

Plastic repair – component A

Version number: 1.0

Date of compilation: 2025-09-08

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

1.1 Product identifier

Trade name

Plastic repair – component A

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

Relevant identified uses

Two component adhesive
Professional use

1.3 Details of the supplier of the safety data sheet

Chemicar Europe NV
Baarbeek 2
2070 Zwijndrecht
Belgium

Telephone: +32 3 234 87 80
e-mail: msds@emm.com
Website: www.finixa.com

Additional information

Supplier of the product			
Country	Name	Postal code/city	Telephone
United Kingdom	Amaric Associates Ltd.	HP22 4LW Aylesbury	+44(0)7831547123

e-mail (competent person)

msds@emm.com

1.4 Emergency telephone number

Emergency information service

+31 38 4676600
This number is only available during the following office hours: Mon-Fri 09:00 - 17:00

Poison centre		
Country	Name	Telephone
United Kingdom	National Poisons Information Service (NPIS)	0344-8920111 (medical professionals only)
United Kingdom	NHS (general public)	non-emergency: 111 or a doctor; emergency: 999

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (acc. to GB CLP)

Section	Hazard class	Category	Hazard class and category	Hazard statement
3.1I	acute toxicity (inhal.)	4	Acute Tox. 4	H332
3.2	skin corrosion/irritation	2	Skin Irrit. 2	H315
3.3	serious eye damage/eye irritation	2	Eye Irrit. 2	H319
3.4R	respiratory sensitisation	1	Resp. Sens. 1	H334
3.4S	skin sensitisation	1	Skin Sens. 1	H317

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Section	Hazard class	Category	Hazard class and category	Hazard statement
3.6	carcinogenicity	2	Carc. 2	H351
3.8R	specific target organ toxicity - single exposure (respiratory tract irritation)	3	STOT SE 3	H335
3.9	specific target organ toxicity - repeated exposure	2	STOT RE 2	H373

For full text of H-phrases: see SECTION 16

The most important adverse physicochemical, human health and environmental effects

Delayed or immediate effects can be expected after short or long-term exposure.

2.2 Label elements

Labelling (acc. to GB CLP)

- signal word Danger

- pictograms

GHS07, GHS08



- hazard statements

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 (respiratory system, respiratory tract) through prolonged or repeated exposure (if inhaled).

- precautionary statements

P201	Obtain special instructions before use.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312	Call a POISON CENTRE/doctor if you feel unwell.
P342+P311	If experiencing respiratory symptoms: Call a POISON CENTER/doctor.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P501	Dispose of contents/container in accordance with local/regional/national/international regulations.

- hazardous ingredients for labelling

Contains: Isocyanic acid, polymethylenepolyphenylene ester; 4,4'-Methylenediphenyl diisocyanate, oligomers; Reaction mass of 4,4'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate; POLY-METHYLENEPOLYPHENYLENE ISOCYANATE-POLYPROPYLENE GLYCOL COPOLYMER; 4,4'-Methylenediphenyl diisocyanate, oligomeric reaction products with α -hydro- ω -hydroxypoly(oxy-1,2-ethanediyl).

Labelling according to Regulation (EC) No. 1907/2006 (REACH) Annex XVII

Restriction R74:

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

2.3 Other hazards

Special danger of slipping by leaking/spilling product.

Results of PBT and vPvB assessment

Does not contain a PBT-/vPvB-substance at a concentration of $\geq 0,1\%$.

Endocrine disrupting properties

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Does not contain an endocrine disruptor (ED) at a concentration of $\geq 0,1\%$.

SECTION 3: Composition/information on ingredients

3.1 Substances

Not relevant (mixture).

3.2 Mixtures

The product does not contain (other) ingredients which are classified according to present knowledge of the supplier and contribute to the classification of the product and hence require reporting in this section.

Name of substance	Identifier	Wt%	Classification acc. to GHS	Pictograms	Notes
Isocyanic acid, polymethylenepolyphenylene ester	CAS No 9016-87-9 EC No 618-498-9	25 – < 40	Acute Tox. 4 / H332 Skin Irrit. 2 / H315 Eye Irrit. 2 / H319 Resp. Sens. 1 / H334 Skin Sens. 1 / H317 Carc. 2 / H351 STOT SE 3 / H335 STOT RE 2 / H373	 	
4,4'-Methylenediphenyl diisocyanate, oligomers	CAS No 25686-28-6 EC No 500-040-3	10 – < 20	Acute Tox. 4 / H332 Skin Irrit. 2 / H315 Eye Irrit. 2 / H319 Resp. Sens. 1 / H334 Skin Sens. 1 / H317 Carc. 2 / H351 STOT SE 3 / H335 STOT RE 2 / H373 EUH204	 	
POLYMETHYLENEPOLYPHENYLENE ISOCYANATE-POLYPROPYLENE GLYCOL COPOLYMER	CAS No 53862-89-8 EC No 670-234-1	10 – < 20	Acute Tox. 4 / H332 Skin Irrit. 2 / H315 Eye Irrit. 2 / H319 Resp. Sens. 1 / H334 Skin Sens. 1 / H317 Carc. 2 / H351 STOT SE 3 / H335 STOT RE 2 / H373	 	
4,4'-Methylenediphenyl diisocyanate, oligomeric reaction products with α -hydro- ω -hydroxypoly(oxy-1,2-ethanediyl)	CAS No 9048-57-1 EC No 500-028-8	5 – < 10	Acute Tox. 4 / H332 Skin Irrit. 2 / H315 Eye Irrit. 2 / H319 Resp. Sens. 1 / H334 Skin Sens. 1 / H317 Carc. 2 / H351 STOT SE 3 / H335 STOT RE 2 / H373	 	
Reaction mass of 4,4'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate	EC No 905-806-4	1 – < 2.5	Acute Tox. 4 / H332 Skin Irrit. 2 / H315 Eye Irrit. 2 / H319 Resp. Sens. 1 / H334 Skin Sens. 1 / H317 Carc. 2 / H351 STOT SE 3 / H335 STOT RE 2 / H373 EUH204	 	

