

Safety data sheet in accordance with Regulation (EC) No 1907/2006

Revision date: 23.05.2025
Replacement of version 0033 of 10.02.2025

Version: 0034

Knauf Aquapanel GmbH & Co. KG

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

1.1 *Product identifier*

Trade name **AQUAPANEL® Joint Adhesive (PU)**

Product number **KAQ_0434**

Item code **49376**

Unique formula identifier (UFI) in accordance with section 5 of Part A of Annex VIII to Regulation (EC) No 1272/2008:

UFI: UXY6-F6DY-5N07-TWDD

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

Appropriate use:

The product is used as an adhesive (1K PUR mounting adhesive).

Recommended restrictions on use:

Preclude from exposure and handling this product those persons suffering from an allergy and those persons susceptible to respiratory disease.

The conditions of restriction in accordance with Annex XVII of Regulation (EC) No 1907/2006 must be observed.

1.3 *Details of the supplier of the safety data sheet*

Knauf Aquapanel GmbH & Co. KG

Zur Helle 11

D-58638 Iserlohn

Telephone: +49-2374-50360

Fax: +49-2374-5036300

e-mail: aquapanel.info@knauf.com

e-mail-address of the competent person responsible for this Safety Data Sheet:

info@gefstoff.de

Technical contact:

Knauf Aquapanel GmbH & Co. KG, Zur Helle 11, D-58638 Iserlohn

Telephone: +49-2374-50360

Fax: +49-2374-5036300

1.4 *Emergency telephone number*

Giftnotruf der Charité - Universitätsmedizin Berlin, Campus Benjamin Franklin, Haus VIII (Wirtschaftsgebäude), UG Hindenburgdamm 30, 12203 Berlin

Giftnotruf Berlin +49-30-30686 700 (Advice in German and English)

(24 hours, Monday – Sunday)

SECTION 2: Hazards identification

2.1 *Classification of the substance or mixture*

Skin Irrit. 2; H315

Skin Sens. 1; H317

Eye Irrit. 2; H319

Resp. Sens. 1; H334

STOT SE 3; H335

Carc. 2; H351

STOT RE 2; H373

Aquatic Chronic 3; H412

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2.2 Label elements

Hazard pictogram(s):



Signal word(s): Danger

Product identifier: AQUAPANEL® Joint Adhesive (PU)
contains isocyanates, reaction product of polyol with methylenediphenyl diisocyanate, methylenediphenyl diisocyanate, mixture of isomers

Hazard statements:

H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
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.

Precautionary statements:

P102	Keep out of reach of children.
P260	Do not breathe mist/vapours.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/protective clothing/eye 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.
P342 + P311	If experiencing respiratory symptoms: Call a POISON CENTER/doctor.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313	IF exposed or concerned: Get medical advice/attention.
P405	Store locked up.
P501	Dispose of contents/container to hazardous or special waste collection point.

Supplemental hazard information:
None.

Conditions of restriction in accordance with Annex XVII of Regulation (EC) No 1907/2006:

No 56 methylenediphenyl diisocyanate (MDI):

Demands on packaging for supply to the general public:

- The packaging must contain protective gloves which comply with the requirements of Directive 89/686/EEC.
- The packaging must be marked visibly, legibly and indelibly as follows:
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.

No 74 Diisocyanates, O = C = N-R-N = C=O:

Demands on packaging for supply to industrial or professional users:

The following statement is placed in a manner that is visibly distinct from the rest of the label information:

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

Remarks:

- According to Article 35 paragraph 2 of Regulation (EC) No 1272/2008 packaging supplied to the general public should not have either a shape or form to mislead consumers.
- According to Annex II section 3.2 of Regulation (EC) No 1272/2008 the packaging containing this mixture and supplied to the general public shall be fitted with a tactile warning of danger.
- The use of the precautionary statements P102 and P501 is necessary for the labelling of the dangerous mixture supplied to the general public.

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2.3 Other hazards

Persons already sensitised to diisocyanates may develop allergic reactions when using this product.
 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
 The product is classified as highly hazardous to water.
 The mixture does not contain any substances classified as PBT/vPvB in a concentration of 0.1% or more.

SECTION 3: Composition/information on ingredients
3.2 Mixtures

REACH registration number:
 - Methylene diphenyl diisocyanate: 01-2119457015-45-XXXX
 - Diethylmethylbenzenediamine: 01-2119486805-25-XXXX

Characterisation

This product is a mixture. It is a solution of isomers of methylenediphenylmethane diisocyanate, diethylmethylbenzenediamine and specific components.

