

watco[®] SAFETY DATA SHEET

Resiflow Flex - Curing Agent

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

1.1 Product identifier

Product name : Resiflow Flex - Curing Agent
Product description : Hardener.
Product type : Liquid.

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

| Identified uses | |
|---|--------|
| Industrial uses Consumer uses Professional uses | |
| Uses advised against | Reason |
| None identified. | - |

1.3 Details of the supplier of the safety data sheet

Watco UK Limited
 Watco House
 Filmer Grove
 Godalming
 Surrey
 GU7 3AL
 Telephone no.: +44 (0) 1483 425000 (08:00 - 18:00 MON-FRI)
 Fax no.: +44 (0) 1483 428888

e-mail address of person responsible for this SDS : rpmeurohas@ro-m.com

1.4 Emergency telephone number

Supplier

Telephone number : +44 (0) 207 858 1228
Hours of operation : 24 / 7

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

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.

SECTION 2: Hazards identification

2.2 Label elements

Hazard pictograms



Signal word

: Danger

Hazard statements

: 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.

Precautionary statements

General

: P102 - Keep out of reach of children.
 P103 - Read label before use.
 P101 - If medical advice is needed, have product container or label at hand.

Prevention

: P260 - Do not breathe dust/fume/gas/mist/vapours/spray.
 P271 - Use only outdoors or in a well-ventilated area.
 P284 - Wear respiratory protection.
 P280 - Wear protective gloves and eye protection:
 - nitrile rubber or butyl rubber gloves and Safety glasses with side shields.

Response

: P302 - IF ON SKIN:
 P352 - Wash with plenty of soap and water.
 P304 - IF INHALED:
 P340 - Remove person to fresh air and keep comfortable for breathing.
 P342 - If experiencing respiratory symptoms:
 P311 - Call a POISON CENTER or physician.
 P305 - IF IN EYES:
 P351 - Rinse cautiously with water for several minutes.
 P338 - Remove contact lenses, if present and easy to do. Continue rinsing.
 P308 - IF exposed or concerned:
 P313 - Get medical attention.

Storage

: P405 - Store locked up.

Disposal

: P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazardous ingredients

: Isocyanic acid, polymethylenepolyphenylene ester
 4,4'-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

: 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.

Special packaging requirements

Containers to be fitted with child-resistant fastenings

: Not applicable.

Tactile warning of danger

: Yes, applicable.

2.3 Other hazards

SECTION 2: Hazards identification

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

SECTION 3: Composition/information on ingredients

3.2 Mixtures : Mixture

| Product/ingredient name | Identifiers | % | Classification | |
|--|--|-----------|---|---------|
| | | | Regulation (EC) No. 1272/2008 [CLP] | Type |
| Isocyanic acid, polymethylenepolyphenylene ester | CAS: 9016-87-9 | ≥50 - ≤75 | 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 | [1] [2] |
| 4,4'-methylenediphenyl diisocyanate | REACH #: 01-2119457014-47 EC: 202-966-0 CAS: 101-68-8 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 | [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 | 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 | [1] [2] |
| 2,2'-methylenediphenyl diisocyanate | EC: 219-799-4 CAS: 2536-05-2 Index: 615-005-00-9 | ≤3 | Acute Tox. 2, H330 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 | [1] [2] |

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

[3] Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII

[4] Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII

[5] Substance of equivalent concern

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

SECTION 4: First aid measures

4.1 Description of first aid measures

- General** : In all cases of doubt, or when symptoms persist, seek medical attention. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and seek medical advice.
- 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.
- 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.
- 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

There are no data available on the mixture itself. The mixture has been assessed following the conventional method of the CLP Regulation (EC) No 1272/2008 and is classified for toxicological properties accordingly. See Sections 2 and 3 for details.

Exposure to component solvent vapour concentrations in excess of the stated occupational exposure limit may result in adverse health effects such as mucous membrane and respiratory system irritation and adverse effects on the kidneys, liver and central nervous system. Symptoms and signs include headache, dizziness, fatigue, muscular weakness, drowsiness and, in extreme cases, loss of consciousness. Solvents may cause some of the above effects by absorption through the skin.

If splashed in the eyes, the liquid may cause irritation and reversible damage.

Repeated or prolonged contact with the mixture may cause removal of natural fat from the skin, resulting in non-allergic contact dermatitis and absorption through the skin. This takes into account, where known, delayed and immediate effects and also chronic effects of components from short-term and long-term exposure by oral, inhalation and dermal routes of exposure and eye contact.

