

# SAFETY DATA SHEET

Date of issue/Date of revision

: 19 March 2026

Version

: 1.02



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

### 1.1 Product identifier

**Product name** : VERSAFLEX 291 - A

**Product code** : 00466266

#### Other means of identification

Not available.

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

**Product use** : Industrial applications, Professional applications, Used by spraying.

**Use of the substance/mixture** : Coating.

**Uses advised against** : Product is not intended, labelled or packaged for consumer use.

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

PPG Coatings Belgium BV/SRL

Tweemontstraat 104

B-2100 Deurne

Belgium

Telephone +32-33606311

Fax +32-33606435

**e-mail address of person responsible for this SDS** : Product.Stewardship.EMEA@ppg.com

### 1.4 Emergency telephone number

#### National advisory body/Poison Centre

National Poison Information Centre at Beaumont Hospital. Tel: +353 1 8092566, email: npicdublin@beaumont.ie

#### Supplier

+31 20 4075210

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

**Product definition** : Mixture

#### Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

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

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## SECTION 2: Hazards identification

The product is classified as hazardous according to Regulation (EC) 1272/2008 as amended.

See Section 16 for the full text of the H statements declared above.

See Section 11 for more detailed information on health effects and symptoms.

### 2.2 Label elements

Hazard pictograms



Signal word

: Danger

Hazard statements

: Causes skin irritation.  
May cause an allergic skin reaction.  
Causes serious eye irritation.  
Harmful if inhaled.  
May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
May cause respiratory irritation.  
Suspected of causing cancer.  
May cause damage to organs through prolonged or repeated exposure.

### Precautionary statements

Prevention

: Wear protective gloves, protective clothing and eye or face protection. Do not breathe vapour.

Response

: IF INHALED: Remove person to fresh air and keep comfortable for breathing. If experiencing respiratory symptoms: Call a POISON CENTER or doctor.

Storage

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

Disposal

: Dispose of contents and container in accordance with all local, regional, national and international regulations.

P280, P260, P304 + P340, P342 + P311, P403 + P233, P501

Hazardous ingredients

: ; 4,4'-methylenediphenyl diisocyanate; o-(p-isocyanatobenzyl)phenyl isocyanate and 2,2'-methylenediphenyl diisocyanate

Supplemental label elements

: Contains isocyanates. May produce an allergic reaction.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

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

### Special packaging requirements

Containers to be fitted with child-resistant fastenings

: Not applicable.

Tactile warning of danger

: Not applicable.

### 2.3 Other hazards

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## SECTION 2: Hazards identification

**Product meets the criteria for PBT or vPvB according to Regulation (EC) No. 1907/2006, Annex XIII** : This mixture does not contain any substances that are assessed to be a PBT or a vPvB.

**Product meets the criteria for endocrine disrupting properties according to Regulation (EC) No. 1907/2006.** : Based on available data, the classification criteria are not met.

**Other hazards which do not result in classification** : None known.

## SECTION 3: Composition/information on ingredients

**3.2 Mixtures** : Mixture

Product/ingredient name	Identifiers	% by weight	Classification	Specific Conc. Limits, M-factors and ATEs	Type
methyloxirane, polymer with 1,1-methylenebis (isocyanatobenzene) [1-methylenebis (isocyanatobenzene)]	CAS: SUB142044	≥25 - ≤50	Acute Tox. 4, H332 Skin Irrit. 2, H315 Resp. Sens. 1A, H334 Skin Sens. 1B, H317 STOT SE 3, H335 EUH029	ATE [Inhalation (vapours)] = 11 mg/l	[1]
4,4'-methylenediphenyl diisocyanate	REACH #: 01-2119457014-47 EC: 202-966-0 CAS: 101-68-8 Index: 615-005-00-9	≥25 - ≤50	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	ATE [Inhalation (dusts and mists)] = 1.5 mg/l 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%	[1] [2]
o-(p-isocyanatobenzyl) phenyl isocyanate	REACH #: 01-2119480143-45 EC: 227-534-9 CAS: 5873-54-1 Index: 615-005-00-9	≥10 - ≤25	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	ATE [Inhalation (dusts and mists)] = 1.5 mg/l 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%	[1] [2]
2,2'-methylenediphenyl diisocyanate	REACH #: 01-2119927323-43 EC: 219-799-4 CAS: 2536-05-2 Index: 615-005-00-9	≥1.0 - ≤4.4	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	ATE [Inhalation (dusts and mists)] = 1.5 mg/l Skin Irrit. 2, H315: C ≥ 5% Eye Irrit. 2, H319: C ≥ 5% Resp. Sens. 1, H334: C ≥ 0.1% STOT SE 3, H335: C	[1] [2]