Substances presenting a health/environmental hazard within the meaning of Regulation (EC) No 1272/2008

CAS No	EC No	Identification	% by weight	Classification
157905-72-1	641-078-1	isocyanates, reaction product of polyol with methylenediphenyl diisocyanate	38 - < 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 STOT RE 2; H373
26447-40-5	247-714-0	methylenediphenyl diisocyanate	12 - < 15	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
68479-98-1	270-877-4	diethylmethylbenzenediamine	0.2 - 0.5	Acute Tox. 4; H302 Acute Tox. 4; H312 Eye Irrit. 2; H319 STOT RE 2; H373 Aquatic Acute 1; H400 Aquatic Chronic 1; H410

See subsection 2.2 for further details. Full text of the hazard statements see Section 16.

Substances for which there are Union workplace exposure limits (see also Section 8.)

No substances.

Additional information

Specific concentration limits for methylenediphenyl diisocyanate in accordance with Annex VI of Regulation (EC) No 1272/2008:

Resp. Sens. 1 ; H334: C ≥ 0.1%
 STOT SE 3 ; H335: C ≥ 5%
 Eye Irrit. 2 ; H319: C ≥ 5%
 Skin Irrit. 2; H315: C ≥ 5%

SECTION 4: First aid measures
4.1 Description of first aid measures
General information

Remove contaminated, soaked clothing immediately and dispose of safely.
 In the immediate working surroundings emergency shower and eye wash must be installed.
 Label their location conspicuously.

(continued from 4.1 Description of first aid measures)

In case of inhalation

Take affected person to fresh air.

When vapours are inhaled, poisonous symptoms can first be observed after several hours, therefore it is essential to consult a doctor.

In case of contact with skin

In case of contact with skin wash off immediately with plenty of soap and water.

Subsequently wash again with soap and water. Avoid drying of product on the skin absolutely.

Consult a doctor if skin irritation persists.

In case of contact with eyes

In case of contact with eyes, rinse immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart and consult an ophthalmologist.

Remove contact lenses, if present and easy to do.

In case of ingestion

Rinse mouth immediately. Spit out liquid immediately.

Do not induce vomiting. Take medical treatment immediately.

4.2 Most important symptoms and effects, both acute and delayed

Asthmatic complaints. Allergic symptoms. Risk of respiratory disorders.

Possibility of temporary symptoms such as coughing, headache and nausea.

Irritating to respiratory tract, eyes, gastro-enteric tract and skin.

4.3 Indication of any immediate medical attention and special treatment needed

Poisonous symptoms can first be observed after several hours, therefore medical observation for at least 48 hours is necessary.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Foam, carbon dioxide, dry powder, water spray jet.

Unsuitable extinguishing media

Full water jet.

5.2 Special hazards arising from the substance or mixture

In the event of fire the following can be released: nitrous gases, carbon monoxide, carbon dioxide, isocyanate vapours, traces of hydrogen cyanide.

5.3 Advice for firefighters

Wear self-contained breathing apparatus. Wear chemical resistant suit.

Do not inhale explosion and/or combustion gases. Cool endangered containers with water spray jet.

Collect contaminated firefighting water separately, must not be discharged into the drains.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Use personal protective clothing. Ensure adequate ventilation. Keep away from unprotected people.

Use breathing apparatus if exposed to vapours/aerosol. Keep away sources of ignition.

For emergency responders

For suitable fabric for personal protective clothing see Section 8.

6.2 Environmental precautions

Do not discharge into the drains, the aquatic environment and soil.

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6.3 *Methods and material for containment and cleaning up*

- Cover with wet binding agent (e.g. clay, diatomaceous earth, sand).
- Collect in appropriate containers after approx. 1 hour.
- Cover container, but do not close container due to possible evolution of CO₂.
- Allow waste material to react for several days. Send containers for disposal.
- Product hardens in contact with water. Clear contaminated area thoroughly with plenty of water.

6.4 *Reference to other sections*

- For personal protective equipment see also Section 8.
- For disposal considerations see also Section 13.