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. Repeated exposure may lead to permanent respiratory disability. Repeated or prolonged contact with irritants may cause dermatitis.

Contains Isocyanic acid, polymethylenepolyphenylene ester, 4,4'-methylenediphenyl diisocyanate, o-(p-isocyanatobenzyl)phenyl isocyanate, 2,2'-methylenediphenyl diisocyanate. May produce an allergic reaction.

Over-exposure signs/symptoms

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

SECTION 4: First aid measures

- 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.

See toxicological information (Section 11)

SECTION 5: Firefighting measures

5.1 Extinguishing media

- Suitable extinguishing media** : Recommended: alcohol-resistant foam, CO₂, powders, water spray or mist.
- Unsuitable extinguishing media** : Do not use water jet.

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 thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides

5.3 Advice for firefighters

- Special protective actions 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.
- Additional information** : No unusual hazard if involved in a fire.

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".

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.

SECTION 6: Accidental release measures

- 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.
- 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.

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.

Examination of lung function should be carried out on a regular basis on persons spraying this mixture.

- 7.1 Precautions for safe handling** : Prevent the creation of flammable or explosive concentrations of vapours in air and avoid vapour concentrations higher than the occupational exposure limits. In addition, the product should only be used in areas from which all naked lights and other sources of ignition have been excluded. Electrical equipment should be protected to the appropriate standard. Mixture may charge electrostatically: always use earthing leads when transferring from one container to another. Operators should wear antistatic footwear and clothing and floors should be of the conducting type. Care should be taken when re-opening partly-used containers. Precautions should be taken to minimise exposure to atmospheric humidity or water. CO₂ will be formed, which, in closed containers, could result in pressurisation. Keep away from heat, sparks and flame. No sparking tools should be used. Avoid contact with skin and eyes. Avoid the inhalation of dust, particulates, spray or mist arising from the application of this mixture. Avoid inhalation of dust from sanding. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Put on appropriate personal protective equipment (see Section 8). Never use pressure to empty. Container is not a pressure vessel. Always keep in containers made from the same material as the original one. Comply with the health and safety at work laws. Do not allow to enter drains or watercourses.
- Information on fire and explosion protection**
Vapours are heavier than air and may spread along floors. Vapours may form explosive mixtures with air.

7.2 Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations.

Notes on joint storage

Keep away from: oxidising agents, strong alkalis, strong acids.

Additional information on storage conditions

Observe label precautions. Store in a dry, cool and well-ventilated area. Keep away from heat and direct sunlight.

Keep container tightly closed.

Keep away from sources of ignition. No smoking. Prevent unauthorised access. Containers that have been opened must be carefully resealed and kept upright to prevent leakage.

7.3 Specific end use(s)

SECTION 7: Handling and storage**Recommendations** : Not available.**Industrial sector specific solutions** : Not available.**SECTION 8: Exposure controls/personal protection**

The information in this section contains generic advice and guidance. Information is provided based on typical anticipated uses of the product. Additional measures might be required for bulk handling or other uses that could significantly increase worker exposure or environmental releases.

8.1 Control parameters**Occupational exposure limits**

| Product/ingredient name | Exposure limit values |
|--|--|
| Isocyanic acid, polymethylenepolyphenylene ester | EH40/2005 WELs (United Kingdom (UK), 12/2011). Inhalation sensitiser. Notes: as NCO STEL: 0,07 mg/m ³ , (as NCO), 0 times per shift, 15 minutes. TWA: 0,02 mg/m ³ , (as NCO), 0 times per shift, 8 hours. |
| 4,4'-methylenediphenyl diisocyanate | EH40/2005 WELs (United Kingdom (UK), 12/2011). Inhalation sensitiser. STEL: 0,07 mg/m ³ , (as NCO) 15 minutes. TWA: 0,02 mg/m ³ , (as NCO) 8 hours. |
| o-(p-isocyanatobenzyl)phenyl isocyanate | EH40/2005 WELs (United Kingdom (UK), 12/2011). Skin sensitiser. STEL: 0,07 mg/m ³ , (as NCO) 15 minutes. TWA: 0,02 mg/m ³ , (as NCO) 8 hours. |
| 2,2'-methylenediphenyl diisocyanate | EH40/2005 WELs (United Kingdom (UK), 12/2011). Inhalation sensitiser. STEL: 0,07 mg/m ³ , (as NCO) 15 minutes. TWA: 0,02 mg/m ³ , (as NCO) 8 hours. |

