

## Features & Benefits

- Adhesion to a wide variety of substrates
- Fast cure at room temperature
- High shear and peel strength
- Good impact strength
- Good chemical & environmental resistance
- Bonds well to unprepared aluminium

## Description

**PERMABOND® TA4207** is a 2-part, 1:1 toughened acrylic adhesive. It can be used to bond a wide variety of materials including metals, plastics, composites, ceramics, wood and other substrates. The adhesive can provide excellent shear strength on many substrates with little surface preparation.

## Physical Properties of Uncured Adhesive

|                      | TA4207 A                  | TA4207 B                  |
|----------------------|---------------------------|---------------------------|
| Chemical composition | Methyl methacrylate       | Methyl methacrylate       |
| Colour               | Straw                     | Yellow                    |
| Mixed colour         | Straw                     |                           |
| Viscosity @ 25°C     | 3000 - 9000 mPa.s<br>(cP) | 1000 – 2000 mPa.s<br>(cP) |
| Specific gravity     | 1.05                      | 1.0                       |

## Typical Curing Properties

|                                                                           |                  |
|---------------------------------------------------------------------------|------------------|
| Ratio of use                                                              | 1 : 1            |
| Maximum gap fill                                                          | 0.5 mm (0.02 in) |
| Fixture time @23°C                                                        | 8 -10 minutes    |
| Handling time<br>(0.3 N/mm <sup>2</sup> shear strength is achieved) @23°C | 12-15 minutes    |
| Working strength @23°C                                                    | 25 - 30 minutes  |
| Full cure @23°C                                                           | 1 hour           |

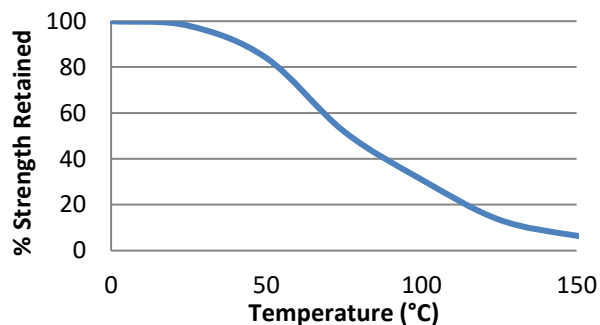
## Typical Performance of Cured Adhesive

|                                                                |                                                                    |
|----------------------------------------------------------------|--------------------------------------------------------------------|
| Shear strength*<br>(ISO4587)                                   | PMMA: >4 N/mm <sup>2</sup> ( <b>&gt;580 psi</b> ) SF*              |
|                                                                | Aluminium: >25 N/mm <sup>2</sup> ( <b>&gt;3600 psi</b> )           |
|                                                                | Steel: >26 N/mm <sup>2</sup> ( <b>&gt;3800 psi</b> )               |
|                                                                | Carbon fibre: >16 N/mm <sup>2</sup> ( <b>&gt;2300 psi</b> )        |
|                                                                | Tin: >5 N/mm <sup>2</sup> ( <b>&gt;725 psi</b> ) SF*               |
|                                                                | PC: >4 N/mm <sup>2</sup> ( <b>&gt;580 psi</b> ) SF*                |
|                                                                | Epoxy FRP: >7 N/mm <sup>2</sup> ( <b>&gt;1000 psi</b> ) SF*        |
|                                                                | PVC: >3 N/mm <sup>2</sup> ( <b>&gt;435 psi</b> ) SF*               |
|                                                                | Hot dip galv steel: >19 N/mm <sup>2</sup> ( <b>&gt;2800 psi</b> )  |
|                                                                | Electro-plated zinc: >19 N/mm <sup>2</sup> ( <b>&gt;2800 psi</b> ) |
| Stainless steel: >32 N/mm <sup>2</sup> ( <b>&gt;4600 psi</b> ) |                                                                    |

\*Strength results will vary depending on the level of surface preparation and gap. If using a cleaning solvent, allow 3-4 minutes to fully evaporate before applying adhesive. Figures above were on degreased-only substrates.