SECTION 7: Handling and storage

7.1 *Precautions for safe handling*

Advice on safe handling

- Activities involving this mixture may only be carried out by qualified personnel or persons who have received adequate training for the activity.
- Open and handle container with care. Avoid contact with skin and eyes.
- Avoid formation of vapours/aerosols. After use containers must be resealed.
- Provide good ventilation of working area (local exhaust ventilation if necessary).
- In case of open handling equipment with built-in suction must be used.
- If suction of the immediate vicinity is impossible or insufficient, the entire working place must be sufficiently ventilated using appropriate machines.
- Comply with the minimum standards in accordance with TRGS 500¹ and with the protective measures in accordance with TRGS 401¹ and TRGS 430¹.

Inhalation:

- In designing the work process the model solutions of the Control Guidance Sheets 100¹, La-101¹ and 110¹ must be taken into consideration in case of possible release of only small amounts of product (range of grams).
- In designing the work process the model solutions of the Control Guidance Sheet 200¹ must be additionally taken into consideration in case of possible release of medium to large amounts of product (range of kilograms up to tons).

Skin contact:

- In designing the work process the model solutions of the Control Guidance Sheets 120¹ and 250¹ must be taken into consideration in case of small-area skin contact (e.g. splashes) and regardless on the duration of skin contact.
- In case of large-area skin contact (wetting of the skin) and short-term effect (duration of skin contact less than 15 minutes per shift), the model solutions of the Control Guidance Sheets 120¹ and 250¹ must be taken into consideration as well. In case of long-term effect (duration of skin contact more than 15 minutes per shift), the model solutions of the Control Guidance Sheet 300¹ (closed system) must be additionally taken into consideration.

Eyes:

- In case of product release (release group: LOW): in designing the work process the model solutions of the Control Guidance Sheet 2020¹ must be additionally taken into consideration in case of release of large amounts of product (range of kilograms up to tons).

Advice on general occupational hygiene

- Do not inhale vapours and aerosols. Avoid contact with eyes and skin.
- Avoid drying of product on the skin absolutely.
- Change soiled or soaked clothing immediately. Store work clothing separately.
- At work do not eat, drink, smoke or take drugs. Storage of foodstuffs in work rooms is forbidden.
- After worktime and before breaks the affected skin areas must be thoroughly cleaned.
- After work protect skin by using skin protective cream. Set out skin protection guidelines.
- In the immediate working surroundings emergency shower and eye wash must be installed.
- Label their location conspicuously.

7.2 *Conditions for safe storage, including any incompatibilities*

Advice on protection against fire and explosion

- Keep away sources of ignition.

Requirements for storage rooms and vessels

- Keep container tightly closed in a cool, well-ventilated place, open and handle carefully.
- Keep only in the original container.
- Protect container from direct sunlight.
- Store in a dry place. Avoid any exposure to moisture.

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(continued from 7.2 Conditions for safe storage, including any incompatibilities)

Advice on storage compatibility

Do not store together with oxidising agents, strong acids and strong alkalis.
The information about joint storage given in Table 12 of TRGS 510¹ must be observed.

Further information on storage conditions

Do not keep at temperatures above 50°C and below +8°C.
Maximum period of storage (time): unopened storage life approx. 18 months.
Recommended storage temperature between 15 and 25°C.

Storage class (for Germany only)

LGK 10 in accordance with TRGS 500¹.

7.3 Specific end use(s)

The product is only intended for the uses mentioned under subsection 1.2.
Observe technical data sheet.
GISCODE⁴: RU 1 (solvent-free polyurethane installation products)

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

CAS No	Identification	Limit values	Remarks
26447-40-5	diphenylmethane diisocyanate (all isomers)	0.03 mg/m ³ 0.09 mg/m ³ 0.15 mg/m ³	National limit values – eight hours Poland National limit values – short term Poland Romania
101-68-8	diphenylmethane-4,4'-diisocyanate	0.05 mg/m ³ - 0.005 ppm 0.052 mg/m ³ - 0.005 ppm 0.05 mg/m ³ - 0.005 ppm 0.1 mg/m ³ - 0.01 ppm 0.05 mg/m ³ inhalable fraction and vapour 0.05 mg/m ³ 0.005 mg/m ³ 0.05 mg/m ³ - 0.005 ppm 0.03 mg/m ³ 0.052 mg/m ³ - 0.005 ppm 0.03 mg/m ³ - 0.002 ppm 0.0001 mg/m ³ 0.1 mg/m ³ - 0.01 ppm 0.1 mg/m ³ - 0.01 ppm 0.2 mg/m ³ - 0.02 ppm 0.1 mg/m ³ inhalable fraction and vapour 0.05 mg/m ³ 0.09 mg/m ³ 0.15 mg/m ³ 0.05 mg/m ³ - 0.005 ppm	National limit values – eight hours Austria Belgium Denmark France Germany Hungary Ireland Norway Poland Spain Sweden The Netherlands National limit values – short term Austria Denmark France Germany Hungary Poland Romania Sweden
2536-05-2	diphenylmethane-2,2'-diisocyanate	0.05 mg/m ³ - 0.005 ppm 0.05 mg/m ³ inhalable aerosol and vapour 0.03 mg/m ³ 0.1 mg/m ³ - 0.01 ppm 0.1 mg/m ³ inhalable aerosol and vapour 0.09 mg/m ³	National limit values – eight hours Austria Germany Poland National limit values – short-term Austria Germany Poland