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. 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

| Product/ingredient name | Type | Exposure | Value | Population | Effects |
|---|------|----------------------|-------------------------|------------|----------|
| 4,4'-methylenediphenyl diisocyanate | DNEL | Dermal | 28,7 mg/cm ² | - | Local |
| | DNEL | Inhalation | 0,1 mg/m ³ | - | Local |
| | DNEL | Long term Inhalation | 0,05 mg/m ³ | Workers | Systemic |
| o-(p-isocyanatobenzyl)phenyl isocyanate | DNEL | Long term Inhalation | 0,05 mg/m ³ | Workers | Local |
| | DNEL | Dermal | 28,7 mg/cm ² | - | Local |
| | DNEL | Inhalation | 0,1 mg/m ³ | - | Local |
| | DNEL | Long term Inhalation | 0,05 mg/m ³ | Workers | Systemic |
| | DNEL | Long term Inhalation | 0,05 mg/m ³ | Workers | Local |

PNECs

SECTION 8: Exposure controls/personal protection

| Product/ingredient name | Compartment Detail | Value | Method Detail |
|---|------------------------|--------------|---------------|
| 4,4'-methylenediphenyl diisocyanate | Fresh water | >1 mg/l | - |
| | Marine water | >0,1 mg/l | - |
| | Soil | >1 mg/kg dwt | - |
| | Sewage Treatment Plant | >1 mg/l | - |
| | | | |
| o-(p-isocyanatobenzyl)phenyl isocyanate | Fresh water | >1 mg/l | - |
| | Marine water | >0,1 mg/l | - |
| | Soil | >1 mg/kg dwt | - |
| | Sewage Treatment Plant | >1 mg/l | - |
| | | | |

8.2 Exposure controls

Appropriate engineering controls : Provide adequate ventilation. Where reasonably practicable, this should be achieved by the use of local exhaust ventilation and good general extraction. Air-fed protective respiratory equipment must be worn by the spray operator, even when good ventilation is provided. In other operations, if local exhaust ventilation and good general extraction are not sufficient to maintain concentrations of particulates and solvent vapours below the OEL, suitable respiratory protection must be worn. (See Occupational exposure controls.)

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 : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles. Recommended: safety glasses with side-shields. (EN 166)

Skin protection

Hand protection

There is no one glove material or combination of materials that will give unlimited resistance to any individual or combination of chemicals.

The breakthrough time must be greater than the end use time of the product.

The instructions and information provided by the glove manufacturer on use, storage, maintenance and replacement must be followed.

Gloves should be replaced regularly and if there is any sign of damage to the glove material.

Always ensure that gloves are free from defects and that they are stored and used correctly.

The performance or effectiveness of the glove may be reduced by physical/chemical damage and poor maintenance.

Barrier creams may help to protect the exposed areas of the skin but should not be applied once exposure has occurred.

Gloves : For prolonged or repeated handling, use the following type of gloves:

Recommended: > 8 hours (breakthrough time): nitrile rubber (0.5mm) or butyl rubber (0.6 mm) gloves

The recommendation for the type or types of glove to use when handling this product is based on information from the following source:

EN 374-3 : 2003

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.

SECTION 8: Exposure controls/personal protection

- 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. Recommended: Wear overalls or long sleeved shirt. (EN 467)
- 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** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. Recommended: organic vapour (Type AX) and particulate filter (as filter combination A-P2) (EN 141)
- 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

9.1 Information on basic physical and chemical properties

Appearance

- Physical state** : Liquid.
- Colour** : Clear.
- Odour** : Slight
- Odour threshold** : Not available.
- pH** : Not available.
- Melting point/freezing point** : Not available.
- Initial boiling point and boiling range** : >300°C
- Flash point** : Closed cup: 229°C
- Evaporation rate** : Not available.
- Flammability (solid, gas)** : Not available.
- Upper/lower flammability or explosive limits** : Not available.
- Vapour pressure** : 1,1 kPa [room temperature]
- Vapour density** : Not available.
- Relative density** : 1,24
- Solubility(ies)** : Not available.
- Partition coefficient: n-octanol/ water** : Not available.
- Auto-ignition temperature** : Not available.
- Decomposition temperature** : Not available.
- Viscosity** : Dynamic (room temperature): 145 mPa·s
- Explosive properties** : Not available.
- Oxidising properties** : Not available.

