PERMABOND® TA4550

Toughened Acrylic Adhesive

Provisional Technical Datasheet

Features & Benefits

- Low odour acrylic
- Excellent adhesion on plastics, metals and composites
- Excellent adhesion on nylon/polyamides
- No primers required
- High toughness
- Fast cure at room temperature

Description

PERMABOND® TA4550 is a 2-part, 2:1 low odour, acrylic adhesive. It was developed for structural bonding of nylon/polyamide (e.g. PA6 and PA12) without the need for any primers or additional surface treatment, such as plasma. TA4550 is also good for bonding plastics, composites and metals. It cures rapidly at room temperature and is thixotropic (non-slump). The adhesive is highly toughened, which makes it suitable for applications involving impact and vibration.

Physical Properties of Uncured Adhesive

	TA4550 A-side	**TA4550 B-side**
Chemical composition	Acrylic	Acrylic
Colour	Clear, colourless	Green
Viscosity @ 25°C	100,000 mPa.s *(cP)* Thixo	100,000 mPa.s *(cP)* Thixo
Specific gravity	1.0	1.0

Typical Curing Properties

Ratio of use	2 : 1
Maximum gap fill	5 mm *(0.2 in)*
Pot life (10g mixed) @23°C	3 minutes
Fixture time *(0.1 N/mm² shear strength is achieved)* @23°C	5-6 minutes
Working strength @ 23°C	2 hours
Full cure @23°C	24 hours

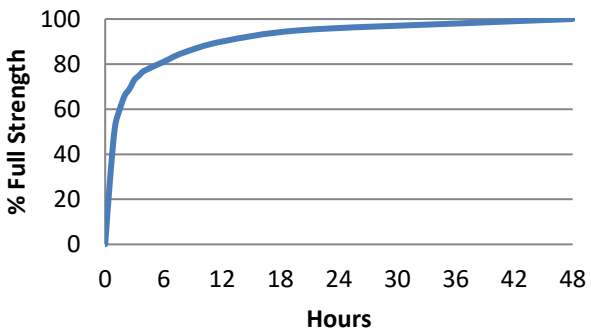
Typical Performance of Cured Adhesive

Shear strength† (ISO4587)	PA6: >6 N/mm² *(>870 psi)* SF * PA6,6: >6 N/mm² *(>870 psi)* SF * PMMA: >4 N/mm² *(>580 psi)* SF * PVC: >6 N/mm² *(>870 psi)* SF * Polycarbonate: 3-5 N/mm² *(435-725 psi)* ABS: 5-7 N/mm² *(725-1015 psi)* PET: 3-5 N/mm² *(435-725 psi)* PET-G: >5 N/mm² *(>725 psi)* SF * Polyester GRP: >6 N/mm² *(>870 psi)* SF * Epoxy FRP: 19-22 *(2755-3191 psi)* Carbon Fibre: 22-25 *(3191-3626 psi)* Stainless Steel: 27-30 N/mm² *(3916-4351 psi)* Aluminium: 24-28 N/mm² *(3481-4062 psi)* Mild Steel: 24-28 N/mm² *(3481-4062 psi)* Aluminium-PA6,6: >6 N/mm² *(>870 psi)* SF * Mild Steel-PA6,6: >6 N/mm² *(>870 psi)* SF *
Peel strength (aluminium) (ISO4578)	250-270 N/25mm *(57-62 PIW)*
Impact strength (ASTM D-950)	24 kJ/cm²
Hardness (ISO868)	60-65 Shore D
Tensile strength (ASTM D638)	11 MPa
Elongation at break (ASTM D638)	140%
Water absorption (24h at 25°C)	1.7%

**Substrate failure was observed.*

†Nature of surface, surface preparation, glue-line thickness, thickness of substrates, pull speed, batch variation, cure time and temperature will all affect the shear strength measurement.

Strength Development



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

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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	5 to 25°C ***(41 to 77°F)***

Surface Preparation

Surfaces should be clean, dry and grease-free before applying the adhesive. Surfaces may have traces of mold release agent present – wipe with isopropanol (IPA) solvent and allow to fully evaporate before bonding.
If bonding to metal: 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.
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.

NB: Adhesive outside of a closed joint (i.e. excess material) will cure more slowly and may feel soft due to air contact. Adhesive inside the joint will cure solid.

Video Links

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

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

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

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