



## SAFETY DATA SHEET

### Permabond UV645

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

##### 1.1. Product identifier

**Product name** Permabond UV645

##### 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.  
Wessex Way  
Colden Common  
Winchester  
Hampshire. SO21 1WP  
United Kingdom  
Tel: +44 (0)1962 711 661  
Fax: +44 (0)1962 711 662  
info.europe@permabond.com

##### 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)

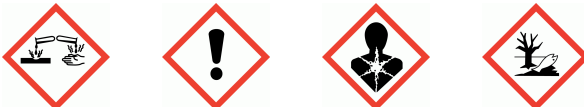
**Physical hazards** Not Classified

**Health hazards** Acute Tox. 4 - H302 Skin Irrit. 2 - H315 Eye Dam. 1 - H318 Skin Sens. 1 - H317 Repr. 1B - H360Df

**Environmental hazards** Aquatic Chronic 2 - H411

##### 2.2. Label elements

###### Pictogram



**Signal word** Danger

**Hazard statements** H302 Harmful if swallowed.  
H315 Causes skin irritation.  
H317 May cause an allergic skin reaction.  
H318 Causes serious eye damage.  
H360Df May damage the unborn child. Suspected of damaging fertility.  
H411 Toxic to aquatic life with long lasting effects.

## Permabond UV645

<b>Precautionary statements</b>	<p>P202 Do not handle until all safety precautions have been read and understood.</p> <p>P273 Avoid release to the environment.</p> <p>P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.</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>
<b>Contains</b>	TETRAHYDROFURFURYL METHACRYLATE, ISOBORNYL ACRYLATE, N,N-DIMETHYLACRYLAMIDE, 2-HYDROXYETHYL METHACRYLATE
<b>Supplementary precautionary statements</b>	<p>P264 Wash contaminated skin thoroughly after handling.</p> <p>P270 Do not eat, drink or smoke when using this product.</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>P405 Store locked up.</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

<b>TETRAHYDROFURFURYL METHACRYLATE</b>		<b>10-30%</b>
CAS number: 2455-24-5	EC number: 219-529-5	
<b>Classification</b> Repr. 1B - H360Df	<b>Classification (67/548/EEC or 1999/45/EC)</b> Xi;R36/37/38.	
<b>ISOBORNYL ACRYLATE</b>		<b>10-30%</b>
CAS number: 5888-33-5	EC number: 227-561-6	
M factor (Acute) = 1	M factor (Chronic) = 1	
<b>Classification</b> Skin Irrit. 2 - H315 Eye Irrit. 2 - H319 Skin Sens. 1 - H317 STOT SE 3 - H335 Aquatic Acute 1 - H400 Aquatic Chronic 1 - H410	<b>Classification (67/548/EEC or 1999/45/EC)</b> Xi;R36/37/38. N;R51/53.	
<b>N,N-DIMETHYLACRYLAMIDE</b>		<b>10-30%</b>
CAS number: 2680-03-7	EC number: 220-237-5	
<b>Classification</b> Acute Tox. 3 - H301 Acute Tox. 3 - H311 Eye Dam. 1 - H318	<b>Classification (67/548/EEC or 1999/45/EC)</b> T;R23. Xn;R21/22. Xi;R36.	

## Permabond UV645

<b>2-HYDROXYETHYL METHACRYLATE</b>		<b>5-10%</b>
CAS number: 868-77-9	EC number: 212-782-2	REACH registration number: 01-2119490169-29-XXXX
<b>Classification</b> Eye Irrit. 2 - H319 Skin Sens. 1 - H317	<b>Classification (67/548/EEC or 1999/45/EC)</b> R43 Xi;R36/38	

<b>DIPHENYL(2,4,6-TRIMETHYLBENZOYL)PHOSPHINE OXIDE</b>		<b>1-&lt;3%</b>
CAS number: 75980-60-8	EC number: 278-355-8	
<b>Classification</b> Skin Sens. 1B - H317 Repr. 2 - H361f Aquatic Chronic 2 - H411	<b>Classification (67/548/EEC or 1999/45/EC)</b> Repr. Cat. 3;R62. N;R51/53.	

