

# Permabond®

## Engineering Adhesives

### SAFETY DATA SHEET

#### Permabond 4C20

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

##### 1.1. Product identifier

Product name Permabond 4C20

##### 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 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 STOT SE 3 - H335

Environmental hazards Not Classified

##### 2.2. Label elements

###### Pictogram



Signal word Warning

Hazard statements H315 Causes skin irritation.  
H319 Causes serious eye irritation.  
H335 May cause respiratory irritation.

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|   |   |
|---|---|
| <b>Precautionary statements</b>               | P280 Wear protective gloves, eye and face protection.<br>P302+P352a IF ON SKIN: Wash with plenty of soap and water<br>P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.<br>P308+P313 IF exposed or concerned: Get medical advice/ attention.  |
| <b>Supplemental label information</b>         | EUH202 Cyanoacrylate. Danger. Bonds skin and eyes in seconds. Keep out of the reach of children.  |
| <b>Contains</b>                               | ETHYL 2-CYANOACRYLATE   |
| <b>Supplementary precautionary statements</b> | P264 Wash skin thoroughly after handling.<br>P271 Use only outdoors or in a well-ventilated area.<br>P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.<br>P333+P313 If skin irritation or rash occurs: Get medical advice/ attention.<br>P337+P313 If eye irritation persists: Get medical advice/ attention.<br>P362+P364 Take off contaminated clothing and wash it before reuse.<br>P403+P233 Store in a well-ventilated place. Keep container tightly closed.<br>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>ETHYL 2-CYANOACRYLATE</b> | <b>60-100%</b>                                   |
| CAS number: 7085-85-0        | EC number: 230-391-5                             |
|                              | REACH registration number: 01-2119527766-29-XXXX |
| <b>Classification</b>        |  |
| Skin Irrit. 2 - H315         |  |
| Eye Irrit. 2 - H319          |  |
| STOT SE 3 - H335             |  |

The full text for all hazard statements is 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>    | On contact, immediate bonding of mouth could occur. Do not induce vomiting. Get medical attention.  |
| <b>Skin contact</b> | On contact, immediate bonding of the skin will occur. No attempt should be made to remove material from skin or to remove contaminated clothing, as the bonded skin can be easily torn. Wash skin thoroughly with soap and water.   |
| <b>Eye contact</b>  | Rinse immediately with plenty of water. Continue to rinse for at least 10 minutes. If adhesive bonding occurs, do not force eyelids apart. Apply a pad soaked in warm water and allow the eyelids to separate. Get medical attention. Cured adhesive will not bond well to surface of eye, but corneal damage from abrasion may result. |

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

|                   |  |
|-------------------|--|
| <b>Inhalation</b> | Irritation of nose, throat and airway. |
|-------------------|--|

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|                     |  |
|---------------------|--|
| <b>Ingestion</b>    | On contact, immediate bonding of mouth could occur.      |
| <b>Skin contact</b> | Prolonged skin contact may cause redness and irritation. |
| <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> | SKIN BONDING. Prise the skin apart slowly working from the edge of the bonded area. This can be eased by using warm soapy water. EYE BONDING. DO NOT force eyelids apart. Apply a pad soaked in warm water and allow the eye to separate itself. |
|-----------------------------|--|

## **SECTION 5: Firefighting measures**

### **5.1. Extinguishing media**

|                                     |  |
|-------------------------------------|--|
| <b>Suitable extinguishing media</b> | Extinguish with foam, carbon dioxide, dry powder or water fog. |
|-------------------------------------|--|

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

|                                      |   |
|--------------------------------------|---|
| <b>Specific hazards</b>              | Cloths used to wipe up spills may cause rapid polymerization that could generate sufficient heat to ignite the cloth.     |
| <b>Hazardous combustion products</b> | Decomposes upon heating to release toxic fumes of nitrogen oxides, carbon monoxide, carbon dioxide, and hydrogen cyanide. |

### **5.3. Advice for firefighters**

|  |   |
|--|---|
| <b>Protective actions during firefighting</b>        | Avoid breathing fire gases or vapours.                      |
| <b>Special protective equipment for firefighters</b> | Use air-supplied respirator, gloves and protective goggles. |

## **SECTION 6: Accidental release measures**

### **6.1. Personal precautions, protective equipment and emergency procedures**

|                             |   |
|-----------------------------|---|
| <b>Personal precautions</b> | For personal protection, see Section 8. Provide adequate ventilation. |
|-----------------------------|---|

### **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> | Small spills: wipe up with cloth. Immediately soak cloth with water to polymerize the adhesive. Caution! Cloth containing adhesive may undergo autoignition if not soaked with water Large spills: flood area with water. When cured, remove film with a scraper. |
|--------------------------------|---|

