

OTR™

Olefin Thermoset Resin



Building
&
Transportation



Oil, Gas
&
Industrial



Offshore
&
Onshore



Water
&
Wastewater



PRODUCT DESCRIPTION

CTech-LLC® Olefin Thermoset Resins OTR™ have many applications but are most noted for use in highly demanding, harsh environments where high impact toughness is a critical success factor. CTech-LLC® Olefin Thermoset Resins OTR™ are designed to deliver the right combination of thermal and mechanical properties in an easy to process system. The ultra-low viscosity provides operational flexibility for achieving high filler loadings and the ability for infusing thick stacks while the wide curing range enables significant formulation flexibility and the ability to make larger parts. They offer excellent fatigue properties, low water absorption, exceptional corrosion and chemical resistance, defect-free thick castings and easy machining. CTech-LLC® Olefin Thermoset Resins OTR™ provide outstanding wear & crack resistance and high temperature stability required for reliable performance, and are objectively tougher than epoxy. These resins are an excellent replacement for metals or other polymer solutions and enable faster cycle times, lighter weight, and reduced total cost of ownership compared to traditional injection or compression molding.

In more niche applications, for example, oil and gas, these resins deliver reliable and exceptional performance where the need for drillability and mud stability is critical to success, along with the avoidance of pipe buckling under heavy loads. They are also excellent in thermal insulation applications.

ADVANTAGES

- Excellent Hardness and Scratch Resistance.
- Excellent Flexibility, and Impact Strength.
- Excellent Adhesion to Polar Substrates.
- Aliphatic Chemistry: Excellent Exterior Durability.
- Excellent Water, Chemical, Solvent and Stain Resistance.
- High Gloss & Clarity.
- Compatible with acrylic and polyester resins.

INSTALLATION PROCEDURE

Barcol hardness values are taken as an indication of surface cure. ASTM standards indicate that FRP equipment should have a Barcol hardness of at least 86% of the manufacturer's published value for each resin.

Experience indicates that Barcol hardness values are subject to a number of variables. In the case of a molded surface, these factors may be post cure, the curvature of a part or the use of one or more plies of synthetic surfacing veil. For non-molded resin surfaces, these factors may be paraffin wax, UV inhibitors, pigments, or other materials added to the resin. On a severely curved or irregular surface, an accurate Barcol hardness value may be impossible to obtain. In such cases, a flat sample using identical fabrication techniques should be monitored for cure during the manufacture of the actual part.

Experience indicates that Barcol hardness values of molded surfaces incorporating synthetic surfacing veil are less than the values of a comparable glass veil laminate. Reductions in Barcol hardness values of five units or more can be expected. Barcol hardness determination is used to check surface cure and is often accompanied by an acetone sensitivity test. The acetone sensitivity test is also valuable in judging cure when the use of the Barcol instrument is impractical. In this test, acetone solvent is liberally wiped over the test surface and allowed to evaporate. A tacky or soft surface during evaporation indicates under-cure.

APPLICATION

CTech-LLC® Olefin Thermoset Resins OTR™ are designed to deliver the performance characteristics that companies need to address their advanced material needs.

- **Exceptional Toughness:** High impact strength and resistance to crack propagation for long lasting parts with predictable life cycles.
- **Lightweight:** Densities near 1 g/cm³ are 10-15% lighter than comparable thermoset resins.
- **Excellent Hot/Wet Properties:** Extremely low water absorption of polyolefins combined with the thermal stability of thermosets.
- **Low Carbon Footprint:** Cradle-to-gate emissions 47% lower than standard epoxy resins.
- **Low Viscosity Resins:** Quick molding of complex shapes, high filler loadings, and low void content.

TECHNICAL DATA

	Unit	OTR™
Color	-	Straw colored
Physical state	-	Liquid
Equivalent weight	-	1700
Acid Value	%	<0.5
Viscosity *	cps	750-1000
Specific Gravity*	min	1.030
Flash point	°C	49.5

* temperature at 25°C

Mechanical Property

	Unit	OTR™
Compressive Strength	MPa	96
Compressive Modulus	MPa	2160
Tensile Strength	MPa	69
Tensile Modulus	MPa	2550
Elongation @ break	%	11
Flexural Strength	MPa	105
Flexural Modulus	MPa	2540
Fracture Toughness	MPa*m ^{0.5}	2.6
Shore D Hardness	-	86

STORAGE & SHELF LIFE

CTech-LLC® OTR™ is normally shipped in bulk from 60 °C to 80 °C and can be stored at 50-60 °C for ease of handling. CTech-LLC® OTR™ is susceptible to crystallization upon prolonged storage at normal ambient temperatures. It may be reconstituted by warming to 120-140

°F for 4-24 hours depending on the mass involved.

CAUTION

Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Use local and general exhaust ventilation in accordance with applicable industry guidelines. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment.

Do not breathe mist or vapor. Do not taste or swallow. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. When using, do not eat, drink or smoke. Use only outdoors or in a well-ventilated area. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Avoid

release to the environment. Observe good industrial hygiene practices. Store locked up. Keep away from heat, sparks and open flame. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Store in a cool, dry place out of direct sunlight. Store in original tightly closed container. Store in a well-ventilated place. Keep in an area equipped with sprinklers.

CTech-LLC®

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IMPORTANT NOTE:

Before using any CTech-LLC® product, the user must review the most recent version of the product's technical data sheet, material safety data sheet and other applicable documents, available at www.ctech-llc.com.

WARRANTY:

CTech-LLC® warrants its products to be free from manufacturing defects. Buyer determines suitability of product for use and assumes all risks. Buyer's sole remedy shall be limited to replacement of product. Any claim for breach of this warranty must be brought within one month of the date of purchase. CTech-LLC® shall not be liable for any consequential or special damages of any kind, resulting from any claim or breach of warranty, breach of contract, negligence or any legal theory. The Buyer, by accepting the products described herein, agrees to be responsible for thoroughly testing any application to determine its suitability before utilizing.