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

<b>Inhalation</b>	Move the exposed person to fresh air. Get medical attention if any discomfort continues.
<b>Ingestion</b>	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.
<b>Skin contact</b>	Remove contaminated clothing immediately and wash skin with soap and water. Get medical attention promptly if symptoms occur after washing.
<b>Eye contact</b>	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

<b>Inhalation</b>	Irritation of nose, throat and airway.
<b>Ingestion</b>	May cause chemical burns in mouth and throat.
<b>Skin contact</b>	Chemical burns. Mild dermatitis, allergic skin rash.
<b>Eye contact</b>	May cause serious eye damage.

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

<b>Notes for the doctor</b>	No specific recommendations. Treat symptomatically.
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### SECTION 5: Firefighting measures

#### 5.1. Extinguishing media

<b>Suitable extinguishing media</b>	Extinguish with foam, carbon dioxide, dry powder or water fog.
<b>Unsuitable extinguishing media</b>	Do not use water jet as an extinguisher, as this will spread the fire.

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

<b>Hazardous combustion products</b>	Burning produces irritating, toxic and obnoxious fumes. Carbon monoxide, carbon dioxide, and unknown hydrocarbons.
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## Permabond UV645

### 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 5°C and 25°C. Protect against direct sunlight. Never return unused material to storage receptacle.

### 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.

## Permabond UV645

<b>Hygiene measures</b>	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.
<b>Respiratory protection</b>	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

<b>Appearance</b>	Liquid.
<b>Colour</b>	Colourless.
<b>Odour</b>	Acrylic
<b>Odour threshold</b>	Not available.
<b>pH</b>	Not relevant.
<b>Melting point</b>	Not available.
<b>Initial boiling point and range</b>	Not applicable.
<b>Flash point</b>	>100°C
<b>Evaporation rate</b>	Not available.
<b>Upper/lower flammability or explosive limits</b>	Not available.
<b>Vapour pressure</b>	Not available.
<b>Vapour density</b>	Not available.
<b>Relative density</b>	1.1
<b>Solubility(ies)</b>	Slightly soluble in water. Soluble in the following materials: Organic solvents.
<b>Auto-ignition temperature</b>	Not available.
<b>Viscosity</b>	≈45000 mPa s @ 23°C
<b>Oxidising properties</b>	Not available.

#### 9.2. Other information

<b>Other information</b>	Not relevant.
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### SECTION 10: Stability and reactivity

#### 10.1. Reactivity

<b>Reactivity</b>	The following materials may react with the product: Strong oxidising agents. Light.
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#### 10.2. Chemical stability

<b>Stability</b>	Stable at normal ambient temperatures.
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#### 10.3. Possibility of hazardous reactions

<b>Possibility of hazardous reactions</b>	There are no known reactivity hazards associated with this product.
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#### 10.4. Conditions to avoid

<b>Conditions to avoid</b>	Protect against direct sunlight.
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## Permabond UV645

### 10.5. Incompatible materials

**Materials to avoid** Strong reducing agents. Strong oxidising agents.

### 10.6. Hazardous decomposition products

**Hazardous decomposition products** Thermal decomposition could produce carbon monoxide, carbon dioxide, and unidentified organic compounds.

## 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.

#### Skin sensitisation

**Skin sensitisation** May cause sensitisation by skin contact.

#### Aspiration hazard

**Aspiration hazard** None under normal conditions.

#### Inhalation

In high concentrations, vapours may irritate throat and respiratory system and cause coughing.

#### Ingestion

Harmful if swallowed.

#### Skin contact

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

#### Eye contact

Causes serious eye damage.

