

Permabond®

Engineering Adhesives

SAFETY DATA SHEET

Permabond UV681

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

1.1. Product identifier

Product name Permabond UV681

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

Identified uses Adhesive.

1.3. Details of the supplier of the safety data sheet

Supplier Permabond Engineering Adhesives Ltd.
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Colden Common
Winchester
Hampshire. SO21 1WP
United Kingdom
Tel: +44 (0)1962 711 661
Fax: +44 (0)1962 711 662
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1.4. Emergency telephone number

Emergency telephone UK +44 (0)1962 711 661 USA 0800 640 7599 Asia +86 (0)21 5773 4913

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (EC 1272/2008)

Physical hazards Not Classified

Health hazards Skin Corr. 1C - H314 Eye Dam. 1 - H318 Skin Sens. 1 - H317 STOT SE 3 - H335

Environmental hazards Aquatic Acute 1 - H400 Aquatic Chronic 1 - H410

Classification (67/548/EEC or 1999/45/EC) Xi;R36/37/38. R43. N;R51/53.

2.2. Label elements

Pictogram



Signal word

Danger

Hazard statements

H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H335 May cause respiratory irritation.
H410 Very toxic to aquatic life with long lasting effects.

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Precautionary statements	<p>P273 Avoid release to the environment.</p> <p>P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.</p> <p>P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.</p> <p>P302+P352a IF ON SKIN: Wash with plenty of soap and water</p> <p>P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</p> <p>P308+P313 IF exposed or concerned: Get medical advice/ attention.</p>
Contains	<p>ISOBORNYL ACRYLATE, TETRAHYDROFURFURYL ACRYLATE, 1,1,1-TRIMETHYLOLPROPANE TRI(3-MERCAPTOPROPIONATE), HEXAMETHYLENE DIACRYLATE</p>
Supplementary precautionary statements	<p>P264 Wash contaminated skin thoroughly after handling.</p> <p>P271 Use only outdoors or in a well-ventilated area.</p> <p>P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.</p> <p>P333+P313 If skin irritation or rash occurs: Get medical advice/ attention.</p> <p>P362+P364 Take off contaminated clothing and wash it before reuse.</p> <p>P391 Collect spillage.</p> <p>P403+P233 Store in a well-ventilated place. Keep container tightly closed.</p> <p>P501 Dispose of contents/container in accordance with existing Community, National and local regulations.</p>

2.3. Other hazards

None under normal conditions.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

ISOBORNYL ACRYLATE	30-60%
CAS number: 5888-33-5 EC number: 227-561-6 M factor (Acute) = 1 M factor (Chronic) = 1	
Classification Skin Irrit. 2 - H315 Eye Irrit. 2 - H319 Skin Sens. 1 - H317 STOT SE 3 - H335 Aquatic Acute 1 - H400 Aquatic Chronic 1 - H410	Classification (67/548/EEC or 1999/45/EC) Xi;R36/37/38. N;R51/53.
URETHANE ACRYLATE OLIGOMER	10-30%
CAS number: 73297-29-7	
Classification Skin Irrit. 2 - H315 Eye Irrit. 2 - H319	Classification (67/548/EEC or 1999/45/EC) Xi;R36/38.

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TETRAHYDROFURFURYL ACRYLATE		10-30%
CAS number: 2399-48-6		EC number: 219-268-7
Classification	Classification (67/548/EEC or 1999/45/EC)	
Skin Corr. 1C - H314	Xi;R36/38.	
Eye Irrit. 2 - H319		
TRIS(2-HYDROXYETHYL)ISOCYANURATE TRIACRYLATE		5-10%
CAS number: 40220-08-4		EC number: 254-843-6
Classification	Classification (67/548/EEC or 1999/45/EC)	
Eye Dam. 1 - H318	Xi;R36/38.	
1,1,1-TRIMETHYLOLPROPANE TRI(3-MERCAPTOPROPIONATE)		5-10%
CAS number: 33007-83-9		EC number: 251-336-1
M factor (Acute) = 1	M factor (Chronic) = 1	
Classification	Classification (67/548/EEC or 1999/45/EC)	
Acute Tox. 4 - H302	Xn;R22. N;R50/53. R43.	
Skin Sens. 1 - H317		
Aquatic Acute 1 - H400		
Aquatic Chronic 1 - H410		
HEXAMETHYLENE DIACRYLATE		1-5%
CAS number: 13048-33-4		EC number: 235-921-9
Classification	Classification (67/548/EEC or 1999/45/EC)	
Skin Irrit. 2 - H315	R43 Xi;R36/38	
Eye Irrit. 2 - H319		
Skin Sens. 1 - H317		
DIPHENYL(2,4,6-TRIMETHYLBENZOYL)PHOSPHINE OXIDE		1-<3%
CAS number: 75980-60-8		EC number: 278-355-8
Classification	Classification (67/548/EEC or 1999/45/EC)	
Skin Sens. 1B - H317	Repr. Cat. 3;R62. N;R51/53.	
Repr. 2 - H361f		
Aquatic Chronic 2 - H411		