Name of substance	Identifier	Specific Conc. Limits	M-Factors	ATE	Exposure route
Isocyanic acid, polymethylenepolyphenylene ester	CAS No 9016-87-9 EC No 618-498-9	Skin Irrit. 2; H315: C $\geq 5\%$ Eye Irrit. 2; H319: C $\geq 5\%$ Resp. Sens. 1; H334: C $\geq 0.1\%$ STOT SE 3; H335: C $\geq 5\%$	-	11 mg//4h 1.5 mg//4h	inhalation: vapour inhalation: dust/mist
4,4'-Methylenediphenyl diisocyanate	CAS No 25686-28-6	Skin Irrit. 2; H315: C $\geq 5\%$ Eye Irrit. 2; H319: C $\geq 5\%$	-	11 mg//4h	inhalation: vapour

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Name of sub-stance	Identifier	Specific Conc. Limits	M-Factors	ATE	Exposure route
anate, oligomers	EC No 500-040-3	Resp. Sens. 1; H334: C ≥ 0.1 % STOT SE 3; H335: C ≥ 5 %			
POLYMETHYLENEPOLYPHENYLENE ISOCYANATE-POLYPROPYLENE GLYCOL COPOLYMER	CAS No 53862-89-8 EC No 670-234-1	-	-	11 mg/4h	inhalation: vapour
4,4'-Methylenediphenyl diisocyanate, oligomeric reaction products with α-hydro-ω-hydroxypoly(oxy-1,2-ethanediyl)	CAS No 9048-57-1 EC No 500-028-8	-	-	11 mg/4h	inhalation: vapour
Reaction mass of 4,4'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate	EC No 905-806-4	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 %	-	11 mg/4h	inhalation: vapour

Remarks

All the percentages given are percentages by weight unless stated otherwise. For full text of H-phrases: see SECTION 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

General notes

Do not leave affected person unattended. Remove victim out of the danger area. In case of unconsciousness place person in the recovery position. Never give anything by mouth. Take off immediately all contaminated clothing. In all cases of doubt, or when symptoms persist, seek medical advice.

Following inhalation

Provide fresh air. If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions. Call a POISON CENTER/doctor.

Following skin contact

Wash with plenty of soap and water. Call a POISON CENTER/doctor.

Following eye contact

Irrigate copiously with clean, fresh water for at least 15 minutes, holding the eyelids apart. Remove contact lenses, if present and easy to do. Continue rinsing. Call a POISON CENTER/doctor.

Following ingestion

Rinse mouth with water (only if the person is conscious). Do NOT induce vomiting.

4.2 Most important symptoms and effects, both acute and delayed

Persons already sensitised to diisocyanates may develop allergic reactions when using this product: asthmatic complaints, breathing difficulties, pulmonary irritation.
Dermatitis, headache, coughing, irritation of the nose, throat and airways, pulmonary edema.

4.3 Indication of any immediate medical attention and special treatment needed

For specialist advice physicians should contact the poison centre.

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SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Water spray; Foam; Dry extinguishing powder; Carbon dioxide (CO₂);
Co-ordinate firefighting measures to the fire surroundings.

Unsuitable extinguishing media

Water jet.

5.2 Special hazards arising from the substance or mixture

Hazardous combustion products

During fire hazardous fumes/smoke could be produced. Nitrogen oxides (NO_x). Carbon monoxide (CO). Carbon dioxide (CO₂).
Hydrogen cyanide (HCN, prussic acid). Hydrocarbons.

5.3 Advice for firefighters

In case of fire and/or explosion do not breathe fumes. Co-ordinate firefighting measures to the fire surroundings. Do not allow firefighting water to enter drains or water courses. Collect contaminated firefighting water separately. Fight fire with normal precautions from a reasonable distance.

Special protective equipment for firefighters

Self-contained breathing apparatus (SCBA). Standard protective clothing for firefighters.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Remove persons to safety. Ventilate affected area.

For emergency responders

Wear breathing apparatus if exposed to vapours/dust/spray/gases. Use personal protective equipment as required.

6.2 Environmental precautions

Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it.

6.3 Methods and material for containment and cleaning up

Advice on how to contain a spill

Covering of drains.

