

RENOLIT ALKORPLUS



SAFETY DATA SHEET

Safety data sheet in accordance with Reg. (EU) no.
2015/830

Product name: RENOLIT ALKORPLUS 81065 Roofing Adhesive

Revision date: 22.06.2015

Version: 1.0

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RENOLIT Belgium NV recommends that you read and understand the entire SDS because it contains important information. We expect you to follow the precautions listed in this document, unless your operating conditions require other suitable measures.

SECTION 1. IDENTIFICATION OF THE SUBSTANCE OR THE MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Product name: RENOLIT ALKORPLUS 81065 Roofing Adhesive

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

Identified use: Adhesive.

1.3 Details of the supplier of the safety data sheet

COMPANY IDENTIFICATION

RENOLIT Belgium NV

Industriepark De Bruwaan 43

B – 9700 OUDENAARDE

Tel.: +32 55 33 97 11

Fax: +32 55 31 86 58

Internet: renolit.belgium@renolit.com / dirk.vandersype@renolit

1.4 EMERGENCY TELEPHONE NUMBER

24-Hour Emergency Contact: +44 (0)1235 239 670

Local Emergency Contact: 00 32 55 33 98 48

In the event of an emergency, contact the Belgian Poison Centre: 070/245.245

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Directive (EC) no. 1272/2008:

Skin Corrosion/irritation - Category 2 - H315

Eye irritation - Category 2 - H319

Respiratory sensitisation - Category 1 - H334

Skin sensitisation - Category 1 - H317

Carcinogenicity - Category 2 - H351

Specific target organ toxicity - single exposure - Category 3 - H335

Specific target organ toxicity - repeated exposure - Category 2 - H373

For the full text of the H statements listed in this section, see section 16.

2.2 Label elements

Labelling according to Directive (EC) No. 1272/2008 [CLP/GHS]:

Hazard pictograms



Signal word: **DANGER**

Hazard statements

H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335	May cause respiratory irritation.
H351	Suspected of causing cancer.
H373	May cause damage to organs (Airways) through prolonged or repeated exposure.

Precautionary statements

P201	Obtain special instructions before use.
P260	Do not breathe spray fumes.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P304 + P340 + P312	AFTER INHALATION: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.
P501	Dispose of contents/container to collection point for hazardous or special waste.

Contains Diphenylmethane Diisocyanate, isomers and homologs

2.3 Other hazards

No data available

SECTION 3. COMPOSITIONS AND INFORMATION ON INGREDIENTS

3.2 Mixtures

This product is a mixture.

CAS No. / EC No. / Index no.	REACH Registration number	Concentration	Component	Classification: Directive (EC) No. 1272/2008
CAS No. 53862-89-8 EC No. Polymer Index no.	–	50.0 - 70.0	Polymethylene polyphenyl polyisocyanate, polypropylene glycol copolymer	Resp. Sens. - 1 - H334 Skin Sens. - 1 - H317
CAS No. 9016-87-9 EC No. 618-498-9 Index no. –	–	15.0 - < 25.0	Diphenylmetha ne Diisocyanate, isomers and homologs	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
CAS No. 29118-24-9 EC No. 471-480-0 Index no.	–	15.0 - < 25.0	Trans-1,3,3,3- Tetrafluorprop- 1-ene	Not classified
CAS No. 101-68-8 EC No. 202-966-0 Index no. 615-005-00-9	01-2119457014-47	5.0 - < 10.0	4,4'- methylenediphenyl diisocyanate	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
CAS No. 13674-84-5 EC No. 237-158-7 Index no.	01-2119486772-26	5.0 - < 10.0	Tris(2-chloro-1- methylethyl) phosphate	Acute Tox. - 4 - H302

If present in this product, all non-classified components described above for which no country-specific MAC value(s) is (are) indicated in section 8 are listed as voluntarily disclosed components.

For the full text of the H statements listed in this section, see section 16.

SECTION 4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice: First Aid personnel should protect themselves and wear the recommended protective clothing (gloves that are resistant to chemicals and protect against splatter). If there is an exposure risk, consult section 8 for specific personal protective equipment.

Inhalation: Remove patient to fresh air. In case of respiratory arrest, apply artificial ventilation. If performing mouth-to-mouth resuscitation, use protective measures for the person providing first aid (pocket mask, etc.). In case of breathing difficulties, oxygen should be administered by qualified personnel. Consult a doctor or take the patient to a hospital.

