

# Permabond®

## Engineering Adhesives

### SAFETY DATA SHEET

#### Permabond ET5364A

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

##### 1.1. Product identifier

**Product name** Permabond ET5364A

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

**Identified uses** Two-component, epoxy-based adhesive.

##### 1.3. Details of the supplier of the safety data sheet

**Supplier** Permabond Engineering Adhesives GmbH  
Niederkasseler Lohweg 18  
40547 Düsseldorf  
Germany  
info.europe@permabond.com

**Manufacturer** 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@permabond.co.uk

##### 1.4. Emergency telephone number

**Emergency telephone** CHEMTREC UK: +(44)-870-8200418 CHEMTREC US: 800-424-9300 (CCN: 829878)

**National emergency telephone number** CHEMTREC Ireland: +(353)-19014670  
CHEMTREC Australia: +(61)-290372994  
CHEMTREC New Zealand: +(64)-98010034

#### 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

**Environmental hazards** Aquatic Chronic 2 - H411

##### 2.2. Label elements

###### Hazard pictograms



**Signal word** Warning

## Permabond ET5364A

<b>Hazard statements</b>	H315 Causes skin irritation. H319 Causes serious eye irritation. H317 May cause an allergic skin reaction. H411 Toxic to aquatic life with long lasting effects.
<b>Precautionary statements</b>	P273 Avoid release to the environment. P280 Wear protective gloves/ protective clothing/ eye protection/ face protection. P302+P352a IF ON SKIN: Wash with plenty of soap and water P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
<b>Supplemental label information</b>	EUH205 Contains epoxy constituents. May produce an allergic reaction.
<b>Contains</b>	EPOXY RESIN (Number average MW <= 700 ), 1,4-BIS(2,3-EPOXYPROPOXY)BUTANE
<b>Supplementary precautionary statements</b>	P264 Wash contaminated skin thoroughly after handling. P333+P313 If skin irritation or rash occurs: Get medical advice/ attention. P337+P313 If eye irritation persists: Get medical advice/ attention. P362+P364 Take off contaminated clothing and wash it before reuse. P391 Collect spillage. P501 Dispose of contents/container in accordance with existing Community, National and local regulations.

### 2.3. Other hazards

None under normal conditions. This substance is not classified as PBT or vPvB according to current EU criteria.

## SECTION 3: Composition/information on ingredients

### 3.2. Mixtures

<b>EPOXY RESIN (Number average MW &lt;= 700 )</b>	<b>60-100%</b>
CAS number: 1675-54-3	EC number: 216-823-5
REACH registration number: 01-2119456619-26-XXXX	
<b>Classification</b>	
Skin Irrit. 2 - H315	
Eye Irrit. 2 - H319	
Skin Sens. 1 - H317	
Aquatic Chronic 2 - H411	
<b>1,4-BIS(2,3-EPOXYPROPOXY)BUTANE</b>	<b>1-5%</b>
CAS number: 2425-79-8	EC number: 219-371-7
REACH registration number: 01-2119494060-45-XXXX	
<b>Classification</b>	
Acute Tox. 4 - H312	
Acute Tox. 4 - H332	
Skin Irrit. 2 - H315	
Eye Irrit. 2 - H319	
Skin Sens. 1 - H317	
Aquatic Chronic 3 - H412	

The full text for all hazard statements is displayed in Section 16.

## SECTION 4: First aid measures

## Permabond ET5364A

### 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>	Rinse mouth thoroughly with water. Give plenty of water to drink. Do not induce vomiting. Get medical attention if any discomfort continues.
<b>Skin contact</b>	Remove contaminated clothing immediately and wash skin with soap and water. If symptoms develop, obtain medical attention
<b>Eye contact</b>	Rinse immediately with plenty of water for 15 minutes holding the eyelids open. Remove any contact lenses and open eyelids wide apart. Get medical attention if any discomfort continues.

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

<b>Skin contact</b>	Skin irritation. Mild dermatitis, allergic skin rash.
<b>Eye contact</b>	Irritating and may cause redness and pain.

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

<b>Notes for the doctor</b>	No specific recommendations. Treat symptomatically.
-----------------------------	---

## 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. Nitrous gases (NOx). Carbon monoxide, carbon dioxide, and unknown hydrocarbons.
--------------------------------------	---

### 5.3. Advice for firefighters

<b>Special protective equipment for firefighters</b>	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

<b>Personal precautions</b>	Wear protective clothing as described in Section 8 of this safety data sheet.
-----------------------------	---

### 6.2. Environmental precautions

<b>Environmental precautions</b>	Do not discharge into drains or watercourses or onto the ground.
----------------------------------	--

### 6.3. Methods and material for containment and cleaning up

<b>Methods for cleaning up</b>	Absorb spillage with sand or other inert absorbent. Transfer to suitable, labelled containers for disposal. Wash area with soap and water.
--------------------------------	--