Advice on how to clean up a spill

Wipe up with absorbent material (e.g. cloth, fleece). Absorb with liquid-binding material (sand, diatomaceous earth, acid binder, universal binder, sawdust).

Appropriate containment techniques

Use of adsorbent materials.

Other information relating to spills and releases

Place in appropriate containers for disposal. Ventilate affected area.

6.4 Reference to other sections

Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Recommendations

- measures to prevent fire as well as aerosol and dust generation

Use local and general ventilation. Use only in well-ventilated areas.

Advice on general occupational hygiene

Wash hands after use. Do not eat, drink and smoke in work areas. Remove contaminated clothing and protective equipment before entering eating areas. Never keep food or drink in the vicinity of chemicals. Never place chemicals in containers that are

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normally used for food or drink. Keep away from food, drink and animal feedingstuffs.

7.2 Conditions for safe storage, including any incompatibilities

Managing of associated risks

- flammability hazards

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

- incompatible substances or mixtures

Keep away from alkalis, oxidising substances, acids.

Control of effects

Protect against external exposure, such as

High temperatures. UV-radiation/sunlight.

Consideration of other advice

Store in a well-ventilated place. Keep container tightly closed.

- ventilation requirements

Keep any substance that emits harmful vapours or gases in a place that allows these to be permanently extracted.

- packaging compatibilities

Keep only in original container.

7.3 Specific end use(s)

See section 1.2.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

National limit values

Occupational exposure limit values (Workplace Exposure Limits)									
Country	Name of agent	CAS No	Identifier	TWA [ppm]	TWA [mg/m ³]	STEL [ppm]	STEL [mg/m ³]	Notation	Source
GB	isocyanates		WEL		0.02		0.07	NCO, ex-C ₂ H ₃ N O	EH40/2005

Notation

ex-C₂H₃N O except methyl isocyanate

NCO measured total-NCO (isocyanate)

STEL short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period (unless otherwise specified)

TWA time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average (unless otherwise specified)

Biological limit values

Biological limit values						
Country	Name of agent	Parameter	Notation	Identifier	Value	Source
GB	Isocyanates (applies to HDI, IPDI, TDI and MDI)	isocyanate-derived diamine	crea	BMGV	1 µmol/mol	EH40/2005

Notation

crea creatinine

Relevant DNELs/DMELs/PNECs and other threshold levels

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Relevant DNELs of components of the mixture						
Name of sub-stance	CAS No	End-point	Threshold level	Protection goal, route of exposure	Used in	Exposure time
4,4'-Methylenedi-phenyl diisocyanate, oligomers	25686-28-6	DNEL	0.05 mg/m ³	human, inhalatory	worker (industry)	chronic - local effects
4,4'-Methylenedi-phenyl diisocyanate, oligomers	25686-28-6	DNEL	0.1 mg/m ³	human, inhalatory	worker (industry)	acute - local effects
4,4'-Methylenedi-phenyl diisocyanate, oligomers	25686-28-6	DNEL	0.025 mg/m ³	human, inhalatory	consumer (private households)	chronic - local effects
4,4'-Methylenedi-phenyl diisocyanate, oligomers	25686-28-6	DNEL	0.05 mg/m ³	human, inhalatory	consumer (private households)	acute - local effects
Reaction mass of 4,4'-methylenedi-phenyl diisocyanate and o-(p-isocyanato-benzyl)phenyl isocyanate / methylene di-phenyl diisocyanate		DNEL	0.05 mg/m ³	human, inhalatory	worker (industry)	chronic - local effects
Reaction mass of 4,4'-methylenedi-phenyl diisocyanate and o-(p-isocyanato-benzyl)phenyl isocyanate / methylene di-phenyl diisocyanate		DNEL	0.1 mg/m ³	human, inhalatory	worker (industry)	acute - local effects
Reaction mass of 4,4'-methylenedi-phenyl diisocyanate and o-(p-isocyanato-benzyl)phenyl isocyanate / methylene di-phenyl diisocyanate		DNEL	0.025 mg/m ³	human, inhalatory	consumer (private households)	chronic - local effects
Reaction mass of 4,4'-methylenedi-phenyl diisocyanate and o-(p-isocyanato-benzyl)phenyl isocyanate / methylene di-phenyl diisocyanate		DNEL	0.05 mg/m ³	human, inhalatory	consumer (private households)	acute - local effects

Relevant PNECs of components						
Name of sub-stance	CAS No	End-point	Threshold level	Organism	Environmental compartment	Exposure time
4,4'-Methylenedi-phenyl diisocyanate, oligomers	25686-28-6	PNEC	10 mg/l	aquatic organisms	water	intermittent release
4,4'-Methylenedi-phenyl diisocyanate, oligomers	25686-28-6	PNEC	1 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
4,4'-Methylenedi-phenyl diisocyanate, oligomers	25686-28-6	PNEC	3.7 µg/l	aquatic organisms	freshwater	short-term (single instance)
4,4'-Methylenedi-phenyl diisocyanate,	25686-28-6	PNEC	0.37 µg/l	aquatic organisms	marine water	short-term (single instance)

