

EPIBOND® 315 High Temperature Adhesive

Product Description

EPIBOND® 315 A/B Adhesive is an extrudable, two-component, room temperature curing epoxy adhesive designed for service temperatures up to 400°F (204°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 lap shear and compressive strength makes this adhesive well suited for aerospace structures requiring a liquid shim. EPIBOND® 315 A/B offers a rapid build-up of strength with an easy to process mix ratio.

Features

- Ideal for bonding metals and composites
- Room temperature cure
- High lap shear and compressive strength
- Maximum service temperature up to 400°F (204°C)
- Resistant to environmental degradation / aging
- Low Outgassing per NASA standard
- Contains 0.005" spacer beads
- Convenient 2:1 volumetric mix ratio for cartridges or meter mix dispensing

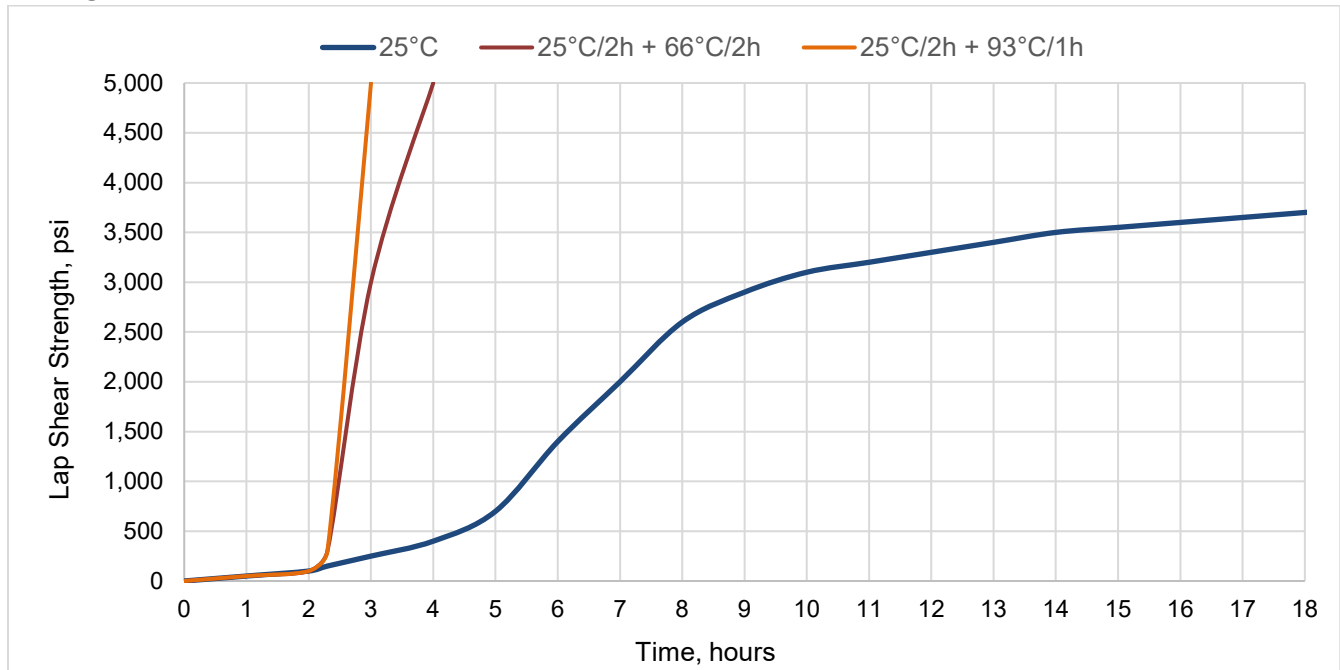
Processing Guidelines

- Substrates should be properly surface treated and be free from any contaminants.
- Mix both components thoroughly for several minutes until a homogeneous mixture is obtained.
- Mixing with a centrifugal mixer such as a FlackTek, Hauschild, or Thinky mixer can improve results. Total mixing time at 2000 rpm should be kept below 1 minute to avoid excessive heating.
- Dispensing from a 2:1 dual barrel cartridge through a static mixer is the preferred method.
- The mixed adhesive should be applied to both dry joint surfaces with a spatula.
- 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. However, this adhesive has been specifically designed to be effective in layers of up to 0.12 in. (3 mm).
- The 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.