Skin contact: Immediately remove the substance from the skin by washing with soap and plenty of water. Remove contaminated clothing and shoes while washing. Consult a doctor if the irritation persists. Wash clothing before wearing again. A study on skin contamination conducted by MDI showed that it is very important to clean the skin right after the exposure and that a polyglycol-based skin cleanser or corn oil is more effective than water and soap. Remove all accessories that cannot be decontaminated, including leather articles such as shoes, belts and watch bands. Suitable safety shower facilities for emergencies must be available on the work site.

Eye contact: Rinse the eyes with water immediately. Remove contact lenses, if present, after the first five minutes and continue to rinse for at least fifteen minutes. Consult a doctor immediately, preferably an ophthalmologist. An eye fountain must be present in the immediate vicinity of the work location.

Swallowing: In case of swallowing, consult a doctor. Do not induce vomiting unless instructed to do so by medical personnel.

4.2 Most important symptoms and effects, both acute and delayed: In addition to the information in "Description of first aid measures" (above), and "Indication of any immediate medical attention and special treatment needed" (below), all additional important symptoms and effects are described in Section 11. Toxicological information.

4.3 Indication of any immediate medical attention and special treatment needed Notes for the doctor: Excessive exposure may exacerbate existing asthma and other respiratory conditions (e.g. emphysema, bronchitis, reactive airways dysfunction syndrome). Ensure good ventilation and oxygen supply for the patient. May cause hypersensitivity of the respiratory organs or asthmatic symptoms. Bronchodilators, cough suppressants and expectorants may help. Treat bronchospasms with beta-2 agonist inhalers and oral or parenteral corticosteroids. Delayed onset of respiratory disorders, such as pulmonary oedema, may occur. Individuals who suffer excessive exposure should be observed for 24-48 hours for symptoms of constricted breathing. If you are hypersensitive to diisocyanates, consult your doctor about working with other sensitising substances and substances that cause respiratory irritation. Exposure may increase the sensitivity of the myocardium (muscle tissue of the heart). Do not administer any sympathomimetic drugs, such as epinephrine, unless absolutely necessary. The treatment of the exposure should take into account the symptoms and clinical condition of the patient.

SECTION 5. FIREFIGHTING MEASURES

5.1 Extinguishing media:

Suitable extinguishing media: Water mist or light spray. Extinguishing powder. CO2 fire extinguishers. Foam. If available, alcohol-resistant foam (ATC type) is preferred. "General purpose" synthetic types of foam (including AFFF) or protein foam may do the job, but they are much less effective.

Unsuitable extinguishing media: Do not use a direct stream of water. This may cause the fire to spread.

5.2 Special hazards arising from the substance or mixture

Hazardous combustion products: In case of fire, the smoke may contain the original product as well as combustion products with various compositions that may be toxic and/or irritating. Possible hazardous combustion by-products include: Nitrogen oxides. Isocyanates. Fluoro hydrogen. Hydrogen halides. Carbon dioxide.

Unusual fire and explosion hazards: In case of fire, some components of this product will catch fire. Container may explode and/or tear as a result of fire. Evaporates quickly at room temperature. The product produces a thick smoke when it burns.

5.3 Advice for firefighters

Firefighting measures: Keep people away. Isolate the area where the fire is and do not allow unnecessary entry. Stay upwind. Stay out of low-lying areas where gases (smoke) can accumulate. Do not use a direct stream of water. This may cause the fire to spread. Fight the fire from a protected location or from a safe distance. Consider using unmanned water cannons. Evacuate all personnel as soon as the ventilation alarm goes off or the container changes colour. Remove the container from the fire zone, if this can be done safely. Use water mist to cool down vessels that were exposed to the fire and the area around the fire until the fire has been extinguished.

Special protective equipment for firefighters: Wear breathing protection with portable compressed air (type: positive pressure) and protective firefighting clothing, including helmet, jacket, pants, boots and gloves. Avoid contact with the product while fighting the fire. If contact is likely to occur, wear a chemical suit designed for firefighting with a self-contained breathing apparatus. If this is not available, wear a chemical suit with a self-contained breathing apparatus and fight the fire from a distance. For protective equipment during clean-up activities after a fire, please see the relevant sections in this safety data sheet.