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Relevant PNECs of components						
Name of sub-stance	CAS No	End-point	Threshold level	Organism	Environmental compartment	Exposure time
oligomers						
4,4'-Methylenedi-phenyl diisocyanate, oligomers	25686-28-6	PNEC	11.7 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
4,4'-Methylenedi-phenyl diisocyanate, oligomers	25686-28-6	PNEC	1.17 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
4,4'-Methylenedi-phenyl diisocyanate, oligomers	25686-28-6	PNEC	2.33 mg/kg	terrestrial organisms	soil	short-term (single instance)
Reaction mass of 4,4'-methylenedi-phenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene di-phenyl diisocyanate		PNEC	3.7 µg/l	aquatic organisms	freshwater	short-term (single instance)
Reaction mass of 4,4'-methylenedi-phenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene di-phenyl diisocyanate		PNEC	0.37 µg/l	aquatic organisms	marine water	short-term (single instance)
Reaction mass of 4,4'-methylenedi-phenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene di-phenyl diisocyanate		PNEC	11.7 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
Reaction mass of 4,4'-methylenedi-phenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene di-phenyl diisocyanate		PNEC	1.17 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
Reaction mass of 4,4'-methylenedi-phenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene di-phenyl diisocyanate		PNEC	2.33 mg/kg	terrestrial organisms	soil	short-term (single instance)

8.2 Exposure controls

Appropriate engineering controls

General ventilation. Provide eyewash stations and safety showers at the workplace.

Individual protection measures (personal protective equipment)

Eye/face protection



Use safety goggle with side protection

Skin protection



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Chemical protective clothing.

Hand protection



Wear suitable gloves. Check leak-tightness/impermeability prior to use. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves. The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

- type of material

Butyl rubber

- material thickness

Use gloves with a minimum material thickness: ≥ 0.5 mm.

- breakthrough time of the glove material

Use gloves with a minimum breakthrough time of the glove material: >480 minutes (permeation: level 6).

- other protection measures

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended. Wash hands thoroughly after handling.

Respiratory protection

In case of inadequate ventilation wear respiratory protection. Type: ABEK-P2 (combined filters against gases, vapours and particles, colour code: Brown/Grey/Yellow/Green/White).

Environmental exposure controls

Take appropriate precautions to avoid uncontrolled release into the environment. Keep away from drains, surface and ground water.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	liquid (viscous)
Colour	beige
Odour	hydrocarbon
Melting point/freezing point	not determined
Boiling point or initial boiling point and boiling range	>200 °C
Evaporation rate	not determined
Flammability	this material is combustible, but will not ignite readily
Lower and upper explosion limit	LEL: UEL: not determined
Flash point	>203 °C
Auto-ignition temperature	>464 °C (auto-ignition temperature (liquids and gases)) calculated value, referring to a component of the mixture
Decomposition temperature	no data available
pH (value)	not determined
Kinematic viscosity	not determined
Dynamic viscosity	20,000 mPa s
Solubility	not determined

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Partition coefficient n-octanol/water (log value)	this information is not available
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Vapour pressure	<0.0133 hPa
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Density and/or relative density

Density	1.288 g/cm ³
Relative vapour density	information on this property is not available

Particle characteristics	not relevant (liquid)
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9.2 Other information

Information with regard to physical hazard classes	hazard classes acc. to GHS (physical hazards): not relevant
Other safety characteristics	there is no additional information

SECTION 10: Stability and reactivity

10.1 Reactivity

This material is not reactive under normal ambient conditions.

10.2 Chemical stability

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

10.3 Possibility of hazardous reactions

No known hazardous reactions.

10.4 Conditions to avoid

Overheating. Humidity.

10.5 Incompatible materials

Acids. Bases. Oxidisers. Alcohols. Amines. Ammonia. Water. Aluminium. Iron. Copper alloys. Zinc.

10.6 Hazardous decomposition products

Reasonably anticipated hazardous decomposition products produced as a result of use, storage, spill and heating are not known. Hazardous combustion products: see section 5.

On subsequent contact with water: Carbon dioxide generation.

Material reacts slowly with water, releasing carbon dioxide which can cause pressure buildup and rupture of closed containers. Elevated temperatures accelerate this reaction.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Test data are not available for the complete mixture.

Classification procedure

The method for classification of the mixture is based on ingredients of the mixture (additivity formula).

Classification acc. to GHS

Acute toxicity

Harmful if inhaled.