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(continued from 8.1 Control parameters)

CAS No	Identification	Limit values	Remarks
5873-54-1	o-(p-isocyanatobenzyl) phenylisocyanate (diphenylmethane-2,4'-diisocyanate)	0.05 mg/m ³ - 0.005 ppm 0.05 mg/m ³ inhalable aerosol and vapour 0.03 mg/m ³ 0.1 mg/m ³ - 0.01 ppm 0.05 mg/m ³ inhalable aerosol and vapour 0.09 mg/m ³	National limit values – eight hours Austria Germany Poland National limit values – short-term Austria Germany Poland
	diisocyanates (measured als NCO)*	binding occupational exposure limit value by 01.01.2029: 6 µg/m ³ 12 µg/m ³ reference period 09.04.2026 – 31.12.2028 10 µg/m ³ 20 µg/m ³	Directive (EU) 2024/869 8 hours short-term 8 hours short-term Notations: skin** dermal and respiratory sensitisation***

* NCO refers to isocyanate functional groups of the diisocyanate compounds.

** Substantial contribution to the total body burden via dermal exposure possible.

*** The substance can cause sensitisation of the skin and of the respiratory tract.

DNEL values

Additional limit values for diphenylmethane-4,4'-diisocyanate in accordance with the registration dossier:

workers, long term exposure: inhalation, local effects:	0.05 mg/m ³
workers, short term exposure: inhalation, local effects:	0.1 mg/m ³
general population, long term exposure: inhalation, local effects:	0.025 mg/m ³
general population, short term exposure: inhalation, local effects:	0.05 mg/m ³

Additional limit values for diethylmethylbenzenediamine in accordance with the registration dossier:

workers, long term exposure: inhalation, systemic effects:	0.13 mg/m ³
workers, long term exposure: dermal, systemic effects:	0.93 mg/kg _{bw} /d
general population, long term exposure: inhalation, systemic effects:	0.053 mg/m ³
general population, long term exposure: dermal, systemic effects:	0.55 mg/kg _{bw} /d
general population, long term exposure: oral, systemic effects:	0.006 mg/kg _{bw} /d

PNEC values

Additional limit values for diphenylmethane-4,4'-diisocyanate in accordance with the registration dossier:

aquatic, freshwater:	3,7 µg/l
aquatic, freshwater, intermittent release:	37 µg/l
aquatic, marine water:	0.37 µg/l
sediment, freshwater:	11.7 mg/kg _{dw}
sediment, marine water:	1.17 mg/kg _{dw}
soil environment:	2.33 mg/kg _{dw}

Additional limit values for diethylmethylbenzenediamine in accordance with the registration dossier:

aquatic, freshwater:	0.006 mg/l
aquatic, freshwater, intermittent release:	0.058 mg/l
aquatic, marine water:	0.001 mg/l
aquatic, sewage treatment plant:	17 mg/l
sediment, freshwater:	0.34 mg/kg _{dw}
sediment, marine water:	0.034 mg/kg _{dw}
soil environment:	64.96 mg/kg _{dw}

The methods for measuring chemical agents in workplace atmosphere must meet the general requirements of EN 481, EN 482 and EN 689.

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8.2 Exposure controls

Appropriate engineering controls

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

See also subsection 7.1.

The protective measures in accordance with TRGS 430¹ must be taken into consideration.

The effectiveness of suitable protective measures must be controlled.

Suitable assessment methods are described in the German TRGS 402¹.

Individual protection measures, such as personal protective equipment

Personal protective equipment needs to be selected specifically for the workplace, depending on concentrations and quantities of the hazardous substances handled. In the cases of special applications, it is recommended to check the chemical resistance with the manufacturer/supplier of the personal protective equipment.