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### SECTION 3: Composition/information on ingredients

			See Section 16 for the full text of the H statements declared above.	≥ 5%	
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There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment, are PBTs, vPvBs or Substances of equivalent concern, or have been assigned a workplace exposure limit and hence require reporting in this section.

#### Type

[1] Substance classified with a health or environmental hazard

[2] Substance with a workplace exposure limit

Occupational exposure limits, if available, are listed in Section 8.

**SUB codes represent substances without registered CAS Numbers.**

### SECTION 4: First aid measures

#### 4.1 Description of first aid measures

- Eye contact** : Remove contact lenses, irrigate copiously with clean, fresh water, holding the eyelids apart for at least 10 minutes and seek immediate medical advice.  
In case of accidental eye contact, avoid direct exposure to the sun or other sources of UV light as severe irritation including burns may result. These reactions can be delayed – get medical attention if pain, irritation or blistering occurs after contact.
- Inhalation** : Remove to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel.
- Skin contact** : Remove contaminated clothing and shoes. Wash skin thoroughly with soap and water or use recognised skin cleanser. Do NOT use solvents or thinners.  
In case of accidental skin contact, avoid direct exposure to the sun or other sources of UV light as severe irritation including burns may result. These reactions can be delayed – get medical attention if pain, irritation, rash or blistering occurs after contact.
- Ingestion** : If swallowed, seek medical advice immediately and show the container or label. Keep person warm and at rest. Do NOT induce vomiting.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

#### 4.2 Most important symptoms and effects, both acute and delayed

##### Potential acute health effects

- Eye contact** : Causes serious eye irritation.
- Inhalation** : Harmful if inhaled. May cause respiratory irritation. May cause allergy or asthma symptoms or breathing difficulties if inhaled.
- Skin contact** : Causes skin irritation. May cause an allergic skin reaction.
- Ingestion** : No known significant effects or critical hazards.

##### Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:  
pain or irritation  
watering  
redness

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## SECTION 4: First aid measures

- Inhalation** : Adverse symptoms may include the following:  
respiratory tract irritation  
coughing  
wheezing and breathing difficulties  
asthma
- Skin contact** : Adverse symptoms may include the following:  
irritation  
redness
- Ingestion** : No specific data.

### 4.3 Indication of any immediate medical attention and special treatment needed

- Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Specific treatments** : No specific treatment.

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

- Suitable extinguishing media** : Use an extinguishing agent suitable for the surrounding fire.
- Unsuitable extinguishing media** : None known.

### 5.2 Special hazards arising from the substance or mixture

- Hazards from the substance or mixture** : In a fire or if heated, a pressure increase will occur and the container may burst.
- Hazardous combustion products** : Decomposition products may include the following materials:  
carbon oxides  
nitrogen oxides  
Cyanate and isocyanate.  
hydrogen cyanide

### 5.3 Advice for firefighters

- Special precautions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- For emergency responders** : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

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## SECTION 6: Accidental release measures

### 6.2 Environmental precautions

: Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

### 6.3 Methods and material for containment and cleaning up

#### Small spill

: Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

#### Large spill

: Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product.

#### Special provisions

: Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Place in a suitable container. The contaminated area should be cleaned immediately with a suitable decontaminant. One possible (flammable) decontaminant comprises (by volume): water (45 parts), ethanol or isopropyl alcohol (50 parts) and concentrated (d: 0,880) ammonia solution (5 parts). A non-flammable alternative is sodium carbonate (5 parts) and water (95 parts). Add the same decontaminant to the remnants and let stand for several days until no further reaction in an unsealed container. Once this stage is reached, close container and dispose of according to local regulations (see section 13). Do not allow to enter drains or watercourses. If the product contaminates lakes, rivers, or sewers, inform the appropriate authorities in accordance with local regulations.

