PENNTROWEL™ 60/60MR LINING SYSTEMS INSTALLATION SPECIFICATION

1. *SCOPE*

1.1 This specification governs the installation of Penntrowel Epoxy 60/60MR Lining System, Penntrowel Viny Ester 60/60MR Lining System and Penntrowel Novolac 60/60MR Lining System as manufactured by Armor. It shall be used in conjunction with information presented on product data sheets CE-245a Penntrowel Epoxy 60/60MR Lining System, CE-245b Penntrowel Vinyl Ester 60/60MR Lining System, CE-245c Penntrowel Novolac 60/60MR Lining System, CE-139 Penntrowel Epoxy Primer, Novocoat™ SC1100 Primer, CE-138 Penntrowel Vinyl Ester Primer, and any associated specifications referenced therein.

1.2 A Penntrowel 60 Lining consists of a primer, and a 60 mil (1.5 mm) trowel applied basecoat. A Penntrowel 60 MR Lining incorporates a 1 oz. chopped strand mat reinforcement layer into the primer layer. In strong caustic or HF exposure, use a polyester reinforcing mat.

1.3 There are two optional fillers available to use with the Penntrowel 60 basecoat layer. The filler can either be Penntrowel L/F Filler Silica (code 19642) or Penntrowel L/F Filler Carbon Grade (code 29446). The selection of the appropriate filler is determined based on the chemical environment the lining will be exposed to Consult Armor if in doubt as to which filler to use. The mixing and use instructions presented below are the same for either filler.

2. MATERIAL, ENVIRONMENTAL, AND SUBSTRATE CONDITIONS

2.1 The product and substrate temperatures are important. The product storage and construction areas shall be conditioned to achieve and maintain the temperatures outlined below.

2.2 At the time of mixing and application, the temperature of the components and substrate should ideally be 70˚F (21˚C) and in all cases between 50°F (10°C) and 90°F (32°C).

2.3 The temperature of the prepared surface shall be at least 5°F (3°C) above the moisture dew point and between 50°F (10°C) and 90°F (32°C) at the time the materials are applied.

2.4 Optional Cold Room Hardeners are available. Consult Armor for applications where temperatures will be between 35°F (2°C) and 50°F (10°C).

2.5 The work site must be protected from precipitation until the lining has achieved dry-to-touch stage and is not damaged by light traffic.

3. SURFACE PREPARATION

3.1 All Penntrowel 60/60MR Systems are formulated to be applied onto a concrete substrate. Consult Armor for other substrates as more appropriate systems may be available.

3.2 The surface condition of new and/or existing concrete can vary greatly. The surface should be thoroughly inspected to identify the condition and suitability of the surface to accept the lining. An assessment and

evaluation of the suitability of the surface should precede quotations, procurement, or mobilization of installation crews.

3.3 New concrete shall reach a minimum compressive strength of 3000 psi (20 MPa) and a surface tensile strength of 300 PSI (2.0 MPa) before the Lining is applied.

3.4 All cavities, stone pockets, honeycombing, and bug holes greater than 1/4" (6 mm) depth shall be filled by repairing with appropriate polymer-modified cementitious materials. Remove all form marks and protrusions such as prominent aggregate exposure, tie wires, reinforcing wires. They must be cut off below the surface and covered.

3.5 A concrete surface to which the Lining is to be applied shall be prepared by abrading the concrete and have a resultant surface like a medium grit of sandpaper. The surface shall have a non-glazed appearance. Remove enough material to achieve a sound concrete surface free of laitance, glaze, efflorescence and incompatible concrete curing agents or form release agents.

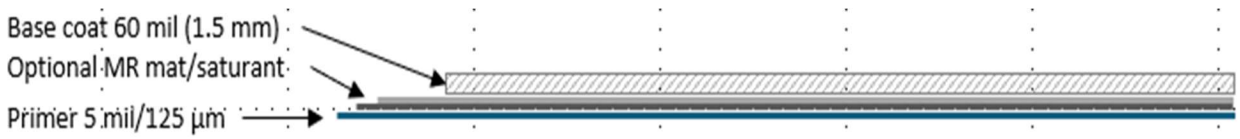
3.6 A single pass troweled finish shall be given to new concrete floors with care being taken to avoid bringing laitance to the surface. New concrete shall be cured in accordance with good practice as outlined in ACI-308 "Recommended Practice for Curing Concrete". Do not use liquid curing compounds as they may impede the bond of the lining system.

