

## Features & Benefits

- Adhesion to a wide variety of substrates
- Full cure at room temperature
- FDA Compliant formulation
- High shear and peel strength
- Good impact strength

## Description

**PERMABOND<sup>®</sup> ET5147** is a 2:1 mixable epoxy adhesive. It has excellent resistance to impact and vibration and is ideal for structural bonding of metal, wood, composites and certain plastics. Its rapid cure speed coupled with its structural strength makes this adhesive suitable for a wide variety of applications. ET5147 is high strength and has excellent environmental durability.

Permabond ET5147 has been specifically formulated to meet the requirements of:

- FDA 175.105 and 175.300
- EU 2002/72/EC and 1935/2004

## Physical Properties of Uncured Adhesive

	ET5147A	ET5147B
Chemical composition	Epoxy Resin	Polyamine Hardener
Appearance	White	Ivory
Viscosity @ 25°C	20rpm: 25,000-40,000 mPa.s (cP) 2rpm: 80,000-160,000 mPa.s (cP)	20rpm: 90,000-150,000 mPa.s (cP) 2rpm: 150,000-300,000 mPa.s (cP)
Specific gravity	1.3	1.2

## Typical Curing Properties

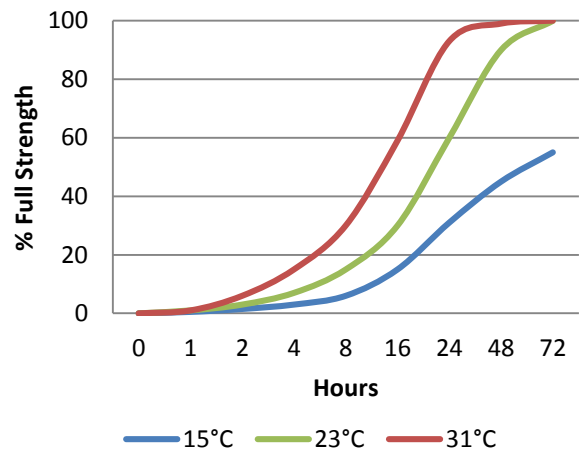
Mix ratio by volume	2:1
Maximum gap fill	2 mm <b>0.08 in</b>
Usable / pot life @23°C 2+1g	40-60 mins
Handling time @23°C	3-5 hours
Working strength	@23°C: 16 hours @60°C: 30 minutes
Full cure	@23°C: 72 hours @60°C: 1 hour

## Typical Performance of Cured Adhesive

Shear strength (mild steel)* (ISO4587)	18-20 N/mm <sup>2</sup> <b>(2600 -2900 psi)</b>
Peel strength (aluminium) (ISO4578)	30-50 N/25mm <b>(7-11 PIW)</b>
Hardness (ISO868)	68-72 Shore D
Glass transition temperature T <sub>g</sub>	50-60°C <b>(122-140°F)</b>
Dielectric strength	15-25 kV/ mm

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

### Strength Development

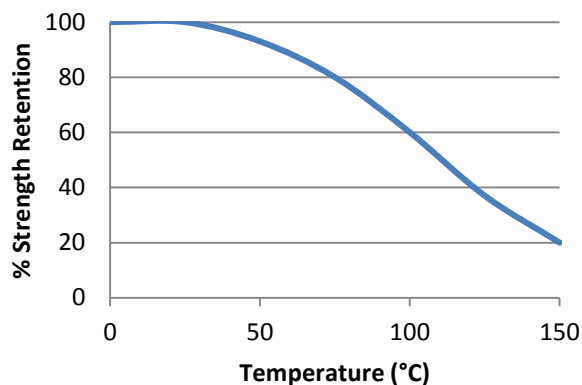


Graph shows typical strength development of bonded components. An increase of 8°C in temperature will halve the cure time. Lower temperatures will result in a slower cure time.

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® program.

## Hot Strength



"Hot strength" shear strength tests performed on mild steel. Fully cured specimens conditioned to pull temperature for 30 minutes before testing at temperature.

ET5147 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.

## 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 safety data sheet.

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. Dual cartridges:
  - a) Insert the cartridge into the application gun and guide the plunger into the cartridge.
  - b) Remove the cartridge cap and dispense material until both sides are flowing.
  - c) Attach the static mixer to the end of the cartridge and begin dispensing the material.
2. Apply material to one of the substrates.
3. Join the parts. Parts must be joined within 40-60 minutes of mixing the two epoxy components.
4. Large quantities and/or higher temperature will decrease the usable life or pot life.
5. Apply pressure to the assembly by clamping for 5 hours or until handling strength is obtained.
6. Full cure will be obtained after 72 hours at 25°C (77°F). Heat can be used to accelerate the curing process.

## Storage & Handling

Storage Temperature	5 to 25°C (41 to 77°F)
---------------------	------------------------

## Contact Permabond:

- Americas +1 732 868 1372
- US 800-640-7599
- Asia + 86 21 5773 4913
- Europe +44 (0) 1962 711661
- UK 0800 975 9800
- Deutschland 0800 111 388
- France 0805 111 388

[info.americas@permabond.com](mailto:info.americas@permabond.com)

[info.europe@permabond.com](mailto:info.europe@permabond.com)

[info.asia@permabond.com](mailto:info.asia@permabond.com)

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® program.