Eye/face protection



Tightly fitting safety glasses in accordance with EN 166 (e.g. safety spectacles with side shields, type 34).

Hand protection



Wear suitable protective gloves. Suitable material:

Butyl rubber;	thickness 0.7 mm;	permeation time: level 6 (≥ 480 minutes).
Nitrile rubber;	thickness 0.4 mm;	permeation time: level 6 (≥ 480 minutes).
Natural rubber;	thickness 0.5 mm;	permeation time: level 6 (≥ 480 minutes).

Wear cotton gloves underneath protection gloves if possible.

Under practical conditions, the maximum wearing period can be significantly lower.

Suitable gloves for the handling of solvent-free polyurethane installation products (GISCODE⁴: RU1) in accordance with GISBAU (Information system of the the German professional associations for building and construction industry):

- Ampri: SolidSafety High Risk Pro 081307, SolidSafety Clean Protect 081309, SolidSafety ChemB Full 081306, SolidSafety Chem MaxGrip 081308
- ANSELL: Alpha Tec Sol-Vex 37-900, 37-675, 37-695, AlphaTec 38-560
- KCL: Camatril 730 / 731 / 732, Butojet 897 / 898, Tricotril 736, VeroChem 754
- MAPA: Ultranitrl 480 / 492 / 493
- UVEX: uvex rubiflex S NB35B, S NB27S, S XG35B, uvex profasstrog NF33, uvex rubiflex Protector NK402B, uvex profabutyl B05R

Suitable protective gloves tested as splash protection (maximum wear duration 20 minutes after contact of product with the gloves):

- Ampri: Blue Eco Plus 01198, Med Comfort Blue 01192, SolidSafety ChemN 081303, Med Comfort Blue Ultra 300 01194, Med Comfort Blue Ultra 400 01240
- ANSELL: Touch 'N' Tuff
- KCL: Dermatril P
- Sempaerit: Semperguard Nitrile
- UVEX: uvex u-fit, uvex u-fit lite

The protective gloves to be used must be comply with the specifications of the standard EN 374.

Body protection

Closed work clothing.

Respiratory protection



In case of spraying, higher concentrations and if ventilation insufficient, use suitable respiratory protection, i.e. full mask/half mask/filtering half mask with

- combination filter A-P2
- combination filter B-P2.

The limitations in wearing time according to the DGUV Regel 112-190² (rule of the German employers' liability insurance association) for the use of respirators have to be observed.

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(continued from 8.2. Exposure controls)

Thermal hazards

Not relevant.

Environmental exposure controls

See Section 6.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state:	pasty liquid
Colour:	white
Odour:	characteristic
Odour threshold:	no data available
Melting point/freezing point (°C):	not determined
Boiling point/initial boiling point/boiling range (°C):	not determined
Flammability:	combustible
Lower explosion limit:	not determined
Upper explosion limit:	not determined
Flash point (°C), closed cup:	no data available
Auto-ignition temperature (°C):	not applicable
Decomposition temperature (°C):	no data available
pH (as supplied):	not applicable
Kinematic viscosity (mm ² /s):	thixotropic
Solubility in water:	water-insoluble; reacts with water (polymerisation)
Soluble in:	not determined
Partition coefficient: n-octanol/water (log value):	no data available
Vapour pressure (20°C) (mbar):	no data available
Density (g/cm ³):	approx. 1.46
Relative vapour density (20°C):	no data available
Particle characteristics:	not applicable (pasty)

9.2 Other information

None.

SECTION 10: Stability and reactivity

10.1 Reactivity

The product reacts with water (hydrolysis).

10.2 Chemical stability

The product is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

10.3 Possibility of hazardous reactions

At elevated temperatures and in contact with tertiary amines and organic tin compounds, technical MDI and monomeric diphenylmethane-4,4'-diisocyanate can polymerise under intense heat.

10.4 Conditions to avoid

Exposure to moisture may cause evolution of carbon dioxide and overpressure can occur in containers (risk of bursting).

10.5 Incompatible materials

Under normal conditions diphenylmethane diisocyanate reacts slowly with water, with evolution of carbon dioxide (formation of excessive pressure in sealed containers).
Exothermic reaction with amines, alcohols, strong acids, strong alkalis and oxidising agents.

10.6 Hazardous decomposition products

Carbon dioxide.
For hazardous combustion products see subsection 5.2.

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SECTION 11: Toxicological information

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

No data are available for the product.

