

# PERMABOND<sup>®</sup> ES558

## Single-Part Epoxy

## Preliminary Technical Data Sheet

Ref.#: 081408ES558

### FEATURES & BENEFITS

- ◆ Excellent Adhesive Strength
- ◆ Excellent Resistance to Vibration
- ◆ Easy to Use Single-Part System
- ◆ High Shear and Peel Strength
- ◆ Good Performance at High Temperature
- ◆ Good Chemical Resistance

### DESCRIPTION

PERMABOND ES558 is a single-part heat cured epoxy adhesive with excellent adhesion to metal surfaces as well as composite material. The high bond strength of this adhesive allows it to replace mechanical fastening, soldering, brazing, or welding. This material requires heat in the range between 120°C and 200°C to cure it. ES558 was designed to have very low viscosity at its curing temperature allowing the epoxy to wick into tight bond areas. ES558 is also self leveling for potting applications.

### TYPICAL PROPERTIES OF THE UNCURED ADHESIVE

Chemical composition	Epoxy resin
Appearance	Silver Paste
Flow Characteristics at curing temperature	Free Flow
Viscosity @ 25°C, cP	100,000 – 300,000
Maximum gap, in (mm)	0.02 (0.51)
Shelf Life at 35°F – 45°F (2°C – 7°C), months	6
Specific gravity	1.5

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## TYPICAL CURING PROPERTIES

Heat is required to cure the epoxy. The cure time is dependent on the temperature used. The following is time required to cure the epoxy at different temperatures.

Temperature, °C (°F)	Cure Time*, minutes
120 (248)	60
150 (302)	45
180 (356)	20
200 (392)	15

\*These curing times are typical for small components cured in an air-circulating oven. If large parts are being bonded then additional time will be required to heat up the parts.

## TYPICAL PROPERTIES OF THE CURED ADHESIVE

Shear Strength, ISO 4587 N/mm <sup>2</sup> (psi)	
Steel	27 – 41 (4,000 – 6,000)
Aluminum	17 - 31 2,500 – 4,500)
Zinc	14 – 27 (2,000 – 4,000)
Coefficient of thermal expansion, mm/mm/°C	45x10 <sup>-6</sup>
Shore D Hardness	80
Temperature Range, °C (°F)	-40 to 180 (-40 to 355)

PermaBOND ES558 offers very good performance at both low and high temperatures. The bond strength decreases as the temperature reaches 200°C, but upon cooling the original strength is regained. The cured adhesive has very good resistance to most commonly used hydrocarbons and alcohols.

## 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).

## DIRECTIONS FOR USE

1. For best results, the surface should be free of contaminants such as dirt, dust, grease, oil, and/or paint. For metal surfaces chemical treatment offers the optimum durability and highest bond strength. However, simple abrasion and solvent wiping might be sufficient.
2. For maximum strength, apply material to both substrates.
3. Join the parts and heat cure making sure the bond line reaches the curing temperature.
4. Apply pressure to keep parts from moving during cure.
5. Clean up can be achieved with solvents such as acetone or isopropyl alcohol.

## **STORAGE & HANDLING**

Permabond ES558 should be stored in the unopened container at a temperature between 2°C and 7°C (35°F and 45°F). Under these conditions the product has a shelf life of 6 months.

**Please refer to the MSDS for more information on the handling of this material.**

**FOR INDUSTRIAL USE ONLY. KEEP OUT OF REACH OF CHILDREN**