The Full Text for all R-Phrases and Hazard Statements are Displayed in Section 16.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation	Move the exposed person to fresh air. Get medical attention if any discomfort continues.
Ingestion	Never give anything by mouth to an unconscious person. Rinse mouth thoroughly with water. Give plenty of water to drink. Do not induce vomiting. Get medical attention immediately.

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Skin contact Remove contaminated clothing immediately and wash skin with soap and water. Get medical attention promptly if symptoms occur after washing.

Eye contact Remove any contact lenses and open eyelids wide apart. Promptly wash eyes with plenty of water while lifting the eye lids. Continue to rinse for at least 15 minutes. Get medical attention.

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

Inhalation May cause respiratory irritation.

Ingestion May cause chemical burns in mouth and throat.

Skin contact Chemical burns. Mild dermatitis, allergic skin rash.

Eye contact May cause serious eye damage.

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

Notes for the doctor No specific recommendations. Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media Extinguish with foam, carbon dioxide, dry powder or water fog.

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture

Hazardous combustion products Burning produces irritating, toxic and obnoxious fumes. Carbon monoxide, carbon dioxide, and unknown hydrocarbons.

5.3. Advice for firefighters

Special protective equipment for firefighters Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions Wear protective clothing as described in Section 8 of this safety data sheet.

6.2. Environmental precautions

Environmental precautions Do not discharge into drains or watercourses or onto the ground.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up Absorb spillage with sand or other inert absorbent. Transfer to suitable, labelled containers for disposal.

6.4. Reference to other sections

Reference to other sections For personal protection, see Section 8. For waste disposal, see section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions Avoid contact with skin and eyes. Do not eat, drink or smoke when using this product.

7.2. Conditions for safe storage, including any incompatibilities

Storage precautions Store in closed original container at temperatures between 2°C and 7°C. Protect against direct sunlight. Never return unused material to storage receptacle.

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7.3. Specific end use(s)

Specific end use(s) Adhesive.

SECTION 8: Exposure Controls/personal protection

8.1. Control parameters

8.2. Exposure controls

Protective equipment



Appropriate engineering controls

Provide adequate general and local exhaust ventilation. Avoid inhalation of vapours. Observe any occupational exposure limits for the product or ingredients.

Eye/face protection

The following protection should be worn: Chemical splash goggles or face shield. Personal eye protection should conform to EN 166

Hand protection

Nitrile rubber or Viton™ gloves are recommended. Cotton or other absorbent gloves should not be worn. Gloves should conform to EN 374. The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material.

Other skin and body protection

Employee must wear appropriate protective clothing and equipment to prevent any possibility of skin contact with this substance.

Hygiene measures

Wash hands at the end of each work shift and before eating, smoking and using the toilet. Promptly remove any clothing that becomes contaminated. Use appropriate skin cream to prevent drying of skin. When using do not eat, drink or smoke. Use of good industrial hygiene practices is required.

Respiratory protection

No specific recommendations. Respiratory protection may be required if excessive airborne contamination occurs.

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Appearance	Liquid.
Colour	Colourless.
Odour	Acrylic
Odour threshold	Not available.
pH	Not relevant.
Melting point	Not available.
Initial boiling point and range	Not applicable.
Flash point	>100°C
Evaporation rate	Not available.
Upper/lower flammability or explosive limits	Not available.
Vapour pressure	Not available.
Vapour density	Not available.