SECTION 6. ACCIDENTAL RELEASE MEASURES FOR THE SUBSTANCE OR MIXTURE

6.1 Personal precautions, protective equipment and emergency procedures: Close off the area. Keep personnel away from low-lying areas. Keep personnel away from enclosed or poorly ventilated areas. Stay upwind from the spill. Ventilate the area where the leak or spill occurred. Only allow necessary and properly protected personnel access to the area. If available, use foam to suppress or extinguish. Follow the procedures for access to enclosed areas before entering the zone. See Section 7, Precautions for safe handling. See Section 10 for more specific information. Use the proper protective devices. For additional information, see Section 8. Measures for managing exposure / personal protection.

6.2 Environmental precautions: Prevent the product from entering the soil, canals, sewage pipes, waterways and/or ground water. See Section 12, Ecological Information.

6.3 Methods and material for containment and cleaning up Contain spilled product if possible. Absorb with materials such as: Sawdust. Soil. Vermiculite. Sand. Clay. Granulated corn cob. Milsorb®. Do NOT use absorbent materials such as: Cement powder (Attention: may generate heat) Collect in suitable open containers that are properly labelled. Do not place in hermetically sealed containers. Suitable containers include: Metal vessels. Plastic vessels Fibre containers with inner lining. Rinse the area where the spill occurred with large amounts of water. Try to neutralise by adding a suitable decontaminating solution: Formulation 1; sodium carbonate 5 - 10%; liquid detergent 0.2 - 2%; water to reach 100%, OR formulation 2: concentrated ammonia solution 3 - 8%; liquid detergent 0.2 - 2%; water to reach 100% If ammonia is used, provide sufficient ventilation to avoid exposure to the fumes. Contact your supplier for assistance with the clean-up. For additional information, see Section 13, Disposal considerations

6.4 Reference to other sections: References to other sections are supplied, if applicable, in the preceding sub-sections.

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handling of the substance or mixture: Avoid contact with eyes, skin and clothing. Avoid continuous or repeated contact with the skin. Avoid inhaling the fumes. Wash thoroughly after use. Use only with sufficient ventilation. Store in properly closed container. Contents under pressure. Do not drill through or burn the container. Enter enclosed rooms only if there is sufficient ventilation. See section 8: Measures for managing exposure / Personal protection.

If these organic substances are spilled on hot fibre insulation materials, this can lower the auto-ignition temperature and may result in spontaneous combustion.

7.2 Conditions for safe storage, including any incompatibilities: Store in a dry place. Protect against humidity in the air. Maintain a nitrogen atmosphere. To prevent possible hazardous reactions, do not store products that have been contaminated with water. Avoid temperatures above 50°C (122°F) See section 10 for more specific information. Additional information about storing this product can be obtained by contacting the sales office or customer service.

Storage stability

Storage temperature:	Storage period:
5 - 30 °C	18 Months

7.3 Specific end uses: Consult the technical data sheet for this product for more information.

SECTION 8. MEASURES FOR MANAGING EXPOSURE / PERSONAL PROTECTION

8.1 Control parameters

Exposure limits, if any, are specified below.

Component	Directive	Type of information	Value / Notation
4,4'-methylenediphenyl diisocyanate	ACGIH	TWA	0.005 ppm
	BE OEL	TGG 8 hr	0.052 mg/m3 0.005 ppm

8.2 Exposure controls

Technical control measures: Use only with sufficient ventilation. Local exhaust fans may be necessary for certain types of work. Provide general ventilation and/or local exhaust fans to keep the air concentration below the limit value. Exhaust systems should be designed, in order to pull air away from the source of fumes/aerosol production and from the people who work in these locations. The smell and irritating properties of this material are not sufficient to warn against excessive exposure. Fatal concentrations can occur in areas with poor ventilation.

Individual protective measures

Eye / face protection: Wear acid-resistant safety goggles. Safety goggles should be in conformity with EN 166 or equivalent.

Skin protection

Hand protection: Use chemical-resistant gloves, classified under EN374: Gloves Giving Protection from Chemicals and Micro-Organisms. Examples of preferred glove materials that form a barrier: Chlorinated polyethylene polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Viton. Examples of acceptable glove materials that form a barrier: Butyl rubber neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" of "vinyl"). If prolonged or repeated contact may occur, gloves with a protection classification of 5 or higher (breakthrough time more than 240 minutes according to EN 374) are recommended. If only single or brief contact is expected, gloves with a protection classification of 3 or higher (breakthrough time more than 60 minutes according to EN 374) are recommended. ATTENTION: The selection of specific gloves for a particular application and usage time in a workplace should also take into account any other relevant factors at the workplace, such as (but not limited to): other chemicals that might be handled, physical requirements (protection against, cutting/drilling, dexterity, thermal protection), potential physical reactions to the glove material, and the instructions/specifications of the glove supplier.

