PERMABOND® TA4210

Toughened Acrylic Adhesive

Technical Datasheet

Features & Benefits

- Adhesion to a wide variety of substrates
- Extended nozzle life / pot life
- High shear and peel strength
- Good impact strength
- Good chemical resistance
- Rapid strength development

Description

PERMABOND® TA4210 is a 2-part, 1:1 toughened acrylic adhesive. Its toughening makes it ideal for bonding dissimilar materials where differential thermal expansion and contraction could be an issue. It is easy to use with a delayed initiation, allowing accurate alignment of components. The strength develops quickly allowing clamps to be removed and a quick turnaround time when used in a production situation.

Physical Properties of Uncured Adhesive

	TA4210 A	**TA4210 B**
Chemical composition	Methyl methacrylate	Methyl methacrylate
Colour	Cream	Cream
Mixed colour	Cream	
Viscosity @ 25°C	40,000-50,000 mPa.s *(cP)*	40,000-50,000 mPa.s *(cP)*
Specific gravity	1.0	1.0

Typical Curing Properties

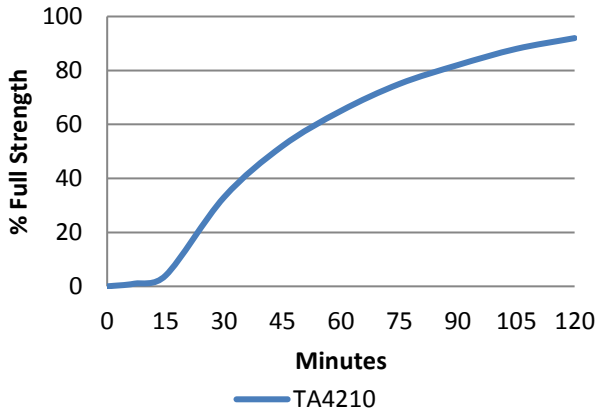
Ratio of use	1 : 1
Maximum gap fill	4 mm *(0.16 in)*
Pot life (10g+10g) @23°C	20-25 minutes
Fixture / handling time *(0.3 N/mm² shear strength is achieved)* @23°C	30-35 minutes
Working strength @23°C	50-60 minutes
Full cure @23°C	24 hours

Typical Performance of Cured Adhesive

Shear strength * (ISO4587)	Steel: 23-25 N/mm² *(3300-3600 psi)* Aluminium: 35-40 N/mm² *(5100-5800 psi)*
Peel strength (ISO 4578)	200-300 N/25mm *(44-67 PIW)*
Hardness (ISO868)	75-80 Shore D
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 kV/mm
Volume resistivity (ASTM D-257)	2 x 10^{13} Ohm.cm

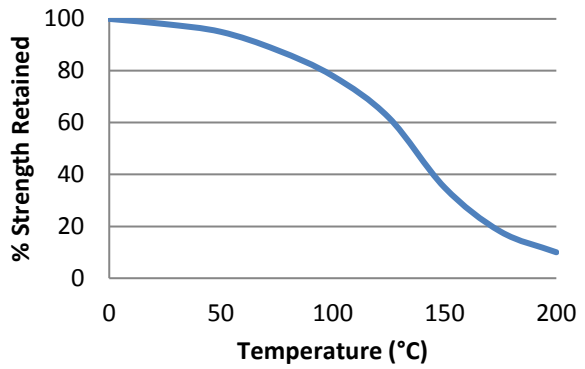
**Strength results will vary depending on the level of surface preparation and gap. If using a cleaning solvent, allow 3-4 minutes to fully evaporate before applying adhesive.*

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.

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.

TA4210 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.

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 prior to bonding. 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) 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.

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.

Video Links

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

Structural acrylic directions for use:
https://youtu.be/xrDNwj2sdkM

Storage & Handling

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

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