

### Features & Benefits

- Excellent adhesive strength
- Excellent resistance to vibration
- Easy to use – no mixing required
- High shear and peel strength
- Good impact strength
- High temperature resistance
- Good resistance to chemicals

### Description

**PERMABOND ES558** is a single-part epoxy paste which flows like solder when heated during curing. The adhesive is toughened for maximum impact resistance, along with excellent peel and shear strength. ES558 is ideal for bonding a wide range of materials including metals, ferrites, ceramics and composites.

### Physical Properties of Uncured Adhesive

|                      |                              |
|----------------------|------------------------------|
| Chemical composition | Epoxy Resin                  |
| Appearance           | Silver-grey                  |
| Viscosity @ 25°C     | 100,000 – 300,000 mPa.s (cp) |
| Density              | 1.5                          |

### Typical Curing Properties

|                          |  |
|--------------------------|--|
| Flow at high temperature | Free flow  |
| Maximum gap fill         | 0.5 mm <b>0.02 in</b>  |
| Cure speed (oven) *      | 120°C (250°F): 60 minutes<br>150°C (300°F): 45 minutes<br>180°C (350°F): 20 minutes<br>200°C (390°F): 15 minutes |
| Cure speed (induction)   | <3 minutes   |

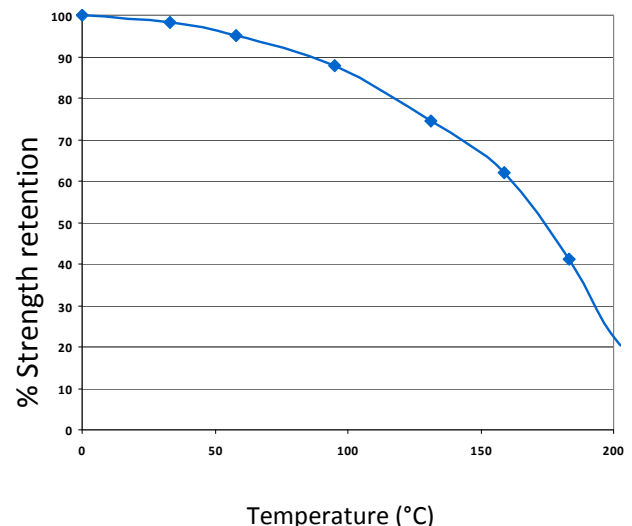
\*Actual cure times will depend on the time it takes for the adhesive to reach this temperature - for example, large assemblies or a crowded oven will require longer to reach full cure. Alternative, quicker methods of curing include induction, hotplates, infrared lamps and hot-air guns.

### Typical Performance of Cured Adhesive

|                                  |   |
|----------------------------------|---|
| Shear strength* ASTM D-1002      | Steel 27 - 41 N/mm <sup>2</sup><br>(4000 – 6000 psi)<br>Aluminium 17 - 31 N/mm <sup>2</sup><br>(2500 – 4500 psi)<br>Zinc 14 - 41 N/mm <sup>2</sup><br>(2000 – 6000 psi) |
| Hardness                         | 80 Shore D  |
| Coefficient of thermal expansion | 45 x 10 <sup>-6</sup> mm/mm/°C  |
| Dielectric constant              | 22 kV / mm  |
| Thermal conductivity             | 0.55 W/(m.K)  |

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

### Temperature Resistance

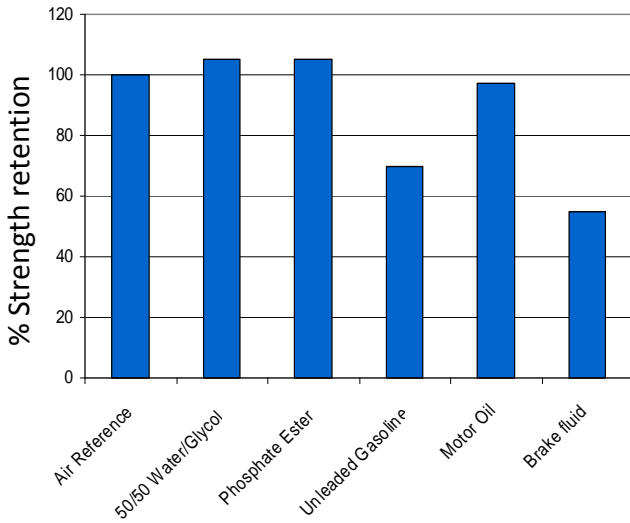


ES558 can withstand higher temperatures for brief periods (such as for paint baking and wave soldering processes) providing the joint is not unduly stressed. The minimum temperature the cured adhesive can be exposed to is -40°C (-40°F) depending on the materials being bonded.

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## Chemical Resistance



Specimens were immersed for 30 days at 85°C 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.

## Storage & Handling

|  |                       |
|--|-----------------------|
| Storage Temperature                                  | 2 to 7°C (35 to 45°F) |
| Shelf Life<br>Stored in original unopened containers | 12 months             |

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