Other protection: Use non-permeable protective clothing that is resistant to this product. The choice of specific components such as face mask, gloves, boots, apron or full suit depends on the type of work.

Respiratory protection: The concentrations in the air should be kept below the exposure guidelines. If the concentrations in the air may exceed the exposure guidelines, use an approved air-purifying respirator, equipped with a filter for organic vapours and particles. In situations where the concentrations in the air may exceed the level at which an air-purifying respirator is effective, use a

compressed-air breathing apparatus (type: positive pressure) (with breathing tube or self-contained breathing apparatus). In emergencies or situations where the concentration in the air is not known, use an approved compressed-air breathing apparatus (type: positive pressure) or respiratory protection with breathing tube (type: positive pressure). In enclosed or poorly ventilated areas, use approved respiratory protection with fresh air supply (types: positive pressure).

Use an EC-approved breathing apparatus: Cartridge for organic vapours with a pre-filter for particles, type AP2.

Environmental exposure control

See SECTION 7: Handling and storage and SECTION 13: Instructions on disposal measures to prevent excessive exposure of the environment during use and waste disposal.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance

Physical state	Liquid.
Colour	Blue
Odour	Musty
Odour threshold	0.4 ppm <i>Based on the literature for MDI.</i> Odour provides insufficient warning of excessive exposure.
pH	Not applicable
Melting point/range	No test data available
Freezing point	No test data available
Boiling point (760 mmHg)	Not applicable
Flash point	closed container No test data available
Evaporation rate (Butyl acetate = 1)	No test data available
Flammability (solid, gas)	Not applicable to liquids
Lower explosive limit	No test data available
Upper explosive limit	No test data available
Vapour pressure:	The container is under pressure.
Relative vapour density (air =1)	No test data available
Relative density (water = 1)	1.1 - 1.2 at 25 °C / 25 °C <i>Supplier</i>
Solubility in water	Insoluble, reacts, releases CO ₂
Partition coefficient n-octanol/water	No data available
Auto-ignition temperature	No test data available
Decomposition temperature	No test data available
Kinematic viscosity	Not applicable
Explosive properties	Not explosive
Oxidising properties	None

9.2 Other information

Molecular weight	Not applicable
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NOTE : The physical and chemical properties listed in Section 9 are typical values for this product and are not intended as product specifications.

SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity: No data available

10.2 Chemical stability: Stable under the recommended storage conditions. See section 7, Storage. Unstable at elevated temperatures.

10.3: Possibility of hazardous reactions: May occur. Elevated temperatures may result in dangerous polymerisation.

10.4 Conditions to avoid: Avoid temperatures above 50°C (122°F). Higher temperatures may cause the container to de-aerate and/or tear. Exposure to high temperatures may cause this product to decompose.

10.5 Incompatible materials: Avoid contact with: Acid alcohols. Amines. Ammonia. Bases. Metal compounds. Strong oxidation agents. Products based on diisocyanates, such as MDI and TDI, react with many substances, which generates heat. The reaction rate increases with the temperature and the contact. These reactions can be intense. Stirring increases contact, as does using another substance as a solvent. Products based on diisocyanates, such as MDI and TDI, are insoluble in water and sink to the bottom, but they react slowly at the interface. The reaction produces CO₂ and a layer of solid polyurea. The reaction with water generates CO₂ and heat.

10.6 Hazardous decomposition products: The decomposition products depend on the temperature, air supply and presence of other substances. Toxic gases are released during decomposition.

SECTION 11. TOXICOLOGICAL INFORMATION

Toxicological information is provided in this section if these data are available.

11.1 Information on toxicological effects

Acute toxicity

Acute oral toxicity

The oral toxicity is low. Small amounts, swallowed during normal handling, are not likely to cause any damage. Swallowing larger amounts may lead to damage. The following effects have been observed in animals: Gastrointestinal irritation.

As a product. The oral LD₅₀ of a single dose has not been determined.

Based on information for component(s):

LD₅₀, Rat, > 5 000 mg/kg estimated

Acute dermal toxicity

Prolonged contact with the skin is not likely to result in the absorption of harmful quantities.

As a product. The dermal LD50 has not been determined.

