

Features & Benefits

- Adhesion to a wide variety of substrates
- Fast cure at room temperature
- Excellent adhesion to metals and ferrites
- Acid-free and non-corrosive
- No mix application
- High shear strength
- Good impact strength
- Good chemical resistance

Description

Permabond TA459 is a structural acrylic adhesive designed primarily for bonding metals, ferrites, ceramics and some thermoplastics. This product was specifically designed to be non-corrosive to sensitive copper parts or other electrically conductive surfaces. The fast curing rate and rapid strength development of this material allows for increased production rate.

Physical Properties of Uncured Adhesive

Chemical composition	Urethane methacrylate
Appearance	Blue, thixotropic
Viscosity @ 25°C	10,000-20,000 mPa s (cP)
Specific Gravity	1.14

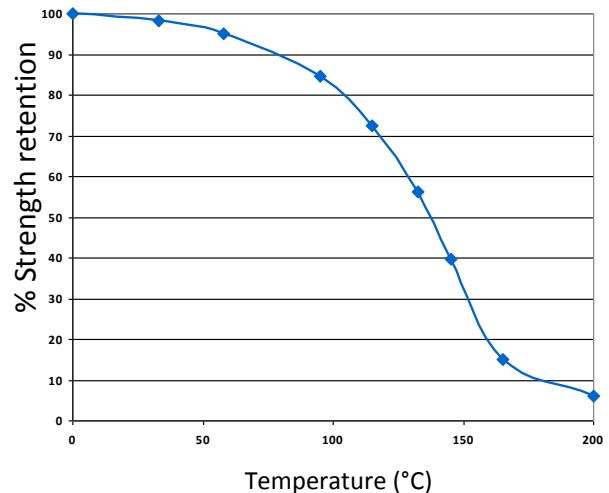
Typical Curing Properties

Ratio of use	10 : 1.5 approximately
Maximum gap fill	Up to 0.5 mm (0.02 in)
Fixture time (zinc)	15-30 seconds (with Initiator 43) <15 seconds (with Initiator 44)
Working strength (at +25°C/50% rh)	< 3 mins (with Initiator 43) <2 mins (with initiator 44)
Full cure	24 hours

Typical Performance of Cured Adhesive

Shear Strength Zn plated after 24 h +25°C	12-18 MPa (1700 – 2610 psi)
Shear Strength Ferrite/steel after 3 minutes +25°C	4 MPa (600 psi)
Shear Strength Ferrite/steel after 24 hours +25°C	>14 MPa (substrate failure) (2000 psi)
Shear Strength Steel/steel after 3 minutes +25°C	9 MPa (1300 psi)
Shear Strength Steel/steel after 24 hours +25°C	20-25 MPa (2900 - 3600 psi)
Tensile Strength stainless steel after 24 h +25°C	20-30 MPa (2900 - 4400 psi)

Temperature Resistance



TA459 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 -55°C (-65°F) depending on the materials being bonded.

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.

Environmental Resistance

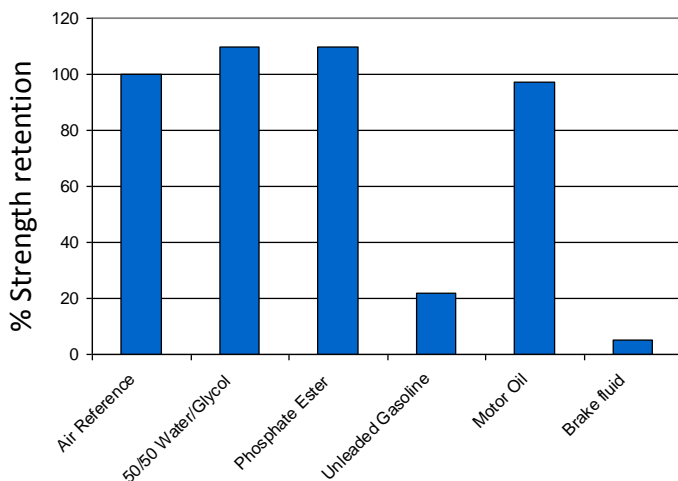
All values were generated on as received steel lap shears as described in ASTM D 1002.

Adhesive was cured at room temperature for 48 hours prior to environmental exposure. Test pieces were assembled with no induced gap and subjected to continuous exposure for 1000 hours at the testing temperature and then the shear strength was tested at room temperature.

1000 hours @	% strength retention
95°C	110% *
120°C	118% *
150°C	132% *
175°C	127% *

*The shear strength is higher the room temperature control because heating the adhesive causes it to become more rigid, resulting in a higher strength.

Chemical Resistance



Specimens were immersed for 30 days at 85°C and tested at room temperature.

Additional Information

This product is not recommended for use in contact with strong oxidizing materials. Where aqueous washing systems are used to clean the surfaces before bonding, these aqueous washes can affect the cure and performance of the adhesive. 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. Use a suitable solvent (such as acetone or isopropanol) for the degreasing of 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.
- 2) Apply Initiator to one surface.
- 3) Apply adhesive to the other surface.
- 4) Assemble the components using sufficient force to spread the adhesive thinly. Parts should be bonded immediately and within a maximum of two hours of applying the Initiator.
- 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.

Storage & Handling

Storage Temperature	5 to 25°C (41 to 77°F)
Shelf Life	12 months
Stored in original unopened containers	

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