED

Following inhalation

Harmful. Can cause sensitization. Coughing, sneezing, nasal discharge, labored breathing.

Following skin contact

Causes irritation of mucous membrane. May cause sensitisation by skin contact (symptoms: itching, redness, rashes).

Following eye contact

Redness, tearing, pain.

Following ingestion

Irritates mucous membranes in the mouth, throat, esophagus and in gastrointestinal area.

4.3 INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED

Product is irritating to the respiratory tract and may cause skin and respiratory tract sensitization. Treatment of acute irritation or narrowing of the bronchial tubes is carried out mainly symptomatic. Depending on the degree of exposure and severity of symptoms additional treatment may be required.

SECTION 5: FIREFIGHTING MEASURES

5.1 EXTINGUISHING MEDIA

Suitable extinguishing media

Carbon dioxide (CO₂).
Foam.
Fire extinguishing powder. Fight larger fires with water spray.

Unsuitable extinguishing media

Full water jet.

5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE

Hazardous combustion products

In the event of fire the following can be generated: carbon monoxide (CO), carbon dioxide (CO₂). In the event of fire the following is released: nitrogen oxides (NO_x).
Vapours of Isocyanates.
Hydrogen cyanide (HCN).

5.3 ADVICE FOR FIREFIGHTERS

Protective actions

In case of fire or heating do not breathe fumes/vapours. Cool containers at risk with water spray. If possible remove containers from endangered area.

Special protective equipment for fire-fighters

Firefighters should wear appropriate protective clothing for firefighters (including helmets, protective boots and gloves) (EN 469) and self-contained breathing apparatus (SCBA) with a full face-piece (EN 137).

Additional information

Contaminated firefighting water must be disposed of in accordance with the regulations; do not allow to reach the sewage system. Contaminated firefighting water and fire residues must be disposed of in accordance with the local regulations.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

For non-emergency personnel

Protective equipment

Use personal protective equipment (Section 8).

Precautionary measures

Ensure adequate ventilation. Keep away from sources of ignition and/or heat; No smoking!

Emergency procedures

Prevent access to unauthorised personnel.



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For emergency responders

No information.

6.2 ENVIRONMENTAL PRECAUTIONS

Do not allow product to reach water/drains/sewage systems or permeable soil. If accidental large entry into water or ground occurs, inform responsible authorities.

6.3 METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP

For containment

No information.

For cleaning up

Remove mechanically; cover residues with wet material (eg. sawdust, chemical binder based on calcium silicate hydrate, sand). After approx. one hour collect in a waste container, which should not be closed (CO₂ formation!). Keep wet in a safe ventilated area. Spillage area can be decontaminated with a solution for neutralization. The solution for decontamination (not flammable): 5% of sodium carbonate and 95% water. You can also use: yellow liquid soap (potassium soap with approx. 15% anionic surfactants): 20 ml + Water 700 ml + PEG 400: 350 ml.

OTHER INFORMATION

No information.

6.4 REFERENCE TO OTHER SECTIONS

See also sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

7.1 PRECAUTIONS FOR SAFE HANDLING

Protective measures

Measures to prevent fire

Ensure adequate ventilation. Keep away from sources of ignition - no smoking.

Measures to prevent aerosol and dust generation

Use general or local exhaust ventilation to prevent inhaling vapours and aerosols.

Measures to protect the environment

No information.

Other measures

No information.

Advice on general occupational hygiene

Use good personal hygiene practices – wash hands at breaks and when done working with material. Do not eat, drink or smoke while working. Avoid contact with skin and eyes. Do not breathe vapours/mist. Remove contaminated clothes and wash them before reuse. Keep working clothes separate from ordinary clothes.

7.2 CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

Technical measures and storage conditions

Keep in cool and well ventilated area. Protect from open fire, heat and direct sunlight. Keep away from food, drink and animal feeding stuffs. Keep in a dry place. Keep in tightly closed container.

Packaging materials

No information.

Requirements for storage rooms and vessels

No information.

Storage class

No information.

Further information on storage conditions

No information.

7.3 SPECIFIC END USE(S)

Recommendations

No information.

