PERMABOND® ET5428

Two-Part Epoxy

Technical Datasheet

Features & Benefits

- Ideal for bonding composite materials
- Easy to apply
- High shear and peel strength
- Rapid cure speed
- High temperature resistance
- Colour matched for FRP bonding

Description

PERMABOND® ET5428 is a thixotropic two part adhesive with excellent resistance to impact and vibration. The controlled flow properties as well as its ease of mixing and application, enables the adhesive to be used where gap filling is required. Permabond® ET5428 has been found to provide exceptional performance even at elevated temperatures.

Permabond® ET5428 has been specifically formulated for use in applications requiring toughness and high strength and shows special benefits in the construction of composite assemblies.

Physical Properties of Uncured Adhesive

	ET5428A	**ET5428B**
Chemical composition	Epoxy Resin	Polyamine Hardener
Appearance	White	Cream
Mixed appearance	Cream	
Viscosity @ 25°C	20rpm: 80,000-150,000 mPa.s *(cP)* 2rpm: 200,000-400,000 mPa.s *(cP)*	20rpm: 100,000-300,000 mPa.s *(cP)* 2rpm: 700,000-1,500,000 mPa.s *(cP)*
Specific gravity	1.1	1.1

Typical Curing Properties

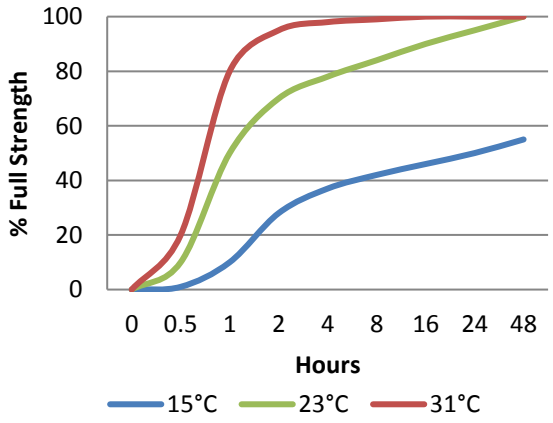
Mix ratio	2:1 by volume 2:1 by weight
Maximum gap fill	5 mm *0.2 in*
Usable / pot life @23°C 10g mixed	10-20 mins
Handling time	23°C: 30-45 mins
Working strength	23°C: 1 hour 60°C: 15 minutes
Full cure	23°C: 24-48 hours 60°C: 1 hour

Typical Performance of Cured Adhesive

Shear strength* (ISO4587)	Mild steel: 18-22 N/mm² *(2600-3200psi)* FRP Glass/Polyester: 6-9 N/mm² *(900-1300psi)* FRP Glass/Epoxy: 24-28 N/mm² *(3500-4000psi)* Carbon Fibre: 20-38 N/mm² *(2900-5500psi)*
Peel strength (aluminium) (ISO4578)	150-250 N/25mm *(33-55 PIW)*
Hardness (ISO868)	65-75 Shore D
Elongation at break (ISO37)	<5%
Glass transition temperature Tg	50-60°C *(122-140°F)*
Dielectric strength	15-25 kV/ mm

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

Strength Development

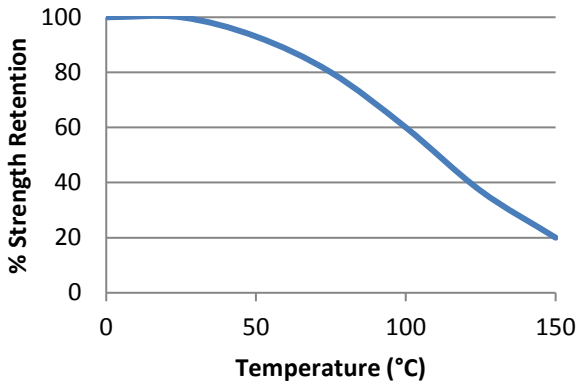


Graph shows typical strength development of bonded components. An increase of 8°C in temperature will halve the cure time. Lower temperatures will result in a slower cure time.

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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.

ET5428 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.

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. 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 10-20 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 30-45 minutes or until handling strength is obtained.
6. Full cure will be obtained after 24-48 hours at 25°C (77°F). Heat can be used to accelerate the curing process.

7. ***NB. Exercise caution when mixing large quantities due to exothermic reaction.***

Video Links

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

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

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