Based on information for component(s):
LD50, Rabbit, > 2 000 mg/kg estimated

Acute inhalative toxicity

In enclosed or poorly ventilated areas, elevated vapour concentrations can easily occur and may lead to unconsciousness or death due to lack of oxygen. Excessive exposure may cause irritation of the upper respiratory organs (nose and throat) and the lungs. May cause pulmonary oedema (fluid in the lungs). Effects may be delayed. Symptoms of excessive exposure may include anaesthetic or narcotic effects; dizziness and drowsiness may be observed. Excessive exposure may exacerbate sensitivity to epinephrine and cardiac irritability (irregular heartbeat). Reduced lung function has been associated with excessive exposure to isocyanates.

As a product. The LD50 has not been determined.

Skin corrosion/irritation

Prolonged contact may cause moderate irritation of the skin with local redness. The product may stick to the skin and cause irritation when it is removed.
May cause discolouration of the skin.

Severe eye damage/ irritation

May cause eye irritation.
May cause transient, mild damage to the cornea.

Sensitisation

Skin contact may cause an allergic reaction.
Animal studies have shown that skin contact with isocyanates can play a part in the sensitisation of the respiratory tract.

May cause allergic reactions of the respiratory tract.
MDI concentrations below the exposure limits may cause allergic reactions of the respiratory organs in individuals who are already sensitised.
The asthmatic symptoms may include coughing, difficulty breathing and tightness of the chest. The effects may be delayed. In some cases the respiratory difficulties can be life-threatening.

Specific target organ system toxicity (single exposure)

May cause respiratory irritation. Exposure route: Inhalation

Specific target organ system toxicity (repeated exposure)

Tissue damage in the upper respiratory tract and the lungs has been observed in test animals after repeated excessive exposure to aerosols with MDI/polymeric MDI.

Carcinogenicity

Lung tumours have been observed in test animals after lifelong exposure to airborne particles of MDI/Polymeric MDI (6 mg/m³). The tumours occurred in combination with respiratory irritation and lung damage. The current exposure guidelines are expected to offer protection against these effects that have been reported for MDI.

Teratogenicity

MDI/polymeric MDI did not cause birth defects in test animals; other effects on the foetus occurred only at high dosages that were toxic to the mothers as well.

Reproductive toxicity

No relevant data were found.

Mutagenicity

In-vitro mutagenicity studies were negative for the tested components. Mutagenicity data for MDI are not conclusive. MDI was weak-positive in some in-vitro studies, while other in-vitro studies were negative. Mutagenicity studies in animals were predominantly negative.

Inhalation hazard

Based on the physical properties, it is unlikely that there is an inhalation hazard.

COMPONENTS THAT EFFECT TOXICOLOGY: Polymethylene polyphenyl**polyisocyanate, polypropylene glycol copolymer****Acute inhalative toxicity**

The LD50 has not been determined.

Diphenylmethane Diisocyanate, isomers and homologs**Acute inhalative toxicity**

LC50, Rat, 4 h, dust/fumes 0.49 mg/l

For similar substance(s) o-(p-isocyanate benzyl) phenyl isocyanate (CAS 5873-54-1). LC50, Rat, 4 h, aerosol 0.31 mg/l

For similar substance(s) 4,4'-Methylenediphenyl diisocyanate (CAS 101-68-8). LC50, Rat, 1 h, aerosol 2.24 mg/l

Trans-1,3,3,3-Tetrafluoroprop-1-ene**Acute inhalative toxicity**

Prolonged excessive exposure may cause harmful effects. In enclosed or poorly ventilated areas, elevated vapour concentrations can easily occur and may lead to unconsciousness or death due to lack of oxygen. May cause irritation of the respiratory tract and depression of the central nervous system. Symptoms may include headache and dizziness, which may lead to impaired coordination and loss of consciousness. Symptoms of excessive exposure may include anaesthetic or narcotic effects; dizziness and drowsiness may be observed. Excessive exposure may exacerbate sensitivity to epinephrine and cardiac irritability (irregular heartbeat).

LC50, Rat, 4 h, vapours, > 207000 ppm

4,4'-methylenediphenyl diisocyanate**Acute inhalative toxicity LC50,**

Rat, 1 h, dust/fumes, 2.24 mg/l

Tris(2-chloro-1-methylethyl)phosphate**Acute inhalative toxicity LC50,**

Rat, 4 h, dust/fumes, > 7 mg/l

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicological information is provided in this section if these data are available.

12.1 Toxicity**Polymethylene polyphenyl polyisocyanate, polypropylene glycol copolymer****Acute fish toxicity**

It is not expected to be toxic for aquatic organisms.