Industrial sector specific solutions

No information.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 CONTROL PARAMETERS

Occupational Exposure limit values



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Name	mg/m ³	ml/m ³	Short-term value mg/m ³	Short-term value ml/m ³	Remark	Biological Tolerance Values
'4,4'-methylene-diphenyl-diisocyanate	0.07	/	/	/	STEL, EH40/2005 WELs (United Kingdom (UK), 8/2007). Skin sensitizer. (as NCO) 15 minute(s).	/
'4,4'-methylene-diphenyl-diisocyanate	0.05	/	/	/	TWA	/
'4,4'-methylene-diphenyl-diisocyanate	0.02	/	/	/	TWA, EH40/2005 WELs (United Kingdom (UK), 8/2007). Skin sensitizer. (as NCO) 8 hour(s).	/

Information on monitoring procedures

BS EN 14042:2003 Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents. BS EN 689:2018 Workplace exposure. Measurement of exposure by inhalation to chemical agents. Strategy for testing compliance with occupational exposure limit values. BS EN 482:2021 Workplace exposure. Procedures for the determination of the concentration of chemical agents. Basic performance requirements.

DNEL/DMEL values

For product

No information.

For components

Name	Type	Exposure route	exp. frequency	Remark	value
diphenylmethane-2,4'-diisocyanate	Worker	dermal	short term local effects	/	28.7 mg/cm ²
diphenylmethane-2,4'-diisocyanate	Worker	dermal	short term systemic effects	mg/kg per day	50 mg/kg
diphenylmethane-2,4'-diisocyanate	Worker	inhalation	long term local effects	/	0.05 mg/m ³
diphenylmethane-2,4'-diisocyanate	Worker	inhalation	long term systemic effects	/	0.05 mg/m ³
diphenylmethane-2,4'-diisocyanate	Worker	inhalation	short term local effects	/	0.1 mg/m ³
diphenylmethane-2,4'-diisocyanate	Worker	inhalation	short term systemic effects	/	0.1 mg/m ³
diphenylmethane-2,4'-diisocyanate	Consumer	dermal	short term systemic effects	/	25 mg/kg bw/day



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Name	Type	Exposure route	exp. frequency	Remark	value
diphenylmethan e-2,4'- diisocyanate	Consumer	inhalation	short term systemic effects	/	0.05 mg/m ³
diphenylmethan e-2,4'- diisocyanate	Consumer	oral	short term systemic effects	/	20 mg/kg bw/day
diphenylmethan e-2,4'- diisocyanate	Consumer	dermal	short term local effects	/	17.2 mg/cm ²
diphenylmethan e-2,4'- diisocyanate	Consumer	inhalation	short term local effects	/	0.05 mg/m ³
diphenylmethan e-2,4'- diisocyanate	Consumer	inhalation	long term systemic effects	/	0.025 mg/m ³
diphenylmethan e-2,4'- diisocyanate	Consumer	inhalation	long term local effects	/	0.025 mg/m ³
'4,4'- methylenediphe nyl diisocyanate	Worker	dermal	short term systemic effects	24 h	50 mg/kg
'4,4'- methylenediphe nyl diisocyanate	Worker	inhalation	short term systemic effects	/	0.1 mg/m ³
'4,4'- methylenediphe nyl diisocyanate	Worker	dermal	short term systemic effects	/	28.7 mg/cm ²
'4,4'- methylenediphe nyl diisocyanate	Worker	inhalation	short term systemic effects	/	0.1 mg/m ³
'4,4'- methylenediphe nyl diisocyanate	Worker	inhalation	long term systemic effects	/	0.05 mg/m ³
'4,4'- methylenediphe nyl diisocyanate	Worker	inhalation	long term systemic effects	/	0.05 mg/m ³
'4,4'- methylenediphe nyl diisocyanate	Consumer	dermal	short term systemic effects	mg/kg per day	25 mg/kg
'4,4'- methylenediphe nyl diisocyanate	Consumer	inhalation	short term systemic effects	/	0.05 mg/m ³
'4,4'- methylenediphe nyl diisocyanate	Consumer	oral	short term systemic effects	mg/kg per day	20 mg/kg
'4,4'- methylenediphe nyl diisocyanate	Consumer	dermal	short term local effects	/	17.2 mg/cm ²
'4,4'- methylenediphe nyl diisocyanate	Consumer	inhalation	short term local effects	/	0.05 mg/m ³



