

Features & Benefits

- Adhesion to a wide variety of substrates
- Cures at room temperature
- High shear and peel strength
- Good impact strength
- Good chemical resistance

Description

PERMABOND® TA4820 is a 2-part, 1:1 toughened methacrylate adhesive designed for bonding thermoplastics, thermosets, metals and composites. TA4820 has excellent adhesion to as received metal surfaces, forming high strength bonds without surface preparation. It provides excellent durability and resistance to many common industrial solvents and fuels, as well as harsh environmental conditions. It cures rapidly at room temperature and its thixotropic properties allow for easy dispensing through static mixing nozzles, while maintaining good gap-filling and non-sag properties. The long fixture time allows for accurate alignment of larger components.

Physical Properties of Uncured Adhesive

	TA4820 A	TA4820 B
Chemical composition	Methyl methacrylate	Methyl methacrylate
Colour	Off-white	Amber
Mixed colour	Cream	
Viscosity @ 25°C	200,000-300,000 mPa.s (cP)	120,000-200,000 mPa.s (cP)
Specific gravity	1.0	1.0

Typical Curing Properties

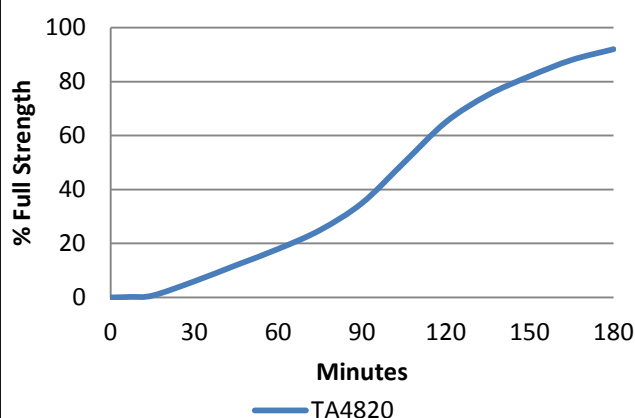
Ratio of use	1 : 1
Maximum gap fill	2 mm (0.08 in)
Pot life (10g+10g) @23°C	15-18 minutes
Fixture time @23°C	30-35 minutes
Handling time (0.3 N/mm ² shear strength is achieved) @23°C	45-60 minutes
Working strength @23°C	100-120 minutes
Full cure @23°C	24 hours

Typical Performance of Cured Adhesive

Shear strength* (ISO4587)	Steel: 21-28 N/mm ² (3000-4000 psi) Aluminium: 17-24 N/mm ² (2500-3500 psi) PPO to HIPS: Substrate failure PVC to PVC: Substrate failure SMC to SMC: Substrate failure Fiber glass to Fiber glass: >12 N/mm ² (1700 psi)
Tensile strength (ISO37)	29 N/mm ² (4200 psi)
Peel strength (ISO 4578)	70-90 N/25mm (15-20 PIW)
Elongation (ISO37)	15-20%
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 MHz
Dielectric strength (ASTM D-149)	30-50 kVmm
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

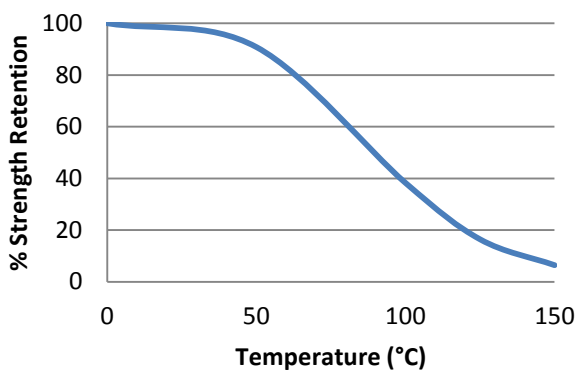


Graph shows typical strength development of bonded components at 23°C. An increase of 8°C in temperature will halve the cure time. Lower temperatures will result in a slower cure time.

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Hot Strength



TA4820 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.

Directions for Use

- 1) Surfaces must be clean, dry and grease-free prior to bonding.
- 2) Apply a thin bead of adhesive pre-mixed through a static mixer nozzle.
- 3) Assemble components and clamp.
- 4) Maintain pressure until handling strength is achieved. The time required will vary according to the joint design and surfaces being bonded.
- 5) Allow 24 hours for adhesive to fully cure.

Storage & Handling

Storage Temperature	2 to 25°C (35 to 77°F)
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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 material safety data sheet (MSDS).

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. The use of a suitable solvent-based cleaner (such as acetone or isopropanol) is recommended. Some metals such as aluminium, copper and its alloys will benefit from light abrasion with emery cloth (or similar), to remove the oxide layer.

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