9.2 Other information

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** : Stable under recommended storage and handling conditions (see Section 7).
- 10.3 Possibility of hazardous reactions** :
- 10.4 Conditions to avoid** : In a fire, hazardous decomposition products may be produced.
- 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** : Under normal conditions of storage and use, hazardous decomposition products should not be produced. If involved in a fire, toxic gases including CO, CO₂ and smoke can be generated.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

| Product/ingredient name | Result | Species | Dose | Exposure |
|--|---------------------------------|--------------|---------------------------|----------|
| Isocyanic acid, polymethylenepolyphenylene ester | LC50 Inhalation Dusts and mists | Rat | 310 mg/m ³ | 4 hours |
| | LD50 Dermal | Rabbit | >9400 mg/kg | - |
| | LD50 Oral | Rat | 49 g/kg | - |
| | LD50 Oral | Rat - Female | >15000 mg/kg | - |
| 4,4'-methylenediphenyl diisocyanate | LD50 Oral | Rat | Single dose 9200 mg/kg | - |
| o-(p-isocyanatobenzyl) phenyl isocyanate | LC50 Inhalation Dusts and mists | Rat - Male | 387 mg/m ³ | 4 hours |
| 2,2'-methylenediphenyl diisocyanate | LC50 Inhalation Dusts and mists | Rat | 370 mg/m ³ | 4 hours |

Conclusion/Summary : Harmful if inhaled.

Acute toxicity estimates

Not available.

Irritation/Corrosion

| Product/ingredient name | Result | Species | Score | Exposure | Observation |
|--|--------------------------|---------|-------|----------------|-------------|
| Isocyanic acid, polymethylenepolyphenylene ester | Eyes - Mild irritant | Rabbit | - | 100 milligrams | - |
| | Skin - Mild irritant | Rabbit | - | - | - |
| | Eyes - Cornea opacity | Rabbit | 0 | - | - |
| 4,4'-methylenediphenyl diisocyanate | Eyes - Moderate irritant | Rabbit | - | 100 milligrams | - |

Conclusion/Summary

- Skin** : Causes skin irritation.
- Eyes** : Causes serious eye irritation.
- Respiratory** : May cause respiratory irritation.

Sensitisation

SECTION 11: Toxicological information

| Product/ingredient name | Route of exposure | Species | Result |
|--|-------------------|------------|-----------------|
| Isocyanic acid, polymethylenepolyphenylene ester | skin | Guinea pig | Not sensitizing |
| 4,4'-methylenediphenyl diisocyanate | skin | Mouse | Sensitising |
| | Respiratory | Rat | Sensitising |
| o-(p-isocyanatobenzyl) phenyl isocyanate | skin | Guinea pig | Not sensitizing |
| | skin | Mouse | Sensitising |
| o-(p-isocyanatobenzyl) phenyl isocyanate | skin | Guinea pig | Not sensitizing |
| | skin | Mouse | Sensitising |

Conclusion/Summary

Skin : May cause an allergic skin reaction.

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

Mutagenicity

| Product/ingredient name | Test | Experiment | Result |
|--|----------|--|----------|
| Isocyanic acid, polymethylenepolyphenylene ester | OECD 471 | Experiment: In vitro Subject: Bacteria | Negative |
| | OECD 474 | Experiment: In vivo Subject: Mammalian-Animal | Negative |
| 4,4'-methylenediphenyl diisocyanate | OECD 471 | Experiment: In vitro Subject: Bacteria | Negative |
| | OECD 474 | Experiment: In vivo Subject: Mammalian-Animal | Negative |
| o-(p-isocyanatobenzyl) phenyl isocyanate | OECD 471 | Experiment: In vitro Subject: Bacteria | Negative |
| | OECD 474 | Experiment: In vivo Subject: Mammalian-Animal | Negative |

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

Carcinogenicity

| Product/ingredient name | Result | Species | Dose | Exposure |
|--|----------------------------|---------|---------------------|--------------------------|
| Isocyanic acid, polymethylenepolyphenylene ester | Positive - Inhalation - TC | Rat | 6 mg/m ³ | 2 years; 6 hours per day |
| 4,4'-methylenediphenyl diisocyanate | Positive - Inhalation - TC | Rat | 6 mg/m ³ | 2 years; 6 hours per day |
| o-(p-isocyanatobenzyl) phenyl isocyanate | Positive - Inhalation - TC | Rat | 6 mg/m ³ | 2 years; 6 hours per day |

Conclusion/Summary : Suspected of causing cancer.