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Name	Type	Exposure route	exp. frequency	Remark	value
'4,4'-methylenediphenyl diisocyanate	Consumer	inhalation	long term systemic effects	systemic	0.025 mg/m ³
'4,4'-methylenediphenyl diisocyanate	Consumer	inhalation	long term local effects	/	0.025 mg/m ³
'2,2'-methylenediphenyl diisocyanate	Worker	dermal	short term local effects	/	28.7 mg/cm ²
'2,2'-methylenediphenyl diisocyanate	Worker	dermal	short term systemic effects	mg/kg per day	50 mg/kg
'2,2'-methylenediphenyl diisocyanate	Worker	inhalation	long term local effects	/	0.05 mg/m ³
'2,2'-methylenediphenyl diisocyanate	Worker	inhalation	long term systemic effects	/	0.05 mg/m ³
'2,2'-methylenediphenyl diisocyanate	Worker	inhalation	short term local effects	/	0.1 mg/m ³
'2,2'-methylenediphenyl diisocyanate	Worker	inhalation	short term systemic effects	/	0.1 mg/m ³
'2,2'-methylenediphenyl diisocyanate	Consumer	dermal	short term systemic effects	/	25 mg/kg bw/day
'2,2'-methylenediphenyl diisocyanate	Consumer	inhalation	short term systemic effects	/	0.05 mg/m ³
'2,2'-methylenediphenyl diisocyanate	Consumer	oral	short term systemic effects	/	20 mg/kg bw/day
'2,2'-methylenediphenyl diisocyanate	Consumer	dermal	short term local effects	/	17.2 mg/cm ²
'2,2'-methylenediphenyl diisocyanate	Consumer	inhalation	short term local effects	/	0.05 mg/m ³
'2,2'-methylenediphenyl diisocyanate	Consumer	inhalation	long term systemic effects	/	0.025 mg/m ³
'2,2'-methylenediphenyl diisocyanate	Consumer	inhalation	long term local effects	/	0.025 mg/m ³

PNEC values

For product

No information.

For components

Name	Exposure route	Remark	value
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Name	Exposure route	Remark	value
diphenylmethane-2,4'-diisocyanate	soil	/	1 mg/kg
diphenylmethane-2,4'-diisocyanate	fresh water	/	1 mg/L
diphenylmethane-2,4'-diisocyanate	marine water	/	0.1 mg/L
diphenylmethane-2,4'-diisocyanate	water treatment plant	/	1 mg/L
'4,4'-methylenediphenyl diisocyanate	fresh water	/	1 mg/L
'4,4'-methylenediphenyl diisocyanate	marine water	/	0.1 mg/L
'4,4'-methylenediphenyl diisocyanate	soil	/	1 mg/kg
'4,4'-methylenediphenyl diisocyanate	water, intermittent release	/	10 mg/L
'4,4'-methylenediphenyl diisocyanate	water treatment plant	/	1 mg/L
'2,2'-methylenediphenyl diisocyanate	soil	/	1 mg/kg
'2,2'-methylenediphenyl diisocyanate	fresh water	/	1 mg/L
'2,2'-methylenediphenyl diisocyanate	marine water	/	0.1 mg/L
'2,2'-methylenediphenyl diisocyanate	water treatment plant	/	1 mg/L

8.2 EXPOSURE CONTROLS

Appropriate engineering control

Substance/mixture related measures to prevent exposure during identified uses

Use good personal hygiene practices – wash hands at breaks and when done working with material. Avoid contact with eyes and skin. Do not breathe vapours/aerosols. Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke while working.

Structural measures to prevent exposure

No information.

Organisational measures to prevent exposure

No information.

Technical measures to prevent exposure

Provide good ventilation and local exhaust in areas with increased concentration.

Personal protective equipment

Eye and face protection

Safety glasses with side protection (BS EN ISO 16321-1:2022).

Hand protection

Protective gloves (BS EN ISO 374). Observe the manufacturer's instructions regarding the use, storage, maintenance and replacement of gloves. In case of damage or at the first signs of wear and tear, change the gloves immediately.

Appropriate materials

Material	Thickness	Penetration Time	Remark
chloroprene rubber	0.5 mm	480 min	BS EN ISO 374
Nitrile	0.35 mm	480 min	BS EN ISO 374
Butyl rubber	0.5 mm	480 min	BS EN ISO 374
Viton (fluorinated rubber)	0.4 mm	480 min	BS EN ISO 374

Skin protection



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Cotton protective clothing and shoes that cover the entire foot (BS EN ISO 20345:2022).

Respiratory protection

In case of insufficient ventilation wear suitable respiratory protection. Wear suitable protective breathing mask (BS EN 136) with filter A2-P2 (BS EN 14387).

Thermal hazards

No information.

Environmental exposure controls

Substance/mixture related measures to prevent exposure

No information.