### 6.4 Reference to other sections

: See Section 1 for emergency contact information.  
See Section 8 for information on appropriate personal protective equipment.  
See Section 13 for additional waste treatment information.

## SECTION 7: Handling and storage

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

### 7.1 Precautions for safe handling

#### Protective measures

: Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitisation problems or asthma, allergies or chronic or recurrent respiratory disease should not be employed in any process in which this product is used. Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

#### Advice on general occupational hygiene

: Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

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## SECTION 7: Handling and storage

### 7.2 Conditions for safe storage, including any incompatibilities

Store between the following temperatures: 0 to 35°C (32 to 95°F). Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Precautions should be taken to minimise exposure to atmospheric humidity or water. CO<sub>2</sub> will be formed, which, in closed containers, could result in pressurisation.

### 7.3 Specific end use(s)

See Section 1.2 for Identified uses.

## SECTION 8: Exposure controls/personal protection

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

### 8.1 Control parameters

#### Occupational exposure limits

Product/ingredient name	Exposure limit values
4,4'-methylenediphenyl diisocyanate	<b>NAOSH (Ireland, 4/2024) Sensitiser.</b> OELV 8 hours: 0.005 ppm (as NCO).
o-(p-isocyanatobenzyl)phenyl isocyanate	<b>NAOSH (Ireland, 4/2024) [isocyanates] Sensitiser.</b> OELV 8 hours: 0.02 mg/m <sup>3</sup> (as NCO). OELV 15 minutes: 0.07 mg/m <sup>3</sup> (as NCO).
2,2'-methylenediphenyl diisocyanate	<b>NAOSH (Ireland, 4/2024) [isocyanates] Sensitiser.</b> OELV 8 hours: 0.02 mg/m <sup>3</sup> (as NCO). OELV 15 minutes: 0.07 mg/m <sup>3</sup> (as NCO).

#### Biological exposure indices

Product/ingredient name	Exposure indices
4,4'-methylenediphenyl diisocyanate	<b>NAOSH BGVs (Ireland, 1/2011) [Isocyanates]</b> BMGV: 1 µmol/mol creatinine, diamine [in urine]. Sampling time: post task.
o-(p-isocyanatobenzyl)phenyl isocyanate	<b>NAOSH BGVs (Ireland, 1/2011) [Isocyanates]</b> BMGV: 1 µmol/mol creatinine, diamine [in urine]. Sampling time: post task.
2,2'-methylenediphenyl diisocyanate	<b>NAOSH BGVs (Ireland, 1/2011) [Isocyanates]</b> BMGV: 1 µmol/mol creatinine, diamine [in urine]. Sampling time: post task.

### Recommended monitoring procedures

Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

#### DNELs/DMELs

English (GB)

Ireland

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## SECTION 8: Exposure controls/personal protection