SF\* = Substrate failure

## Hot Strength



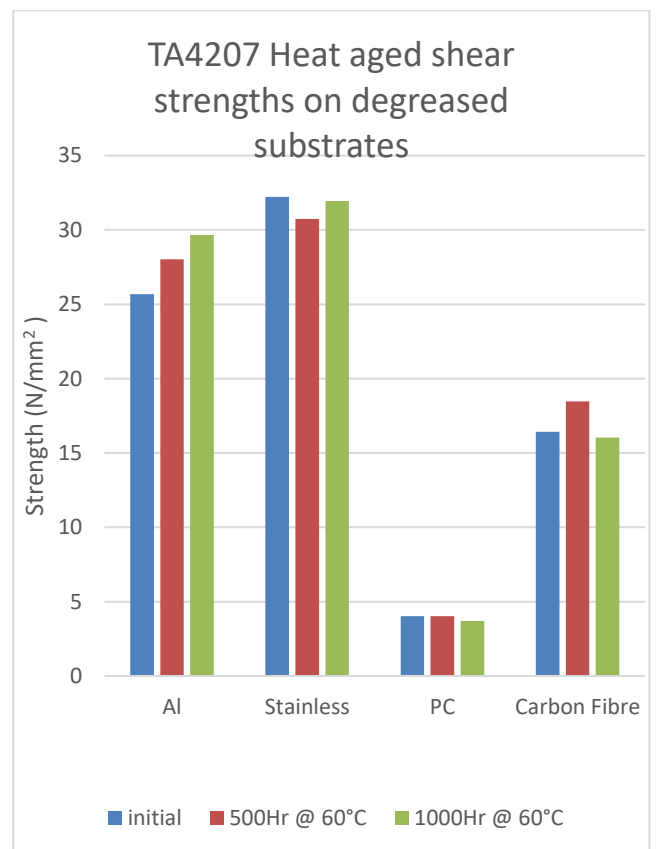
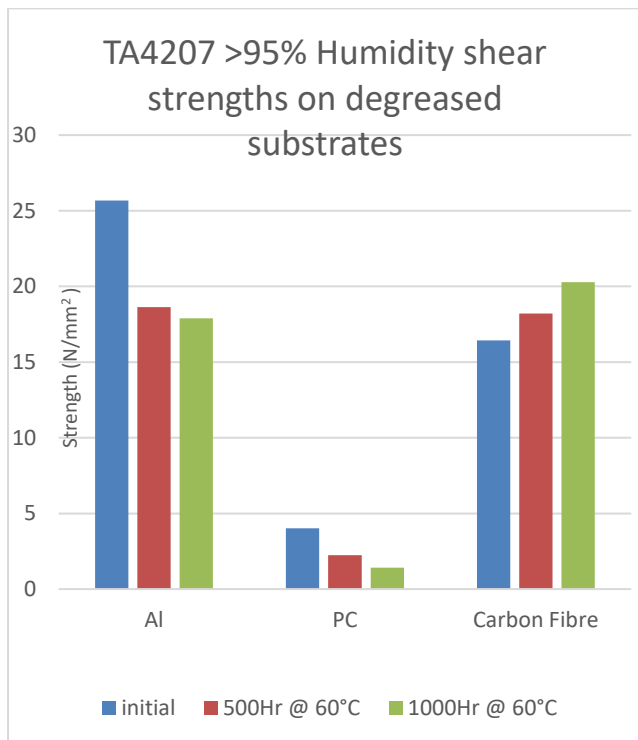
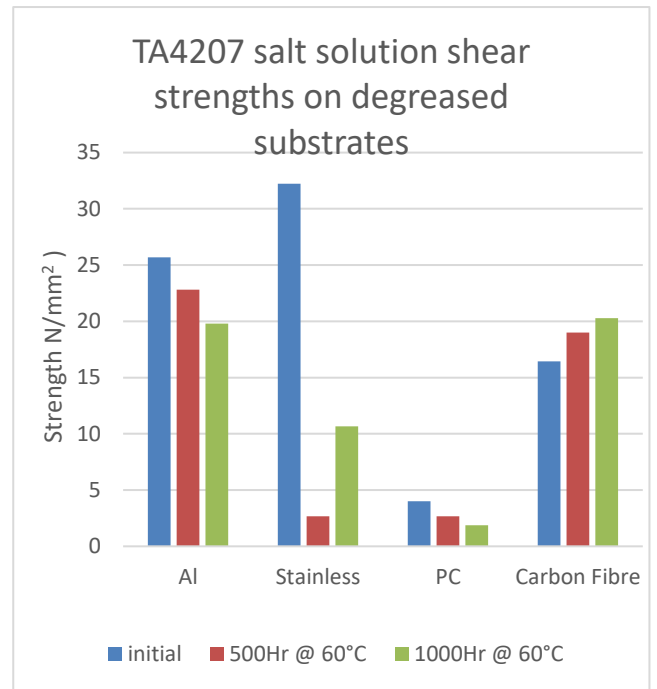
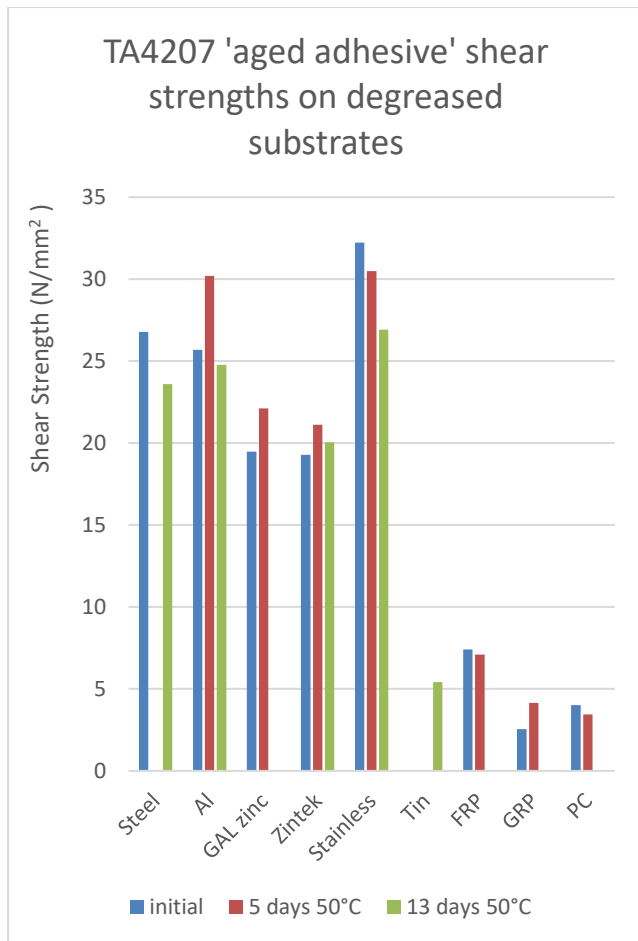
"Hot strength" shear strength tests performed on mild steel. Fully cured specimens conditioned to pull temperature for 30 minutes before testing at temperature.