Instruction measures to prevent exposure

No information.

Organisational measures to prevent exposure

No information.

Technical measures to prevent exposure

No information.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

Physical state

liquid

Colour

brown

Odour

characteristic

Important health, safety and environmental information

Odour threshold	No information.
Melting point/Freezing point	No information.
Boiling point or initial boiling point and boiling range	> 300 °C at 1013 hPa
Flammability	> 400 °C
Lower and upper explosion limit	No information.
Flash point	> 210 °C
Auto-ignition temperature	No information.
Decomposition temperature	No information.
pH	substance/mixture reacts with water
Viscosity	Dynamic: < 5500 mPas at 25 °C (DIN 53019)
Solubility	Water: insoluble
Partition coefficient	No information.
Vapour pressure	< 17 hPa at 20 °C (EG A4) < 39 hPa at 55 °C
Density and/or relative density	Density: > 1.1 g/cm ³ at 20 °C (DIN 53217)
Relative vapour density	No information.
Particle characteristics	No information.

9.2 OTHER INFORMATION

Explosive properties	No information.
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SECTION 10: STABILITY AND REACTIVITY

10.1 REACTIVITY

No information.

10.2 CHEMICAL STABILITY

Product is stable under normal conditions of use, recommended handling and storage conditions.

10.3 POSSIBILITY OF HAZARDOUS REACTIONS



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Product reacts slowly with water, releasing CO₂, which can cause overpressure in closed containers. Danger of explosion..

10.4 CONDITIONS TO AVOID

No special precautions required. Consider the directions for use and storage. Do not expose to temperatures above 200°C.

10.5 INCOMPATIBLE MATERIALS

Amines.

Alcohols. Exothermic reaction with amines and alcohols.

10.6 HAZARDOUS DECOMPOSITION PRODUCTS

Under normal use conditions no hazardous decomposition products are expected. In case of fire/explosion vapours/gases that pose a health hazard are released.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 INFORMATION ON HAZARD CLASSES AS DEFINED IN REGULATION (EC) NO 1272/2008

(a) Acute toxicity

For product

Exposure route	Type	Species	Time	value	Method	Remark
oral	LD ₅₀	rat	/	> 5000 mg/kg	/	/

For components

Name	Exposure route	Type	Species	Time	value	Method	Remark
diphenylmethane-2,4'-diisocyanate	oral	LD ₅₀	rat	/	5000 mg/kg	/	/
diphenylmethane-2,4'-diisocyanate	dermal	LD ₅₀	rabbit	/	> 9400 mg/kg	/	/
diphenylmethane-2,4'-diisocyanate	inhalation	LC ₅₀	rat	4 h	0.387 mg/l	/	vapour
'4,4'-methylene diphenyl diisocyanate	oral	LD ₅₀	rat (male)	/	> 10000 mg/kg	/	/
'4,4'-methylene diphenyl diisocyanate	dermal	LD ₅₀	rabbit	/	> 9400 mg/kg	/	/
'4,4'-methylene diphenyl diisocyanate	inhalation	LC ₅₀	rat	4 h	0.368 mg/m ³	OECD 403	/
'2,2'-methylene diphenyl diisocyanate	oral	LD ₅₀	rat	/	> 2000 mg/kg	/	/



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Name	Exposure route	Type	Species	Time	value	Method	Remark
'2,2'-methylene diisocyanate	dermal	LD ₅₀	rabbit	/	> 9400 mg/kg /	/	/
'2,2'-methylene diisocyanate	inhalation	LC ₅₀	/	4 h	0.527 mg/l	/	dust/aerosol

Additional information

Harmful if inhaled.

(b) Skin corrosion/irritation

For components

Name	Species	Time	result	Method	Remark
diphenylmethane-2,4'-diisocyanate	rabbit	/	Irritating.	OECD 404 (Acute / Dermal Irritation/Corrosion)	/
'4,4'-methylene diphenyl diisocyanate	rabbit	/	Irritating.	OECD 404	/
'2,2'-methylene diphenyl diisocyanate	rabbit	/	Mild irritating.	OECD 404 (Acute / Dermal Irritation/Corrosion)	/

Additional information

Irritating to eyes, respiratory system and skin.