Acute toxicity

LD50 rat, oral	(mg/kg)	> 2000	(diphenylmethane-4,4'-diisocyanate)	(Directive 84/449/EEC)
		472	(diethylmethylbenzenediamine)	(RTECS)
LC50 rat, inhalation	(mg/l/4h)	0.37	(diphenylmethane-4,4'-diisocyanate)	(OECD Test Guideline 403)
LD50 rabbit, dermal	(mg/kg)	> 9400	(diphenylmethane-4,4'-diisocyanate)	(OECD Test Guideline 402)
		> 2000	(diethylmethylbenzenediamine)	(OECD Test Guideline 402)

Skin corrosion/irritation

Skin Irrit. 2: Causes skin irritation.

Irritant effect on skin (rabbit)	Irritating	(diphenylmethane-4,4'-diisocyanate)	(OECD Test Guideline 404)
	Not irritating	(diethylmethylbenzenediamine)	(OECD Test Guideline 404)

Serious eye damage/irritation

Eye Irrit. 2: Causes serious eye irritation.

Irritant effect on eyes	Mild eye irritation on eyes of rabbits (dose: 100 mg)	(RTECS)
	(Standard Draize Test; diphenylmethane-4,4'-diisocyanate)	
	Irritating	(diethylmethylbenzenediamine) (OECD Test Guideline 404)

Respiratory or skin sensitisation

Skin Sens. 1: May cause an allergic skin reaction.

Resp. Sens. 1: May cause allergy or asthma symptoms or breathing difficulties if inhaled.

The product contains isocyanates, reaction product of polyol with methylenediphenyl diisocyanate and methylene-diphenyl diisocyanate (mixture of isomers). These components are classified as sensitising by inhalation and skin contact.

Germ cell mutagenicity

The mixture does not contain substances classified as germ cell mutagens.

Carcinogenicity

Carc. 2: Suspected of causing cancer.

Respirable aerosols of diphenylmethane-4,4'-diisocyanate are suspected to cause cancer in accordance with the German TRGS 905 (category K2).

Reproductive toxicity

The mixture does not contain substances classified as toxic for the reproduction.

Specific target organ toxicity (STOT)-single exposure

STOT SE 3: May cause respiratory irritation.

Specific target organ toxicity (STOT)-repeated exposure

STOT RE 2: May cause damage to organs through prolonged or repeated exposure.

Aspiration hazard

The mixture does not contain aspiration toxicants.

Symptoms related to the physical, chemical and toxicological characteristics

Asthmatic complaints. Allergic symptoms. Risk of respiratory disorders.

Possibility of temporary symptoms such as coughing, headache and nausea.

Irritating to respiratory tract, eyes, gastro-enteric tract and skin.

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

Very low concentrations of methylenediphenyl diisocyanate may cause allergic reactions in sensitive persons.

Those persons may not have any further contact with this substance.

Complaints can first be observed after several hours or days (bronchial asthma due to vapours of methylene-diphenyl diisocyanate and allergic symptoms).

11.2 Information on other hazards

The mixture has not been tested.

Endocrine disrupting properties

No data available for the mixture.

Other information

None.

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SECTION 12: Ecological information

12.1 Toxicity

Aquatic toxicity:

96 h LC50	(fish)	> 1000 mg/l	(Danio rerio; zebrafish) (OECD Test Guideline 203) (diphenylmethane-4,4'-diisocyanate)
		> 106	(Danio rerio; zebrafish) (OECD Test Guideline 203) (diethylmethylbenzenediamine)
48 h EC50	(daphnia)	> 100 mg/l	(Daphnia magna) (OECD Test Guideline 202) (diphenylmethane-4,4'-diisocyanate)
		0.5 mg/l	(Daphnia magna) (EU method C2) (diethylmethylbenzenediamine)
72 h EC50	(algae)	> 100 mg/l	(Desmodesmus subspicatus) (OECD Test Guideline 201) (diphenylmethane-4,4'-diisocyanate)
72 h ErC	algae	approx. 104 mg/l	(Desmodesmus subspicatus) (OECD Test Guideline 201) (diethylmethylbenzenediamine)

Behaviour in sewage works:

The behaviour of the product in sewage treatment plants has not been tested. Do not discharge into the drains.

12.2 Persistence and degradability

Under normal conditions diphenylmethane diisocyanate reacts slowly with water, with evolution of carbon dioxide and formation of solid polyurea (insoluble, not biodegradable and not acute toxic).

- diphenylmethane-4,4'-diisocyanate: 1%/28d (OECD Test Guideline 301 F). Not biodegradable.

