

**CE-243M**  
**11/12 Supersedes 11/06**

### **PENNTROWEL<sup>®</sup> VINYL ESTER L/F SYSTEM SILICA AND CARBON GRADE**

#### **DESCRIPTION**

PENNTROWEL Vinyl Ester L/F System is a nominal 3.0 mm multi-layer monolithic lining system that offers the benefits of increased strength and chemical resistance by incorporating 400 gm woven glass mat reinforcement and multiple layer build into the lining. PENNTROWEL Vinyl Ester L/F utilizes a vinyl ester novolac backbone resin for maximum service temperature and chemical resistance. It is packaged with pre-proportioned graded fillers based on either quartz or carbon aggregates (for strong caustic or hydrofluoric acid service).

The system has been formulated to perform in chemical immersion service, and to withstand the various temperature extremes that can be encountered in sumps, trenches, pits and vessels. **For complete installation details, consult Corrosion Engineering installation specification [CES-352](#).**

#### **AREAS OF USE**

PENNTROWEL Vinyl Ester L/F System is used both in and out-of-doors to protect concrete and steel substrates from to a wide variety of corrosive agents, including: oxidizing and non-oxidizing acids, salts, oils, (mineral and vegetable) and many alkaline-based cleaners, as well as organic solvents. PENNTROWEL Vinyl Ester L/F System can be specified for use in the following applications:

- trenches
- pits
- vessels
- sumps
- manways
- floors

Note: Use PENNTROWEL Vinyl Ester L/F Carbon System in hydrofluoric acid service.

#### **OUTSTANDING FEATURES**

- Excellent physical properties
- Extremely low absorption and shrinkage
- Resists attack from strong oxidizing chemicals
- Reinforcing adds strength, thus reducing the possibility of cracking

**TYPICAL PHYSICAL PROPERTIES**

<b>PROPERTY</b>	<b>SILICA</b>	<b>CARBON</b>
Wet density	1.8	1.8
Compressive strength (ASTM C-579)	99.9 MPa	137.9 MPa
Tensile strength (ASTM C-307)	12.4 MPa	15.1 MPa
Coefficient of expansion (ASTM C-531)	1.9 x 10 <sup>-5</sup>	nt
Shrinkage, (ASTM C-531) @ 28 days	0.2%	0.8%
Modulus of elasticity (ASTM C-580)	1.7 x 10 <sup>6</sup>	1.05 x 10 <sup>6</sup>
Flexural strength (ASTM C-580)	24.1 MPa	33.0 MPa
Service temperature limit (Depending on chemical exposure)	107°C	107°C
Mix Ratio Resin:Hardener:Filler - By weight	1.0:0.02:2.5	1.0:0.02:2.0
Mix Ratio Resin:Hardener - By volume	100:2.0	100:2.0

**ESTIMATING/PACKAGING THEORETICAL QUANTITIES – NO OVERAGE ALLOWANCE**

<b>STEP</b>	<b>PRODUCT</b>	<b>CODE</b>	<b>PACKAGING</b>	<b>COVERAGE*</b>
Primer	PT VE Primer Resin	50101	29 Kg pail	0.3 Kg/m <sup>2</sup> @ 0.28 mm
	PT VE Primer Resin	50106	4.0 Kg can	
Silica L/F Base and Build Coat	PT VE Resin Grey	50113	29 kg pail	2.7 kg/m <sup>2</sup> @ 1.5 mm
	PT L/F Filler	50305	25 kg bag	5.4 kg/m <sup>2</sup> @ 3.0 mm
Cloth	450 gm L/F Reinforcing Mat	---	per sm	per sm
Saturant for cloth	PT VE Resin Clear	50112	29 kg pail	1.0-1.2 kg catalyzed resin per m <sup>2</sup>

For **PENNTROWEL VE L/F Carbon** , substitute the following for Base/Build Coat and Cloth layers above

Carbon L/F Base and Build Coat	PT VE Resin Grey	50113	29 kg pail	2.7 kg/m <sup>2</sup> @ 1.5 mm
	PT L/F Filler Carbon	50306	25 kg bag	5.4 kg/m <sup>2</sup> @ 3.0 mm
Carbon L/F Reinforcing Cloth	Nexus ® Veil Reinforcing cloth	50703	per sm	per sm
Catalyst	CHP Hardener	50109	400 gm bottle	1.5-2.25% addition by wt of resin

\* Note: Consumption is theoretical and does not allow for surface irregularities, pail loss or normal wastage.

**SAFETY PRECAUTIONS / DISCLAIMER**

Mixes and applications of this product present a number of hazards. Read and follow the hazard information, precautions and first aid directions on the individual product labels and material safety data sheets before using. While all statements, technical information, and recommendations contained herein are based on information our company believes to be reliable, nothing contained herein shall constitute any warranty, express or implied, with respect to the products and/or services described herein and any such warranties are expressly disclaimed. We recommend that the prospective purchaser or user independently determine the suitability of our product(s) for their intended use. No statement, information or recommendation with respect to our products, whether contained herein or otherwise communicated, shall be legally binding upon us unless expressly set forth in a written agreement between us and the purchaser/user.



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