(c) Serious eye damage/irritation

For components

Name	Exposure route	Species	Time	result	Method	Remark
diphenylmethane-2,4'-diisocyanate	/	rabbit	/	No irritant effect.	OECD 405 Acute Eye Irritation/Corrosion	/
'4,4'-methylene diphenyl diisocyanate	/	rabbit	/	Non-irritant.	OECD 405, GLP	/
'2,2'-methylene diphenyl diisocyanate	/	rabbit	/	Mild irritating.	OECD 405 Acute Eye Irritation/Corrosion	/

(d) Respiratory or skin sensitisation

For components



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Name	Exposure route	Species	Time	result	Method	Remark
diphenylmethane-2,4'-diisocyanate	dermal	Guinea pig (male/female)	/	Non sensitising.	OECD 406 (Skin Sensitization)	Buehler test
diphenylmethane-2,4'-diisocyanate	dermal	mouse	/	Sensitizing.	OECD 429 Skin Sensitisation: Local Lymph Node Assay	/
diphenylmethane-2,4'-diisocyanate	inhalation	guinea pig	/	Sensitizing.	/	/
'4,4'-methylenediphenyl diisocyanate	dermal	mouse	/	Sensitizing.	OECD 429 Skin Sensitisation: Local Lymph Node Assay	/
'4,4'-methylenediphenyl diisocyanate	dermal	guinea pig	/	Non sensitising.	OECD 406	/
'4,4'-methylenediphenyl diisocyanate	inhalation	guinea pig	/	Sensitizing.	/	/
'2,2'-methylenediphenyl diisocyanate	dermal	mouse	/	Sensitizing.	OECD 429 Skin Sensitisation: Local Lymph Node Assay	/
'2,2'-methylenediphenyl diisocyanate	inhalation	guinea pig	/	Sensitizing.	/	/

Additional information

May cause an allergic skin reaction. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

(e) (Germ cell) mutagenicity

For components

Name	Type	Species	Time	result	Method	Remark
'4,4'-methylenediphenyl diisocyanate	/	Bacteria	/	Negative.	EU EC B.13/14 Mutagenicity - Reverse Mutation Test using Bacteria	/
'4,4'-methylenediphenyl diisocyanate	in-vivo mutagenicity	/	/	Negative.	OECD 474	/

(f) Carcinogenicity

For components



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Name	Exposure route	Type	Species	Time	value	result	Method	Remark
'4,4'-methylene diphenyl diisocyanate	inhalation	/	rat	2 years	mg/l	Positive	OECD 453 Combined Chronic Toxicity/Carcinogenicity Studies	5 days per week

(g) Reproductive toxicity

For components

Name	Reproductive toxicity type	Type	Species	Time	value	result	Method	Remark
'4,4'-methylene diphenyl diisocyanate	Teratogenicity	NOAEL	rat (male/female)	/	12 mg/kg	/	OECD 414	Inhalation (vapour)

Summary of evaluation of the CMR properties

Suspected of causing cancer. Product is not classified as mutagenic or toxic for reproduction.

(h) STOT-single exposure

No information.

(i) STOT-repeated exposure

For components

Name	Exposure route	Type	Species	Time	Exposure organ	value	result	Method	Remark	
diphenyl methane -2,4'-diisocyanate	inhalation (aerosol)	LOAEC	rat	104 weeks	sub-chronic	Respiratory tract	1 mg/m ³	irritation	OECD 453	6 h per day, 5 days per week
diphenyl methane -2,4'-diisocyanate	inhalation (aerosol)	NOAEC	rat	104 weeks	sub-chronic	/	0.2 mg/m ³	irritation	OECD 453	6 h per day, 5 days per week
'4,4'-methylene diphenyl diisocyanate	inhalation (aerosol)	NOAEC	rat	104 weeks	sub-chronic	/	0.2 mg/m ³	irritation	OECD 453	6 h per day, 5 days per week
'4,4'-methylene diphenyl diisocyanate	inhalation (aerosol)	LOAEC	rat	104 weeks	sub-chronic	Respiratory tract	1 mg/m ³	irritation	OECD 453	6 h per day, 5 days per week
'2,2'-methylene diphenyl diisocyanate	inhalation (aerosol)	NOAEC	rat	104 weeks	sub-chronic	/	0.2 mg/m ³	irritation	OECD 453	6 h per day, 5 days per week



Safety data sheet

Name	ExposureType route	Species	Time	Exposure organ	value	result	Method	Remark
'2,2'-methylenediphenyldiisocyanate	inhalation (aerosol) LOAEC	rat	104 weeks	sub-chronic Respiratory tract	1 mg/m ³	irritation	OECD 453	6 h per day, 5 days per week

(j) Aspiration hazard

No information.