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Relative density	1.1
Solubility(ies)	Insoluble in water. Soluble in the following materials: Organic solvents.
Auto-ignition temperature	Not available.
Viscosity	≈100 mPa s @ 23°C
Oxidising properties	Not available.

9.2. Other information

Other information	Not relevant.
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SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	The following materials may react with the product: Strong oxidising agents. Light.
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10.2. Chemical stability

Stability	Stable at normal ambient temperatures.
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10.3. Possibility of hazardous reactions

Possibility of hazardous reactions	There are no known reactivity hazards associated with this product.
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10.4. Conditions to avoid

Conditions to avoid	Protect against direct sunlight.
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10.5. Incompatible materials

Materials to avoid	Strong reducing agents. Strong oxidising agents.
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10.6. Hazardous decomposition products

Hazardous decomposition products	Thermal decomposition could produce carbon monoxide, carbon dioxide, and unidentified organic compounds.
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SECTION 11: Toxicological information

11.1. Information on toxicological effects

Toxicological effects	The toxicological properties of this product have not been fully evaluated. Avoid direct contact with skin or eyes. Do not ingest or inhale.
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Skin sensitisation

Skin sensitisation	May cause sensitisation by skin contact.
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Aspiration hazard

Aspiration hazard	None under normal conditions.
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Inhalation

May cause respiratory irritation.

Skin contact

This product is strongly irritating. Prolonged contact may cause burns.

Eye contact

Causes serious eye damage.

Toxicological information on ingredients.

ISOBORNYL ACRYLATE

Acute toxicity - oral

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**Acute toxicity oral (LD₅₀
mg/kg)** 5,000.0

Species Rat

ATE oral (mg/kg) 5,000.0

Acute toxicity - dermal

**Acute toxicity dermal (LD₅₀
mg/kg)** 3,000.0

Species Rabbit

ATE dermal (mg/kg) 3,000.0

TRIS(2-HYDROXYETHYL)ISOCYANURATE TRIACRYLATE

Acute toxicity - oral

**Acute toxicity oral (LD₅₀
mg/kg)** 2,500.0

Species Rat

ATE oral (mg/kg) 2,500.0

HEXAMETHYLENE DIACRYLATE

Acute toxicity - oral

**Acute toxicity oral (LD₅₀
mg/kg)** 5,000.0

Species Rat

ATE oral (mg/kg) 5,000.0

Acute toxicity - dermal

**Acute toxicity dermal (LD₅₀
mg/kg)** 3,650.0

Species Rabbit

ATE dermal (mg/kg) 3,650.0

DIPHENYL(2,4,6-TRIMETHYLBENZOYL)PHOSPHINE OXIDE

Acute toxicity - oral

**Acute toxicity oral (LD₅₀
mg/kg)** 5,000.0

Species Rat

ATE oral (mg/kg) 5,000.0

Acute toxicity - dermal

**Acute toxicity dermal (LD₅₀
mg/kg)** 2,000.1

Species Rat

ATE dermal (mg/kg) 2,000.1

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SECTION 12: Ecological Information

Ecotoxicity Very toxic to aquatic life with long lasting effects. Avoid release to the environment.

12.1. Toxicity

Toxicity There are no data on the ecotoxicity of this product.

Ecological information on ingredients.

ISOBORNYL ACRYLATE

Acute aquatic toxicity

LE(C)₅₀ 0.1 < L(E)C₅₀ ≤ 1

M factor (Acute) 1

Acute toxicity - fish LC₅₀, 96 hours: 0.704 mg/l, Danio rerio (Zebrafish)

Acute toxicity - aquatic plants EC₅₀, 72 hours: 1.98 mg/l, Pseudokirchneriella subcapitata
NOEC, 72 hours: 0.405 mg/l, Pseudokirchneriella subcapitata

Chronic aquatic toxicity

M factor (Chronic) 1

Chronic toxicity - aquatic invertebrates NOEC, 21 days: 0.092 mg/l, Daphnia magna

1,1,1-TRIMETHYLOLPROPANE TRI(3-MERCAPTOPROPIONATE)

Acute aquatic toxicity

LE(C)₅₀ 0.1 < L(E)C₅₀ ≤ 1

M factor (Acute) 1

Chronic aquatic toxicity

M factor (Chronic) 1

HEXAMETHYLENE DIACRYLATE

Acute toxicity - fish LC₅₀, 96 hours: 4.6 mg/l, Leuciscus idus (Golden orfe)