Product/ingredient name	Exposure	Value
4,4'-methylenediphenyl diisocyanate	DNEL - Workers - Long term - Inhalation <i>Local</i>	0.05 mg/m <sup>3</sup>
	DNEL - Workers - Short term - Inhalation <i>Local</i>	0.1 mg/m <sup>3</sup>
	DNEL - General population - Consumers - Long term - Inhalation <i>Local</i>	0.025 mg/m <sup>3</sup>
	DNEL - General population - Consumers - Short term - Inhalation <i>Local</i>	0.05 mg/m <sup>3</sup>
	DNEL - Workers - Short term - Inhalation <i>Systemic</i>	0.1 mg/m <sup>3</sup>
	DNEL - Workers - Long term - Inhalation <i>Systemic</i>	0.05 mg/m <sup>3</sup>
	DNEL - Workers - Short term - Dermal <i>Systemic</i>	50 mg/kg bw/day
	DNEL - Workers - Short term - Dermal <i>Local</i>	28.7 mg/cm <sup>2</sup>
	DNEL - General population - Consumers - Short term - Dermal <i>Systemic</i>	25 mg/kg bw/day
	DNEL - General population - Consumers - Short term - Inhalation <i>Systemic</i>	0.05 mg/m <sup>3</sup>
	DNEL - General population - Consumers - Short term - Oral <i>Systemic</i>	20 mg/kg bw/day
	DNEL - General population - Consumers - Short term - Dermal <i>Local</i>	17.2 mg/cm <sup>2</sup>
	DNEL - General population - Consumers - Long term - Inhalation <i>Systemic</i>	0.025 mg/m <sup>3</sup>
	DNEL - General population - Long term - Inhalation <i>Local</i>	0.025 mg/m <sup>3</sup>
	DNEL - General population - Short term - Inhalation <i>Local</i>	0.05 mg/m <sup>3</sup>
o-(p-isocyanatobenzyl) phenyl isocyanate	DNEL - Workers - Long term - Inhalation <i>Local</i>	0.05 mg/m <sup>3</sup>
	DNEL - Workers - Short term - Inhalation <i>Local</i>	0.1 mg/m <sup>3</sup>
	DNEL - Workers - Short term - Dermal <i>Local</i>	28.7 mg/cm <sup>2</sup>
2,2'-methylenediphenyl diisocyanate	DNEL - General population - Long term - Inhalation <i>Local</i>	0.025 mg/m <sup>3</sup>
	DNEL - General population - Short term - Inhalation <i>Local</i>	0.05 mg/m <sup>3</sup>
	DNEL - Workers - Long term - Inhalation <i>Local</i>	0.05 mg/m <sup>3</sup>
	DNEL - Workers - Short term - Inhalation <i>Local</i>	0.1 mg/m <sup>3</sup>
	DNEL - Workers - Short term - Dermal <i>Local</i>	28.7 mg/cm <sup>2</sup>
	DNEL - General population - Long term - Inhalation <i>Local</i>	0.025 mg/m <sup>3</sup>
	DNEL - General population - Short term - Inhalation <i>Local</i>	0.05 mg/m <sup>3</sup>
	DNEL - Workers - Long term - Inhalation <i>Local</i>	0.05 mg/m <sup>3</sup>
	DNEL - Workers - Short term - Inhalation <i>Local</i>	0.1 mg/m <sup>3</sup>
	DNEL - Workers - Short term - Inhalation <i>Local</i>	0.1 mg/m <sup>3</sup>

### PNECs

Product/ingredient name	Compartment Detail - Method	Value
4,4'-methylenediphenyl diisocyanate	Fresh water - Assessment Factors	1 mg/l
	Marine water - Assessment Factors	0.1 mg/l
	Sewage Treatment Plant - Assessment Factors	1 mg/l
	Soil - Assessment Factors	1 mg/kg dwt
o-(p-isocyanatobenzyl)phenyl isocyanate	Fresh water - Assessment Factors	1 mg/l
	Marine water - Assessment Factors	0.1 mg/l
	Sewage Treatment Plant - Assessment Factors	1 mg/l

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2,2'-methylenediphenyl diisocyanate	Soil - Equilibrium Partitioning	1 mg/kg dwt
	Fresh water - Assessment Factors	1 mg/l
	Marine water - Assessment Factors	0.1 mg/l
	Sewage Treatment Plant - Assessment Factors	1 mg/l
	Soil - Assessment Factors	1 mg/kg dwt

**8.2 Exposure controls**

**Appropriate engineering controls** : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

**Individual protection measures**

**Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

**Eye/face protection** : Chemical splash goggles. Use eye protection according to EN 166.

**Skin protection**

**Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated. When prolonged or frequently repeated contact may occur, a glove with a protection class of 6 (breakthrough time greater than 480 minutes according to EN 374) is recommended. When only brief contact is expected, a glove with a protection class of 2 or higher (breakthrough time greater than 30 minutes according to EN 374) is recommended. The user must check that the final choice of type of glove selected for handling this product is the most appropriate and takes into account the particular conditions of use, as included in the user's risk assessment.