### 6.4. Reference to other sections

<b>Reference to other sections</b>	For personal protection, see Section 8. For waste disposal, see section 13.
------------------------------------	---

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

<b>Usage precautions</b>	Avoid contact with skin and eyes. Do not ingest or inhale. Do not eat, drink or smoke when using this product.
--------------------------	--

### 7.2. Conditions for safe storage, including any incompatibilities

## Permabond ET5364A

**Storage precautions** Store in closed original container at temperatures between 5°C and 25°C.

### 7.3. Specific end use(s)

**Specific end use(s)** Adhesive. Sealant.

## SECTION 8: Exposure controls/Personal protection

### 8.1. Control parameters

#### EPOXY RESIN (Number average MW <= 700 ) (CAS: 1675-54-3)

<b>DNEL</b>	Workers - Inhalation; Long term systemic effects: 12.25 mg/m <sup>3</sup> Workers - Dermal; Long term systemic effects: 8.33 mg/kg/day Workers - Inhalation; Short term systemic effects: 12.25 mg/m <sup>3</sup> Workers - Dermal; Short term systemic effects: 8.33 mg/kg/day
<b>PNEC</b>	- Fresh water; Long term 0.006 mg/l - Sediment (Freshwater); Long term 0.996 mg/l - Sediment (Marinewater); 0.0996 mg/l - STP; Long term 10 mg/l - Soil; Long term 0.196 mg/l - marine water; 0.0006 mg/l - Water; 0.0018 mg/l

#### 1,4-BIS(2,3-EPOXYPROPOXY)BUTANE (CAS: 2425-79-8)

<b>DNEL</b>	Workers - Inhalation; Long term systemic effects: 4.7 mg/m <sup>3</sup> Workers - Dermal; Long term systemic effects: 6.66 mg/kg/day
<b>PNEC</b>	Fresh water; 0.024 mg/l marine water; 0.002 mg/l Intermittent release; 0.24 mg/l STP; 100 mg/l Sediment (Freshwater); 0.084 mg/kg Sediment (Marinewater); 0.008 mg/kg

#### [3-(2,3-EPOXYPROPOXY)PROPYL]TRIMETHOXYSILANE (CAS: 2530-83-8)

<b>DNEL</b>	Workers - Inhalation; Long term systemic effects: 147 mg/m <sup>3</sup> Workers - Dermal; Long term systemic effects: 21 mg/kg/day
<b>PNEC</b>	Fresh water; 1 mg/l Intermittent release; 1 mg/l marine water; 0.1 mg/l STP; 10 mg/l Sediment (Freshwater); 3.6 mg/kg Sediment (Marinewater); 0.36 mg/kg

### 8.2. Exposure controls

#### Protective equipment



Appropriate engineering controls

Provide adequate ventilation.

## Permabond ET5364A

<b>Eye/face protection</b>	The following protection should be worn: Chemical splash goggles or face shield. Personal eye protection should conform to EN 166
<b>Hand protection</b>	It is recommended that chemical-resistant, impervious gloves are worn. Gloves should conform to EN 374. For exposure up to 4 hours, wear gloves made of the following material: Nitrile rubber. Thickness: $\geq 0.4$ mm The selected gloves should have a breakthrough time of at least 0.5 hours. For exposure up to 8 hours, wear gloves made of the following material: Nitrile rubber. Thickness: $\geq 0.4$ mm The selected gloves should have a breakthrough time of at least 8 hours. The breakthrough time for any glove material may be different for different glove manufacturers. 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. Considering the data specified by the glove manufacturer, check during use that the gloves are retaining their protective properties and change them as soon as any deterioration is detected.
<b>Other skin and body protection</b>	Employee must wear appropriate protective clothing and equipment to prevent any possibility of skin contact with this substance.
<b>Hygiene measures</b>	Wash 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>	Ensure adequate ventilation of the working area. Respiratory protection may be required if excessive airborne contamination occurs. Respiratory protection complying with an approved standard should be worn if a risk assessment indicates inhalation of contaminants is possible. Organic vapour filter. Type A. (EN14387)

### SECTION 9: Physical and chemical properties

#### 9.1. Information on basic physical and chemical properties

<b>Appearance</b>	Paste.
<b>Colour</b>	Cream.
<b>Odour</b>	Mild.
<b>Odour threshold</b>	Not available.
<b>pH</b>	Not available.
<b>Melting point</b>	Not determined.
<b>Initial boiling point and range</b>	Not applicable.
<b>Flash point</b>	$>100^{\circ}\text{C}$
<b>Evaporation rate</b>	Not available.
<b>Upper/lower flammability or explosive limits</b>	Not applicable.
<b>Vapour pressure</b>	Not determined.
<b>Vapour density</b>	Not available.
<b>Relative density</b>	1.3
<b>Solubility(ies)</b>	Insoluble in water. Miscible with the following materials: Organic solvents.
<b>Partition coefficient</b>	Not applicable.
<b>Auto-ignition temperature</b>	Not determined.