Symptoms related to the physical, chemical and toxicological characteristics

No information.

Interactive effects

No information.

11.2 INFORMATION ON OTHER HAZARDS

Endocrine disrupting properties

No information.

Other information

No information.

SECTION 12: ECOLOGICAL INFORMATION

12.1 TOXICITY

Acute (short-term) toxicity

For product

Type	Exposure time	Species	organism	Method	Remark	value
LC ₅₀	96 h	fish	<i>Brachydanio rerio</i>	OECD 203	/	> 100 mg/L
EC ₅₀	48 h	crustacea	<i>Daphnia magna</i>	OECD 202	/	83 mg/L
ErC ₅₀	72 h	algae	<i>Desmodesmus subspicatus</i>	OECD 201	/	> 100 mg/L

For components

Name	Type	value	Exposure time	Species	organism	Method	Remark
diphenylmethane-2,4'-diisocyanate	LC ₅₀	1000 mg/L	96 h	fish	/	/	/
diphenylmethane-2,4'-diisocyanate	EC ₅₀	1000 mg/L	48 h	crustacea	/	/	/
'4,4'-methylenediphenyldiisocyanate	LC ₅₀	> 1000 mg/L	96 h	fish	/	OECD 203	/
'4,4'-methylenediphenyldiisocyanate	EC ₅₀	> 1000 mg/L	24 h	daphnia	<i>Daphnia magna</i>	OECD 202	/



Safety data sheet

Name	Type	value	Exposure time	Species	organism	Method	Remark
'4,4'-methylenedi phenyl diisocyanate	EC ₅₀	> 100 mg/L	72 h	algae	/	OECD 201	/
'4,4'-methylenedi phenyl diisocyanate	EC ₅₀	> 100 mg/kg	3 h	bacteria	/	OECD 209	/
'4,4'-methylenedi phenyl diisocyanate	NOEC	> 1000 mg/kg	14 days	Soil macroorganisms	<i>Eisenia fetida</i>	OECD TG 207	/
'4,4'-methylenedi phenyl diisocyanate	NOEC	> 1000 mg/kg	14 days	Plants	<i>Avena sativa</i>	OECD TG 208	/
'4,4'-methylenedi phenyl diisocyanate	NOEC	> 1000 mg/kg	14 days	Plants	<i>Lactuca sativa</i>	OECD TG 208	/
'2,2'-methylenedi phenyl diisocyanate	LC ₅₀	> 1000 mg/L	96 h	fish	<i>Danio rerio</i>	OECD Guideline 203 (Fish, Acute Toxicity Test)	/
'2,2'-methylenedi phenyl diisocyanate	EC ₅₀	> 1640 mg/L	72 h	algae	<i>Scenedesmus subspicatus</i>	OECD Guideline 201 (Alga, Growth Inhibition Test)	/
'2,2'-methylenedi phenyl diisocyanate	EC ₅₀	> 100 mg/L	3 h	activated sludge	/	OECD 209 Activated Sludge, Respiration Inhibition Test	/
'2,2'-methylenedi phenyl diisocyanate	EC ₅₀	> 1000 mg/L	24 h	daphnia	<i>Daphnia magna</i>	202 (Daphnia / sp. Acute Immobilisation Test)	/

Chronic (long-term) toxicity

For components



Safety data sheet

Name	Type	value	Exposure time	Species	organism	Method	Remark
diphenylmethane-2,4'-diisocyanate	NOEC	> 10 mg/l	21 days	Magna Daphnia	<i>Daphnia magna</i>	OECD 202	/
'4,4'-methylenediphenyl diisocyanate	NOEC	> 10 mg/l	21 days	Magna Daphnia	<i>Daphnia magna</i>	OECD 211	/
'2,2'-methylenediphenyl diisocyanate	NOEC	> 10 mg/l	21 days	Magna Daphnia	<i>Daphnia magna</i>	OECD 202	/

12.2 PERSISTENCE AND DEGRADABILITY

Abiotic degradation, physical- and photo-chemical elimination

For components

Name	Environment	Type / Method	Half Time	Evaluation	Method	Remark
'4,4'-methylenediphenyl diisocyanate	Air	photodegradation	/	slowly	/	/

Biodegradation

For components

Name	Type	Rate	Time	Evaluation	Method	Remark
'4,4'-methylenediphenyl diisocyanate	aerobic	/	/	Non-biodegradable	/	/

Additional information

Contains non readily biodegradable component(s).

