

Advanced Materials**Epibond[®] 1590-3mm A/B**

EPOXY ADHESIVE

- High strength
- Non-slumping up to 0.12 in. (3mm)
- Good environmental stability

DESCRIPTION :

Epibond[®] 1590-3mm A/B epoxy adhesive is a two-component liquid shim material that is easy to handle and features good resistance to slumping. The cured epoxy adhesive has high compressive strength after curing. Epibond[®] 1590-3mm A/B epoxy adhesive is toughened, has a wide range of service temperatures and exhibits good chemical environmental resistance and environmental stability.

TYPICAL PROPERTIES AS RECEIVED :

<u>Property</u>	<u>1590-3mm A Resin</u>	<u>1590-3mm B Hardener</u>	<u>1590-3mm A/B System</u>	<u>Test Method</u>
Color	Ivory White	Dark Gray	Gray	Visual
Density, g/cc.	1.27	0.98	1.10	ASTM-D-792
Viscosity, cP at 77°F (25°C)	60,000	200,000	200,000	ASTM-D-2196
Gel time, 100 gms at 77°F (25°C), minutes	--	--	50	ASTM-D-2471

PRETREATMENT :

The strength and durability of a bonded joint are dependent on proper treatment of the surfaces to be bonded. At the very least, joint surfaces should be cleaned with a good degreasing agent such as acetone or proprietary degreasing agent in order to remove all traces of oil, grease and dirt. Alcohol, gasoline or paint thinners should never be used. The strongest and most durable joints are obtained by either mechanically abrading, chemically etching ("pickling") or anodizing the degreased surfaces. Abrading should be followed by a second degreasing treatment.

MIX RATIO :

To 100 parts by weight of Epibond[®] 1590-3mm A resin, add 41.5 parts by weight of Epibond[®] 1590-3mm B hardener (100:56 by volume). Mix both components thoroughly for several minutes until a homogeneous mixture is obtained.

APPLICATION OF ADHESIVE :

The resin/hardener mix should be applied with a spatula to the pretreated and dry joint surfaces. A layer of adhesive 0.002 to 0.004 in. (0.05 to 0.1mm) thick will normally provide the maximum lap shear strength, however this adhesive has been designed to be effective in layers up to 0.12 in. (3mm). The joint components should be assembled and clamped as soon as the adhesive has been applied. An even contact pressure throughout the joint area during cure will ensure optimum performance.

MECHANICAL PROCESSING :

Specialist firms have developed metering, mixing and spreading equipment that enables the bulk processing of adhesive. Huntsman Advanced Materials will be pleased to advise customers on the choice of equipment for their particular needs.

EQUIPMENT MAINTENANCE :

All tools should be cleaned before adhesives residues have had time to cure. The removal of cured residues is a difficult and time-consuming operation.

If solvents such as acetone are used for cleaning, operatives should take the appropriate precautions and, in addition, avoid skin and eye contact.

CURE SCHEDULE :

Cure for 5 hours @ 158°F (70°C).

TYPICAL CURED PROPERTIES (Not for specification purposes)

<u>Test</u>	<u>Result</u>	<u>Test Method</u>
Lap Shear Strength , psi (MPa) on CAA/BR127 primed aluminum		EN2243-1
at -67°F (-55°C)	3,390 (23.4)	--
at 75°F (23°C)	4,550 (31.4)	--
at 176°F (80°C)	3,230 (22.3)	--
at 248°F (120°C)	1,510 (10.4)	--
Peel Strength , pli (N/26mm) @ 176°F (80°C)	16.4 (72.7)	
Compression Strength , ksi (MPa)		DIN D695
at -67°F (-55°C)	38.8 (267.5)	--
at 75°F (23°C)	29.2 (201.5)	--
at 176°F (80°C)	17.1 (117.9)	--
at 248°F (120°C)	10.1 (69.6)	--
Compression Modulus , ksi (MPa)		ISO 604
at -67°F (-55°C)	360.2 (2,483)	--
at 75°F (23°C)	199.2 (1,373)	--
at 176°F (80°C)	125.8 (867.5)	--
at 248°F (120°C)	21.9 (151)	--
Metal to Metal Peel Load , lb. (N) Determined on CAA/BR127 primed aluminum (test speed 75mm/min).		EN2243-2
at -67°F (-55°C)	4.3 (19.2)	--
at 75°F (23°C)	16.4 (72.9)	--
at 248°F (120°C)	5.7 (25.3)	--

Lap Shear Strength, psi (MPa)

Determined on CAA/BR127 primed aluminum

Test Method

EN2243-1.

Effect of Environmental Conditioning

Conditioning	Aging Conditions	Test Temperature	Results
Dry Heat	68 hr. @ 248°F (120°C)	248°F (120°C)	2,200 (14.9)
Water	Equilibrium @ 158°F (70°C)	176°F (80°C)	2,400 (16.5)
Solvent	1 hr. @ 75°F (23°C)	248°F (120°C)	2,100 (14.2)

Compression Strength, ksi (MPa)

Determined on 0.39 x 0.39 x 0.39 in. (10 x 10 x 10mm) cubic Samples @ test speed of 0.5mm/min)

DIN53454

Effect of Environmental Conditioning

Conditioning	Aging Conditions	Test Temperature	Results
85% R/H	Equilibrium @ 158°F (70°C)	-67°F (-55°C)	40.3 (278)
		75°F (23°C)	29.9 (206)
		176°F (80°C)	14.4 (99)

Compression Modulus, ksi (MPa)

Determined on 0.39 x 0.39 x 0.39 in. (10 x 10 x 10mm) cubic

Test Method

DIN53454

Samples @ test speed of 0.5mm/min)

Effect of Environmental Conditioning

Conditioning	Aging Conditions	Test Temperature	Results
85% R/H	Equilibrium @ 158°F (70°C)	-67°F (-55°C)	294.6 (2,031)
		75°F (23°C)	170.4 (1,175)
		176°F (80°C)	92.4 (637)

Peel Load, psi (MPa)

Determined on CAA/BR127 primed aluminum

Test Method

EN2243-2.

Effect of Environmental Conditioning

Conditioning	Aging Conditions	Test Temperature	Results
Dry Heat	168 hr. @ 248°F (120°C)	75°F (23°C)	4,200 (29)

**STORAGE/
SHELF LIFE :**

Epoxy resins and hardeners should be stored in a dry place in their original, sealed containers at temperatures from 60-100°F (16-38°C). Material temperatures should be above 65°F (18°C) when mixing. After use, tightly reseal containers.

Under these conditions, epoxy resins and hardeners will remain useable for 12 months from date of shipping from Huntsman.

CAUTION :

Huntsman Advanced Materials Americas Inc. maintains up-to-date Material Safety Data Sheets (MSDS) 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. Copies of the latest MSDS may be requested by calling our customer service group at 800-367-8793 or emailing your request to adhesives_group@huntsman.com.

FIRST AID !

Eyes and skin: Flush eyes with water for 15 minutes. Contact a physician if irritation persists. Wash skin thoroughly with soap and water. Remove and wash contaminated clothing before reuse.

Inhalation: Remove subject to fresh air.

Swallowing: Dilute by giving water to drink and contact a physician promptly. Never give anything to drink to an unconscious person.

KEEP OUT OF REACH OF CHILDREN**FOR PROFESSIONAL AND INDUSTRIAL USE ONLY**

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