

## **CORROSION ENGINEERING SPECIFICATION FOR INSTALLATION**

### **PENNTROWEL<sup>®</sup> L/F SYSTEMS**

***NOTE: PENNTROWEL L/F Systems are sophisticated lining systems and should only be installed by industrial contractors familiar with industrial lining practices.***

#### **1. SCOPE**

- 1.2 All systems have been formulated to perform in chemical immersion service, and will withstand the various temperature extremes that can be encountered in sumps, trenches, pits and vessels. All systems offer the benefits of increased strength and chemical resistance by incorporating 10 oz. glass mat reinforcement and multiple layer build.
- 1.2 PENNTROWEL Epoxy L/F System is a multiple component bisphenol epoxy monolithic system that is suitable for a wide range of chemical service.
- 1.3 PENNTROWEL Novolac L/F (Lining/Flooring) System is based on premium quality novolac epoxy resins for superior chemical resistance.
- 1.4 PENNTROWEL Vinyl Ester L/F System utilizes a vinyl ester novolac backbone resin for chemical resistance in bleaching and oxidizing chemistry.

#### **2. SURFACE PREPARATION**

##### **2.1 Steel**

- 2.1.1 Abrasive-blast steel surfaces in accordance with SSPC-SP#5 "White Metal Blast Cleaning" to a 3 mil minimum profile. Immediately after blasting, apply a single coat of Primer to hold blast. Steel surface must be free of moisture for the application of the Primer.

##### **2.2 Concrete**

**PENNTROWEL® L/F INSTALLATION SPECIFICATION**  
**SPECIFICATION CES-352**  
**10/12 SUPERSEDES 04/00 PAGE 2 OF 4**

2.2.1 All concrete surfaces to be lined shall meet the following criteria:

A minimum compressive strength of 3,000 psi (test with a concrete test hammer).

A minimum surface tensile bond strength of 300 psi (test with a Dillon Dynamometer, Elcometer Adhesion Tester, or equal).

2.2.2 Preparation shall be in accordance with the following ASTM Standards:

D4258 - Practice for Surface Cleaning Concrete for Coating

D4259 - Practice for Abrading Concrete

D4261 - Practice for Surface Cleaning Concrete Unit Masonry for Coating

D4262 - Test Method for pH of Chemically - Cleaned or Etched Concrete Surfaces

D4263 - Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method

D4285 - Method for Indicating Oil or Water in Compressed Air

### **3. APPLICATION**

3.1 Layer 1 PENNTROWEL Primer

3.1.1 After removing lids from the PENNTROWEL Epoxy Primer Resin (Part A) and PENNTROWEL Epoxy Primer Hardener (Part B), thoroughly stir Part A and then add Part B into the Part A container, stirring thoroughly with a mechanical mixer for a minimum of 2 minutes.

3.1.2 For PENNTROWEL Vinyl Ester L/F, use PENNTROWEL Vinyl Ester Primer. Mix as outlined in 3.1.1.

3.1.3 Apply to properly prepared surface of dry concrete or dry abrasive blasted steel with a brush, squeegee, or short nap roller.

3.1.4 Primer must be hardened to a tack free cure before application of ground coat. (Minimum of 8-12 hours at 70°F).

3.2 Layer 2 - PENNTROWEL L/F System Ground Coat

3.2.1 Remove the lids from the Resin and Hardener. Thoroughly stir Resin

**PENNTROWEL® L/F INSTALLATION SPECIFICATION**  
**SPECIFICATION CES-352**  
**10/12 SUPERSEDES 04/00 PAGE 3 OF 4**

and then pour the contents of each into a mixer and mix thoroughly. Add the PENNTROWEL L/F Filler a little at a time while mechanically mixing until all the filler has been added and a uniform wetted out mix has been obtained.

- 3.2.2 If necessary, the amount of Filler to be added can be varied slightly to facilitate troweling. It is preferable that the recommended mix ratio be followed as closely as possible for the Ground Coat and Build Coat.
- 3.2.3 Trowel apply a minimum of 1/16" thickness of the Ground Coat on the surface of the cured tack free PENNTROWEL Epoxy Primer.

### 3.3 Reinforcing Layer and Saturant

- 3.3.1 Apply the reinforcing mat immediately on to the wet surface of the Ground Coat. Press the mat firmly into the Ground Coat being careful to eliminate any wrinkling. Adjacent strips of mat should be overlapped 2".
- 3.3.2 Prepare a saturant of Resin mixed with the recommended amount of Hardener. Immediately saturate the mat with an even coat of this Resin/Hardener Saturant. (Note: on overhead work, allow the mat in the base coat to set up slightly before saturating the mat). Work out wrinkles as work proceeds, using ribbed roller tools as utilized for FRP laminate work.
- 3.3.3 Allow installation to harden a minimum of 8 hours at 70°F before proceeding.

### 3.4 PENNTROWEL L/F System Build Coat

- 3.4.1 Repeat section 3.2.
- 3.4.2 Trowel apply a minimum of 1/16" of this build coat onto the surface of the hard cured reinforcing layer. Hard trowel to densify the build coat and to eliminate voids.
- 3.4.3 Allow to cure at least 72 hours at 70°F before placing into service.
- 3.4.4 Clean tools and equipment periodically with Acetone or MEK to prevent accumulation of cured coatings (do not use acetone for vinyl ester l/f cleanup). Read MSDS's and follow manufacturer's

**PENNTROWEL® L/F INSTALLATION SPECIFICATION**  
**SPECIFICATION CES-352**  
**10/12 SUPERSEDES 04/00 PAGE 4 OF 4**

precautions while using and storing these chemicals.

3.5 Finishing Solution (For use with PENNTROWEL Vinyl Ester L/F only)

3.5.1 Immediately after the last build coat is trowelled out, lightly dampen a short-nap roller with a solvent-resistant core with Finishing Solution and roll it onto the surface to close up and smooth out a fine rough or dry surface texture.

3.5.2 Finishing Solution does not add to the lining build thickness or become part of the finished lining system.

3.5.3 The use of Finishing Solution is not intended to remove trowel marks or compensate for poor build coat finishing techniques and should be applied lightly.

**4. STORAGE**

4.1 If PENNTROWEL L/F Filler is stored like Portland cement in a dry, cool covered premise on wooden pallets, it should be usable for up to one year from its date of manufacture.

4.2 If Resin and Hardener are stored in a cool, dry location they should be usable within one year of their date of manufacture. If there is any question with respect to quality of the components, the components shall be tested prior to being used.

**5. SAFETY PRECAUTIONS / DISCLAIMER**

5.1 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.

5.2 Please contact Corrosion Engineering for specific recommendations at +1-610-833-4000 or fax +1-610-833-3040.