12.3 BIOACCUMULATIVE POTENTIAL

Partition coefficient

For components

Name	Media	value	Temperature °C	pH	Concentration	Method
'4,4'-methylenediphenyl diisocyanate	Octanol-water (log Pow)	4.51	/	/	/	/

Bioconcentration factor (BCF)

For components

Name	Species	organism	value	Duration	Evaluation	Method	Remark
'4,4'-methylenediphenyl diisocyanate	organism	<i>Cyprinus carpio</i>	92 - 200	4 weeks	/	OECD 305	experimental value

Additional information



Safety data sheet

No bioaccumulation expected.

12.4 MOBILITY IN SOIL

Known or predicted distribution to environmental compartments

No information.

Surface tension

No information.

Adsorption/Desorption

For components

Name	Type	Criterion	value	Evaluation	Method	Remark
'4,4'-methylenediphenyl diisocyanate	Soil	Henry constant (H)	8.9E-7 Pa.m ³ / mol	/	/	25 °C

12.5 RESULTS OF PBT AND VPVB ASSESSMENT

The components in this formulation do not meet the criteria for classification as PBT or vPvB.

12.6 ENDOCRINE DISRUPTING PROPERTIES

No information.

12.7 OTHER ADVERSE EFFECTS

No information.

12.8 ADDITIONAL INFORMATION

For product

Do not allow to reach ground water, water courses or sewage system. Isocyanates react with water to form an insoluble polyurea.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 WASTE TREATMENT METHODS

Product / Packaging disposal

Waste chemical

Do not allow product to reach drains/sewage systems. Any disposal in the environment or discharging into water is prohibited. Disposal must be made according to official regulations: deliver it to authorised collector/remover/transformer of hazardous waste. Dispose of in accordance with applicable waste disposal regulation.

Waste codes / waste designations according to LoW

08 04 09* - waste adhesives and sealants containing organic solvents or other dangerous substances

Packaging

Packaging must be completely emptied - scrape with a spatula or brush so that the remaining amount of goods is no longer usable and does not drip from the packaging. Packaging emptied in this way is not hazardous waste. Uncleaned / not emptied containers are classified as hazardous waste - they should be handled in the same manner as the contents. Empty container is not suitable for reuse. Deliver completely emptied containers to approved waste disposal authorities.

Waste codes / waste designations according to LoW

15 01 02 - plastic packaging
15 01 04 - metallic packaging
15 01 10* - packaging containing residues of or contaminated by dangerous substances

Waste treatment-relevant information

Disposal in accordance with the Rules on the management of waste.

Sewage disposal-relevant information

No information.

Other disposal recommendations

No information.

SECTION 14: TRANSPORT INFORMATION

ADR/RID	IMDG	IATA	ADN
14.1 UN number or ID number			
Not dangerous according to transport regulations.	Not dangerous according to transport regulations.	Not dangerous according to transport regulations.	Not dangerous according to transport regulations.
14.2 UN proper shipping name			



Safety data sheet

ADR/RID	IMDG	IATA	ADN
Not given/not applicable	Not given/not applicable	Not given/not applicable	Not given/not applicable
14.3 Transport hazard class(es)			
Not given/not applicable	Not given/not applicable	Not given/not applicable	Not given/not applicable
14.4 Packing group			
Not given/not applicable	Not given/not applicable	Not given/not applicable	Not given/not applicable
14.5 Environmental hazards			
NO	NO	NO	NO
14.6 Special precautions for user			
Limited quantities	Limited quantities		Limited quantities
Not given/not applicable	Not given/not applicable		Not given/not applicable
14.7 Maritime transport in bulk according to IMO instruments			
	Not given/not applicable		

SECTION 15: REGULATORY INFORMATION

15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/LEGISLATION SPECIFIC FOR THE SUBSTANCE OR MIXTURE

- Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (including last amendment Commission Regulation (EU) 2020/878)

- Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures

Information according 2004/42/EC about limitation of emissions of volatile organic compounds (VOC-guideline)

not applicable

Regulation EC 648/2004 on detergents

No information.

