PERMABOND® ET513

Two-Part Epoxy

Provisional Technical Datasheet

Features & Benefits

- Full cure at room temperature
- Easy to apply
- Low viscosity – ideal for potting or laminating applications
- Good chemical resistance
- Ultra-clear bondline

Description

PERMABOND® ET513 is a two-part, solvent free, epoxy adhesive developed for bonding and/or potting in applications requiring an ultra-clear bondline, excellent impact resistance, resistance to a wide range of chemicals/solvents and minimal shrinkage.

Physical Properties of Uncured Adhesive

	ET513A	**ET513B**
Chemical composition	Epoxy Resin	Polyamine Hardener
Appearance	Transparent	Transparent
Viscosity @ 25°C	5000-7000 mPa.s *(cP)*	4000-6000 mPa.s *(cP)*

Typical Curing Properties

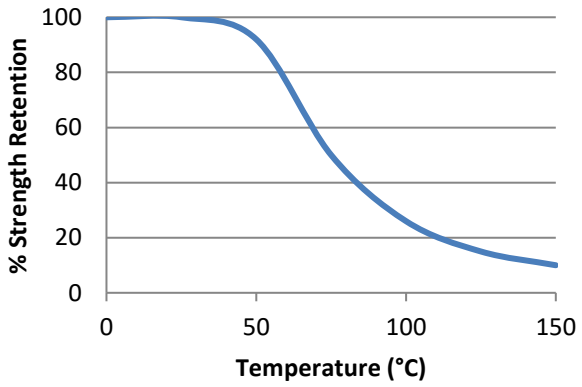
Mix ratio by weight	100:45
Mix ratio by volume	2:1
Maximum gap fill	0.25 mm *0.01 in*
Usable / pot life @25°C	45 minutes (50g mixed)
Full cure @25°C	3 days

Typical Performance of Cured Adhesive

Shear strength* (mild steel) (ISO4587)	25 N/mm² *(3625 psi)*
Shear strength (Polycarbonate)	3 N/mm² *(435 psi)*
Tg by DSC	60°C
CTE (below Tg)	5 x 10^{-5}
CTE (above TG)	1.5 x 10^{-4}

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

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.

ET513 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.

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.

FOR PROFESSIONAL OR INDUSTRIAL USE ONLY. KEEP OUT OF REACH OF CHILDREN

Additional Information

This product is not recommended for use in contact with strong oxidizing materials.
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.

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. 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. Measure volumetrically 2 parts resin to 1 part hardener (or by weight 100:45). Mix thoroughly taking care not to entrap air.
2. Apply material. If potting; take care to fill component and not entrap air.
3. If bonding a joint or laminating, assemble the parts. Parts must be joined within 45 minutes of mixing the two epoxy components.
4. Large quantities and/or higher temperature will decrease the usable life or pot life.
5. Apply pressure to the assembly by clamping for 24 hours or until handling strength is obtained.
6. Full cure will be obtained after 3 days at 25°C (77°F). Heat can be used to accelerate the curing process.

Video Links

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

Two-part epoxy directions for use:
https://youtu.be/GRX1RyknYqc

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.

FOR PROFESSIONAL OR INDUSTRIAL USE ONLY. KEEP OUT OF REACH OF CHILDREN