Processing Information

Parameter	Value		
Mix ratios	100:62 Per Weight		2:1 Per Volume
Mixing color indicator	Resin (A): Off-White	Hardener (B): Dark Gray	Mixed: Gray
Viscosity at 1/s shear rate	A: 650,000	B: 165,000	Mixed: 300,000
Sag/Slump Test [ASTM D2202]	No Sag		
Static Mixer / Extrusion rate at 80psi	0.50in diameter, 24 element ... 38 g/min		
	0.44in x 0.44in width, 26 element ... 44 g/min		
Recommended Cure Schedules	5 days at 77°F (25°C)		
	77°F/ 2-3 hours + 150°F (66°C) / 1-2 hours		
	77°F/ 2 hours + 200°F (93°C) / 45-60 minutes		
	77°F/ 3 hours + 250°F (121°C) / 30-45 minutes		
	77°F/ 3 hours + 300°F (149°C) / 20-30 minutes		
Working time (within nozzle)	60 min within nozzle, 30 min for 100g mass		
Gel time at 77°F (25°C)	20g / 90 min; 50g / 75 min; 100g / 45 min		
Handling time at 77°F (25°C)	2,000psi in 7 hours; 4,000psi in 24 hours		

Strength Development at Room Temperature. Anodized & Primed Aluminum



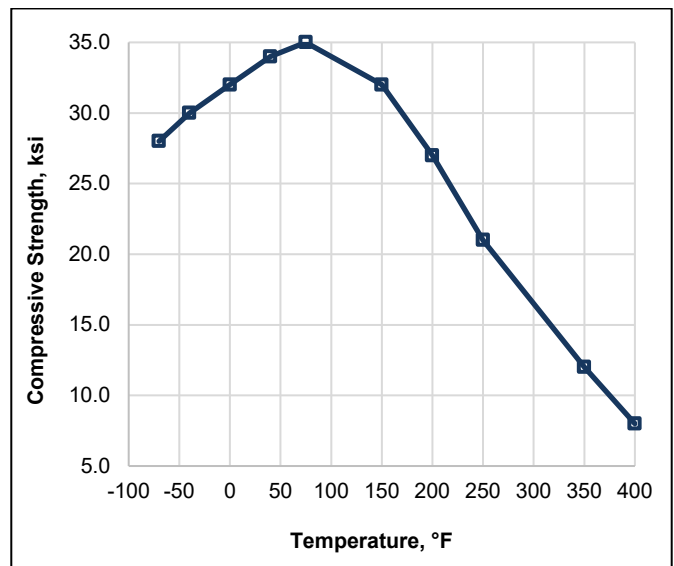
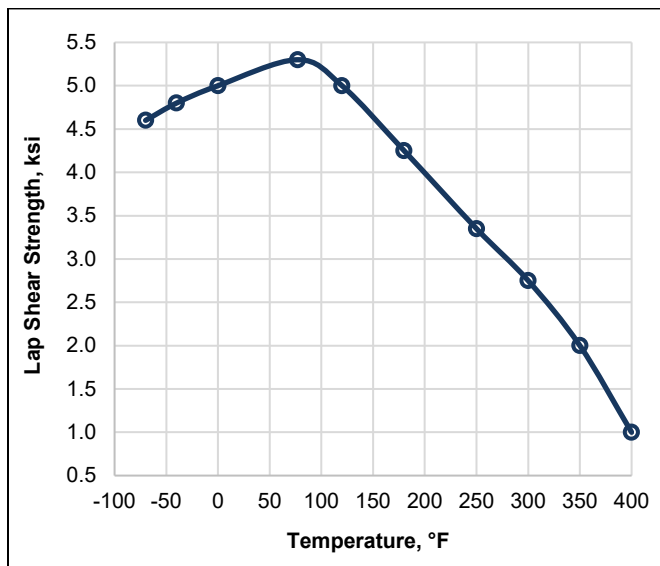
Typical Physical Properties

Unless otherwise stated, the data were determined with typical production batches using standard test methods, and the specimens cured for 5 days at 77°F (25°C). These are typical values and should not be used to establish product specifications.

Physical Properties

Property	Condition	Test Temp	Value
Tensile lap shear strength, psi (MPa) [ASTM D1002]	Aluminum 2024*, Cured 150°F (66°C) for 1-2 hours	-67°F (-55°C)	4,500
		77°F (25°C)	5,500
		180°F (82°C)	4,250
		250°F (121°C)	3,350
		300°F (149°C)	2,750
		350°F (177°C)	2,000
		400°F (204°C)	1,000
Compressive, psi (MPa) [ASTM D695]	Aluminum 2024*, Cured 77°F for 5 days	77°F (25°C)	5,000
	Carbon Fiber Composite, blasted 200 grit	77°F (25°C)	4,500
	Steel, Bare	77°F (25°C)	4,000
Compressive, psi (MPa) [ASTM D695]	Ultimate Strength	-67°F (-55°C)	30,000
		77°F (25°C)	35,000
		250°F (121°C)	25,000
		350°F (177°C)	12,000
Compressive, psi (MPa) [ASTM D695]	2% Offset Yield	77°F (25°C)	14,000
	Modulus	77°F (25°C)	650,000
T-Peel, pli (N/mm) [ASTM D3167]	Aluminum 2024*, 15 mil bond thickness	77°F (25°C)	12
Hardness, Shore D [ASTM D2240]	--	77°F (25°C)	85
Cured Density, g/cc	--	77°F (25°C)	1.35