### Toxicological information on ingredients.

#### TETRAHYDROFURFURYL METHACRYLATE

##### Acute toxicity - oral

**Acute toxicity oral (LD<sub>50</sub> mg/kg)** 4,000.0

**Species** Rat

**ATE oral (mg/kg)** 4,000.0

##### Reproductive toxicity

**Reproductive toxicity - fertility** Suspected of damaging fertility.

##### Specific target organ toxicity - repeated exposure

**STOT - repeated exposure** NOAEL 300 mg/kg, Oral, Rat

#### ISOBORNYL ACRYLATE

##### Acute toxicity - oral

**Acute toxicity oral (LD<sub>50</sub> mg/kg)** 5,000.0

**Species** Rat

**ATE oral (mg/kg)** 5,000.0

##### Acute toxicity - dermal

## Permabond UV645

**Acute toxicity dermal (LD<sub>50</sub> mg/kg)** 3,000.0

**Species** Rabbit

**ATE dermal (mg/kg)** 3,000.0

### N,N-DIMETHYLACRYLAMIDE

#### Acute toxicity - oral

**Acute toxicity oral (LD<sub>50</sub> mg/kg)** 216.0

**Species** Rat

**ATE oral (mg/kg)** 216.0

#### Acute toxicity - dermal

**Acute toxicity dermal (LD<sub>50</sub> mg/kg)** 519.0

**Species** Rabbit

**ATE dermal (mg/kg)** 519.0

#### Acute toxicity - inhalation

**Acute toxicity inhalation (LC<sub>50</sub> vapours mg/l)** 3.16

**Species** Rat

#### Skin corrosion/irritation

**Animal data** Not irritating.

#### Serious eye damage/irritation

**Serious eye damage/irritation** Causes serious eye damage.

#### Respiratory sensitisation

**Respiratory sensitisation** No data available.

#### Skin sensitisation

**Skin sensitisation** Not sensitising.

#### Germ cell mutagenicity

**Genotoxicity - in vitro** Negative.

#### Carcinogenicity

**Carcinogenicity** No data available.

### 2-HYDROXYETHYL METHACRYLATE

#### Acute toxicity - oral

**Acute toxicity oral (LD<sub>50</sub> mg/kg)** 5,000.0

**Species** Rat

## Permabond UV645

ATE oral (mg/kg) 5,000.0

### Acute toxicity - dermal

Acute toxicity dermal (LD<sub>50</sub> 3,000.0  
mg/kg)

Species Rabbit

ATE dermal (mg/kg) 3,000.0

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

### Acute toxicity - oral

Acute toxicity oral (LD<sub>50</sub> 5,000.0  
mg/kg)

Species Rat

ATE oral (mg/kg) 5,000.0

### Acute toxicity - dermal

Acute toxicity dermal (LD<sub>50</sub> 2,000.1  
mg/kg)

Species Rat

ATE dermal (mg/kg) 2,000.1

## SECTION 12: Ecological Information

**Ecotoxicity** Toxic to aquatic life with long lasting effects.

### 12.1. Toxicity

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

### Ecological information on ingredients.

#### TETRAHYDROFURFURYL METHACRYLATE

**Acute toxicity - fish** LC<sub>50</sub>, 96 hours: 34.7 mg/l, Pimephales promelas (Fat-head Minnow)

**Acute toxicity - aquatic plants** EC<sub>50</sub>, 72 hours: >100 mg/l, Desmodesmus subspicatus  
NOEC, 72 hours: >100 mg/l, Desmodesmus subspicatus

**Chronic toxicity - aquatic invertebrates** NOEC, 21 days: 37.2 mg/l, Daphnia magna

#### ISOBORNYL ACRYLATE

### Acute aquatic toxicity

LE(C)<sub>50</sub> 0.1 < L(E)C<sub>50</sub> ≤ 1

M factor (Acute) 1

**Acute toxicity - fish** LC<sub>50</sub>, 96 hours: 0.704 mg/l, Danio rerio (Zebrafish)

**Acute toxicity - aquatic plants** EC<sub>50</sub>, 72 hours: 1.98 mg/l, Pseudokirchneriella subcapitata  
NOEC, 72 hours: 0.405 mg/l, Pseudokirchneriella subcapitata

### Chronic aquatic toxicity



## Permabond UV645

<b>M factor (Chronic)</b>	1
<b>Chronic toxicity - aquatic invertebrates</b>	NOEC, 21 days: 0.092 mg/l, Daphnia magna

### N,N-DIMETHYLACRYLAMIDE

<b>Acute toxicity - fish</b>	LC <sub>50</sub> , 96 hours: > 120 mg/l, Onchorhynchus mykiss (Rainbow trout)
<b>Acute toxicity - aquatic invertebrates</b>	EC <sub>50</sub> , 48 hours: > 120 mg/l, Daphnia magna
<b>Acute toxicity - aquatic plants</b>	NOEC, 72 hours: 50 mg/l, Pseudokirchneriella subcapitata
<b>Acute toxicity - microorganisms</b>	EC <sub>20</sub> , 3 hours: 430 mg/l, Activated sludge