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- acute toxicity estimate (ATE)

Exposure route	ATE
Inhalation: vapour	11.96 mg/l/4h
Inhalation: dust/mist	1.045 mg/l/4h

Acute toxicity

Exposure route	Endpoint	Value	Species
inhalation: dust/mist	LC50	2.09 mg/l/1h	bee

Acute toxicity estimate (ATE) of components

Name of substance	CAS No	Exposure route	ATE
Isocyanic acid, polymethylenepolyphenylene ester	9016-87-9	inhalation: vapour	11 mg/l/4h
Isocyanic acid, polymethylenepolyphenylene ester	9016-87-9	inhalation: dust/mist	1.5 mg/l/4h
4,4'-Methylenediphenyl diisocyanate, oligomers	25686-28-6	inhalation: vapour	11 mg/l/4h
POLYMETHYLENEPOLYPHENYLENE ISOCYANATE-POLYPROPYLENE GLYCOL COPOLYMER	53862-89-8	inhalation: vapour	11 mg/l/4h
4,4'-Methylenediphenyl diisocyanate, oligomeric reaction products with α-hydro-ω-hydroxypoly(oxy-1,2-ethanediyl)	9048-57-1	inhalation: vapour	11 mg/l/4h
Reaction mass of 4,4'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate		inhalation: vapour	11 mg/l/4h

Acute toxicity of components

Name of substance	CAS No	Exposure route	Endpoint	Value	Species
Isocyanic acid, polymethylenepolyphenylene ester	9016-87-9	oral	LD50	>10,000 mg/kg	rat
Isocyanic acid, polymethylenepolyphenylene ester	9016-87-9	dermal	LD50	9,400 mg/kg	rabbit
Isocyanic acid, polymethylenepolyphenylene ester	9016-87-9	inhalation: dust/mist	LC50	0.49 mg/l/4h	rat
Isocyanic acid, polymethylenepolyphenylene ester	9016-87-9	inhalation: vapour	LC50	2.24 mg/l/1h	rat
Isocyanic acid, polymethylenepolyphenylene ester	9016-87-9	inhalation: vapour	LC50	0.387 mg/l/4h	rat
4,4'-Methylenediphenyl diisocyanate, oligomers	25686-28-6	oral	LD50	>5,000 mg/kg	rat
Reaction mass of 4,4'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate		oral	LD50	>2,000 mg/kg	rat

Skin corrosion/irritation

Causes skin irritation.

Serious eye damage/eye irritation

Causes serious eye irritation.

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Respiratory or skin sensitisation

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

Germ cell mutagenicity

Shall not be classified as germ cell mutagenic.

Carcinogenicity

Suspected of causing cancer.

Reproductive toxicity

Shall not be classified as a reproductive toxicant.

Specific target organ toxicity - single exposure

May cause respiratory irritation.

Specific target organ toxicity - repeated exposure

May cause damage to organs (respiratory system, respiratory tract) through prolonged or repeated exposure (if inhaled).

Hazard category	Target organ	Exposure route
2	respiratory system	if inhaled
2	respiratory tract	if inhaled

Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

11.2 Information on other hazards

Endocrine disrupting properties

Does not contain an endocrine disruptor (ED) at a concentration of $\geq 0,1\%$.

SECTION 12: Ecological information

12.1 Toxicity

Shall not be classified as hazardous to the aquatic environment.

Aquatic toxicity (acute) of components of the mixture					
Name of substance	CAS No	Endpoint	Value	Species	Exposure time
Isocyanic acid, polymethylenepolyphenylene ester	9016-87-9	LC50	$>1,000 \text{ mg/l}$	zebra fish	96 h
Isocyanic acid, polymethylenepolyphenylene ester	9016-87-9	EC50	$>1,000 \text{ mg/l}$	water flea (Daphnia)	24 h
Isocyanic acid, polymethylenepolyphenylene ester	9016-87-9	NOEC	$1,640 \text{ mg/l}$	desmodesmus subspicatus (green alga)	72 h
4,4'-Methylenediphenyl diisocyanate, oligomers	25686-28-6	LC50	$>1,000 \text{ mg/l}$	fish	96 h
4,4'-Methylenediphenyl diisocyanate, oligomers	25686-28-6	EC50	129.7 mg/l	aquatic invertebrates	24 h
4,4'-Methylenediphenyl diisocyanate, oligomers	25686-28-6	EL50	8.9 mg/l	daphnia magna	48 h

Aquatic toxicity (chronic) of components of the mixture					
Name of substance	CAS No	Endpoint	Value	Species	Exposure time
4,4'-Methylenediphenyl diisocyanate, oligomers	25686-28-6	ErC50	$>1,640 \text{ mg/l}$	algae	3 d

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Aquatic toxicity (chronic) of components of the mixture					
Name of substance	CAS No	Endpoint	Value	Species	Exposure time
4,4'-Methylenediphenyl diisocyanate, oligomers	25686-28-6	EC50	>100 mg/l	microorganisms	3 h
4,4'-Methylenediphenyl diisocyanate, oligomers	25686-28-6	NOELR	1,640 mg/l	algae	3 d
4,4'-Methylenediphenyl diisocyanate, oligomers	25686-28-6	NOEC	≥10 mg/l	aquatic invertebrates	21 d
Reaction mass of 4,4'-methylene-diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate		NOEC	≥10 mg/l	aquatic invertebrates	21 d

12.2 Persistence and degradability

Data are not available.

12.3 Bioaccumulative potential

Data are not available.

12.4 Mobility in soil

Data are not available.

12.5 Results of PBT and vPvB assessment

Does not contain a PBT-/vPvB-substance at a concentration of ≥ 0,1%.

12.6 Endocrine disrupting properties

Does not contain an endocrine disruptor (ED) at a concentration of ≥ 0,1%.

