Technical data sheet

Product:	ET538
Manufacturer:	PERMABOND ENGINEERING ADHESIVES
Product group:	KLEBSTOFF
Article group:	2-K KLEBSTOFF
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PERMABOND® ET538

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PERMABOND® ET538

Two-Part Epoxy

Technical Datasheet

Features & Benefits

- Adhesion to a wide variety of substrates
- Full cure at room temperature
- Easy to apply
- High shear and peel strength
- Good impact strength
- Good chemical resistance
- Non-drip rheology

Description

PERMABOND® ET538 is a structural, room temperature curing epoxy adhesive that has excellent adhesion to a wide variety of surfaces such as wood, metal, ceramics and many plastic and composite materials. It exhibits good resistance to petrol, oils and water and has an extended cure time making it suitable for larger applications and batch production processes. Its thixotropic "non-slump" nature makes it suitable for gap filling or vertical application.

Physical Properties of Uncured Adhesive

	ET538 A side	**ET538 B side**
Chemical composition	Epoxy Resin	Polyamine Hardener
Appearance	White	Dark grey
Viscosity @ 25°C	20rpm: 75,000 mPa.s *(cP)* 2.5rpm: 225,000 mPa.s *(cP)*	20rpm: 30,000 mPa.s *(cP)* 2rpm: 60,000 mPa.s *(cP)*
Specific gravity	1.1	1.4

Typical Curing Properties

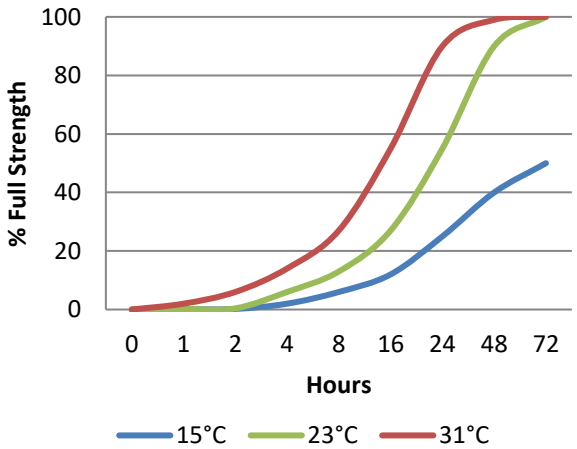
Mix ratio	1:1 by volume 100:130 by weight
Maximum gap fill	5 mm *0.2 in*
Usable / pot life @23°C	120-150 mins
Handling time @23°C	3-5 hours
Working strength @23°C	24 hours
Full cure @23°C	72 hours

Typical Performance of Cured Adhesive

Shear strength* (ISO4587)	Mild steel: 25-30 N/mm² *(3625-4350psi)* Aluminium: 22-26 N/mm² *(3190-3770psi)* Stainless Steel: 28-32 N/mm² *(4060-4640psi)* Zinc: 17-20 N/mm² *(2500 - 2900 psi)* Carbon Fibre: 20-24 N/mm² *(2900-3480psi)* FRP Glass/Polyester: 6-8 N/mm² *(870-1160psi)* FRP Glass/Epoxy: 18-22 N/mm² *(2610-3190psi)* Polycarbonate: 3-5 N/mm² *(435-725psi)* PA6 30% filled: 3-5 N/mm² *(435-725psi)*
Peel strength (aluminium) (ISO4578)	60-80 N/25mm *(13-18 PIW)*
Hardness (ISO868)	70-80 Shore D
Elongation at break (ISO37)	4-8%
Glass transition temperature Tg	45-55°C *(113-131°F)*
Dielectric strength	15-25 kV/ mm
Thermal conductivity	0.55 W/(m.K)

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

Strength Development



Graph shows typical strength development of bonded components. An increase of 8°C in temperature will halve the cure time. Lower temperatures will result in a slower cure time.

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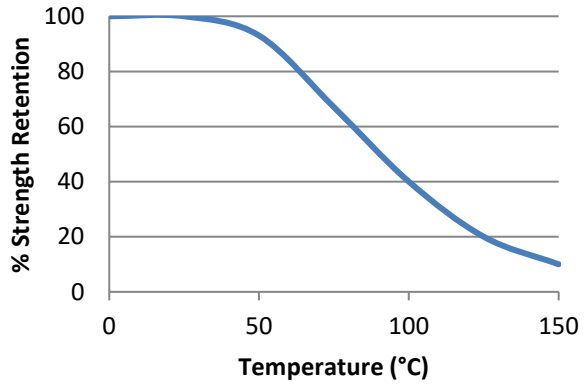
Hot Strength



Hot strength" shear strength tests performed on mild steel. Fully cured specimens conditioned to pull temperature for 30 minutes before testing at temperature.

ET538 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.

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.

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. Dual cartridges:
   a) Insert the cartridge into the application gun and guide the plunger into the cartridge.
   b) Remove the cartridge cap and dispense material until both sides are flowing.
   c) Attach the static mixer to the end of the cartridge and begin dispensing the material.
2. Apply material to one of the substrates.
3. Join the parts. Parts must be joined within the usable pot life 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 until handling strength is obtained.
6. Full cure will be obtained after 72 hours at 23°C (73°F). Heat can be used to accelerate the curing process.

Storage & Handling

Storage Temperature	5 to 25°C *(41 to 77°F)*

Video Links

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

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

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