Reproductive toxicity

| Product/ingredient name | Maternal toxicity | Fertility | Developmental toxin | Species | Dose | Exposure |
|--|-------------------|-----------|---------------------|--------------|------------------------------------|--------------------------|
| Isocyanic acid, polymethylenepolyphenylene ester | Negative | - | Negative | Rat - Female | Inhalation: 4 mg/m ³ | 10 days; 6 hours per day |
| 4,4'-methylenediphenyl diisocyanate | Negative | Negative | Negative | Rat - Female | Inhalation: 4 mg/m ³ | 10 days; 6 hours per day |
| o-(p-isocyanatobenzyl) phenyl isocyanate | Negative | Negative | Negative | Rat - Female | Inhalation: 4 mg/m ³ | 10 days; 6 hours per day |

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

SECTION 11: Toxicological information**Teratogenicity**

| Product/ingredient name | Result | Species | Dose | Exposure |
|--|-----------------------|--------------|----------------------|--------------------------|
| Isocyanic acid, polymethylenepolyphenylene ester | Negative - Inhalation | Rat - Female | 12 mg/m ³ | 20 days; 6 hours per day |
| 4,4'-methylenediphenyl diisocyanate | Negative - Inhalation | Rat - Female | 12 mg/m ³ | 20 days; 6 hours per day |
| o-(p-isocyanatobenzyl) phenyl isocyanate | Negative - Inhalation | Rat - Female | 12 mg/m ³ | 20 days; 6 hours per day |

Conclusion/Summary : 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 |
|--|------------|-------------------|------------------------------|
| WATCO-Flexicoat Curing Agent | Category 3 | Not applicable. | Respiratory tract irritation |
| Isocyanic acid, polymethylenepolyphenylene ester | Category 3 | Not applicable. | Respiratory tract irritation |
| 4,4'-methylenediphenyl diisocyanate | Category 3 | Not applicable. | Respiratory tract irritation |
| o-(p-isocyanatobenzyl)phenyl isocyanate | Category 3 | Not applicable. | Respiratory tract irritation |
| 2,2'-methylenediphenyl diisocyanate | Category 3 | Not applicable. | Respiratory tract irritation |

Specific target organ toxicity (repeated exposure)

| Product/ingredient name | Category | Route of exposure | Target organs |
|--|------------|-------------------|----------------|
| WATCO-Flexicoat Curing Agent | Category 2 | Not determined | Not determined |
| Isocyanic acid, polymethylenepolyphenylene ester | Category 2 | Not determined | Not determined |
| 4,4'-methylenediphenyl diisocyanate | Category 2 | Not determined | Not determined |
| o-(p-isocyanatobenzyl)phenyl isocyanate | Category 2 | Not determined | Not determined |
| 2,2'-methylenediphenyl diisocyanate | Category 2 | Not determined | Not determined |

Aspiration hazard

Not available.

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

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

| Product/ingredient name | Result | Species | Dose | Exposure |
|--|---|---------|-----------------------|--------------------------|
| Isocyanic acid, polymethylenepolyphenylene ester | Chronic NOAEL Inhalation Dusts and mists | Rat | 0,2 mg/m ³ | 2 years; 5 days per week |
| | Chronic LOAEL Inhalation Dusts and mists | Rat | 1 mg/m ³ | 2 years; 5 days per week |
| 4,4'-methylenediphenyl diisocyanate | Chronic NOAEL Inhalation Dusts and mists | Rat | 0,2 mg/m ³ | 2 years; 5 days per week |
| | Chronic LOAEL Inhalation Dusts and mists | Rat | 1 mg/m ³ | 2 years; 5 days per week |

SECTION 11: Toxicological information

| | |
|------------------------------|--|
| Conclusion/Summary | : Based on available data, the classification criteria are not met. |
| 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. |
| Teratogenicity | : No known significant effects or critical hazards. |
| Developmental effects | : No known significant effects or critical hazards. |
| Fertility effects | : No known significant effects or critical hazards. |
| Other information | : Not available. |

SECTION 12: Ecological information**12.1 Toxicity**

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.