## Permabond ET5364A

<b>Decomposition Temperature</b>	Not available.
<b>Viscosity</b>	≈34000 mPa s @ 23°C Thixotropic
<b>Explosive properties</b>	Not determined.
<b>Oxidising properties</b>	Not determined.

### 9.2. Other information

<b>Other information</b>	Not relevant.
--------------------------	---------------

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

<b>Reactivity</b>	Under normal conditions of storage and use, no hazardous reactions will occur.
-------------------	--

### 10.2. Chemical stability

<b>Stability</b>	Stable at normal ambient temperatures.
------------------	--

### 10.3. Possibility of hazardous reactions

<b>Possibility of hazardous reactions</b>	Reactions with the following materials may generate heat: Amines.
---	---

### 10.4. Conditions to avoid

<b>Conditions to avoid</b>	Avoid excessive heat for prolonged periods of time.
----------------------------	---

### 10.5. Incompatible materials

<b>Materials to avoid</b>	Strong oxidising agents. Strong acids. Strong alkalis.
---------------------------	--

### 10.6. Hazardous decomposition products

<b>Hazardous decomposition products</b>	Thermal decomposition could produce carbon monoxide, carbon dioxide, and unidentified organic compounds.
---	--

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

<b>Toxicological effects</b>	The mixture is classified based on the available hazard information for the ingredients as defined in the classification criteria for mixtures for each hazard class or differentiation in Annex I to Regulation 1272/2008/EC. Relevant available health/ecological information for the substances listed under Section 3 is provided in the following.
------------------------------	---

#### Skin sensitisation

<b>Skin sensitisation</b>	May cause sensitisation by skin contact.
---------------------------	--

#### Aspiration hazard

<b>Aspiration hazard</b>	None under normal conditions.
--------------------------	-------------------------------

#### Inhalation

Unlikely to be hazardous by inhalation because of the low vapour pressure of the product at ambient temperature. In high concentrations, vapours may irritate throat and respiratory system and cause coughing.

#### Ingestion

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

#### Skin contact

Irritating to skin.

#### Eye contact

Irritating and may cause redness and pain.

### Toxicological information on ingredients.

## Permabond ET5364A

### EPOXY RESIN (Number average MW <= 700 )

#### Acute toxicity - oral

Acute toxicity oral (LD<sub>50</sub> mg/kg) 11,400.0

Species Rat

#### Acute toxicity - dermal

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

Species Rabbit

#### Acute toxicity - inhalation

Notes (inhalation LC<sub>50</sub>) No specific test data are available.

#### Skin corrosion/irritation

Skin corrosion/irritation Not irritating.

Animal data Oedema score: Very slight oedema - barely perceptible (1).

#### Serious eye damage/irritation

Serious eye damage/irritation Not irritating.

#### Respiratory sensitisation

Respiratory sensitisation No specific test data are available.

#### Skin sensitisation

Skin sensitisation Local Lymph Node Assay (LLNA) - Mouse: Sensitising.

#### Germ cell mutagenicity

Genotoxicity - in vitro Conclusive data but not sufficient for classification.

#### Carcinogenicity

Carcinogenicity Conclusive data but not sufficient for classification.

IARC carcinogenicity IARC Group 3 Not classifiable as to its carcinogenicity to humans.

#### Reproductive toxicity

Reproductive toxicity - fertility Fertility - NOAEL 750 mg/kg/day, Oral, Rat

Reproductive toxicity - development Developmental toxicity: - NOAEL: 180 mg/kg/day, Oral, Rat

#### Specific target organ toxicity - single exposure

STOT - single exposure No specific test data are available.

#### Specific target organ toxicity - repeated exposure

STOT - repeated exposure Conclusive data but not sufficient for classification.

#### Aspiration hazard

Aspiration hazard Based on available data the classification criteria are not met.

