



SAFETY DATA SHEET

Permabond TA4590

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

1.1. Product identifier

Product name Permabond TA4590

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 Skin Irrit. 2 - H315 Eye Irrit. 2 - H319 Skin Sens. 1 - H317 STOT SE 3 - H335

Environmental hazards Not Classified

Classification (67/548/EEC or 1999/45/EC) Xi;R36/37/38. R43. R52/53.

2.2. Label elements

Pictogram



Signal word Warning

Hazard statements H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.

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Precautionary statements	<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>
Contains	2-HYDROXYETHYL METHACRYLATE, ISOBORNOLMETHACRYLATE, MALEIC ACID
Supplementary precautionary statements	<p>P261 Avoid breathing vapour/ spray.</p> <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>P337+P313 If eye irritation persists: Get medical advice/ attention.</p> <p>P362+P364 Take off contaminated clothing and wash it before reuse.</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

2-HYDROXYETHYL METHACRYLATE			30-60%
CAS number: 868-77-9	EC number: 212-782-2	REACH registration number: 01-2119490169-29-XXXX	
Classification	Classification (67/548/EEC or 1999/45/EC)		
Eye Irrit. 2 - H319	R43 Xi;R36/38		
Skin Sens. 1 - H317			
ISOBORNOLMETHACRYLATE			10-30%
CAS number: 7534-94-3	EC number: 231-403-1	REACH registration number: 01-2119886505-27-XXXX	
Classification	Classification (67/548/EEC or 1999/45/EC)		
Skin Irrit. 2 - H315	Xi;R36/37/38. N;R51/53.		
Eye Irrit. 2 - H319			
STOT SE 3 - H335			
Aquatic Chronic 3 - H412			

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MALEIC ACID		1-5%
CAS number: 110-16-7	EC number: 203-742-5	REACH registration number: 01-2119488705-25-XXXX
Classification Acute Tox. 4 - H302 Acute Tox. 4 - H312 Skin Irrit. 2 - H315 Eye Dam. 1 - H318 Skin Sens. 1 - H317 STOT SE 3 - H335	Classification (67/548/EEC or 1999/45/EC) Xn;R22 Xi;R36/37/38 R43	
tert-AMYL HYDROPEROXIDE		<1%
CAS number: 3425-61-4	EC number: 222-321-7	REACH registration number: 01-2119964027-36-XXXX
Classification Flam. Liq. 3 - H226 Org. Perox. A - H240 Acute Tox. 4 - H302 Acute Tox. 3 - H311 Acute Tox. 3 - H331 Skin Corr. 1B - H314 Eye Dam. 1 - H318 Skin Sens. 1 - H317 Aquatic Chronic 2 - H411	Classification (67/548/EEC or 1999/45/EC) Xn;R20/21/22. C;R34. O;R7. R52/53.	
ETHYLENE DIMETHACRYLATE		<1%
CAS number: 97-90-5	EC number: 202-617-2	REACH registration number: 01-2119965172-38-XXXX
Classification Skin Sens. 1 - H317 STOT SE 3 - H335	Classification (67/548/EEC or 1999/45/EC) R43 Xi;R37	

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	Rinse mouth thoroughly with water. Give plenty of water to drink. Do not induce vomiting. Get medical attention.
Skin contact	Wash skin thoroughly with soap and water. If symptoms develop, obtain medical attention
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 if any discomfort continues.

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

Inhalation	May cause respiratory irritation.
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Skin contact Skin irritation. Mild dermatitis, allergic skin rash.

Eye contact Irritating and may cause redness and pain.

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 Foam, carbon dioxide or dry powder.

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. Oxides of nitrogen.

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 Not considered to be a significant hazard due to the small quantities used. Avoid discharge into drains.

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 Use in a well ventilated area. Avoid contact with skin and eyes. Avoid eating, drinking and smoking when using the 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. Never return unused material to storage receptacle.

7.3. Specific end use(s)

Usage description Adhesive.