| Product/ingredient name | Result | Species | Exposure |
|--|-----------------------|---------------------------------|----------|
| Isocyanic acid, polymethylenepolyphenylene ester | Acute EC50 >1640 mg/l | Algae - Scenedesmus subspicatus | 72 hours |
| | Acute EC50 >1000 mg/l | Daphnia spec. | 48 hours |
| 4,4'-methylenediphenyl diisocyanate | Acute LC50 >1000 mg/l | Fish | 96 hours |
| | Chronic NOEC >10 mg/l | Daphnia spec. | 21 days |
| | Acute EC50 >1640 mg/l | Algae - Scenedesmus subspicatus | 72 hours |
| | Acute EC50 >100 mg/l | Daphnia spec. | 48 hours |
| o-(p-isocyanatobenzyl) phenyl isocyanate | Acute LC50 >1000 mg/l | Fish | 96 hours |
| | Chronic NOEC >10 mg/l | Daphnia spec. | 21 days |
| | Acute EC50 >1640 mg/l | Algae - Scenedesmus subspicatus | 72 hours |
| | Acute EC50 >100 mg/l | Daphnia spec. | 48 hours |
| | Acute LC50 >1000 mg/l | Fish | 96 hours |
| | Chronic NOEC >10 mg/l | Daphnia spec. | 21 days |
| | | Daphnia spec. | 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 |
|--|-----------|-----------------------------|------|----------|
| Isocyanic acid, polymethylenepolyphenylene ester | OECD 301D | 0 % - Not readily - 28 days | - | - |
| 4,4'-methylenediphenyl diisocyanate | OECD 301D | 0 % - Not readily - 28 days | - | - |
| o-(p-isocyanatobenzyl) phenyl isocyanate | OECD 301D | 0 % - Not readily - 28 days | - | - |

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

SECTION 12: Ecological information

| Product/ingredient name | Aquatic half-life | Photolysis | Biodegradability |
|--|----------------------------|------------------|------------------|
| Isocyanic acid, polymethylenepolyphenylene ester | Fresh water 0,8 days, 25°C | 50%; 0.92 day(s) | Not readily |
| 4,4'-methylenediphenyl diisocyanate | Fresh water 0,8 days, 25°C | 50%; 0.92 day(s) | Not readily |
| o-(p-isocyanatobenzyl) phenyl isocyanate | Fresh water 0,8 days, 25°C | 50%; 0.92 day(s) | Not readily |

12.3 Bioaccumulative potential

| Product/ingredient name | LogP _{ow} | BCF | Potential |
|--|--------------------|-----|-----------|
| Isocyanic acid, polymethylenepolyphenylene ester | - | <14 | low |
| 4,4'-methylenediphenyl diisocyanate | 4,51 | 200 | low |
| o-(p-isocyanatobenzyl) phenyl isocyanate | - | 200 | low |
| 2,2'-methylenediphenyl diisocyanate | 5,22 | 200 | low |

12.4 Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.

Mobility : Not available.

12.5 Results of PBT and vPvB assessment

PBT : Not applicable.

vPvB : Not applicable.

12.6 Other adverse effects : No known significant effects or critical hazards.

SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance.

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 : Yes.

Disposal considerations : Do not allow to enter drains or watercourses. Residues in empty containers should be neutralised with a decontaminant (see section 6). Dispose of according to all federal, state and local applicable regulations. If this product is mixed with other wastes, the original waste product code may no longer apply and the appropriate code should be assigned. For further information, contact your local waste authority.

European waste catalogue (EWC)

The European Waste Catalogue classification of this product, when disposed of as waste, is:

SECTION 13: Disposal considerations

| Waste code | Waste designation |
|------------|---|
| 08 01 11* | waste paint and varnish containing organic solvents or other hazardous substances |

Packaging

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.

Disposal considerations : Using information provided in this safety data sheet, advice should be obtained from the relevant waste authority on the classification of empty containers. Empty containers must be scrapped or reconditioned. Dispose of containers contaminated by the product in accordance with local or national legal provisions.

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 | 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. |
| Additional information | - | - | - | - |

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.

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.

SECTION 15: Regulatory information

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

Other EU regulations

VOC for Ready-for-Use Mixture : Not applicable.

Europe inventory : All components are listed or exempted.