- diethylmethylbenzenediamine: < 1%/28d (registration dossier). Not biodegradable.

Chemical oxygen demand (COD) No data available.

Biochemical oxygen demand (BOD5) No data available.

AOX-hint Not to apply.

12.3 Bioaccumulative potential

The product has not been tested.

Partition coefficient: n-octanol/water:

4.52 (22°C; pH approx. 7) (diphenylmethane-4,4'-diisocyanate) (OECD Test Guideline 117)

1.37 (25°C; pH 8.5) (diethylmethylbenzenediamin) (OECD Test Guideline 107)

12.4 Mobility in soil

The product has not been tested.

12.5 Results of PBT and vPvB assessment

The mixture does not contain any substances classified as PBT/vPvB in a concentration of 0.1% or more.

12.6 Endocrine disrupting properties

No data available for the mixture.

12.7 Other adverse effects

Ozone depletion potential No data available.

Photochemical ozone creation potential No data available.

Global warming potential No data available.

Product reacts with water, with evolution of carbon dioxide.

The product is classified as highly hazardous to water.

Contains according to the formulation following heavy metals and compounds of EC-Directives 2000/60/EC:

None.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Waste disposal according to official state regulations.

Sewage disposal must be avoided.

Consult the local waste disposal expert about waste disposal.

Disposal operations/recovery operations according to Directive 2008/98/EC

Disposal operations: D 10 Incineration on land

Recovery operations: R 1 Use principally as a fuel or other means to generate energy

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(continued from 13.1 Waste treatment methods)

Properties of waste which render it hazardous in accordance with Annex III of Directive 2008/98/EC

HP 4:	Irritant – skin irritation and eye damage
HP 5:	Specific Target Organ Toxicity (STOT)
HP 7:	Carcinogenic
HP 13:	Sensitising
HP 14:	Ecotoxic

Product/unused product

Waste disposal corresponding to European Waste Catalogue. Wastes must be classified with respect to their origin and depending on different processing steps.

The waste codes mentioned as follows are only constituted as our recommendations. Referring to the particular case they should be completed or revised.

EC waste code:	08 04 09
Waste notation:	Waste adhesives and sealants containing organic solvents or other hazardous substances

Contaminated packaging

Recommendation:	Contaminated packaging should be emptied as far as possible and after appropriate cleansing may be taken for reuse.
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Recommended cleansing agent:	No information available.
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Packaging that cannot be cleaned:	
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EC waste code:	15 01 10
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Waste notation:	Packaging containing residues of or contaminated by dangerous substances
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SECTION 14: Transport information

14.1 UN number or ID number

No dangerous good in accordance with the UN Model Regulations (ADR/RID/ADN/IMDG/ICAO/IATA).

14.2 UN proper shipping name

Not relevant.

14.3 Transport hazard class(es)

Not relevant.

14.4 Packing group

Not relevant.

14.5 Environmental hazards

Not relevant.

14.6 Special precautions for user

Not relevant.

14.7 Maritime transport in bulk according to IMO instruments

Not relevant.

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SECTION 15: Regulatory information

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

Information regarding relevant Union safety, health and environmental provisions

- Conditions of restriction in accordance with Annex XVII Regulation (EC) No 1907/2006:
 - No 3
 - No 56 (methylenediphenyl diisocyanate (MDI))
 - No 74 (diisocyanates, O = C = N-R-N = C=O)
- The mixture does not contain substances classified as substances of very high concern (SVHC) in accordance with Article 57 of the Regulation (EC) No 1907/2006 in a concentration of 0.1% or more.
- Obligation of notification in accordance with Annex VIII to Regulation (EC) No 1272/2008.
- Observe employment restrictions under the law for the protection of young people at work (94/33/EC).
- Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers.
- Observe Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work.