### 2-HYDROXYETHYL METHACRYLATE

<b>Acute toxicity - fish</b>	LC <sub>50</sub> , 96 hours: > 100 mg/l, Oryzias latipes (Red killifish)
<b>Acute toxicity - aquatic invertebrates</b>	EC <sub>50</sub> , 48 hours: 380 mg/l, Daphnia magna
<b>Acute toxicity - aquatic plants</b>	EC <sub>50</sub> , 72 hours: 836 mg/l, Selenastrum capricornutum NOEC, 72 hours: 400 mg/l, Selenastrum capricornutum
<b>Acute toxicity - microorganisms</b>	EC <sub>50</sub> , 16 hours: > 3000 mg/l, Pseudomonas fluorescens
<b>Chronic toxicity - aquatic invertebrates</b>	NOEC, 21 days: 24.1 mg/l, Daphnia magna

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

<b>Acute toxicity - fish</b>	LC <sub>50</sub> , 48 hours: 6.53 mg/l, Oryzias latipes (Red killifish)
<b>Acute toxicity - aquatic invertebrates</b>	EC <sub>50</sub> , 48 hours: 3.53 mg/l, Daphnia magna
<b>Acute toxicity - aquatic plants</b>	EC <sub>50</sub> , 72 hours: > 2.01 mg/l, Pseudokirchneriella subcapitata
<b>Acute toxicity - microorganisms</b>	EC <sub>50</sub> , 180 minutes: > 1000 mg/l, Activated sludge

#### 12.2. Persistence and degradability

**Persistence and degradability** No data available.

#### Ecological information on ingredients.

### TETRAHYDROFURFURYL METHACRYLATE

<b>Persistence and degradability</b>	The product is readily biodegradable.
<b>Biodegradation</b>	- 75%: 28 days

## Permabond UV645

### ISOBORNYL ACRYLATE

**Biodegradation** Water - Degradation 57%: 28 days

### N,N-DIMETHYLACRYLAMIDE

**Stability (hydrolysis)** pH7 - Half-life : > 1 year @ 50°C

**Biodegradation** Water - Degradation 0%: 28 days

### 2-HYDROXYETHYL METHACRYLATE

**Biodegradation** Water - Degradation 84%: 28 days

### 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.

### N,N-DIMETHYLACRYLAMIDE

**Bioaccumulative potential** No data available.

### 2-HYDROXYETHYL METHACRYLATE

**Bioaccumulative potential** BCF: 1.34 - 1.54,

### 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.

#### Ecological information on ingredients.

### N,N-DIMETHYLACRYLAMIDE

**Mobility** No data available.

### 2-HYDROXYETHYL METHACRYLATE

**Adsorption/desorption coefficient** Water - Koc: 42.7 @ 20°C

#### 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.

#### Ecological information on ingredients.

# Permabond UV645

## N,N-DIMETHYLACRYLAMIDE

**Other adverse effects** No data available.

### SECTION 13: Disposal considerations

#### 13.1. Waste treatment methods

<b>General information</b>	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.
<b>Disposal methods</b>	Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.
<b>Waste class</b>	08 04 09* waste adhesives and sealants containing organic solvents or other dangerous substances.

### SECTION 14: Transport information

#### 14.1. UN number

1760

#### 14.2. UN proper shipping name

CORROSIVE LIQUID, N.O.S. (contains Isobornyl 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

Not applicable.

**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 Annex II of MARPOL 73/78 and the IBC Code Not applicable.

### SECTION 15: Regulatory information

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

## Permabond UV645

<b>National regulations</b>	The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (SI 2009 No. 716).
<b>EU legislation</b>	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)
<b>Guidance</b>	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

<b>Revision date</b>	07/08/2015
<b>Revision</b>	3
<b>Supersedes date</b>	06/01/2015
<b>Hazard statements in full</b>	H301 Toxic if swallowed. H302 Harmful if swallowed. H311 Toxic in contact with skin. 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. H360Df May damage the unborn child. Suspected of damaging fertility. 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.