*Aluminum 2024 T3 Clad, Anodized and Primed



Thermal Properties

Property	Condition	Test Temp	Value	
Thermal Analysis	Glass transition temperature, Tg, (DMA E' onset), °C	Cured 1 hour at 200°F (93°C)	--	124
	CTE	Cured 1 hour at 200°F (93°C)	--	α1: TBD α2: TBD
Resistance to Thermal & Chemical Exposure	Lap Shear Strength, psi *Aluminum 2024	30 days in Water at 77°F (25°C)	77°F (25°C)	5,000
		7 days in Hydraulic Fluid at 120°F (49°C)	77°F (25°C)	5,000
		7 days in Lubrication Oil at 120°F (49°C)	77°F (25°C)	5,000
		7 days in Jet A at 77°F (25°C)	77°F (25°C)	5,200
	Tg (DMA E' onset), °C	After 7 days at 160°F(71°C)/85%RH	--	TBD
		30 days in Water at 77°F (25°C)	--	TBD

Storage

EPIBOND® 315 A Resin and **EPIBOND® 315 B Hardener** should be stored in a dry place in their original sealed containers. When stored at a temperature between **2°C and 25°C (36°F and 77°F)** the shelf life is **24 months** from date of manufacture. When stored at a temperature between **18°C and 40°C (64°F and 104°F)**, the shelf life of both components is **12 months** from date of manufacture. Tightly re-seal all containers immediately after use to prevent contamination.

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

FOR PROFESSIONAL AND INDUSTRIAL USE ONLY

Important Legal Notice

Sales of the product described herein ("Product") are subject to the general terms and conditions of sale of either Huntsman Advanced Materials LLC, or its appropriate affiliate including without limitation Huntsman Advanced Materials (Europe) BVBA, Huntsman Advanced Materials Americas Inc., or Huntsman Advanced Materials (Hong Kong) Ltd. ("Huntsman"). The following supercedes Buyer's documents.

Huntsman warrants that at the time and place of delivery all Products sold to Buyer shall conform to the specifications provided to Buyer by Huntsman.

While the information and recommendations included in this publication are, to the best of Huntsman's knowledge, accurate as of the date of publication, NOTHING CONTAINED HEREIN (EXCEPT AS SET FORTH ABOVE REGARDING CONFORMANCE WITH SPECIFICATIONS PROVIDED TO BUYER BY HUNTSMAN) IS TO BE CONSTRUED AS A REPRESENTATION OR WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, NONINFRINGEMENT OF ANY INTELLECTUAL PROPERTY RIGHTS, OR WARRANTIES AS TO QUALITY OR CORRESPONDENCE WITH PRIOR DESCRIPTION OR SAMPLE, AND THE BUYER ASSUMES ALL RISK AND LIABILITY WHATSOEVER RESULTING FROM THE USE OF SUCH PRODUCT, WHETHER USED SINGLY OR IN COMBINATION WITH OTHER SUBSTANCES.

No statements or recommendations made herein are to be construed as a representation about the suitability of any Product for the particular application of Buyer or user or as an inducement to infringe any patent or other intellectual property right. Buyer is responsible to determine the applicability of such information and recommendations and the suitability of any Product for its own particular purpose, and to ensure that its intended use of the Product does not infringe any intellectual property rights.

The Product may be or become hazardous. The Buyer should obtain Material Safety Data Sheets and Technical Data Sheets from Huntsman containing detailed information on Product hazards and toxicity, together with proper shipping, handling and storage procedures for the Product, and should comply with all applicable governmental laws, regulations and standards relating to the handling, use, storage, distribution and disposal of, and exposure to the Product. Buyer shall also take all steps necessary to adequately inform, warn and familiarize its employees, agents, direct and indirect customers and contractors who may handle or be exposed to the Product of all hazards pertaining to and proper procedures for safe handling, use, storage, transportation and disposal of and exposure to the Product, and the containers or equipment in which the Product may be handled, shipped or stored.

EPIBOND is a registered trademark of Huntsman Corporation or an affiliate thereof in one or more, but not all countries.

© 2023 Huntsman Advanced Materials Inc.

Main Offices:

Huntsman Corporation
10003 Woodloch Forest Dr
The Woodlands, TX 77380
888-564-9318

Huntsman Advanced Technology Center
8600 Gosling Rd.
The Woodlands, TX 77381
281-719-7400