

# VER<sup>TM</sup>900

Bisphenol-A Epoxy Based Vinyl Ester Resin



Building  
&  
Transportation



Oil, Gas  
&  
Industrial



Offshore  
&  
Onshore



Water  
&  
Wastewater



## PRODUCT DESCRIPTION

CTech-LLC<sup>®</sup> VER<sup>TM</sup>900 is A Bisphenol a type Vinyl Ester Resin. CTech-LLC<sup>®</sup> VER<sup>TM</sup>900 provides excellent corrosion resistance to a broad range of organic and inorganic acids, alkalis, oxidizing chemicals and salt solutions etc. It also provides very good mechanical strength such as tensile and flexural while incorporated with reinforcement such as glass fiber, carbon fiber or kevlar fiber etc. CTech-LLC<sup>®</sup> VER<sup>TM</sup>900 is designed to provide superior toughness with excellent fatigue resistance due to high heat distortion temperature.

CTech-LLC<sup>®</sup> VER<sup>TM</sup>900 Vinyl Ester Resins are actually polymers dissolved in styrene monomer. The fabricator cures these resins to a solid state, reacting the polymer together with the styrene in the presence of glass reinforcements to produce a fiber reinforced rigid structure. They have been used to fabricate thousands of different types of corrosion resistant FRP equipment. Many versions of CTech-LLC<sup>®</sup> VER<sup>TM</sup>900 have been developed for ease of handling during hand lay-up, spray-up, filament winding, pultrusion, centrifugal casting, resin transfer molding and other methods of commercial fabrication. CTech-LLC<sup>®</sup> VER<sup>TM</sup>900 combines superior retention of mechanical properties at high temperature.

## ADVANTAGES

- Excellent corrosion resistance
- Excellent impact strength
- High tensile elongation
- High Heat Resistance
- Low Viscosity
- Superior corrosion resistance to a wide range of acids, bases, chlorides, solvents, and oxidize

## TYPICAL USES

- Can be easily applied by hand lay-up laminating, spray-up, pultrusion, resin transfer molding (RTM) and filament winding.
- Can be used in polymer concrete casting.
- Can comply with US FDA regulation 21 CFR 177.2420 if the resin is properly formulated postcure.

## DESIGN

The gel time of CTech-LLC<sup>®</sup> VER<sup>TM</sup>900 is affected primarily by catalyst

concentration and temperature. The variations of cure characteristics may be caused by the variations of catalyst, humidity, pigment, fillers and other additives. It is recommended that the fabricators check the cure characteristics with a small quantity resin before proceeding for bulk production.

## 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 90% 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.

#### TECHNICAL DATA

	Unit	VER <sup>TM</sup> 900
Physical State*	-	Solid
Viscosity	mPas	275
Specific Gravity	gm/cc	1.03
Shelf Life	month	3
Monomer Content	%	48

\* Temperature at 25°C

#### TYPICAL CURING CHARACTERISTICS

MEKP <sup>TM</sup> catalyst (phr)*	Temperature <sup>o</sup> C	Gel Time, minutes
1.00	15-21	65-75
1.25	15-21	50-60
1.50	15-21	40-50
1.00	21-27	25-35
1.25	21-27	20-30
1.50	21-27	15-25
1.00	27-32	20-30
1.25	27-32	15-25
1.50	27-32	10-20

\* Typical curing characteristics are measured using 100 phr resin with various levels of catalyst.

#### PROPERTY OF CURED AT 25<sup>o</sup>C

	Unit	VER <sup>TM</sup> 900
Barcol Hardness	-	35
Tensile Strength	MPa	82
Tensile Modulus	MPa	3720
Tensile Elongation at Yield	%	4.6
Tensile Elongation at Break	%	7.9
Flexural Strength	MPa	131
Flexural Modulus	MPa	3450
Heat Distortion Temperature	<sup>o</sup> C	98

#### APPLICATION

- Chemical storage tanks, pipes, fume gas desulfurizing systems (FGD), scrubbers, ducts.
- Corrosion resistant flooring while incorporated with aggregates.
- Waste water treatment systems.
- Food storage tanks and pure water system.
- Marine use for yachts and boats.

#### STORAGE & SHELF LIFE

CTech-LLC<sup>®</sup> VER<sup>TM</sup>900 contains organic solvent (styrene). Keep away from heat, sparks and flames. CTech-LLC<sup>®</sup> VER<sup>TM</sup>900 is a potentially reactive chemical. Please store it in dark and keep away from heat and direct sunshine.

#### CAUTION

If CTech-LLC<sup>®</sup> VER<sup>TM</sup>900 is blended with cobalt-salt promoters, shelf life will be shortened. Promoted CTech-LLC<sup>®</sup> VER<sup>TM</sup>900 must be used within four months. Containers, not completely emptied must be closed immediately after use.

#### CTech-LLC<sup>®</sup>

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#### IMPORTANT NOTE:

Before using any CTech-LLC<sup>®</sup> 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](http://www.ctech-llc.com).

#### WARANTY:

CTech-LLC<sup>®</sup> 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<sup>®</sup> 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.