# PERMABOND® TA4246

*Toughened Acrylic Adhesive*

Technical Datasheet

## 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® 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® Initiator 46.

## Physical Properties of Uncured Adhesive

| | |
|---|---|
| Chemical composition | Methyl methacrylate |
| Appearance | Amber liquid |
| Viscosity @ 25°C | 20rpm: 15,000 – 35,000 mPa.s *(cP)* |
| Specific gravity (resin) | 1.0 |

## Typical Curing Properties *(with Initiator 46)*

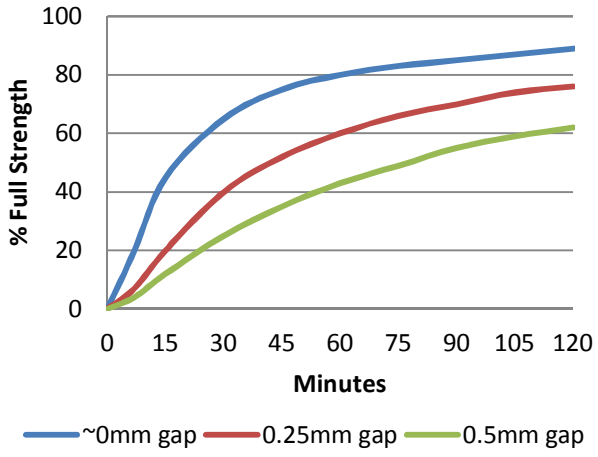
| | |
|---|---|
| Ratio of use | 10:1 approximately |
| Maximum gap fill | 0.5 mm *(0.02 in)* |
| Fixture time (aluminium) @23°C | No gap: 1-2 mins |
| Handling time (aluminium) *(0.3 N/mm² shear strength is achieved)* @23°C | No gap: 2-4 mins |
| Working strength (aluminium) @23°C | No gap: 15-30 mins |
| Full cure @23°C | 24 hours |

## Typical Performance of Cured Adhesive

| | |
|---|---|
| Shear strength (ISO4587)* | Mild steel: 33-35 N/mm² *(4800-5100 psi)* Aluminium: 20-30 N/mm² *(2900-4350 psi)* |
| Peel strength (aluminium) (ISO 4578) | 150-180 N/25mm *(33-40 PIW)* |
| Tensile strength (ISO37) | 30N/mm² *(4350 psi)* |
| Impact strength (ASTM D-950) | 50-60 kJ/m² |
| Coefficient of thermal expansion (ASTM D-696) | 80 x $10^{-6}$ 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 $10^{13}$ Ohm.cm |

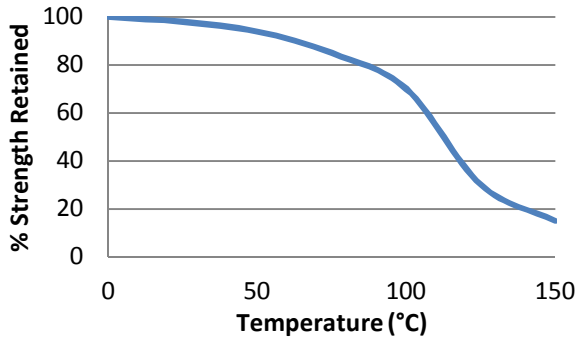
**Strength results will vary depending on the level of surface preparation and gap.*

### Strength Development




Graph shows typical strength development of bonded components at 23°C. Curing at higher or lower temperatures may affect cure speed.

## 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.
**This Technical Datasheet (TDS) offers guideline information and does not constitute a specification.**

## 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.

## Video Links

Surface preparation:
https://youtu.be/8CMOMP7hXjU

TA4246 directions for use:
https://youtu.be/j4Ou9acBtmc

## Storage & Handling

| | |
|---|---|
| Storage Temperature | 2 to 7°C *(35 to 45°F)* |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