

# PERMABOND<sup>®</sup> ES550

## Single-Part Epoxy



### Preliminary Technical Data Sheet

Ref.# 081408ES550

#### 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 ES550 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. ES550 also offer excellent peel, cleavage and impact resistance. This material requires heat in the range between 120°C and 200°C to cure it. ES550 was designed to be non-sagging at its curing temperature allowing the product to be used in large gaps and on vertical surfaces.

#### TYPICAL PROPERTIES OF THE UNCURED ADHESIVE

Chemical composition	Epoxy resin
Appearance	Silver Paste
Flow Characteristics at curing temperature	No Flow
Viscosity @ 25°C, cP	1,000,000-2,000,000
Maximum gap, in (mm)	0.12 (3)
Specific gravity	1.5
Shelf Life at 35°F – 45°F (2°C – 7°C), months	6

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.

No representative of ours has any authority to waive or change the foregoing provisions but, subject to such provisions, our engineers are available to assist purchasers in adapting our products to their needs and to the circumstances prevailing in their business. Nothing contained herein shall be construed to imply the non-existence of any relevant patents or to constitute a permission, inducement or recommendation to practice any invention covered by any patent, without authority from the owner of this patent. We also expect purchasers to use our products in accordance with the guiding principles of the Chemical Manufacturers Association's Responsible Care<sup>®</sup> program.

PERMABOND LLC  
14 Robinson Street, Pottstown, PA 19464  
20 World's Fair Drive, Somerset, NJ 08873  
Application Assistance: 1-800-640-7599 Customer Service: 1-800-714-0170  
Fax No.: 1-800-334-3219  
[www.permabond.com](http://www.permabond.com)

## 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
120 (248)	40
150 (302)	20
180 (356)	15
200 (392)	10

\*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 ES550 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 that 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 ES550 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**