12.7 Other adverse effects

Data are not available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Sewage disposal-relevant information

Do not empty into drains. Avoid release to the environment.

Waste treatment of containers/packages

Completely emptied packages can be recycled. Handle contaminated packages in the same way as the substance itself.

Relevant provisions relating to waste

List of wastes

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

Remarks

Please consider the relevant national or regional provisions. Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities.

SECTION 14: Transport information

14.1 UN number	not subject to transport regulations
14.2 UN proper shipping name	not relevant
14.3 Transport hazard class(es)	none
14.4 Packing group	not assigned

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14.5 Environmental hazards

non-environmentally hazardous acc. to the dangerous goods regulations

14.6 Special precautions for user

There is no additional information.

14.7 Maritime transport in bulk according to IMO instruments

No data available.

Additional information for each of the UN Model Regulations

International Maritime Dangerous Goods Code (IMDG) - additional information

Not subject to IMDG.

International Civil Aviation Organization (ICAO-IATA/DGR) - additional information

Not subject to ICAO-IATA.

SECTION 15: Regulatory information

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

Relevant provisions of the European Union (EU)

Seveso Directive

2012/18/EU (Seveso III)

No	Dangerous substance/hazard categories	Qualifying quantity (tonnes) for the application of lower and upper-tier requirements	Notes
	not assigned		

Regulation concerning the establishment of a European Pollutant Release and Transfer Register (PRTR)

None of the ingredients are listed.

Water Framework Directive (WFD)

List of pollutants (WFD)

Name of substance	Name acc. to inventory	CAS No	Listed in	Remarks
4,4'-Methylenediphenyl diisocyanate, oligomers	Substances and preparations, or the breakdown products of such, which have been proved to possess carcinogenic or mutagenic properties or properties which may affect steroidogenic, thyroid, reproduction or other endocrine-related functions in or via the aquatic environment		a)	
Reaction mass of 4,4'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate	Substances and preparations, or the breakdown products of such, which have been proved to possess carcinogenic or mutagenic properties or properties which may affect steroidogenic, thyroid, reproduction or other endocrine-related functions in or via the aquatic environment		a)	
Isocyanic acid, polymethylenepolyphenylene ester	Substances and preparations, or the breakdown products of such, which have been proved to possess carcinogenic or mutagenic properties or properties which may affect steroidogenic, thyroid, reproduction or other endocrine-related functions in or via the aquatic environment		a)	

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List of pollutants (WFD)				
Name of substance	Name acc. to inventory	CAS No	Listed in	Remarks
POLYMETHYLENEPOLY-PHENYLENE ISOCYANATE-POLYPROPYLENE GLYCOL CO-POLYMER	Substances and preparations, or the breakdown products of such, which have been proved to possess carcinogenic or mutagenic properties or properties which may affect steroidogenic, thyroid, reproduction or other endocrine-related functions in or via the aquatic environment		a)	
4,4'-Methylenediphenyl diisocyanate, oligomeric reaction products with α-hydro-ω-hydroxypoly(oxy-1,2-ethanediyl)	Substances and preparations, or the breakdown products of such, which have been proved to possess carcinogenic or mutagenic properties or properties which may affect steroidogenic, thyroid, reproduction or other endocrine-related functions in or via the aquatic environment		a)	

Legend

a) Indicative list of the main pollutants

Regulation (EU) 2019/1148 of the European Parliament and of the Council of 20 June 2019 on the marketing and use of explosives precursors, amending Regulation (EC) No 1907/2006 and repealing Regulation (EU) No 98/2013

None of the ingredients are listed.

Regulation on persistent organic pollutants (POP)

None of the ingredients are listed.

National regulations (GB)

List of substances subject to authorisation (GB REACH, Annex 14) / SVHC - candidate list

None of the ingredients are listed.

Restrictions according to GB REACH, Annex 17

Dangerous substances with restrictions (GB REACH, Annex 17)			
Name	Name acc. to inventory	Conditions of restriction	No
Plastic repair – component A	this product meets the criteria for classification in accordance with Regulation No 1272/2008/EC	R3	3
4,4'-Methylenediphenyl diisocyanate, oligomers	diisocyanates	R74	74
Isocyanic acid, polymethylenepolyphenylene ester	Methylenediphenyl diisocyanate (MDI)	R56	56
Isocyanic acid, polymethylenepolyphenylene ester	diisocyanates	R74	74

Legend

R3

- Shall not be used in:
 - ornamental articles intended to produce light or colour effects by means of different phases, for example in ornamental lamps and ashtrays,
 - tricks and jokes,
 - games for one or more participants, or any article intended to be used as such, even with ornamental aspects,
- Articles not complying with paragraph 1 shall not be placed on the market.
- Shall not be placed on the market if they contain a colouring agent, unless required for fiscal reasons, or perfume, or both, if they:
 - can be used as fuel in decorative oil lamps for supply to the general public, and,
 - present an aspiration hazard and are labelled with R65 or H304,
- Decorative oil lamps for supply to the general public shall not be placed on the market unless they conform to the British Standard Specification on Decorative oil lamps (BS EN 14059) adopted by the British Standards Institute.
- Without prejudice to the implementation of other legislation relating to the classification, packaging and labelling of dangerous