Special instructions

Regulation (EC) No. 1907/2006 (REACH) Annex XVII - Terms of restriction: 56 Methylenediphenyl diisocyanate (MDI):

1. Shall not be placed on the market after 27 December 2010, as a constituent of mixtures in concentrations equal to or greater than 0,1 % by weight of MDI for supply to the general public, unless suppliers shall ensure before the placing on the market that the packaging:

(a) contains protective gloves which comply with the requirements of Council Directive 89/686/ EEC;

(b) is marked visibly, legibly and indelibly as follows, and without prejudice to other Community legislation concerning the classification, packaging and labelling of substances and mixtures:

„— Persons already sensitised 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.

— This product should not be used under conditions of poor ventilation unless a protective mask with an appropriate gas filter (i.e. type A1 according to standard EN 14387) is used.“

2. By way of derogation, paragraph 1(a) shall not apply to hot melt adhesives. Regulation (EC) No. 1907/2006 (REACH) Annex XVII - Terms of restriction: 74.

15.2 CHEMICAL SAFETY ASSESSMENT

No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

SECTION 16: OTHER INFORMATION

Indication of changes

2.2 Label elements 8.2 Exposure controls

Key literature references and sources for data

No information.

Abbreviations and acronyms



Safety data sheet

ATE - Acute Toxicity Estimate
 ADR - Agreement concerning the International Carriage of Dangerous Goods by Road
 ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
 CEN - European Committee for Standardisation
 C&L - Classification and Labelling
 CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
 CAS# - Chemical Abstracts Service number
 CMR - Carcinogen, Mutagen, or Reproductive Toxicant
 CSA - Chemical Safety Assessment
 CSR - Chemical Safety Report
 DMEL - Derived Minimal Effect Level
 DNEL - Derived No Effect Level
 DPD - Dangerous Preparations Directive 1999/45/EC
 DSD - Dangerous Substances Directive 67/548/EEC
 DU - Downstream User
 EC - European Community
 ECHA - European Chemicals Agency
 EC-Number - EINECS and ELINCS Number (see also EINECS and ELINCS)
 EEA - European Economic Area (EU + Iceland, Liechtenstein and Norway)
 EEC - European Economic Community
 EINECS - European Inventory of Existing Commercial Substances
 ELINCS - European List of notified Chemical Substances
 EN - European Standard
 EQS - Environmental Quality Standard
 EU - European Union
 Euphrac - European Phrase Catalogue
 EWC - European Waste Catalogue (replaced by LoW – see below)
 GES - Generic Exposure Scenario
 GHS - Globally Harmonized System
 IATA - International Air Transport Association
 ICAO-TI - Technical Instructions for the Safe Transport of Dangerous Goods by Air
 IMDG - International Maritime Dangerous Goods
 IMSBC - International Maritime Solid Bulk Cargoes
 IT - Information Technology
 IUCLID - International Uniform Chemical Information Database
 IUPAC - International Union for Pure Applied Chemistry
 JRC - Joint Research Centre
 Kow - octanol-water partition coefficient
 LC50 - Lethal Concentration to 50 % of a test population
 LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose)
 LE - Legal Entity
 LoW - List of Wastes (see <http://ec.europa.eu/environment/waste/framework/list.htm>)
 LR - Lead Registrant
 M/I - Manufacturer / Importer
 MS - Member States
 MSDS - Material Safety Data Sheet
 OC - Operational Conditions
 OECD - Organization for Economic Co-operation and Development
 OEL - Occupational Exposure Limit
 OJ - Official Journal
 OR - Only Representative
 OSHA - European Agency for Safety and Health at work
 PBT - Persistent, Bioaccumulative and Toxic substance
 PEC - Predicted Effect Concentration
 PNEC(s) - Predicted No Effect Concentration(s)
 PPE - Personal Protection Equipment
 (Q)SAR - Qualitative Structure Activity Relationship
 REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
 RID - Regulations concerning the International Carriage of Dangerous Goods by Rail
 RIP - REACH Implementation Project
 RMM - Risk Management Measure
 SCBA - Self-Contained Breathing Apparatus
 SDS - Safety data sheet
 SIEF - Substance Information Exchange Forum
 SME - Small and Medium sized Enterprises
 STOT - Specific Target Organ Toxicity
 (STOT) RE - Repeated Exposure
 (STOT) SE - Single Exposure
 SVHC - Substances of Very High Concern
 UN - United Nations
 vPvB - Very Persistent and Very Bioaccumulative

List of relevant H phrases



Safety data sheet

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.

H332 Harmful if inhaled.

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

H335 May cause respiratory irritation.

H351 Suspected of causing cancer.

H373 May cause damage to organs through prolonged or repeated exposure.

H410 Very toxic to aquatic life with long lasting effects.