Diphenylmethane Diisocyanate, isomers and homologs**Acute fish toxicity**

The measured ecotoxicity is based on the hydrolysed product, generally under conditions with maximum production of soluble types.

Material is not classified as hazardous to aquatic organisms (LC50/EC50/IC50/LL50/EL50 are greater than 100 mg/L for the most sensitive species).

Based on the information for a similar product.

LC50, Danio rerio (zebrafish), static test, 96 h, > 1 000 mg/l, OESO Guideline 203 or Equivalent

Acute toxicity to crustacea

Based on the information for a similar product.

LC50, Daphnia magna (water flea), static test, 24 h, > 1 000 mg/l, OESO Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants

Based on the information for a similar product.

NOEC, Desmodesmus subspicatus (green algae), static test, 72 h, Growth inhibition, 1 640 mg/l, OESO Guideline 201 or Equivalent

Toxicity to bacteria

Based on the information for a similar product.

EC50, activated sludge, static test, 3 h, Respiration rate, > 100 mg/l

Terrestrial toxicity

EC50, Eisenia fetida (redworms), Based on the information for a similar product:, 14 d, > 1 000 mg/kg

Toxicity to terrestrial plants EC50, Avena sativa

(oats), Growth inhibitor, 1 000 mg/l EC50, Lactuca sativa (lettuce), Growth inhibitor, 1 000 mg/l

Trans-1,3,3,3-Tetrafluoroprop-1-ene**Acute fish toxicity**

Material is not classified as hazardous to aquatic organisms (LC50/EC50/IC50/LL50/EL50 are greater than 100 mg/L for the most sensitive species).

NOEC, Cyprinus carpio (Carp), Static, 96 h, > 117 mg/l

Acute toxicity to crustacea

EC50, Daphnia magna (water flea), Static, 48 h, > 160 mg/l

Acute toxicity to algae/aquatic plants

NOEC, Algae, 72 h, Further, > 170 mg/l

4,4'-methylenediphenyl diisocyanate**Acute fish toxicity**

The measured ecotoxicity is based on the hydrolysed product, generally under conditions with maximum production of soluble types.

Material is not classified as hazardous to aquatic organisms (LC50/EC50/IC50/LL50/EL50 are greater than 100 mg/L for the most sensitive species).

Based on the information for a similar product.

LC50, Danio rerio (zebrafish), static test, 96 h, > 1 000 mg/l, OESO Guideline 203 or Equivalent

Acute toxicity to crustacea

Based on the information for a similar product.

LC50, Daphnia magna (water flea), static test, 24 h, > 1 000 mg/l, OESO Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants

Based on the information for a similar product.

NOEC, Desmodesmus subspicatus (green algae), static test, 72 h, Growth inhibition, 1 640 mg/l, OESO Guideline 201 or Equivalent

Toxicity to bacteria

Based on the information for a similar product.

EC50, activated sludge, static test, 3 h, Respiration rate, > 100 mg/l

Terrestrial toxicity

EC50, Eisenia fetida (redworms), Based on the information for a similar product:, 14 d, > 1 000 mg/kg

Toxicity to terrestrial plants EC50, Avena sativa

(oats), Growth inhibitor, 1 000 mg/l EC50, Lactuca sativa (lettuce), Growth inhibitor, 1 000 mg/l

Tris(2-chloro-1-methylethyl) phosphate**Acute fish toxicity**

Material is not classified as hazardous to aquatic organisms.

LC50, Lepomis macrochirus (Bluegill), static test, 96 h, 84 mg/l, OESO Guideline 203 or Equivalent

Acute toxicity to crustacea

EC50, Daphnia magna water flea), 48 h, 131 mg/l

Acute toxicity to algae/aquatic plants

NOEC, Pseudokirchneriella subcapitata (green algae), static test, 96 h, Growth inhibition, 82 mg/l, OESO Guideline 201 or Equivalent

Toxicity to bacteria

EC50, active sludge, Respiration inhibition, 3 h, 784 mg/l, OECD 209 Test

Chronic toxicity to crustacea

NOEC, Daphnia magna (water flea), semi-static test, 21 d, number of offspring, 32 mg/l
NOEC, Daphnia magna (water flea), semi-static test, 21 d, number of offspring, > 32 mg/l

12.2 Persistence and degradability

Polymethylene polyphenyl polyisocyanate, polypropylene glycol copolymer

Biodegradation: Biodegradation expected to be very slow

Diphenylmethane Diisocyanate, isomers and homologs

Biodegradation: In aquatic and terrestrial environments the product reacts with water, resulting primarily in insoluble polyureas that appear to be stable. The expected tropospheric half-life of this material in the atmosphere is short. This is based on calculations and analogies with related diisocyanates. 10-day window: Not applicable

Biodegradation: 0 %

Exposure time: 28 d

Method: OESO Guideline 302C or Equivalent

Trans-1,3,3,3-Tetrafluoroprop-1-ene

Biodegradation: Based on strict test guidelines this material cannot be considered directly biodegradable, but these results do not necessarily mean that the material is not biodegradable under environmental conditions.