SECTION 8: Exposure Controls/personal protection

8.1. Control parameters

8.2. Exposure controls

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Protective equipment



Appropriate engineering controls

Provide adequate 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. 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	Blue.
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.
Relative density	1.1
Solubility(ies)	Slightly soluble in water. Soluble in the following materials: Organic solvents.
Auto-ignition temperature	Not available.
Decomposition Temperature	Not available.
Viscosity	~85000 mPa s @ 23°C Thixotropic
Oxidising properties	Not available.

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9.2. Other information

Other information Not relevant.

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity The following materials may react with the product: Strong oxidising agents.

10.2. Chemical stability

Stability Stable at normal ambient temperatures.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions There are no known reactivity hazards associated with this product.

10.4. Conditions to avoid

Conditions to avoid Stable at normal ambient temperatures and when used as recommended.

10.5. Incompatible materials

Materials to avoid No specific material or group of materials is likely to react with the product to produce a hazardous situation.

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 corrosion/irritation

Animal data Irritating to skin.

Serious eye damage/irritation

Serious eye damage/irritation Irritating to eyes.

Skin sensitisation

Skin sensitisation May cause sensitisation by skin contact.

Aspiration hazard

Aspiration hazard Not anticipated to present an aspiration hazard, based on chemical structure.

Inhalation

May cause respiratory system irritation.

Ingestion

No harmful effects expected from quantities likely to be ingested by accident.

Toxicological information on ingredients.

2-HYDROXYETHYL METHACRYLATE

Acute toxicity - oral

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

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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

ISOBORNLYMETHACRYLATE**Acute toxicity - oral**

Acute toxicity oral (LD₅₀ mg/kg) 2,000.1

Species Rat
ATE oral (mg/kg) 2,000.1

Acute toxicity - dermal

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

Species Rabbit
ATE dermal (mg/kg) 3,000.0

MALEIC ACID**Acute toxicity - oral**

Acute toxicity oral (LD₅₀ mg/kg) 708.0

Species Rat
ATE oral (mg/kg) 500.0

Acute toxicity - dermal

Acute toxicity dermal (LD₅₀ mg/kg) 1,560.0

Species Rabbit
ATE dermal (mg/kg) 1,560.0

tert-AMYL HYDROPEROXIDE**Acute toxicity - oral**

Acute toxicity oral (LD₅₀ mg/kg) 582.0

Species Rat
ATE oral (mg/kg) 582.0

Acute toxicity - dermal

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Acute toxicity dermal (LD₅₀ 446.0 mg/kg)

Species Rat

ATE dermal (mg/kg) 446.0

Acute toxicity - inhalation

Acute toxicity inhalation (LC₅₀ vapours mg/l) 2.425

Species Rat

ATE inhalation (vapours mg/l) 2.425

Reproductive toxicity

Reproductive toxicity - fertility - NOAEL 100 mg/kg/day, Oral, Rat P

ETHYLENE DIMETHACRYLATE

Acute toxicity - oral

Acute toxicity oral (LD₅₀ 8,300.0 mg/kg)

Species Rat

ATE oral (mg/kg) 8,300.0

Acute toxicity - dermal

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

Species Rat

ATE dermal (mg/kg) 2,000.1

Skin corrosion/irritation

Animal data Not irritating.

Serious eye damage/irritation

Serious eye damage/irritation Not irritating.

Skin sensitisation

Skin sensitisation Sensitising.

SECTION 12: Ecological Information

Ecotoxicity The product is not expected to be hazardous to the environment.

12.1. Toxicity

Toxicity No data available.

Ecological information on ingredients.

