

Features & Benefits

- Toughened for high shear and peel strength
- Saves preparation time by bonding to unprepared metals
- High viscosity with no flow, allowing for larger gap-filling
- Extended open time for larger assemblies
- Longer nozzle life for less wastage

Description

PERMABOND® TA4213 is a highly thixotropic, 1:1 mix ratio two-part acrylic adhesive. It has a 20 minute open time, and once the bond is made, a rapid strength development. TA4213 can provide excellent shear strengths on many substrates with little surface preparation and has excellent flow control – allowing for minimal slump application.

Typical Physical Properties of Uncured Adhesive

	TA4213 A	TA4213 B
Chemical composition	Methyl Methacrylate	Methyl Methacrylate
Colour	Straw	Cream
Mixed colour	Cream	
Viscosity @ 25°C	2 rpm: 365,000 mPa.s (cP) 20 rpm: 90,000 mPa.s (cP)	2 rpm: 65,000 mPa.s (cP) 20 rpm: 12,000 mPa.s (cP)
Specific Gravity	1.0	1.0

Typical Curing Properties

Ratio of use	1:1
Maximum gap fill	5 mm (0.196 in)
Pot life (10g mix) @23°C	30 minutes
Open time @23°C	20 minutes
Working strength @23°C	1 hour
Full cure @23°C	24 hours

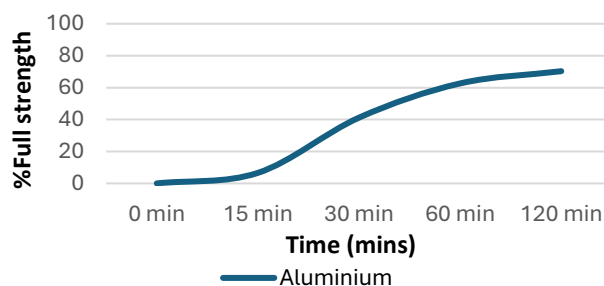
Typical Performance of Cured Adhesive

Shear strength† (ISO 4587)	2014 Aluminium*	23-27 N/mm² (3340-3920 psi)
	Mild steel*	25-28 N/mm² (3630-4060 psi)
	Mild steel**	21-23 N/mm² (3050-3340 psi)
	Stainless steel*	25-33 N/mm² (3630-4790 psi)
	Galvanised Zinc	13-19 N/mm² (1890-2760 psi)
	PMMA***	5-7 N/mm² (730-1020 psi)
	PVC	7-8 N/mm² (1020-1160 psi)
	Polycarbonate	2-4 N/mm² (290-580 psi)
	Epoxy FRP	5-6 N/mm² (730-870 psi)
	Polyester GRP	8-10 N/mm² (1160-1450 psi)
Peel strength (ISO 4578)	2050 Aluminium:	314 N/25mm² (224 PIW)
Elongation at break (ASTM D638)	20%	
Hardness (ISO 868)	60 Shore D	

*Grit-blasted, **De-greased, ***Substrate failure

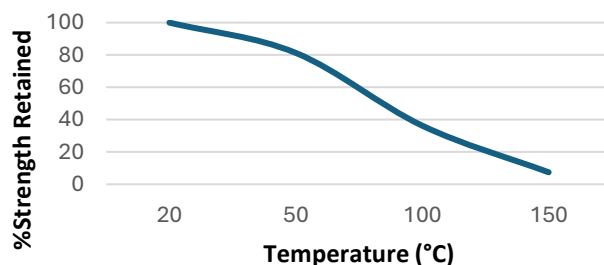
†Strength results will vary depending on the level of surface preparation and gap.

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

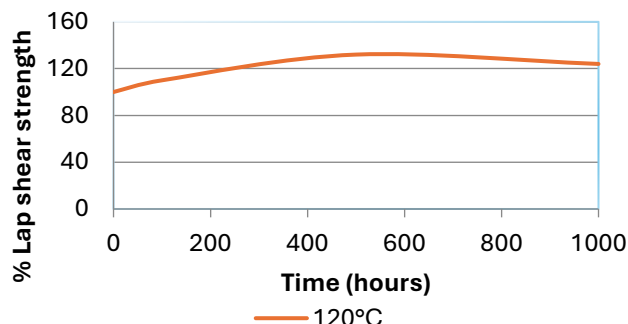


**Hot strength" shear strength tests performed on aluminium. 24-hour cure at room-temperature and conditioned for 30 minutes before testing.

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.

Heat Ageing



Heat Ageing shear strength tests performed on aluminium.

Permabond® TA4213 can withstand higher temperatures for brief periods (such as for paint-baking and wave-soldering processes) provided the joint is not unduly stressed.

Chemical Resistance

Shear strength retention at +25°C- Lap shear strength on aluminium 2024	
Condition	Strength Retention after 500h (%)
Cataplasm @50°C	85
85°C/85%RH	50

Video Links

Surface preparation:

<https://youtu.be/8CMOMP7hXjU>



Structural acrylic directions for use:

<https://youtu.be/edvBe4iYNCY>



This technical datasheet (TDS) offers guideline information and does not constitute a specification.

Additional Information

This product is not recommended for use in contact with strongly 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.
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 joint design and surfaces being bonded.
- 5) Allow 24 hours for adhesive to fully cure.

Storage & Handling

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

www.permabond.com

• UK: 0800 975 9800

• General Enquiries: +44 (0)1962 711661

• US: 732-868-1372

• Asia: + 86 21 5773 4913

info.europe@permabond.com

info.americas@permabond.com

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.