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Legend

substances and mixtures, suppliers shall ensure, before the placing on the market, that the following requirements are met:
(a) lamp oils, labelled with R65 or H304, intended for supply to the general public are visibly, legibly and indelibly marked as follows: 'Keep lamps filled with this liquid out of the reach of children'; and, by 1 December 2010 'Just a sip of lamp oil'

— or even sucking the wick of lamps
— may lead to life-threatening lung damage';

(b) grill lighter fluids, labelled with R65 or H304, intended for supply to the general public are legibly and indelibly marked by 1 December 2010 as

follows: 'Just a sip of grill lighter may lead to life-threatening lung damage';

(c) lamp oils and grill lighters, labelled with R65 or H304, intended for supply to the general public are packaged in black opaque containers not exceeding 1 litre by 1 December 2010.

7. Natural or legal persons placing on the market for the first time lamp oils and grill lighter fluids, labelled with R65 or H304, shall by 1 December 2011, and annually thereafter, provide data on alternatives to lamp oils and grill lighter fluids labelled R65 or H304 to the Agency.

R56 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 Regulation (EU) 2016/425;

(b) is marked visibly, legibly and indelibly as follows, and without prejudice to other 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 BS EN 14387) is used.'

2. By way of derogation, paragraph 1(a) shall not apply to hot melt adhesives.

(*****) OJ L 399, 30.12.1989, p. 18.

R74 1. Shall not be used as substances on their own, as a constituent in other substances or in mixtures for industrial and professional use(s) after 24 August 2023, unless:

(a) the concentration of diisocyanates individually and in combination is less than 0.1 % by weight, or

(b) the employer or self-employed ensures that industrial or professional user(s) have successfully completed training on the safe use of diisocyanates prior to the use of the substance(s) or mixture(s).

2. Shall not be placed on the market as substances on their own, as a constituent in other substances or in mixtures for industrial and professional use(s) after 24 February 2022, unless:

(a) the concentration of diisocyanates individually and in combination is less than 0.1 % by weight, or

(b) the supplier ensures that the recipient of the substance(s) or mixture(s) is provided with information on the requirements referred to in point (b) of paragraph 1 and the following statement is placed on the packaging, in a manner that is visibly distinct from the rest of the label information: 'As from 24 August 2023 adequate training is required before industrial or professional use'.

3. For the purpose of this entry 'industrial and professional user(s)' means any worker or self-employed worker handling diisocyanates on their own, as a constituent in other substances or in mixtures for industrial and professional use(s) or supervising these tasks.

4. The training referred to in point (b) of paragraph 1 shall include the instructions for the control of dermal and inhalation exposure to diisocyanates at the workplace without prejudice to any national occupational exposure limit value or other appropriate risk management measures at national level. Such training shall be conducted by an expert on occupational safety and health with competence acquired by relevant vocational training. That training shall cover as a minimum:

(a) the training elements in point (a) of paragraph 5 for all industrial and professional use(s).

(b) the training elements in points (a) and (b) of paragraph 5 for the following uses:

— handling open mixtures at ambient temperature (including foam tunnels);

— spraying in a ventilated booth;

— application by roller;

— application by brush;

— application by dipping and pouring;

— mechanical post treatment (e.g. cutting) of not fully cured articles which are not warm anymore;

— cleaning and waste;

— any other uses with similar exposure through the dermal and/or inhalation route;

(c) the training elements in points (a), (b) and (c) of paragraph 5 for the following uses:

— handling incompletely cured articles (e.g. freshly cured, still warm);

— foundry applications;

— maintenance and repair that needs access to equipment;

— open handling of warm or hot formulations (> 45 °C);

— spraying in open air, with limited or only natural ventilation (includes large industry working halls) and spraying with high energy (e.g. foams, elastomers);

— and any other uses with similar exposure through the dermal and/or inhalation route.

5. Training elements:

(a) general training, including on-line training, on:

— chemistry of diisocyanates;

— toxicity hazards (including acute toxicity);

— exposure to diisocyanates;

— occupational exposure limit values;

— how sensitisation can develop;

— odour as indication of hazard;

— importance of volatility for risk;

— viscosity, temperature, and molecular weight of diisocyanates; — personal hygiene;

— personal protective equipment needed, including practical instructions for its correct use and its limitations;

— risk of dermal contact and inhalation exposure;

— risk in relation to application process used;

— skin and inhalation protection scheme;

— ventilation;

— cleaning, leakages, maintenance;

— discarding empty packaging;

