

Advanced Materials

Epocast® 52-A/B

EPOXY LAMINATING SYSTEM

- Designed for Composite Repairs
- Good Hot-Wet Strength
- Good Wetting, Low Viscosity

DESCRIPTION :

Epocast® 52-A/B epoxy laminating system is a two-part material formulated for service up to 350°F (177°C). Well suited for fabrication and repair of graphite composites, the laminating system combines low temperature vacuum bag curing capability with good hot-wet strength. Epocast® 52-A/B epoxy laminating system is qualified to specifications including: BMS 8-301, Class 1, Grade 2; AIMS 08-01-002-01; and AIMS 08-02-002-01.

TYPICAL PROPERTIES AS RECEIVED :

<u>Property</u>	<u>52-A Resin</u>	<u>52-B Hardener</u>	<u>52-A/B System</u>	<u>Test Method</u>
Color	Blue	Amber	Amber	Visual
Density, g/cc.	1.20	1.00	1.10	ASTM-D-792
Viscosity, cP at 77°F (25°C)	14,000	1,500	5,500	ASTM-D-2196
Gel time, 100 gms at 77°F (25°C), minutes	--	--	60	ASTM-D-2471
Shelf life at 77°F (25°C), unopened, months	6	6	--	--
at 40°F (5°C), unopened, months	12	12	--	--

MIX RATIO :

To 100 parts by weight of Epocast® 52-A resin, add 41 parts by weight of Epocast® 52-B hardener (2:1 by volume). Mix both components thoroughly for several minutes until a homogeneous mixture is obtained. Mix carefully to minimize air entrapment. Mix only the amount of material that can be used within 40 minutes. Heat buildup during or after mixing is normal. Allowing quantities greater than 250 grams to gel can produce excessive exotherm that may cause product decomposition and generate toxic fumes. Spreading material to a shallow tray (reducing mass/surface ratio) will minimize heat build up and extend gel time. Mixing smaller quantities will minimize the heat buildup.

CURE SCHEDULE :

3 hours at 150°F (66°C) or 2 hours at 200°F (93°C).

TYPICAL CURED PROPERTIES* (Not for specification purposes)

<u>Test</u>	<u>Result</u>	
	350 (177)	
Maximum service temperature, °F (°C)	150°F* Cure	200°F Cure*
Short Beam Shear Strength, at 77°F (25°C), Ksi (MPa)		7.7 (53.1)
at 176°F (80°C)/wet		7.4 (51)
Tensile Strength (±45) at -65°F (-54°C), Ksi (MPa)	28 (193)	27 (186.2)
at 160°F (71°C)/wet	17 (117)	18 (124)
Compression Interlaminar Shear Strength, at -65°F (-54°C), Ksi (MPa)	9.7 (66.8)	10.5 (72.4)
at 77°F (25°C)	7.7 (53.1)	8.6 (59.3)

* 150°F=66°C; 200°F=93°C

**36% resin content on T300 3KPW. Wet = 10 days at 140°F (60°C)/85% RH.

	<u>Ultimate Strength</u>	<u>Shear Modulus (x10⁶)</u>
Inplane Shear Strength/Modulus		
Tested at 176°F (80°C), psi (MPa)		
after water soak 2 weeks at 158°F (70°C)	10,500 (72.4)	0.835 (0.006)
after 1000 hours Jet A soak at RT	11,600 (80)	0.358 (0.002)
after 1000 hours Skydrol soak at 158°F (70°C)	12,480 (86)	0.377 (0.003)
(no immersion) 73°F (23°C)/50% RH	10,390 (71.6)	0.372 (0.002)
Tested at 248°F (120°C), psi (MPa)		
water soak 2 weeks at 158°F (70°C)	7,980 (55)	0.784 (0.005)
(no immersion) 73°F (23°C)/50% RH	8,330 (57.4)	0.285 (0.002)
Tested at room temperature, psi (MPa)		
water soak 2 weeks at 158°F (70°C)	13,000 (89.6)	0.465 (0.003)
MEK soak 1 hour	14,990 (103.3)	0.509 (0.003)
(no immersion) 73°F (23°C)/50% RH	13,550 (93.4)	0.462 (0.003)
	(All above average of 3 specimens)	
Tested at 73°F (22°C), psi (MPa)		
40 hours at 73°F (23°C)/50% RH	11,940 (82.3)	0.731 (0.005)
Tested at 176°F (80°C) Wet, psi (MPa)		
96 hours water boil	9,050 (62.4)	0.451 (0.003)
	(Two above average of 5 specimens)	
Glass Transition Temperature		
Cure: 3 hours at 150°F (55°C)		
plus 1 hour at 350°F (177°C), °F (°C)	310 (155)	
Cure: 3 hours at 150°F (55°C)	262 (133)	

STORAGE/ Epoxy resins and hardeners should be stored in a dry place in their original, sealed
SHELF LIFE : 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 6 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

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