

### Features & Benefits

- Adhesion to a wide variety of substrates
- Fast cure at room temperature
- No mix application
- Very high shear and peel strength
- Excellent impact strength
- Good chemical resistance

### Description

PERMABOND<sup>®</sup> TA4246 is a 2-part, no-mix, room temperature curing structural adhesive. It is ideal for use on a wide variety of substrate materials and forms a very high strength structural bond with excellent environmental durability and chemical resistance. It has high peel strength and excellent impact resistance and can be used to replace rivets or welding to give a more lightweight, durable assembly. Use with Permabond<sup>®</sup> Initiator 46.

### Physical Properties of Uncured Adhesive

Chemical composition	Methyl methacrylate
Appearance	Amber liquid
Viscosity @ 25°C	20rpm: 15,000 – 30,000 mPa.s (cP)
Specific gravity (resin)	1.0

### Typical Curing Properties (with Initiator 46)

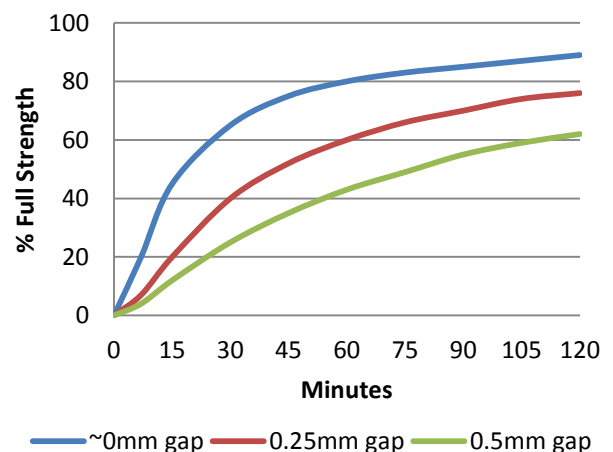
Ratio of use	10:1 approximately
Maximum gap fill	0.5 mm (0.02 in)
Fixture time (aluminium) @23°C	No gap: 1-2 mins
Handling time (aluminium) (0.3 N/mm <sup>2</sup> shear strength is achieved) @23°C	No gap: 2-4 mins
Working strength (aluminium) @23°C	No gap: 15-30 mins
Full cure @23°C	24 hours

### Typical Performance of Cured Adhesive

Shear strength (ISO4587)*	Mild steel: 33-35 N/mm <sup>2</sup> (4800-5100 psi) Aluminium: 20-30 N/mm <sup>2</sup> (2900-4350 psi)
Peel strength (aluminium) (ISO 4578)	150-180 N/25mm (33-40 PIW)
Tensile strength (ISO37)	30N/mm <sup>2</sup> (4350 psi)
Impact strength (ASTM D-950)	50-60 kJ/m <sup>2</sup>
Coefficient of thermal expansion (ASTM D-696)	80 x 10 <sup>-6</sup> 1/K
Thermal conductivity (ASTM C-177)	0.1 W/(m.K)
Dielectric constant (ASTM D-150)	4.6
Dielectric strength (ASTM D-149)	30-50 kV/mm
Volume resistivity (ASTM D-257)	2 x 10 <sup>13</sup> Ohm.cm

\*Strength results will vary depending on the level of surface preparation and gap.

### Strength Development

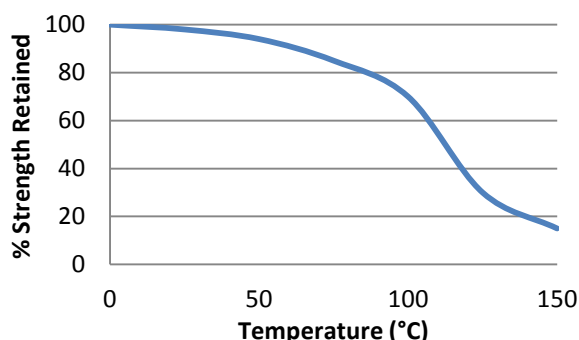


Graph shows typical strength development of bonded components at 23°C. An increase of 8°C in temperature will halve the cure time. Lower temperatures will result in a slower cure time.

The information given and the recommendations made herein are based on our research and are believed to be accurate but no guarantee of their accuracy is made. In every case we urge and recommend that purchasers before using any product in full-scale production make their own tests to determine to their own satisfaction whether the product is of acceptable quality and is suitable for their particular purpose under their own operating conditions. THE PRODUCTS DISCLOSED HEREIN ARE SOLD WITHOUT ANY WARRANTY AS TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED.