TA4207 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.

|                                        | 24Hr Shear Strength          | 1000Hr @60°C |
|----------------------------------------|------------------------------|--------------|
| Stainless Steel<br>(Acetone degreased) | >32 MPa                      | >31MPa       |
| Aluminium<br>(Acetone degreased)       | >25 MPa                      | >29MPa       |
| Carbon Fibre<br>(IPA degreased)        | >16 MPa                      | >16MPa       |
| PC<br>(IPA degreased)                  | >4MPa<br>(Substrate failure) | >3 MPa       |

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## 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 (SDS). 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.**

## Storage & Handling

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

## 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. If using a cleaning solvent, allow 3-4 minutes to fully evaporate before applying adhesive.
- 2) Apply a thin bead of adhesive pre-mixed through a static mixer nozzle.
- 3) Alternatively apply a thin layer of resin on one component and hardener on the other.
- 4) Assemble components and clamp.
- 5) Maintain pressure until handling strength is achieved. The time required will vary according to the joint design and surfaces being bonded.
- 6) Allow 24 hours for adhesive to fully cure. Accelerated cure times may be achieved by heating.

## Video Links

Surface preparation:

<https://youtu.be/8CMOMP7hXiU>

Structural acrylic directions for use:

<https://youtu.be/edvBe4iYNCY>



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