# Epibond® 100 A/C High Temperature Epoxy Structural Adhesive

## Product Description

Epibond® 100 A/C is an extrudable, two-component, heat curing epoxy structural adhesive designed for service temperatures up to 300°F (149°C). This product is suitable for bonding a wide variety of materials such as metals, composites and many other dissimilar substrates. The combination of high strength and high hot/wet $T_g$ performance makes this adhesive well suited for aerospace and other demanding applications. Epibond® 100 A/C contains 5 mil (125 micron) spacer beads to help provide the very uniform bond line required in high stress areas.

## Features

- Service temperature up to 300°F (149°C)
- High tensile shear strength
- High Dry / Wet $T_g$
- Resistant to amine blush
- High bond-line thickness tolerance
- Good chemical and environmental resistance
- Gap-filling thixotropic paste
- 2:1 mix ratio by volume
- No SVHC as defined under REACH*

*Does not intentionally contain any Substances of Very High Concern (SVHC) for authorization as published by the European Chemicals Agency (ECHA) pursuant to Article 59 REACH as of October 15, 2014

## Typical Properties*

| Property | Epibond® 100 A Resin | Epibond® 100 C Hardener | Mixed Adhesive | Test Method |
|---|---|---|---|---|
| Appearance | Off-white | Amber | Off-white | Visual |
| Density g/cm$^3$ | 1.16 | 1.0 | 1.0 | ASTM D891 |
| Viscosity at 77ºF (25°C), cP | Semi-Paste | Paste | Thixotropic Paste | ASTM D2196 |

*Typical properties are based on Huntsman's test methods. Copies are available upon request.

# Processing

## Pretreatment

Substrates to be bonded should be properly surface treated and be free from contaminants.

## Mixing

Mix both components thoroughly for several minutes until a homogeneous mixture is obtained, or dispense from a 2:1 200 mL or 50 mL dual barrel cartridge. For 200 mL cartridges, use a Semmixer (TAH) 9.5-mm dia. x 18-element spiral mixing nozzle or equivalent. For 50 mL cartridges, use a Semmixer 6.35-mm dia. x 20- element spiral mixing nozzle or equivalent.

Under normal temperature conditions according to the standard mix ratio this material has a working time of approximately 120 - 140 minutes.

## Mix Ratio

| Product | Parts by weight | Parts by volume |
|---|---|---|
| Epibond® 100 A Resin | 100 | 2 |
| Epibond® 100 C Hardener | 44 | 1 |

## Application

The mixed adhesive should be spread with a spatula to the suitably pretreated dry joint surfaces. A layer of adhesive 0.004 to 0.012 inches (0.1 to 0.3 mm) thick will normally provide the maximum lap shear strength. This adhesive, however, has been designed to be effective in layers up to 0.12 in. (3 mm). Components to be bonded should be assembled and clamped as soon as the adhesive has been applied. Even contact pressure throughout the joint area during cure will ensure optimum performance.

## Handling Strength

Measured by lap shear strength with PPA and primed Aluminum at RT, in psi (MPa)

| Cure time, h / Temp. | 150°F (66°C) | 158°F (70°C) | 167°F (75°C) |
|---|---|---|---|
| 0.5 | NA* | 640 (4.4) | NA |
| 1.00 | 1650 (11.37) | 3350 (23.0) | 3570 (24.6) |
| 1.50 | 2680 (18.5) | NA | NA |

*NA: not tested

### Processing Data

| Parameter | Value |
|---|---|
| Gel time, 100 g, @ 77°F, min | > 180 |
| Typical Cure Cycle | 1 h at 150 - 158°F + 3 - 5 h at 200 - 275°F |

## Typical Physical Properties

Unless otherwise stated, the data were determined with typical production batches using standard test methods. They are typical values only, and do not constitute a product specification.

The following properties were determined on a substrate of phosphoric acid anodized and primed aluminum. The cure schedule was 1 hour at 150°F (65°C) plus 5 hours at 200°F (93°C).

| Property | Test Method | Value |
|---|---|---|
| Tensile lap shear strength, psi<br>at 77°F (25°C)<br>at 200°F (93°C)<br>at 300°F (149°C)<br>at 350°F (177°C) | ASTM D1002 | <br>4,400<br>3,600<br>2,200<br>990 |
| T-Peel strength*, pli (N/mm) | ASTM D1867 | 5 (0.87) |
| $T_g$, DMA, °C<br>Dry as cured<br>Wet† | ASTM D7028 | <br>130<br>123 |
| Tensile strength at 77°F (25°C), psi | ASTM D638 | 7,300 |
| Elongation at break, % | ASTM D638 | 4.4 |
| Tensile modulus, ksi | ASTM D638 | 430 |
| Hardness, Shore D | ASTM D2250 | 82 |
| Flexural strength, psi | ASTM D790 | 12,100 |
| Flexural modulus, ksi | ASTM D790 | 302.6 |
| Compressive strength at 77°F (25°C), psi | ASTM D695 | 12,200 |
| Shear Modulus G', ksi<br>at 77°F (25°C)<br>at 140°F (60°C)<br>at 194°F (90°C)<br>at 284°F (140°C) | ASTM D5279 | <br>142<br>119.6<br>91.9<br>2.3 |

*At 77°F (25°C), 20-mil anodized & primed Al, 15-mil bond line.
†After 42-day at 145°F at 85% RH.

## Chemical Resistance

| Property | Weight Absorption after 24 h Immersion, % |
|---|---|
| Aviation gasoline 100LL | 0.03 |
| Jet-A | 0.05 |
| TKS 406B | 0.00 |
| Skydrol 500B-4 | 0.00 |
| Turbo oil 2380 | 0.01 |
| Royco 756A | 0.04 |
| X-IT Carbon Remover & Cleaner | 0.09 |

## Storage

**Epibond® 100 A/C** should be stored in a dry place in its original sealed container at a temperature between 2°C and 40°C (36°F and 104°F). Tightly reseal containers after each use. Under these storage conditions, the product has a shelf-life of **18 months** (from date of manufacture). The components should not be exposed to direct sunlight.

## Precautionary Statement

Huntsman Advanced Materials Americas LLC maintains up-to-date Safety Data Sheets (SDS) on all of its products. These sheets contain pertinent information that you may need to protect your employees and customers against any known health or safety hazards associated with our products. Users should review the latest MSDS to determine possible health hazards and appropriate precautions to implement prior to using this material.

**First Aid!**
Refer to SDS as mentioned above.

**KEEP OUT OF REACH OF CHILDREN**

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