Information regarding national laws/national measures that may be relevant (for Germany only)

Restriction of occupation:	Law for the protection of expectant and nursing mothers; Youth Employment Protection Act must be observed. Article 8 paragraph 7 of the German Ordinance on Hazardous Substances must be observed.
Major-accident Ordinance:	Not relevant
Fire and explosion hazards:	Not relevant
Regulation on clean air (TA Luft):	Number 5.2.5, class I, diphenylmethane diisocyanate (2,4'- and 4,4'-isomers), > 38 - < 55% WGK 3 – highly hazardous to water (deduction of the WGK according to Annex 1 No 5.2 AwSV) ³ The German Ordinance on facilities for handling substances that are hazardous to water (AwSV) has to be observed.
Water hazard class:	
German Ordinance on Hazardous Substances (in accordance with EC-Directive 98/24/EC): Regulation on Occupational Medical Prevention (ArbMedVV):	Articles 7, 8, 9, 14 Annex, Part 1 (1): <u>Obligatory prophylaxis:</u> The employer shall arrange occupational medical prophylaxis for workers conducting activities with exposure to this substance, when frequent skin contact cannot be excluded or the air concentration exceeds 0.05 milligrams per cubic meter. Annex, Part 2 h.): <u>Prophylaxis offer:</u> Occupational medical prevention has to be offered, when activities with exposure to this substance are conducted whereby an air concentration of 0.05 mg per cubic meter is observed or skin contact cannot be excluded.
DGUV Recommendations on Occupational Medical Prevention: isocyanates Technical Rules for Hazardous Substances ¹ :	TRGS 400, 401, 402, 406, 430, 500, 510, 555, 600, 900, 905
Rules of the employers' liability insurance association ² :	DGUV Regel 112-189, 112-190, 112-192, 112-195
Classification in accordance with the easy-to-use workplace control scheme for hazardous substances of the Federal Institute for Occupational Safety and Health, version 2.2, 2014 ⁵ :	inhalation: hazard group C skin contact: hazard group HD (the protective measures in accordance with TRGS 430 ¹ should be applied preferably)
Classification in accordance with the new module "Eyes" of the easy-to-use workplace control scheme for hazardous substances of the Federal Institute for Occupational Safety and Health, version January 2025 ⁶ :	eyes: hazard group Au-B

15.2 Chemical safety assessment

No chemical safety assessment has been carried out for the mixture.

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SECTION 16: Other information

Keeping (restrictions) Article 8 paragraphs 5 and 6 of the German Ordinance on Hazardous Substances has to be observed. (only for Germany)

Supply to professional user, industrial user, to the general public

Full text of the hazard statements referred to under sections 2 and 3 of the Safety Data Sheet

H302	Harmful if swallowed.
H312	Harmful in contact with skin.
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.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.

Key or legend to abbreviations and acronyms used in the safety data sheet

ADN:	Accord européen relatif au transport international des marchandises dangereuses par voie de navigation intérieure
ADR:	Accord relatif au transport international des marchandises dangereuses par route
AOX:	adsorbable organically bound halogens
AwSV:	Verordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen (Ordinance on facilities for handling substances that are hazardous to water)
DGUV:	Deutsche Gesetzliche Unfallversicherung (German Social Accident Insurance)
DNEL:	Derived No-Effect Level
ICAO/IATA:	International Civil Aviation Organisation/International Air Transport Association-Dangerous Goods Regulations
IMDG-Code:	International Maritime Dangerous Goods-Code
IMO:	International Maritime Organization
LGK:	Lagerklasse (storage class)
MDI:	Methylenediphenyl diisocyanate
OECD:	Organisation for Economic Co-operation and Development
PBT:	persistent, bioaccumulative and toxic
PNEC:	Predicted No-Effect Concentration
RID:	Règlement international concernant le transport des marchandises dangereuses par chemin de fer
RTECS:	Registry of Toxic Effects of Chemical Substances
TRGS:	Technische Regeln für Gefahrstoffe (Technical Rules for Hazardous Substances)
VOC	volatile organic compounds
vPvB:	very persistent and very bioaccumulative

Literature references and sources for data

- ¹ <https://www.baua.de>
- ² <https://www.arbeitssicherheit.de>
- ³ <https://www.umweltbundesamt.de>
- ⁴ <https://www.wingis-online.de>
- ⁵ <https://www.baua.de/emkg>
- ⁶ <https://www.baua.de/DE/Themen/Chemikalien-Biostoffe/Gefahrstoffe/EMKG/Leitfaeden>

Method used for the classification of the mixture

The classification was undertaken in accordance with the classification criteria of Annex I of Regulation (EC) No 1272/2008.

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(continued from 16. Other information)

Changes which have been made to the previous version of the safety data sheet

Revised sections: 7.1, 8.2, 12.7, 13.1, 15.1, 16

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.

Compiled by:

Dr. Michael Urban

Fachberatung Gefahrstoff Gefahrgut

Vogelbeerweg 3

D-26180 Rastede-Ipwege / Germany

Tel.: +49-4402-695620

Fax: +49-4402-695621