

LCWR250

- 250°F Cure Filament Winding System
- Single component, exceptional shelf life, quick cure
- Excellent translation of properties from fiber to composite
- Compatible with wide variety of sizing chemistries

Description:

LCWR250 single component, 250°F cure, epoxy resin system for filament winding applications. LCWR250 has high fracture toughness, strength and modulus allowing significant reduction in part weights and material usage over conventional systems while achieving required strength values. The system can give high Tg values upon post cure at temperatures above 300°F.

Typical Properties as Received:

Property	Value	Test Method
Density, g/cc	1.1	ASTM D-1622
Color	Translucent White	Eyesight
Viscosity, cP, at 25°C	8835	Brookfield
Viscosity, cP, at 50°C	800	Brookfield
Viscosity, cP at 75°C	160	Brookfield

Processing Parameters:

It is recommended that the resin be warmed in a bath to temperatures above 115°F but not above 145°F so as to reduce viscosity and aid adequate wet out of fiber. Recommended resin weight percent in the wound part is between 20% and 35% for optimal properties. The precise resin content must be determined keeping in mind the appropriate fiber, sizing and part geometry.

Cure Schedule:

Typical cure schedule is 1.5 hours at 250°F followed by a post cure at 300°F if high Tg values (300°F+) are required. Typical pot life at temperatures up to 140°F exceeds 8 hours. The material MUST NOT EXCEED 170°F in bulk form as this will cause an aggressive exothermic reaction.

For good interlaminar bonding, uniform wet out and compaction of the wound part, a dwell stage at 190°F for 1 hour is recommended, giving the resin time to move between laminae and consolidate.

For thick/large parts, it is recommended that the resin content be kept below 35%. Further, it is recommended that the part be first cured at 210°F and the exothermic peak be tracked with the aid of a thermocouple. After a drop in temperature following the peak, the part may immediately be ramped to higher temperatures to aid full cure and also increase the Tg.

Parts up to 0.25" thick and with resin content under 30% may be cured directly at 275°F with or without the dwell stage at 190°F as determined by the user.

Typical Properties Once Cured*:

Property	Value	Test Method
Weight gain,%, after 24 hour immersion in water at 77°F (25°C)	<1	ASTM D-543
Tg (E') (°F)	250-360	ASTM D-7028

*Properties are presented for purpose of comparison, no guarantee is extended or implied regarding properties.

Long Term Storage:

LCWR250 should be stored in a dry place, sealed in its original container. If stored at -40°F (-40°C), the product will remain useable for 12 months after the date of shipping from Lattice Composites. If stored at 0°F (-18°C), the product will remain useable for 6 months after the date of shipping from Lattice Composites.

Typical shelf life of the material at 77°F is upwards of 2 months. If the material is kept on the shop floor longer than 2 weeks at a time, it is recommended that the material be refrigerated at temperatures not exceeding 40°F.

Transportation Requirements:

LCWR250 must be shipped refrigerated at temperatures not exceeding 44°F. Proper care must be taken to ensure that the material does not see temperatures in excess of 80°F for more than 2 hours or temperatures in excess of 100°F at any time.

Disposal:

Uncured LCWR250 is hazmat material and must be disposed off in accordance with local laws and regulations. Please see the SDS for more details. Cured, completely solidified and polymerized LCWR250 may be disposed off as solid waste. Any unused resin may be cured with at least 70 weight % reinforcement in order to avoid the risk of aggressive exotherms and smoke. Under no circumstances may the material be cured in bulk form without reinforcement as doing so may cause the material to burn and pose a fire hazard.

Precautions:

Lattice Composites ships all products with Safety Data Sheets (SDS). These sheets are compiled and maintained to allow all of Lattice Composites customers to protect their customers and employees against any known health or safety hazards. It is strongly suggested that users of our products review the appropriate SDS before use allowing them to make informed decisions about any necessary actions needed to protect themselves and their employees. Copies of the latest SDS for any product can be obtained by contacting our offices at (951) 826-1101.

It is also recommended that the user run a trial/experiment to determine gel time, exothermic characteristics and degree of adhesion for their specific application.

Disclaimer:

The values stated in this data sheet in no way constitute a guarantee or warranty of any kind. The values are obtained by averaging laboratory test results. The actual values that a customer will get depend upon individual processing and sample conditions. It is highly recommended that the user conduct their own experiments to ascertain properties.



LCWR250

Proper care should be taken at all times with regard to handling and use of this material. The purchaser and/or user should obtain Safety Data Sheets, containing information on hazards, toxicity, storage and handling, from Lattice Composites. The purchaser and/or user should ensure that all persons who will be in contact with products are trained regarding their use, storage and disposal. All persons using Lattice Composites products should use appropriate personal protective equipment. Lattice Composites accepts no responsibility or liability regarding any injury or damages resulting from the use of its products.

Frequently asked questions:

1. Can I cure bulk quantities of the material to dispose of it?

No, please see the disposal section of this document for further information. Contact Lattice Composites for further clarifications and safe ways of disposal.

2. How can the material be transported?

The material must be transported in refrigerated containers. The temperature must not exceed 44°F during shipping. Please see the "Transportation" and "Long term storage" sections of this documents for further clarification.

3. What is the maximum recommended temperature during winding?

140°F

4. What is the maximum resin by weight percent in the cured part?

The resin may not be used in parts exceeding 35% by weight of resin. Using the resin in higher resin content parts may cause excessive exotherms and undesired cracking. Contact Lattice Composites for your specific needs if outside the recommended window.

5. What sizing do you recommend for the fiber?

LCWR250 is compatible with most epoxy sized glass and carbon fibers

Note: For further clarifications on safe usage of the material, refer to the accompanying SDS sheet.