**Gloves** : polyethylene butyl rubber

**Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

**Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

**Respiratory protection** : Use an air-fed respirator unless a site-specific assessment determines that an air-fed respirator is not necessary, in which case the results of the risk assessment should be utilized to determine whether respiratory protection is necessary and what type of protection is appropriate. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. If workers are exposed to concentrations above the exposure limit, they must use appropriate, certified respirators. Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Wear a respirator conforming to EN140. Filter type: organic vapour (Type A) and particulate filter P3

**Restrictions on use** : Persons with a history of asthma, allergies or chronic or recurrent respiratory disease should not be employed in any process in which this product is used.

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## SECTION 8: Exposure controls/personal protection

**Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

## SECTION 9: Physical and chemical properties

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

### 9.1 Information on basic physical and chemical properties

#### Appearance

**Physical state** : Liquid.  
**Colour** : Various  
**Odour** : Faint odour.  
**Melting point/freezing point** : Not determined.  
**Boiling point or initial boiling point and boiling range** : >37.78°C  
**Flammability** : Not determined. There are no data available on the mixture itself.  
**Lower and upper explosion limit** : Not available.  
**Flash point** : Closed cup: 110°C  
**Auto-ignition temperature** :

Ingredient name	°C	°F	Method
4,4'-methylenediphenyl diisocyanate	>601	>1113.8	EU A.15

**Decomposition temperature** : Stable under recommended storage and handling conditions (see Section 7).

**pH** : Not applicable. insoluble in water.

**Viscosity** : Dynamic (room temperature): Not available.  
 Kinematic (room temperature): Not available.  
 Kinematic (40°C): >21 mm<sup>2</sup>/s

**Solubility** :

Media	Result
cold water	Not soluble

**Partition coefficient n-octanol/water (log Pow)** : Not applicable.

**Vapour pressure** :

Ingredient name	Vapour Pressure at 20°C			Vapour pressure at 50°C		
	mm Hg	kPa	Method	mm Hg	kPa	Method
4,4'-methylenediphenyl diisocyanate	0.000061	0.0000081	OECD 104			

**Relative density** : 1.11

#### Particle characteristics

**Median particle size** : Not applicable.

### 9.2 Other information

#### 9.2.1 Information with regard to physical hazard classes

**Explosive properties** : The product itself is not explosive, but the formation of an explosible mixture of vapour or dust with air is possible.

**Oxidising properties** : Product does not present an oxidizing hazard.

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## SECTION 9: Physical and chemical properties

No additional information.

## SECTION 10: Stability and reactivity

- 10.1 Reactivity** : No specific test data related to reactivity available for this product or its ingredients.
- 10.2 Chemical stability** : The product is stable.
- 10.3 Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.
- 10.4 Conditions to avoid** : In a fire, hazardous decomposition products may be produced.  
Refer to protective measures listed in sections 7 and 8.
- 10.5 Incompatible materials** : Keep away from: oxidising agents, strong alkalis, strong acids, amines, alcohols, water.  
Uncontrolled exothermic reactions occur with amines and alcohols.
- 10.6 Hazardous decomposition products** : Depending on conditions, decomposition products may include the following materials:  
Cyanate and isocyanate. carbon oxides nitrogen oxides hydrogen cyanide

## SECTION 11: Toxicological information

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

The mixture has been assessed following the conventional method of the CLP Regulation (EC) No 1272/2008 and is classified for toxicological properties accordingly.

Harmful if inhaled.

Causes serious eye irritation.

Causes skin irritation.

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

May cause an allergic skin reaction.

Suspected of causing cancer.

May cause respiratory irritation.

May cause damage to organs through prolonged or repeated exposure.