No representative of ours has any authority to waive or change the foregoing provisions but, subject to such provisions, our engineers are available to assist purchasers in adapting our products to their needs and to the circumstances prevailing in their business. Nothing contained herein shall be construed to imply the non-existence of any relevant patents or to constitute a permission, inducement or recommendation to practice any invention covered by any patent, without authority from the owner of this patent. We also expect purchasers to use our products in accordance with the guiding principles of the Chemical Manufacturers Association's Responsible Care<sup>®</sup> program.

## Hot Strength



"Hot strength" shear strength tests performed on mild steel. Fully cured specimens conditioned to pull temperature for 30 minutes before testing at temperature.

TA4246 can withstand higher temperatures for brief periods (such as for paint baking and wave soldering processes) providing the joint is not unduly stressed. The minimum temperature the cured adhesive can be exposed to is -40°C (-40°F) depending on the materials being bonded.

## Adhesion to Various Substrates

ABS	12 MPa (substrate failure)
Aluminium (acid etched)	30 MPa
Aluminium (solvent wiped)	13 MPa
Beechwood	10 MPa (substrate failure)
Brass	9 MPa
Galvanised steel	7 MPa
Glass	16 MPa (substrate failure)
GRP	8 MPa (substrate failure)
Nylon	11 MPa
Phenolic	12 MPa (substrate failure)
PMMA	9 MPa
Polycarbonate	19 MPa (substrate failure)
PVC	19 MPa (substrate failure)
Steel (abrade & degrease)	35 MPa
Steel (oil contaminated)	20 MPa
Steel (solvent wiped)	23 MPa

## Additional Information

This product is not recommended for use in contact with strong oxidizing materials. This product may affect some thermoplastics and users must check compatibility of the product with such substrates.

Information regarding the safe handling of this material may be obtained from the Safety Data Sheet.

Users are reminded that all materials, whether innocuous or not, should be handled in accordance with the principles of good industrial hygiene.

## Surface Preparation

Surfaces should be clean, dry and grease-free before applying the adhesive. Permabond Cleaner A is recommended for the degreasing of most surfaces. Some metals such as aluminium, copper and its alloys will benefit from light abrasion with emery cloth (or similar), to remove the oxide layer.

## Directions for Use

- 1) Surfaces must be clean, dry and grease-free. Apply Initiator 46 to one surface.
- 2) Apply adhesive to the other surface.
- 3) Assemble the components using sufficient force to spread the adhesive thinly. Parts should be bonded immediately and within a maximum of two hours of applying the Initiator.
- 4) Maintain pressure until handling strength is achieved. The time required will vary according to the joint design, gap and surfaces being bonded.
- 5) Allow 24 hours for adhesive to fully cure. Accelerated cure times may be achieved by heating.

## Storage & Handling

Storage Temperature	5 to 25°C (41 to 77°F)
---------------------	------------------------

### Contact Permabond:

- Americas +1 732 868 1372
  - US 800-640-7599
  - Asia + 86 21 5773 4913
  - Europe +44 (0) 1962 711661
  - UK 0800 975 9800
  - Deutschland 0800 111 388
  - France 0805 111 388
- [info.americas@permabond.com](mailto:info.americas@permabond.com)  
[info.europe@permabond.com](mailto:info.europe@permabond.com)  
[info.asia@permabond.com](mailto:info.asia@permabond.com)

The information given and the recommendations made herein are based on our research and are believed to be accurate but no guarantee of their accuracy is made. In every case we urge and recommend that purchasers before using any product in full-scale production make their own tests to determine to their own satisfaction whether the product is of acceptable quality and is suitable for their particular purpose under their own operating conditions. THE PRODUCTS DISCLOSED HEREIN ARE SOLD WITHOUT ANY WARRANTY AS TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED.

No representative of ours has any authority to waive or change the foregoing provisions but, subject to such provisions, our engineers are available to assist purchasers in adapting our products to their needs and to the circumstances prevailing in their business. Nothing contained herein shall be construed to imply the non-existence of any relevant patents or to constitute a permission, inducement or recommendation to practice any invention covered by any patent, without authority from the owner of this patent. We also expect purchasers to use our products in accordance with the guiding principles of the Chemical Manufacturers Association's Responsible Care® program.