Industrial emissions (integrated pollution prevention and control) - Air : Listed

Industrial emissions (integrated pollution prevention and control) - Air

Industrial emissions (integrated pollution prevention and control) - Water : Listed

Industrial emissions (integrated pollution prevention and control) - Water

| Product/ingredient name | Carcinogenic effects | Mutagenic effects | Developmental effects | Fertility effects |
|--|----------------------|-------------------|-----------------------|-------------------|
| Isocyanic acid, polymethylenepolyphenylene ester | Carc. 2, H351 | - | - | - |
| 4,4'-methylenediphenyl diisocyanate | Carc. 2, H351 | - | - | - |
| o-(p-isocyanatobenzyl) phenyl isocyanate | Carc. 2, H351 | - | - | - |
| 2,2'-methylenediphenyl diisocyanate | Carc. 2, H351 | - | - | - |

Ozone depleting substances (1005/2009/EU)

Not listed.

Prior Informed Consent (PIC) (649/2012/EU)

Not listed.

Seveso Directive

This product is not controlled under the Seveso Directive.

National regulations

Industrial use : The information contained in this safety data sheet does not constitute the user's own assessment of workplace risks, as required by other health and safety legislation. The provisions of the national health and safety at work regulations apply to the use of this product at work.

References : EH40/2005 Workplace exposure limits
Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II, as amended by Regulation (EU) No. 2015/830

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol (Annexes A, B, C, E)

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

SECTION 15: Regulatory information

Not listed.

[UNECE Aarhus Protocol on POPs and Heavy Metals](#)

Not listed.

CN code : 3210 00 90

[International lists](#)

[National inventory](#)

- Australia** : All components are listed or exempted.
- Canada** : All components are listed or exempted.
- China** : All components are listed or exempted.
- Japan** : **Japan inventory (ENCS)**: All components are listed or exempted.
Japan inventory (ISHL): Not determined.
- Malaysia** : Not determined.
- New Zealand** : All components are listed or exempted.
- Philippines** : All components are listed or exempted.
- Republic of Korea** : All components are listed or exempted.
- Taiwan** : Not determined.
- Turkey** : Not determined.
- United States** : All components are listed or exempted.

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]
- : DMEL = Derived Minimal Effect Level
- : DNEL = Derived No Effect Level
- : EUH statement = CLP-specific Hazard statement
- : PBT = Persistent, Bioaccumulative and Toxic
- : PNEC = Predicted No Effect Concentration
- : RRN = REACH Registration Number
- : vPvB = Very Persistent and Very Bioaccumulative

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

| Classification | Justification |
|---------------------|-----------------------|
| Acute Tox. 4, H332 | On basis of test data |
| Skin Irrit. 2, H315 | Expert judgment |
| Eye Irrit. 2, H319 | Expert judgment |
| Resp. Sens. 1, H334 | Expert judgment |
| Skin Sens. 1, H317 | Expert judgment |
| Carc. 2, H351 | Expert judgment |
| STOT SE 3, H335 | Expert judgment |
| STOT RE 2, H373 | Expert judgment |

[Full text of H-phrases referred to in sections 2 and 3](#)

SECTION 16: Other information

| | | |
|---|---|--|
| Full text of abbreviated H statements | : H315 H317 H319 H330 H332 H334 H335 H351 H373 | Causes skin irritation. May cause an allergic skin reaction. Causes serious eye irritation. Fatal if inhaled. 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. |
| Full text of classifications [CLP/GHS] | : Acute Tox. 2, H330 Acute Tox. 4, H332 Carc. 2, H351 Eye Irrit. 2, H319 Resp. Sens. 1, H334 Skin Irrit. 2, H315 Skin Sens. 1, H317 STOT RE 2, H373 STOT SE 3, H335 | ACUTE TOXICITY (inhalation) - Category 2 ACUTE TOXICITY (inhalation) - Category 4 CARCINOGENICITY - Category 2 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2 RESPIRATORY SENSITISATION - Category 1 SKIN CORROSION/IRRITATION - Category 2 SKIN SENSITISATION - Category 1 SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE - Category 2 SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Respiratory tract irritation) - Category 3 |

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Notice to reader

The information in this Safety Data Sheet is based on the present state of knowledge and current legislation. It provides guidance on health, safety and environmental aspects of the product and should not be construed as any guarantee of technical performance or suitability for particular applications. The product should not be used for purposes other than those shown in Section 1 without first referring to the supplier and obtaining written handling instructions. As the specific conditions of use of the product are outside the supplier's control, the user is responsible for ensuring that the requirements of relevant legislation are complied with. The information contained in this safety data sheet does not constitute the user's own assessment of workplace risks, as required by other health and safety legislation.