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Legend

- protection of bystanders;
- identification of critical handling stages;
- specific national code systems (if applicable);
- behaviour-based safety;
- certification or documented proof that training has been successfully completed
- (b) intermediate level training, including on-line training, on:
 - additional behaviour-based aspects;
 - maintenance;
 - management of change;
 - evaluation of existing safety instructions;
 - risk in relation to application process used;
 - certification or documented proof that training has been successfully completed
- (c) advanced training, including on-line training, on:
 - any additional certification needed for the specific uses covered;
 - spraying outside a spraying booth;
 - open handling of hot or warm formulations (> 45 °C);
 - certification or documented proof that training has been successfully completed
- 6. The training:
 - (a) must comply with any other requirements contained in any other legislation that relate to the delivery of the training elements referred to in paragraph 5 and
 - (b) is in addition to any other training required by any other legislation.
- 7. The supplier referred to in point (b) of paragraph 2 shall ensure that the recipient is provided with training material and courses pursuant to paragraphs 4 and 5. The training shall take into consideration the specificity of the products supplied, including composition, packaging, and design.
- 8. The employer or self-employed shall document the successful completion of the training referred to in paragraphs 4 and 5. The training shall be renewed at least every five years.
- 9. The Agency shall include in its report pursuant to Article 117(2) the following information:
 - (b) the number of cases of reported and recognised occupational asthma and occupational respiratory and dermal diseases in relation to diisocyanates;
 - (d) information about enforcement activities related to this restriction.
- 10. This restriction shall apply without prejudice to other legislation on the protection of safety and health of workers at the workplace.

15.2 Chemical Safety Assessment

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

SECTION 16: Other information

Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
Acute Tox.	Acute toxicity
ADR	Accord relatif au transport international des marchandises dangereuses par route (Agreement concerning the International Carriage of Dangerous Goods by Road)
ATE	Acute Toxicity Estimate
Carc.	Carcinogenicity
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
DGR	Dangerous Goods Regulations (see IATA/DGR)
DMEL	Derived Minimal Effect Level
DNEL	Derived No-Effect Level
EC50	Effective Concentration 50 %. The EC50 corresponds to the concentration of a tested substance causing 50 % changes in response (e.g. on growth) during a specified time interval
EC No	The EC Inventory (EINECS, ELINCS and the NLP-list) is the source for the seven-digit EC number, an identifier of substances commercially available within the EU (European Union)
ED	Endocrine disruptor
EH40/2005	EH40/2005 Workplace exposure limits (http://www.nationalarchives.gov.uk/doc/open-government-licence/)
EINECS	European Inventory of Existing Commercial Chemical Substances
EL50	Effective Loading 50 %: the EL50 corresponds to the loading rate required to produce a response in 50% of the test organisms
ELINCS	European List of Notified Chemical Substances

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Abbr.	Descriptions of used abbreviations
ErC50	≡ EC50: in this method, that concentration of test substance which results in a 50 % reduction in either growth (EbC50) or growth rate (ErC50) relative to the control
Eye Dam.	Seriously damaging to the eye
Eye Irrit.	Irritant to the eye
GB CLP	The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use) (Amendment etc.) (EU Exit) Regulations 2019, SI 2019/720 (as amended)
GB REACH	The REACH etc. (Amendment etc.) (EU Exit) Regulations 2019, SI 2019/758 (as amended)
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
IATA	International Air Transport Association
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods Code
index No	The Index number is the identification code given to the substance in Part 3 of Annex VI to Regulation (EC) No 1272/2008
LC50	Lethal Concentration 50%: the LC50 corresponds to the concentration of a tested substance causing 50 % lethality during a specified time interval
LD50	Lethal Dose 50 %: the LD50 corresponds to the dose of a tested substance causing 50 % lethality during a specified time interval
LEL	Lower explosion limit (LEL)
NLP	No-Longer Polymer
NOEC	No Observed Effect Concentration
NOELR	No Observed Effect Loading Rate
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted No-Effect Concentration
ppm	Parts per million
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
Resp. Sens.	Respiratory sensitisation
RID	Règlement concernant le transport International ferroviaire des marchandises Dangereuses (Regulations concerning the International carriage of Dangerous goods by Rail)
Skin Corr.	Corrosive to skin
Skin Irrit.	Irritant to skin
Skin Sens.	Skin sensitisation
STEL	Short-term exposure limit
STOT RE	Specific target organ toxicity - repeated exposure
STOT SE	Specific target organ toxicity - single exposure
TWA	Time-weighted average
UEL	Upper explosion limit (UEL)
vPvB	Very Persistent and very Bioaccumulative
WEL	Workplace exposure limit

Key literature references and sources for data

The REACH etc. (Amendment etc.) (EU Exit) Regulations 2019, SI 2019/758 (as amended). The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use) (Amendment etc.) (EU Exit) Regulations 2019, SI 2019/720 (as amended). GB mandatory classification and labelling.

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Agreement concerning the International Carriage of Dangerous Goods by Road (ADR). Regulations concerning the International Carriage of Dangerous Goods by Rail (RID). International Maritime Dangerous Goods Code (IMDG). Dangerous Goods Regulations (DGR) for the air transport (IATA).

Classification procedure

Physical and chemical properties: The classification is based on tested mixture.

Health hazards, Environmental hazards: The method for classification of the mixture is based on ingredients of the mixture (additivity formula).

List of relevant phrases (code and full text as stated in section 2 and 3)

Code	Text
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 (respiratory system, respiratory tract) through prolonged or repeated exposure (if inhaled).

Disclaimer

This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product.