2-HYDROXYETHYL METHACRYLATE

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

ISOBORNLYMETHACRYLATE

Acute toxicity - fish	LC ₅₀ , 96 hours: 1.79 mg/l, <i>Danio rerio</i> (Zebrafish)
Acute toxicity - aquatic invertebrates	EC ₅₀ , 48 hours: > 2.57 mg/l, <i>Daphnia magna</i>
Acute toxicity - aquatic plants	EC ₅₀ , 72 hours: 2.28 mg/l, <i>Pseudokirchneriella subcapitata</i>
Chronic toxicity - aquatic invertebrates	NOEC, 21 days: 0.233 mg/l, <i>Daphnia magna</i>

MALEIC ACID

Acute toxicity - fish	LC ₅₀ , 96 hours: 5 mg/l, <i>Pimephales promelas</i> (Fat-head Minnow) LC ₀ , 96 hours: 300 mg/l, <i>Lepomis macrochirus</i> (Bluegill)
Acute toxicity - aquatic invertebrates	EC ₅₀ , 48 hours: 160 - 400 mg/l, <i>Daphnia magna</i> EC ₁₀₀ , 24 hours: 200 mg/l, <i>Daphnia magna</i>
Acute toxicity - aquatic plants	EC ₅₀ , 72 hours: 41 mg/l, <i>Desmodesmus subspicatus</i>

tert-AMYL HYDROPEROXIDE

Acute toxicity - aquatic invertebrates	EC ₅₀ , 48 hours: 6.7 mg/l, <i>Daphnia magna</i>
Acute toxicity - aquatic plants	EC ₅₀ , 72 hours: 1.2 mg/l, <i>Pseudokirchneriella subcapitata</i>
Acute toxicity - microorganisms	EC ₅₀ , 3 hours: 138 mg/l, Activated sludge

ETHYLENE DIMETHACRYLATE

Acute toxicity - aquatic invertebrates	EC ₅₀ , 48 hours: 44.9 mg/l, <i>Daphnia magna</i>
Acute toxicity - aquatic plants	NOEC, 96 hours: 0.804 mg/l, <i>Pseudokirchneriella subcapitata</i>
Acute toxicity - microorganisms	EC ₅₀ , 180 minutes: 570 mg/l, Activated sludge

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Chronic toxicity - aquatic invertebrates EC₅₀, 21 days: >5.05 mg/l, Daphnia magna

12.2. Persistence and degradability

Persistence and degradability No data available.

Ecological information on ingredients.

2-HYDROXYETHYL METHACRYLATE

Biodegradation Water - Degradation 84%: 28 days

ISOBORNLYMETHACRYLATE

Biodegradation Water - Degradation 70%: 28 days

tert-AMYL HYDROPEROXIDE

Biodegradation Water - 0%: 7 days

12.3. Bioaccumulative potential

Bioaccumulative potential No data available on bioaccumulation.

Ecological information on ingredients.

2-HYDROXYETHYL METHACRYLATE

Bioaccumulative potential BCF: 1.34 - 1.54,

MALEIC ACID

Bioaccumulative potential BCF: < 10, Leuciscus idus (Golden orfe)

12.4. Mobility in soil

Mobility No data available.

Ecological information on ingredients.

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 product does not contain any substances classified as PBT or vPvB.

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.

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Disposal methods	Do not empty into drains, dispose of this material and its container at hazardous or special waste collection point.
Waste class	08 04 09* waste adhesives and sealants containing organic solvents or other dangerous substances.

SECTION 14: Transport information

General The product is not classified as dangerous for carriage.

14.1. UN number

Not applicable.

14.2. UN proper shipping name

Not applicable.

14.3. Transport hazard class(es)

Not applicable.

14.4. Packing group

Not applicable.

14.5. Environmental hazards

Environmentally hazardous substance/marine pollutant

No.

14.6. Special precautions for user

Not applicable.

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.
Approved Classification and Labelling Guide (Sixth edition) L131.
Safety Data Sheets for Substances and Preparations.

15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

SECTION 16: Other information

Permabond TA4590

Revision date 07/11/2016

Revision 3

Supersedes date 27/05/2015

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.
R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Hazard statements in full

H226 Flammable liquid and vapour.
H240 Heating may cause an explosion.
H302 Harmful if swallowed.
H311 Toxic in contact with skin.
H312 Harmful in contact with skin.
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.
H331 Toxic if inhaled.
H335 May cause respiratory irritation.
H411 Toxic to aquatic life with long lasting effects.
H412 Harmful 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.