### 1,4-BIS(2,3-EPOXYPROPOXY)BUTANE

## Permabond ET5364A

### Acute toxicity - oral

**Acute toxicity oral (LD<sub>50</sub> mg/kg)** 1,163.0

**Species** Rat

### Acute toxicity - dermal

**Acute toxicity dermal (LD<sub>50</sub> mg/kg)** 2,000.0

**Species** Rabbit

### Skin corrosion/irritation

**Animal data** Rabbit Moderately irritating.

### Serious eye damage/irritation

**Serious eye damage/irritation** Method: OECD 405, Rabbit Irritating to eyes. Irreversible effect.

### Skin sensitisation

**Skin sensitisation** Guinea pig maximization test (GPMT) - Guinea pig: Sensitising.

### Germ cell mutagenicity

**Genotoxicity - in vitro** Gene mutation: Positive.

**Genotoxicity - in vivo** Chromosome aberration: Negative.

### Carcinogenicity

**Carcinogenicity** No information available.

### Reproductive toxicity

**Reproductive toxicity - fertility** No information available.

### Specific target organ toxicity - single exposure

**STOT - single exposure** Based on available data the classification criteria are not met.

### Specific target organ toxicity - repeated exposure

**STOT - repeated exposure** Based on available data the classification criteria are not met.

### Aspiration hazard

**Aspiration hazard** No information available.

## SECTION 12: Ecological information

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

### 12.1. Toxicity

**Toxicity** The mixture is classified based on the available hazard information for the ingredients as defined in the classification criteria for mixtures for each hazard class or differentiation in Annex I to Regulation 1272/2008/EC. Relevant available health/ecological information for the substances listed under Section 3 is provided in the following.

### Ecological information on ingredients.

#### EPOXY RESIN (Number average MW <= 700 )

### Acute aquatic toxicity

## Permabond ET5364A

<b>Acute toxicity - fish</b>	LC <sub>50</sub> , 24 hours: 4.4 mg/l, Oncorhynchus mykiss (Rainbow trout)
<b>Acute toxicity - aquatic invertebrates</b>	LC <sub>50</sub> , 24 hours: 4.9 mg/l, Daphnia magna
<b>Acute toxicity - aquatic plants</b>	EC <sub>50</sub> , 48 hours: 9.1 mg/l, Selenastrum capricornutum
<b>Acute toxicity - microorganisms</b>	IC <sub>50</sub> , 3 hours: > 100 mg/l, Activated sludge
<b><u>Chronic aquatic toxicity</u></b>	
<b>Chronic toxicity - aquatic invertebrates</b>	NOEC, 21 days: 0.3 mg/l, Daphnia magna

### 1,4-BIS(2,3-EPOXYPROPOXY)BUTANE

<b><u>Acute aquatic toxicity</u></b>	
<b>Acute toxicity - fish</b>	LC <sub>50</sub> , 96 hours: 19.8 mg/l, Brachydanio rerio (Zebra Fish)
<b>Acute toxicity - aquatic invertebrates</b>	EC <sub>50</sub> , 24 hours: 75 mg/l, Daphnia magna
<b>Acute toxicity - aquatic plants</b>	EC <sub>50</sub> , 72 hours: >160 mg/l, Algae

#### 12.2. Persistence and degradability

**Persistence and degradability** The product is not readily biodegradable.

#### Ecological information on ingredients.

##### EPOXY RESIN (Number average MW ≤ 700 )

**Biodegradation** Water - 6 - 12%: 28 days

##### 1,4-BIS(2,3-EPOXYPROPOXY)BUTANE

**Persistence and degradability** Not readily biodegradable.

#### 12.3. Bioaccumulative potential

**Partition coefficient** Not applicable.

#### Ecological information on ingredients.

##### EPOXY RESIN (Number average MW ≤ 700 )

**Bioaccumulative potential** BCF: 100 - 3000,

**Partition coefficient** log Pow: 3.242

##### 1,4-BIS(2,3-EPOXYPROPOXY)BUTANE

**Bioaccumulative potential** log Kow: -0.27,

#### 12.4. Mobility in soil

**Mobility** No data available. The product has poor water-solubility.

#### Ecological information on ingredients.

## Permabond ET5364A

### EPOXY RESIN (Number average MW <= 700 )

Adsorption/desorption coefficient      Water - log Koc: 2.65 @ 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.

### **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**      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**

**Road transport notes**      Applies only to inner containers >5 litres. See SP 375

**Sea transport notes**      Applies only to inner containers >5 litres. See 2.10.2.7 of the IMDG code.

**Air transport notes**      Applies only to inner containers >5 litres. See SP A197 (375)

#### 14.1. UN number

3082

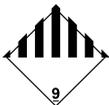
#### 14.2. UN proper shipping name

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (contains Epoxy resin)

#### 14.3. Transport hazard class(es)

9

#### **Transport labels**



#### 14.4. Packing group

III

#### 14.5. Environmental hazards

**Environmentally hazardous substance/marine pollutant**



#### 14.6. Special precautions for user

## Permabond ET5364A

EmS F-A, S-F

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

**Revision date** 20/01/2021

**Revision** 3

**Supersedes date** 01/07/2015

**Hazard statements in full** H312 Harmful in contact with skin.  
H315 Causes skin irritation.  
H317 May cause an allergic skin reaction.  
H319 Causes serious eye irritation.  
H332 Harmful if inhaled.  
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.