Rhino® 1310T Resin
Epoxy Composites
Data Sheet

Resin – Part # 1310T
Hardeners – Part # 3102, 3103, 3138, 3191, 3136R-1

DESCRIPTION: A non-draining, 100% solids, no VOCs epoxy system for producing fiber reinforced epoxy composites. A single resin (Rhino® 1310T) with available choices of curing agents provides the maximum flexibility for a variety of fiber reinforced applications. A wide variety of Rhino® hardeners are available to use with Rhino® 1310T epoxy resin, see chart below.

TYPICAL USES:
- Infrastructure seismic upgrades (concrete, beams, columns, pipes)
- Carbon fiber or glass filament winding (pressure tanks, vessels)
- Fatigue resistant FRP manufactured parts
- Composite tooling

FEATURES & BENEFITS:
- 100% solids, no VOCs
- Fast wet-out of fiberglass reinforcements with minimal drainage from laminate
- Flexible wrap conforms to any shape
- Reduced installation time
- Less weight / lower thermal expansion
- Greater fatigue resistance / greater strength and reinforcement

PHYSICAL PROPERTIES: Liquid and cured physical properties of Rhino® 1310T with Rhino® hardeners:

Rhino® 1310T (Composite Resin) with:	Hardeners				
	Rhino® 3102	Rhino® 3103	Rhino® 3138	Rhino® 3191	Rhino® 3136R-1
Viscosity, cps	3460	2360	2460	2900	2500
Parts Hardener by Weight	22	22	22	43	20
Mix Ratio by Volume	4:1	4:1	4:1	2:1	5:1
Gel Time Min,150gr	12 – 15	30 – 35	50 – 60	60 – 70	25 – 30
HDT, °F	190	190	240	175	265
Set Time, Hrs at 77°F (25°C)	2	4	5	4	3
Cure Time, Hrs at 130°F (54°C)	2	3	4	3 – 4	3 – 4
Hardness, Shore D (24 hr room temp cure)	80	78	80	75	85
Elongation, %	4.5	4.5	4.0	5.0	2.5

All listed hardeners cure very rapidly when heat cured at temperature of 120 – 140˚F.

HARDENER RECOMMENDATIONS (Epoxy Composites):
All hardeners reach sufficient strength for return to service or demolding after an overnight ambient cure. The fastest Rhino hardener, Rhino® 3102, is useful for winter applications or for mixing in smaller batches. Rhino® 3103 is the standard 30-minute system hardener used for 4:1 volume mixing applications. Rhino® 3138 is used in high temperature applications (up to 240˚F) and is 4:1 by volume which is also useful in hot weather or for large areas. Rhino® 3191 is the standard 1 hour, general purpose hardener and may be certified to NSF Standard 61 for potable water. Rhino® 3136R-1 is used for composite tooling.

Rhino® hardeners: Rhino® 3102, Rhino® 3103 and Rhino® 3191 are DOT not regulated / DOT non-corrosive, minimizing hazardous materials shipping issues.

(continued)

CURE SCHEDULE FOR RHINO® 1310T RESIN :

Allow the composite to cure at the recommended temperature as listed in the physical properties chart (above). In the case of all listed hardeners, allow at least 6 – 8 hours at ambient (>65°F) temperature or 2 – 3 hours at 130°F before attempting to return the composite to service. In colder weather (less than 65°F) allow additional time for the composite to cure.

After the recommended elevated termperature cure, all systems may be exposed to the listed service temperatures. In all cases, an elevated temperature cure of 2 – 4 hours at 120°F – 140°F assures the highest quality end product.

TYPICAL MECHANICAL PROPERTIES:

Rhino® 1310T resin post cured at 130°F for 4 hours with all listed hardeners. For reference purposes only, these properties are measured as a composite using A-260 unidirectional e-glass, glass to resin ratio of 60:40.

PROPERTY	RESULT	TEST METHOD
Tensile Strength (psi)	>30,000	ASTM D-638
Flexural Strength (psi)	>32,000	ASTM D-790
Compressive Strength (psi)	>20,000	ASTM D-695
Izod Impact Strength (ft/lb/in)	>40	ASTM D-256A
Heat Deflection Temp	>170°F	Rhino

HOW SUPPLIED: Rhino® 1310T Epoxy System for Composite Applications with listed hardeners are available in 5 gallon pails, 55 gallon drums and 265 gallon IBC's.

SAFETY PRECAUTIONS: Health Considerations: Consult the Rhino Linings® Safety Data Sheets (SDS)

This chemical system requires the use of proper safety equipment and procedures. Please follow the Rhino Linings® product SDS and Safety Manual for detailed information and handling guidelines.

For Your Protection:

The information and recommendations in this publication are, to the best of our knowledge, reliable. Suggestions made concerning the products and their uses, applications, storage and handling are only the opinion of Rhino Linings Corporation. Users should conduct their own tests to determine the suitability of these products for their own particular purposes and of the storage and handling methods herein suggested. The toxicity and risk characteristics of products made by Rhino Linings Corporation will necessarily differ from the toxicity and risk characteristics developed when such products are used with other materials during a manufacturing process. The resulting risk characteristics should be determined and made known to ultimate end-users and processors. Because of numerous factors affecting results, **Rhino Linings Corporation makes no warranty of any kind, express or implied,** other than that the material conforms to its applicable current Standard Specifications. Rhino Linings Corporation hereby disclaims any and all other warranties, including but not limited to those of merchantability or fitness for a particular purpose. No statements made herein may be construed as a representation or warranty. The liability of Rhino Linings Corporation for any claims arising from or sounding in breach of warranty, negligence, strict liability, or otherwise shall be limited to the purchase price of the material.

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Rhino Linings Corporation
9747 Businesspark Avenue, San Diego, CA 92131
858-450-0441 • Fax 858-450-6881
1-800-422-2603
www.rhinolinings.com