

PERMABOND[®] ES578

Single-Part Epoxy

Preliminary Technical Data Sheet

Ref.#: 081808ES578

FEATURES & BENEFITS

- ◆ Very Good Thermal Conductivity
- ◆ Excellent Resistance to Vibration
- ◆ Easy to Use Single-Part System
- ◆ High Shear and Peel Strength
- ◆ Good Performance at High Temperature
- ◆ Good Chemical Resistance
- ◆ Non-Sag

DESCRIPTION

PERMABOND ES578 is a single-part heat cured epoxy adhesive with excellent adhesion to metal surfaces, ceramics as well as composite materials. ES578 provides excellent thermal conductivity and bond strength. This material requires heat in the range between 150°C and 200°C to cure it. ES578 was designed for application requiring heat dissipation such as bonding aluminum heat sinks to ceramic headers.

TYPICAL PROPERTIES OF THE UNCURED ADHESIVE

Chemical composition	Epoxy resin
Appearance	Black Paste
Flow Characteristics at curing temperature	No Flow
Viscosity @ 25°C, cP	600,000 – 800,000
Maximum gap, in (mm)	0.2 (5.0)
Shelf Life at 35°F – 45°F (2°C – 7°C), months	6
Specific gravity	1.5

Non-Warranty: The information given and the recommendations made herein are based on our research and are believed to be accurate but no guarantee of their accuracy is made. In every case we urge and recommend that purchasers before using any product in full-scale production make their own tests to determine to their own satisfaction whether the product is of acceptable quality and is suitable for their particular purpose under their own operating conditions. THE PRODUCTS DISCLOSED HEREIN ARE SOLD WITHOUT ANY WARRANTY AS TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED.

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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 the time required to cure the epoxy at different temperatures.

Temperature, °C (°F)	Cure Time*, minutes
100 (212)	120
120 (248)	40
150 (302)	20
180 (356)	15

*These curing times are typical for 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, N/mm² (psi)
ISO 4587

Steel	27 - 41 (4,000 – 6,000)
Aluminum	17 – 31 (2,500 – 4,500)
Zinc	14 – 27 (2,000 – 4,000)

Shore D Hardness	84
Temperature Range, °C (°F)	-40 to 180 (-40 to 355)
Thermal conductivity, W/m.K (BTU-in/hr-ft ² -°F)	1.3 (9.0)
ASTM D-2214	
Dielectric Strength, kV/mm	17.7
Dielectric Constant at 1 mHz	5.4
Dissipation Factor at 1 mHz	0.02

Permabond ES578 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, isopropyl alcohol.

STORAGE & HANDLING

Permabond ES578 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