Acute toxicity - aquatic invertebrates EC₅₀, 48 hours: 2.6 mg/l, Daphnia magna

Acute toxicity - aquatic plants EC₅₀, 72 hours: 1.5 mg/l, Desmodosmus subspicatus

Acute toxicity - microorganisms EC₂₀, 30 minutes: 60 mg/l, Activated sludge

DIPHENYL(2,4,6-TRIMETHYLBENZOYL)PHOSPHINE OXIDE

Acute toxicity - fish LC₅₀, 48 hours: 6.53 mg/l, Oryzias latipes (Red killifish)

Acute toxicity - aquatic invertebrates EC₅₀, 48 hours: 3.53 mg/l, Daphnia magna

Acute toxicity - aquatic plants EC₅₀, 72 hours: > 2.01 mg/l, Pseudokirchneriella subcapitata

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Acute toxicity - microorganisms EC₅₀, 180 minutes: > 1000 mg/l, Activated sludge

12.2. Persistence and degradability

Persistence and degradability No data available.

Ecological information on ingredients.

ISOBORNYL ACRYLATE

Biodegradation Water - Degradation 57%: 28 days

HEXAMETHYLENE DIACRYLATE

Biodegradation The substance is readily biodegradable.

DIPHENYL(2,4,6-TRIMETHYLBENZOYL)PHOSPHINE OXIDE

Biodegradation Water - Degradation < 20%: 28 days

12.3. Bioaccumulative potential

Bioaccumulative potential No data available on bioaccumulation.

Ecological information on ingredients.

HEXAMETHYLENE DIACRYLATE

Partition coefficient log Pow: ~ 2.81

DIPHENYL(2,4,6-TRIMETHYLBENZOYL)PHOSPHINE OXIDE

Bioaccumulative potential BCF: 23 - 55, Cyprinus carpio (Common carp)

12.4. Mobility in soil

Mobility No data available.

12.5. Results of PBT and vPvB assessment

Results of PBT and vPvB assessment This substance is not classified as PBT or vPvB according to current EU criteria.

12.6. Other adverse effects

Other adverse effects None known.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

General information Waste disposal should be in accordance with existing Community, National and local regulations Empty containers may contain product residue; follow SDS and label warnings even after they have been emptied.

Disposal methods Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.

Waste class 08 04 09* waste adhesives and sealants containing organic solvents or other dangerous substances.

SECTION 14: Transport information

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14.1. UN number

1760

14.2. UN proper shipping name

CORROSIVE LIQUID, N.O.S. (contains Tetrahydrofurfuryl acrylate)

14.3. Transport hazard class(es)

8

Transport labels



14.4. Packing group

III

14.5. Environmental hazards

Environmentally hazardous substance/marine pollutant



14.6. Special precautions for user

EmS F-A, S-B

Tunnel restriction code (E)

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

Transport in bulk according to Not applicable.

Annex II of MARPOL 73/78

and the IBC Code

SECTION 15: Regulatory information

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

National regulations	The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (SI 2009 No. 716).
EU legislation	Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures (as amended). COMMISSION REGULATION (EU) 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)
Guidance	Workplace Exposure Limits EH40. CHIP for everyone HSG228. Safety Data Sheets for Substances and Preparations. Approved Classification and Labelling Guide (Sixth edition) L131.

15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

SECTION 16: Other information

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Revision date	29/03/2016
Revision	4
Supersedes date	09/10/2015
Risk phrases in full	R22 Harmful if swallowed. R36/37/38 Irritating to eyes, respiratory system and skin. R36/38 Irritating to eyes and skin. R43 May cause sensitisation by skin contact. R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. R62 Possible risk of impaired fertility.
Hazard statements in full	H302 Harmful if swallowed. H314 Causes severe skin burns and eye damage. H315 Causes skin irritation. H317 May cause an allergic skin reaction. H318 Causes serious eye damage. H319 Causes serious eye irritation. H335 May cause respiratory irritation. H361f Suspected of damaging fertility. H400 Very toxic to aquatic life. H410 Very toxic to aquatic life with long lasting effects. H411 Toxic to aquatic life with long lasting effects.

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty, guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.