4,4'-methylenediphenyl diisocyanate

Biodegradation: In aquatic and terrestrial environments the product reacts with water, resulting primarily in insoluble polyureas that appear to be stable. The expected tropospheric half-life of this material in the atmosphere is short. This is based on calculations and analogies with related diisocyanates. 10-day window: Not applicable

Biodegradation: 0 %

Exposure time: 28 d

Method: OESO Guideline 302C or Equivalent

Tris(2-chloro-1-methylethyl) phosphate

Biodegradation: The expected biodegradation rate of this material is very slow. Does not meet the OECD/EEC tests for biodegradability. 10-day window: unsuccessful

Biodegradation: 14 %

Exposure time: 28 d

Method: OESO Guideline 301E or Equivalent

10-day window Not applicable

Biodegradation: 95 %

Exposure time: 64 d

Method: OESO Guideline 302A or Equivalent

12.3 Bioaccumulation

Bioaccumulation: No data available.

12.4 Mobility in soil

Polymethylene polyphenyl polyisocyanate, polypropylene glycol copolymer

In aquatic and terrestrial environments, its mobility is expected to be limited by its reaction with water, resulting primarily in insoluble polyureas.

Diphenylmethane Diisocyanate, isomers and homologs

In aquatic and terrestrial environments, its mobility is expected to be limited by its reaction with water, resulting primarily in insoluble polyureas.

Trans-1,3,3,3-Tetrafluoroprop-1-ene

The potential for mobility in soil is moderate (Koc between 150 and 500).

Partition coefficient (Koc): estimated at 180

4,4'-methylenediphenyl diisocyanate

In aquatic and terrestrial environments, its mobility is expected to be limited by its reaction with water, resulting primarily in insoluble polyureas.

Tris(2-chloro-1-methylethyl) phosphate

The potential for mobility in soil is low (Koc between 2000 and 5000).

Partition coefficient (Koc): estimated at 1300

12.5 Results of PBT and vPvB assessment

Polymethylene polyphenyl polyisocyanate, polypropylene glycol copolymer

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT)

Diphenylmethane Diisocyanate, isomers and homologs

This substance is not considered persistent, bioaccumulative and toxic (PBT)

Trans-1,3,3,3-Tetrafluoroprop-1-ene

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT)

4,4'-methylenediphenyl diisocyanate

This substance is not considered persistent, bioaccumulative and toxic (PBT)

Tris(2-chloro-1-methylethyl) phosphate

This substance is not considered persistent, bioaccumulative and toxic (PBT) This substance is not considered very persistent and very bioaccumulative (vPvB).

12.6 Other adverse effects

Product has no ozone-depleting components.

SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

If this product is disposed of in its unused, uncontaminated state, it must be treated as hazardous waste according to EC Directive 2008/98/EC Disposal practices must be in conformity with all national and regional laws and any municipal or local ordinances on hazardous waste. Additional assessments may be required for used, contaminated and residual materials. Do not discharge in sewer systems, soil or surface waters. It is recommended to incinerate this material in an approved incineration plant that is suitable for this hazardous waste. It is preferable to neutralise small quantities of waste by means or polyol, for instance,

rather than discharging them. Empty vessels must be cleaned first (see Section 6) and then be either punctured or shredded or delivered to an approved recycler.

Assignment of an appropriate EWC waste class and an EWC waste code for this product depends on what this product is used for. Consult the waste processing service.

SECTION 14. TRANSPORT INFORMATION

Classification for LAND transport (ADR/RID)

14.1 VN number UN 3500

14.2 Proper shipping

name in

accordance with

the

UN Model

Regulations

CHEMICAL UNDER PRESSURE N.O.S.

14.3 Class 2

14.4 Packing group Not applicable

14.5 Environmental hazards Not considered hazardous to the environment based on available data.

14.6 Special precautions for user

Hazard identification no.: 20

Classification for SEA transport (IMO/IMDG):

14.1 VN number UN 3500

14.2 Proper shipping

name in

accordance with

the

UN Model

Regulations

CHEMICAL UNDER PRESSURE, N.O.S.