### Acute toxicity

Product/ingredient name	Result	Dose / Exposure
methyloxirane, polymer with 1,1-methylenebis (isocyanatobenzene) [1-methylenebis (isocyanatobenzene)]	Rat - Male - Oral - LD50	>10000 mg/kg
4,4'-methylenediphenyl diisocyanate	Rabbit - Male, Female - Dermal - LD50 Rat - Oral - LD50 <i>Toxic effects:</i> Behavioral - Somnolence (general depressed activity) Behavioral - Ataxia Changes in Chemistry or Temperature - Body temperature decrease	>9400 mg/kg 9200 mg/kg

### Acute toxicity estimates

Route	ATE value
Inhalation (vapours)	22.45 mg/l
Inhalation (dusts and mists)	2.95 mg/l

**Conclusion/Summary** : Harmful if inhaled.

### Irritation/Corrosion

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Product/ingredient name	Result
4,4'-methylenediphenyl diisocyanate	Rabbit - Skin - Irritant

### Conclusion/Summary

**Skin** : Causes skin irritation.

**Eyes** : Causes serious eye irritation.

**Respiratory** : Based on available data, the classification criteria are not met.

### Respiratory or skin sensitization

Product/ingredient name	Test	Result
4,4'-methylenediphenyl diisocyanate	Mouse - skin OECD 429	Sensitising
-	Guinea pig - Respiratory	Sensitising

### Conclusion/Summary

**Skin** : May cause an allergic skin reaction.

**Respiratory** : May cause allergy or asthma symptoms or breathing difficulties if inhaled.

### Mutagenicity

Based on available data, the classification criteria are not met.

### Carcinogenicity

Product/ingredient name	Result	Species / Route of exposure	Dose / Exposure
4,4'-methylenediphenyl diisocyanate	Positive	Rat - Inhalation - TC	0 to 6 mg/m <sup>3</sup> [5 days per week] [2 years]

Suspected of causing cancer.

### Reproductive toxicity

Based on available data, the classification criteria are not met.

### Specific target organ toxicity (single exposure)

Product/ingredient name	Category	Route of exposure	Target organs
methyloxirane, polymer with 1,1-methylenebis (isocyanatobenzene)[1-methylenebis (isocyanatobenzene)]	Category 3	-	Respiratory tract irritation
4,4'-methylenediphenyl diisocyanate	Category 3	-	Respiratory tract irritation
o-(p-isocyanatobenzyl)phenyl isocyanate	Category 3	-	Respiratory tract irritation
2,2'-methylenediphenyl diisocyanate	Category 3	-	Respiratory tract irritation

### Conclusion/Summary

May cause respiratory irritation.

### Specific target organ toxicity (repeated exposure)

Product/ingredient name	Category	Route of exposure	Target organs
4,4'-methylenediphenyl diisocyanate	Category 2	-	-
o-(p-isocyanatobenzyl)phenyl isocyanate	Category 2	-	-
2,2'-methylenediphenyl diisocyanate	Category 2	-	-

### Conclusion/Summary

May cause damage to organs through prolonged or repeated exposure.

### Aspiration hazard

Based on available data, the classification criteria are not met.

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**Information on likely routes of exposure** : Not available.

### Potential acute health effects

**Inhalation** : Harmful if inhaled. May cause respiratory irritation. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

**Ingestion** : No known significant effects or critical hazards.

**Skin contact** : Causes skin irritation. May cause an allergic skin reaction.

**Eye contact** : Causes serious eye irritation.

### Symptoms related to the physical, chemical and toxicological characteristics

**Inhalation** : Adverse symptoms may include the following:  
respiratory tract irritation  
coughing  
wheezing and breathing difficulties  
asthma

**Ingestion** : No specific data.

**Skin contact** : Adverse symptoms may include the following:  
irritation  
redness

**Eye contact** : Adverse symptoms may include the following:  
pain or irritation  
watering  
redness

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

#### Short term exposure

**Potential immediate effects** : No known significant effects or critical hazards.

**Potential delayed effects** : No known significant effects or critical hazards.

#### Long term exposure

**Potential immediate effects** : No known significant effects or critical hazards.

**Potential delayed effects** : No known significant effects or critical hazards.

### Potential chronic health effects

**General** : May cause damage to organs through prolonged or repeated exposure. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