3.7 Consult SSPC-SP 13/NACE No. 6 for recommended surface preparation procedures on concrete.

3.8 For steel substrates refer to SSPC-SP#5. A 3-mil (75 µm) profile is recommended.

4. SYSTEM LAYERS

4.1 All Armor 60/60MR Lining Systems are constructed using the following layers. Only the resins used with the various systems are different.



5. PRIMER APPLICATION CE-245a PENNTROWEL 60 Lining System and CE-245c PENNTROWEL Novolac 60 Lining System

5.1 Penntrowel Epoxy Primer (CE-139) or Novocoat SC 1100 are the recommended primers when applying CE-245a Penntrowel 60 Lining System and CE-245c Penntrowel Novolac 60 Lining System onto concrete. Primer seals the substrate surface, promotes adhesion of the Lining System and minimizes concrete outgassing. Consult Product Data Sheets for additional details.

5.2 Open proportioned cans of Part A Primer Resin and Part B Primer Hardener. Blend thoroughly together in mixing vessel. Use a slow speed electric drill to mix the liquids to avoid whipping air into the mix.

5.3 Mix thoroughly for one minute minimum and until mix is homogeneous.

5.4 Apply mixed primer onto prepared substrate by using a roller or brush. On damp concrete surfaces the primer can be scrubbed into the surface with a stiff brush. This will emulsify any residual wetness at the concrete surface and penetrate the concrete. The presence of residual moisture will be observed if present as the primer will turn a milky-white color.

5.5 Allow primer to dry to touch before proceeding with application of basecoat. Primer must remain clean and dry before proceeding with basecoat application

5.6 ***PRIMER APPLICATION* CE-245b *PENNTROWEL Vinyl Ester 60 Lining System***

5.7 Penntrowel Vinyl Ester Primer (CE-138) is the recommended primer when applying CE-245b Penntrowel Vinyl Ester 60 Lining System. It is not tolerant of wet or damp surfaces. All substrates are to be completely dried before proceeding.

Penntrowel Vinyl Ester Primer does not come packaged with pre-proportioned matching package sizes. It requires careful measuring of CHP Hardener to add to the Vinyl Ester Primer Resin. Consult Product Data Sheet CE-138 for additional details including mix ratio instructions.

5.8 Follow detailed instructions for applying CE-138 Penntrowel Vinyl Ester Primer after mixing as outlined in sections above. While the Resins are different, the primer application instructions are the same.

6. PENNTROWEL 60 LINING BASECOAT - MIXING

6.1 Remove the lid from the Part A Resin and pour into mixing vessel. The mixer can be a KOL-type rotary mixer or equivalent.

6.2 Slowly add contents of Part B Hardener into the Part A Resin and mix thoroughly for at least one minute or until mix is homogeneous.

6.3 Slowly add proportioned L/F Filler into mixed Resin/Hardener and mix thoroughly for at least one minute and until there are no visible dry spots in the Filler. Consult data sheet for exact mix ratios and proportions.

6.4 Never add water, Portland cement additives, or other adulterants to the mix.

7. MIXED BASECOAT - INSTALLATION

7.1 Penntrowel 60 Lining Systems are applied in a single pass layer over primed concrete to achieve a total lining thickness of a nominal 60-65 mils (1/16” or 1.5 mm). Follow component mix ratio instructions as outlined on the product data sheet.

7.2 The Penntrowel 60 Systems basecoat layer will exhibit a work life of 45-60 minutes at 70˚F (21˚C).

8. PENNTROWEL 60 MR OPTIONAL REINFORCEMENT LAYER

8.1 When specified, apply 1 oz. or 1.5 oz. chopped strand glass mat immediately onto the wet primer layer. Use a serrated roller to smooth and embed the glass mat. Abut mat layer edges together, leaving no gaps. Once smoothed, flood the mat with a saturating layer to ensure full wetting of the mat. Use the serrated roller to smooth out the saturant. Proceed with subsequent basecoat layer once saturant/mat layer is dry to touch.

9. CLEANUP

9.1 Clean tools with xylene and rags. Dispose of rags in accordance with good practice and in compliance with local regulations.

10. SAFETY PRECAUTIONS DISCLAIMER CONTACT INFORMATION

10.1 Consult current Safety Data Sheets (SDS’s) before commencement of work.

10.2 While 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. For all Terms and Conditions of Sale see armor-inc.com.

10.3 Please contact Armor for further information at +1-877-98ARMOR (982-7667) or customerservice@armor-inc.com.

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