### **6.4. Reference to other sections**

|                                    |   |
|------------------------------------|---|
| <b>Reference to other sections</b> | Collect and dispose of spillage as indicated in Section 13. |
|------------------------------------|---|

## **SECTION 7: Handling and storage**

### **7.1. Precautions for safe handling**

|                          |  |
|--------------------------|--|
| <b>Usage precautions</b> | Ensure adequate ventilation of the working area. Avoid contact with skin and eyes. Always replace cap after use. |
|--------------------------|--|

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

|                            |   |
|----------------------------|---|
| <b>Storage precautions</b> | Store in tightly-closed, original container in a dry and cool place. Keep containers upright. |
|----------------------------|---|

### **7.3. Specific end use(s)**

|                            |           |
|----------------------------|-----------|
| <b>Specific end use(s)</b> | Adhesive. |
|----------------------------|-----------|

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### SECTION 8: Exposure Controls/personal protection

#### 8.1. Control parameters

##### Occupational exposure limits

##### ETHYL 2-CYANOACRYLATE

Short-term exposure limit (15-minute): WEL 0.3 ppm 1.5 mg/m<sup>3</sup>

WEL = Workplace Exposure Limit

##### ETHYL 2-CYANOACRYLATE (CAS: 7085-85-0)

##### DNEL

Workers - Inhalation; Long term systemic effects: 9.25 mg/m<sup>3</sup>

Workers - Inhalation; Long term local effects: 9.25 mg/m<sup>3</sup>

##### PNEC

Technically not feasible.

#### 8.2. Exposure controls

##### Protective equipment



##### Appropriate engineering controls

Normal (mechanical) room ventilation should be adequate for small volumes. For higher volume activities, or if needed for worker comfort, local mechanical exhaust should be provided.

##### Eye/face protection

Use approved safety goggles or face shield. Personal eye protection should conform to EN 166

##### Hand protection

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: ≥ 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: ≥ 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.

##### Other skin and body protection

Uniforms, coveralls, or a lab coat should be worn

##### Hygiene measures

Wash at the end of each work shift and before eating, smoking and using the toilet. When using do not eat, drink or smoke. Wash promptly if skin becomes contaminated. Use of good industrial hygiene practices is required.

##### Respiratory protection

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

##### Appearance

Liquid.

##### Colour

Colourless.

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|   |  |
|---|--|
| <b>Odour</b>  | Pungent.   |
| <b>Odour threshold</b>                              | Not available.   |
| <b>pH</b>   | Not applicable.  |
| <b>Melting point</b>                                | Not applicable.  |
| <b>Initial boiling point and range</b>              | >100°C   |
| <b>Flash point</b>                                  | 83°C   |
| <b>Evaporation rate</b>                             | Not available.   |
| <b>Upper/lower flammability or explosive limits</b> | Not applicable.  |
| <b>Vapour pressure</b>                              | ~0.6 mbar @ 25°C   |
| <b>Vapour density</b>                               | Not applicable.  |
| <b>Relative density</b>                             | 1.1  |
| <b>Bulk density</b>                                 | Not applicable.  |
| <b>Solubility(ies)</b>                              | Hardens in contact with water. Insoluble in water. Miscible with the following materials:<br>Organic solvents. |
| <b>Partition coefficient</b>                        | Not applicable.  |
| <b>Auto-ignition temperature</b>                    | Not available.   |
| <b>Decomposition Temperature</b>                    | Not available.   |
| <b>Viscosity</b>                                    | ≈500 mPa s @ 23°C  |
| <b>Explosive properties</b>                         | Not determined.  |
| <b>Oxidising properties</b>                         | Not applicable.  |

### 9.2. Other information

#### SECTION 10: Stability and reactivity

##### 10.1. Reactivity

**Reactivity**                      The product reacts with water and will generate heat.

##### 10.2. Chemical stability

**Stability**                        Stable at normal ambient temperatures and when used as recommended.

##### 10.3. Possibility of hazardous reactions

**Possibility of hazardous reactions**      Reactions with the following materials may generate heat: Water Alcohols. Alkalis. Amines.

##### 10.4. Conditions to avoid

**Conditions to avoid**                      Do not add water directly to the product. It may cause a violent reaction.

##### 10.5. Incompatible materials

**Materials to avoid**                        Water. Amines. Alkalis. Alcohols.

##### 10.6. Hazardous decomposition products

**Hazardous decomposition products**      Heating may generate the following products: Toxic gases/vapours/fumes of: Carbon dioxide (CO<sub>2</sub>). Carbon monoxide (CO). Nitrous gases (NO<sub>x</sub>). Hydrogen cyanide (HCN).