**Carcinogenicity** : Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.

**Mutagenicity** : No known significant effects or critical hazards.

**Reproductive toxicity** : No known significant effects or critical hazards.

**Other information** : Based on the properties of the isocyanate components and considering toxicological data on similar mixtures, this mixture may cause acute irritation and/or sensitisation of the respiratory system, leading to an asthmatic condition, wheezing and tightness of the chest. Sensitised persons may subsequently show asthmatic symptoms when exposed to atmospheric concentrations well below the OEL. Persons with a history of skin sensitisation problems or asthma, allergies or chronic or recurrent respiratory disease should not be employed in any process in which this product is used. Repeated exposure may lead to permanent respiratory disability. Moisture-sensitive material. Acrylate components of the mixture have irritating properties. Prolonged or repeated contact with skin or mucous membrane may result in irritation symptoms, such as

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redness, blistering, dermatitis etc. May cause allergic skin reactions with repeated exposure. The inhalation of airborne droplets or aerosols may cause irritation of the respiratory tract. Ingestion may cause nausea, weakness and central nervous system effects. In case of accidental skin contact, avoid direct exposure to the sun or other sources of UV light as severe irritation including burns may result. These reactions can be delayed – get medical attention if pain, irritation, rash or blistering occurs after contact.

### 11.2 Information on other hazards

#### 11.2.1 Endocrine disrupting properties

The product does not meet the criteria to be considered as having endocrine disrupting properties according to the criteria set out in either Regulation (EC) No. 1907/2006 or Regulation (EC) No 1272/2008.

#### 11.2.2 Other information

Not available.

## SECTION 12: Ecological information

There are no data available on the mixture itself.

Do not allow to enter drains or watercourses.

The mixture has been assessed following the summation method of the CLP Regulation (EC) No 1272/2008 and is not classified as hazardous to the environment.

### 12.1 Toxicity

Product/ingredient name	Result	Species	Dose / Exposure
methyloxirane, polymer with 1,1-methylenebis (isocyanatobenzene) [1-methylenebis (isocyanatobenzene)]	LC50	Fish - <i>Brachydanio rerio</i>	>1000 mg/l [96 hours]
	EC50 - Fresh water	Daphnia - <i>Daphnia magna</i>	>1000 mg/l [48 hours]
	EC50 - Fresh water	Algae - <i>Desmodesmus subspicatus</i>	>1640 mg/l [72 hours]
	NOEC - Fresh water	Daphnia - <i>Daphnia magna</i>	≥10 mg/l [21 days]

**Conclusion/Summary** : Based on available data, the classification criteria are not met.

### 12.2 Persistence and degradability

Product/ingredient name	Test	Result	Dose / Inoculum
methyloxirane, polymer with 1,1-methylenebis (isocyanatobenzene) [1-methylenebis (isocyanatobenzene)]	-	0% [28 days]	

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
methyloxirane, polymer with 1,1-methylenebis (isocyanatobenzene) [1-methylenebis (isocyanatobenzene)]	-	-	Not readily

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## SECTION 12: Ecological information

### 12.3 Bioaccumulative potential

Product/ingredient name	LogP <sub>ow</sub>	BCF	Potential
1,4-bis(methylenebis(isocyanatobenzene))benzene	4.51	200	Low
4,4'-methylenediphenyl diisocyanate	4.51	-	High
o-(p-isocyanatobenzyl)phenyl isocyanate	4.51	-	High
2,2'-methylenediphenyl diisocyanate	5.22	-	High

### 12.4 Mobility in soil

#### Soil/water partition coefficient

Product/ingredient name	logK <sub>oc</sub>	K <sub>oc</sub>
1,4-bis(methylenebis(isocyanatobenzene))benzene	3.1	1167.83
o-(p-isocyanatobenzyl)phenyl isocyanate	2.9	720.413
2,2'-methylenediphenyl diisocyanate	2.2	143.527

### 12.5 Results of PBT and vPvB assessment

This mixture does not contain any substances that are assessed to be a PBT or a vPvB.

### 12.6 Endocrine disrupting properties

The product does not meet the criteria to be considered as having endocrine disrupting properties according to the criteria set out in either Regulation (EC) No. 1907/2006 or Regulation (EC) No 1272/2008.

### 12.7 Other adverse effects

No known significant effects or critical hazards.

## SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

### 13.1 Waste treatment methods

#### Product

**Methods of disposal** : The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction.

**Hazardous waste** :

#### European waste catalogue (EWC)

Waste code	Waste designation
08 05 01*	waste isocyanates

#### Packaging

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## SECTION 13: Disposal considerations

- Methods of disposal** : The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.
- Special precautions** : This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

## SECTION 14: Transport information

	ADR/RID	ADN	IMDG	IATA
14.1 UN number or ID number	Not regulated.	Not regulated.	Not regulated.	Not regulated.
14.2 UN proper shipping name	-	-	-	-
14.3 Transport hazard class(es)	-	-	-	-
14.4 Packing group	-	-	-	-
14.5 Environmental hazards	No.	No.	No.	No.
Marine pollutant substances	Not applicable.	Not applicable.	Not applicable.	Not applicable.

### Additional information

- ADR/RID : None identified.
- ADN : None identified.
- IMDG : None identified.
- IATA : None identified.

**14.6 Special precautions for user** : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

**14.7 Maritime transport in bulk according to IMO instruments** : Not applicable.

## SECTION 15: Regulatory information

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

[EU Regulation \(EC\) No. 1907/2006 \(REACH\)](#)

[Annex XIV - List of substances subject to authorisation](#)

[Annex XIV](#)

None of the components are listed.

[Substances of very high concern](#)

None of the components are listed.

[Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles](#)

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## SECTION 15: Regulatory information

Product/ingredient name	Entry Number ( REACH )
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4,4'-methylenediphenyl diisocyanate	56 [Consumer products] 74
o-(p-isocyanatobenzyl)phenyl isocyanate	56 [Consumer products] 74
2,2'-methylenediphenyl diisocyanate	56 [Consumer products] 74

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

### Other EU regulations

**Explosive precursors** : Not applicable.

#### Ozone depleting substances (EU 2024/590)

Not listed.

#### Persistent Organic Pollutants

Not listed.

### Seveso Directive

This product is not controlled under the Seveso Directive.

**15.2 Chemical safety assessment** : No Chemical Safety Assessment has been carried out.

## SECTION 16: Other information

✔ Indicates information that has changed from previously issued version.

### Abbreviations and acronyms

ATE = Acute Toxicity Estimate

CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]

DNEL = Derived No Effect Level

EUH statement = CLP-specific Hazard statement

PNEC = Predicted No Effect Concentration

RRN = REACH Registration Number

PBT = Persistent, Bioaccumulative and Toxic

vPvB = Very Persistent and Very Bioaccumulative

ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road

ADN = European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway

IMDG = International Maritime Dangerous Goods

IATA = International Air Transport Association

### Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Classification	Justification
Acute Tox. 4, H332	Calculation method
Skin Irrit. 2, H315	Calculation method
Eye Irrit. 2, H319	Calculation method
Resp. Sens. 1, H334	Calculation method
Skin Sens. 1, H317	Calculation method
Carc. 2, H351	Calculation method
STOT SE 3, H335	Calculation method
STOT RE 2, H373	Calculation method

### Full text of abbreviated H statements

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**SECTION 16: Other information**

H315 H317 H319 H332 H334  H335 H351 H373  EUH029	Causes skin irritation. May cause an allergic skin reaction. Causes serious eye irritation. Harmful if inhaled. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause respiratory irritation. Suspected of causing cancer. May cause damage to organs through prolonged or repeated exposure. Contact with water liberates toxic gas.
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**Full text of classifications [CLP/GHS]**

Acute Tox. 4 Carc. 2 Eye Irrit. 2 Resp. Sens. 1 Resp. Sens. 1A Skin Irrit. 2 Skin Sens. 1 Skin Sens. 1B STOT RE 2  STOT SE 3	ACUTE TOXICITY - Category 4 CARCINOGENICITY - Category 2 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2 RESPIRATORY SENSITISATION - Category 1 RESPIRATORY SENSITISATION - Category 1A SKIN CORROSION/IRRITATION - Category 2 SKIN SENSITISATION - Category 1 SKIN SENSITISATION - Category 1B SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE - Category 2 SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE - Category 3
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<b>Prepared by</b>	: EHS
<b>Version</b>	: 1.02

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