PERMABOND® ES5681

Single-part, heat-cure Epoxy

Technical Datasheet

Features & Benefits

- Rapid cure speed
- Excellent resistance to vibration
- Easy to use – no mixing required
- High shear and peel strength
- High temperature resistance
- Good resistance to chemicals

Description

PERMABOND® ES5681 is a single-part heat cured epoxy adhesive with excellent adhesion to metal surfaces, ceramics as well as composite materials. It is a tough, multipurpose adhesive with excellent impact and vibration resistance.

Physical Properties of Uncured Adhesive

Chemical composition	Epoxy Resin
Appearance	Black
Viscosity @ 25°C	40,000 – 60,000 mPa.s *(cP)*
Specific gravity	1.1

Typical Curing Properties

Flow at high temperature	Flowing
Maximum gap fill	0.5 mm *0.02 in*
Cure speed (oven) *	135° C *(275°F):* 35 minutes 150°C *(300°F):* 20 minutes 160°C *(320°F):* 15 minutes
Cure speed (induction)	<2 minutes

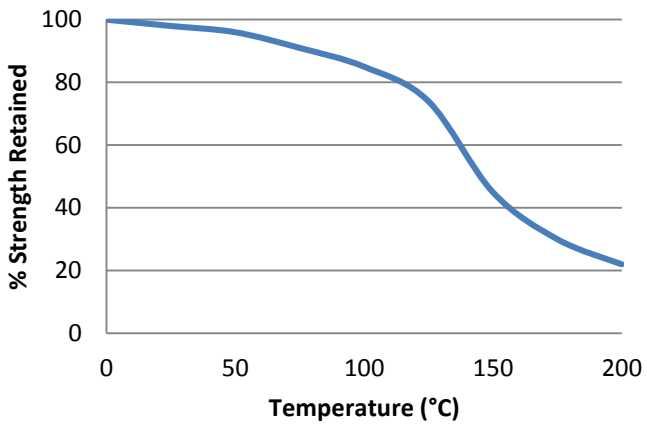
**Actual cure times will depend on the time it takes for the adhesive to reach this temperature - for example, large assemblies or a crowded oven will require longer to reach full cure. Alternative, quicker methods of curing include induction, hotplates, infrared lamps and hot-air guns.*

Typical Performance of Cured Adhesive

Shear strength* (ISO 4587):	Steel 30 - 35 N/mm² *(4400 – 5100 psi)* FRP Glass/Polyester: 3-5 N/mm² *(400-700psi)* FRP Glass/Epoxy: 14-16 N/mm² *(2000-2300psi)* Carbon Fibre: 18-22 N/mm² *(2600-3200 psi)*
Tensile strength (ASTM D 2095):	35-40 N/mm² *(5100– 5800 psi)*
Hardness	84 Shore D
Impact strength (ASTM D 950):	30-40 KJ/m²
Peel strength (aluminium)	180-200 N/25mm *(40– 44 PIW)*

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

Temperature Resistance

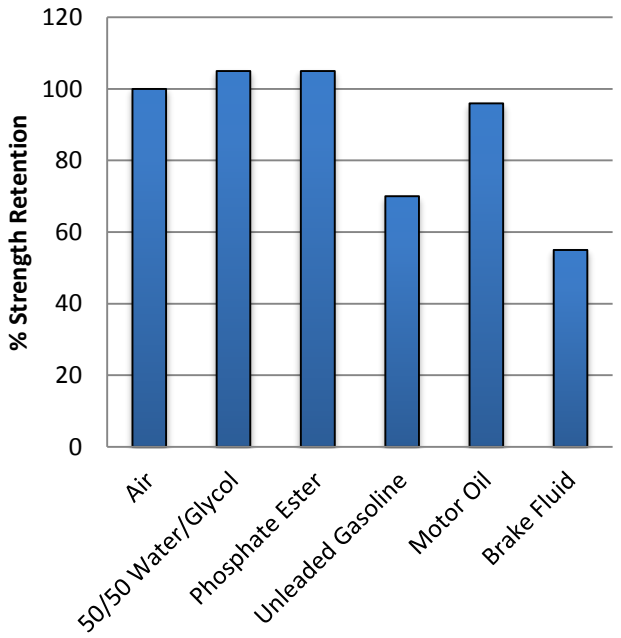


ES5681 can withstand higher temperatures for brief periods (such as for paint baking and wave soldering processes) providing the joint is not unduly stressed. The minimum temperature the cured adhesive can be exposed to is -40°C (-40°F) depending on the materials being bonded.

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Chemical Resistance



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

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 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) The adhesive should be dispensed from the cartridge via the nozzle supplied (this can be cut to give the appropriate sized bead to cover the bond area).
2) Apply the adhesive to one surface and avoid entrapping air.
3) Assemble parts applying sufficient pressure to ensure the adhesive spreads to cover the entire bond area.
4) Use a jig / clamp to prevent parts moving during cure.
5) It is advisable not to disturb the joint until the adhesive is fully cured.
6) Cure with heat – see page one for cure schedule.

Storage & Handling

Storage Temperature	2 to 7°C *(35 to 45°F)*

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