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### 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.                            |
| <b>Other health effects</b>  | Under EU legislation the cyanoacrylates do not require classification as sensitisers and the rapid polymerisation caused on contact with moisture makes this unlikely. However the American Conference of Governmental Industrial Hygienists (ACGIH) has reported some limited evidence of skin and respiratory sensitisation. May cause allergic reactions in susceptible people. |
| <b>Inhalation</b>            | Irritating to respiratory system.  |
| <b>Ingestion</b>             | On contact, immediate bonding of mouth could occur.  |
| <b>Skin contact</b>          | Irritating to skin. On contact, immediate bonding of the skin will occur.  |
| <b>Eye contact</b>           | Irritating to eyes. On contact, will bond eyelids together. Vapours are lachrymatory.  |

#### Toxicological information on ingredients.

#### ETHYL 2-CYANOACRYLATE

##### Acute toxicity - oral

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

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>) Not available.

##### Skin corrosion/irritation

Animal data Dose: 0.5g, 24 hours, Rabbit Slightly irritating.

##### Serious eye damage/irritation

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

##### Skin sensitisation

Skin sensitisation - Guinea pig: Not sensitising.

##### Germ cell mutagenicity

Genotoxicity - in vitro Gene mutation: Negative. Chromosome aberration: Negative. Bacterial reverse mutation test: Negative.

##### Carcinogenicity

Carcinogenicity No evidence of carcinogenicity in animal studies.

##### Reproductive toxicity

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**Reproductive toxicity - fertility**      Technically not feasible.

**Reproductive toxicity - development**      Technically not feasible.

**Specific target organ toxicity - single exposure**

**STOT - single exposure**      No information available.

**Specific target organ toxicity - repeated exposure**

**STOT - repeated exposure**      No information available.

**Aspiration hazard**

**Aspiration hazard**      Not available.

### SECTION 12: Ecological Information

**Ecotoxicity**      Not regarded as dangerous for the environment.

**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.

**Acute aquatic toxicity**

**Acute toxicity - aquatic invertebrates**      Not available.

**Acute toxicity - aquatic plants**      Not available.

**Acute toxicity - terrestrial**      Not available.

**12.2. Persistence and degradability**

**Persistence and degradability**      No data available.

**Biological oxygen demand**      Not known.

**Chemical oxygen demand**      Not known.

**12.3. Bioaccumulative potential**

**Bioaccumulative potential**      No data available on bioaccumulation.

**Partition coefficient**      Not applicable.

**Ecological information on ingredients.**

**ETHYL 2-CYANOACRYLATE**

**Partition coefficient**      log Kow: 0.776

**12.4. Mobility in soil**

**Mobility**      The product hardens to a solid, immobile substance.

**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**

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**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**                      Not classified.

**Rail transport notes**                        Not classified.

**Sea transport notes**                        Not classified.

**Air transport notes**                         Applies only to inner containers > 500ml.

#### 14.1. UN number

**UN No. (ADR/RID)**                         Not applicable

**UN No. (IMDG)**                             Not applicable

**UN No. (ICAO)**                             3334

**UN No. (ADN)**                              Not applicable

#### 14.2. UN proper shipping name

**Proper shipping name (ADR/RID)**        Not applicable

**Proper shipping name (IMDG)**        Not applicable

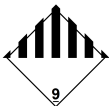
**Proper shipping name (ICAO)**        AVIATION REGULATED LIQUID, N.O.S. (contains ethyl cyanoacrylate)

**Proper shipping name (ADN)**        Not applicable

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

**ICAO class/division**                        9

#### Transport labels



#### 14.4. Packing group

**ICAO packing group**                        III

#### 14.5. Environmental hazards

**Environmentally hazardous substance/marine pollutant**

No.

#### 14.6. Special precautions for user



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None under normal conditions.

### 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

|                             |  |
|-----------------------------|--|
| <b>National regulations</b> | Health and Safety at Work etc. Act 1974 (as amended).<br>The Control of Substances Hazardous to Health Regulations 2002 (SI 2002 No. 2677) (as amended).<br>Rivers (Prevention of Pollution) Act 1961.<br>Control of Pollution (Special Waste) Regulations 1980 (as amended).<br>Control of Pollution Act 1974.<br>The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (SI 2009 No. 716).<br>Control of Substances Hazardous to Health Regulations 2002 (as amended). |
| <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).<br>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.<br>Introduction to Local Exhaust Ventilation HS(G)37.<br>CHIP for everyone HSG228.<br>Approved Classification and Labelling Guide (Sixth edition) L131.<br>Safety Data Sheets for Substances and Preparations.   |

#### 15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

### SECTION 16: Other information

|                                  |   |
|----------------------------------|---|
| <b>Revision date</b>             | 05/09/2018  |
| <b>Revision</b>                  | 4   |
| <b>Supersedes date</b>           | 28/04/2017  |
| <b>Hazard statements in full</b> | H315 Causes skin irritation.<br>H319 Causes serious eye irritation.<br>H335 May cause respiratory irritation. |

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.