14.3 Class 2.2

14.4 Packing group Not applicable

14.5 Environmental hazards Not considered a contaminant for the sea based on available data.

14.6 Special precautions for user

EMS: F-C, S-V

14.7 Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC code

Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

14.1 VN number UN 3500

14.2 Proper shipping

name in

accordance with

the

UN Model

Regulations

Chemical under pressure, N.O.S.

14.3 Class	2.2
14.4 Packing group	Not applicable
14.5 Environmental hazards	Not applicable
14.6 Special precautions for user	No data available.

This information is not intended to supply all specific laws, operational requirements/information about this product. Additional information about transport is available from a representative of the sales organisation or from the customer service. It is the responsibility of the transport company to comply with all statutory provisions for the transport of goods.

SECTION 15. REGULATORY INFORMATION

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

REACH Directive (EC) No. 1907/2006

This product only contains components that have either been registered in advance, are exempt from registration, or are considered registered in accordance with Directive (EC) No. 1907/2006 (REACH). The aforementioned indications of REACH registration status are provided in good faith and they are assumed to be accurate as of the date listed above. Explicit or implicit guarantees are given, however [sic]. It is the responsibility of the buyer/user to make sure that his/her understanding of the regulatory status of this product is correct.

Restrictions on manufacture, marketing and use:

The following substance(s) that is/are part of this product is/are subject to an authorisation requirement in accordance with Annex XVII of the REACH regulations on manufacture, marketing and use if present in certain hazardous substances, mixtures and articles. Users of this product must take the restrictions listed in the aforementioned precautions into consideration.

CAS No.: 9016-87-9 Name: Diphenylmethane Diisocyanate, isomers and homologs

Restriction status: Specified in REACH Annex XVII

Limited forms of use: See Annex XVII to Directive (EC) No. 1907/2006 for

Restriction conditions

CAS No.: 101-68-8 Name: 4,4'-methylenediphenyl diisocyanate

Restriction status: Specified in REACH Annex XVII

Limited forms of use: See Annex XVII to Directive (EC) No. 1907/2006 for

Restriction conditions

Seveso II - Directive 2003/105/EC of the European Parliament and the Council amending Council Directive 96/82/EC on the control of major-accident hazards involving dangerous substances

Included in Directive: Not applicable

15.2 Chemical safety assessment:

Not applicable

SECTION 16. OTHER INFORMATION**Full text of the H statements listed in sections 2 and 3.**

H302 Harmful if swallowed.
 H315 Causes skin irritation.
 H317 May cause an allergic skin reaction. H319 Causes serious eye irritation.
 H332 Harmful if inhaled.
 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
 H335 May cause respiratory irritation. H351 Suspected of causing cancer.
 H373 May cause damage to organs through prolonged or repeated exposure.

Classification and procedure are used to deduce the classification for mixtures from Directive (EC) no. 1272/2008.

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 - Based on test data. STOT
 RE - 2 - H373 - Calculation method

Literature on the product

Additional information about this product is available from your vendor or the contact person at the customer service.

Revision

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 The most recent revisions are indicated by the double vertical line in bold print on the left side of the document.

Legend

ACGIH	USA. ACGIH Threshold Limit Values
BE OEL	Limit values for occupational exposure
TGG 8 hr	Limit value
TWA	Time-weighted average - 8 hours

Sources and references

This safety data sheet was prepared by Product Regulatory Services and Hazard Communications Groups based on information from internal references within our company.

RENOLIT BELGIUM NV asks every customer or recipient of this Safety Data Sheet (SDS) to read it carefully and to consult appropriate experts if necessary so they will understand the information in this SDS and be aware of the dangers associated with the product. The

information in this document is provided in good faith and is assumed to be accurate as of the date listed above. No explicit or implicit guarantees are given, however. Legal provisions may change and they may also vary depending on the country. It is the responsibility of the buyer/user to make sure that his activities comply with all local statutory provisions. The information in this document applies only the product as shipped. Since the circumstances in which the product is used cannot be monitored by the producer, the buyer/user must determine the circumstances in which the product can be used safely. In light of the proliferation of sources of information, such as Safety Data Sheets (SDSs) from different producers, we are not responsible and cannot be responsible for Safety Data Sheets obtained from other sources. If you have received a Safety Data Sheet from another source, or if you are not sure whether you have the most recent version of a Safety Data Sheet, please contact us.