PENNCHEM™ 97 MEMBRANE INSTALLATION SPECIFICATION

1. SCOPE

1.1 This specification governs the installation of Pennchem 97 Membrane as a stand-alone lining or under brick, tile or polymer concrete on bare, primed or previously coated concrete or steel.

2. REFERENCES

2.1 Armor product data sheets: CE-293 Pennchem 97 Membrane, CE-139 Penntrowel™ Epoxy Primer, Novocoat™ SC1100 Primer/Sealer, CE-314 Pennguard™ HP Epoxy Primer.

2.2 Armor installation specifications: CES-342 Penncoat™ Linings, CES-150 Pennguard HP Epoxy Primer

2.3 Industry standards: ACI-308 Recommended Practice for Curing Concrete, SSPC-SP 13/NACE No. 6, NACE No. 3/SSPC-SP 6/SA 2.0, NACE No. 2/SSPC-SP 10/SA 2.5

3. MATERIAL, ENVIRONMENTAL, AND SUBSTRATE CONDITIONS

3.1 Maintain the product components at 70°F (21°C) to 90°F (32°C) during mixing and application.

3.2 During product installation, the substrate must be at least 5°F (3°C) above the moisture dew point and between 50°F (10°C) and 90°F (32°C).

3.3 Intolerant of moisture. Must not be used over damp surfaces. Protect from moisture after application until fully cured. Do not expose to steam after cure. Maintain ambient and substrate temperatures above 50°F (10°C) until membrane is dry-to-touch.

4. CONCRETE SUBSTRATES

4.1 A single pass troweled finish shall be given to new concrete floors with care being taken to avoid bringing laitance to the surface. Do not use liquid curing compounds as they may impede the bond of the lining system.

4.2 When forms will or have been used for placing concrete, they should be designed to yield a smooth continuous surface to which the lining will be applied.

4.3 New concrete shall be cured in accordance with good practice as outlined in ACI-308 Recommended Practice for Curing Concrete.

4.4 New concrete shall reach a minimum compressive strength of 3,000 psi (20 MPa) and a surface tensile strength of 300 psi (2.0 MPa) before the lining is applied.

4.5 Remove all form marks and protrusions such as prominent aggregate exposure. Cut off tie wires and reinforcing wires below the surface and make the surface flush by packing with a suitable fast curing sand/cement repair mix. All cavities, stone pockets, honeycombing, and bug holes greater than 1/4" (6 mm) depth shall be filled by repairing with appropriate polymer or polymer-modified cementitious materials.

4.6 Abrade the surface in accordance with SSPC-SP 13/NACE No. 6 to achieve a texture similar to 80-100 grit sandpaper. Remove enough material to achieve a sound concrete surface free of laitance, glaze, efflorescence, and concrete curing or form release agents.

4.7 Penntrowel Epoxy Primer (CE-139) or Novocoat SC1100 Primer/Sealer may be used on prepared concrete surfaces to reduce the risk of blisters or pinholes from concrete outgassing. Consult Installation Specification CES-342 for details.

5. STEEL SUBSTRATES

5.1 Prepare steel substrates in accordance with NACE No. 3/SSPC-SP 6/SA 2.0 when used under brick, tile or polymer concrete.

5.2 If being used as a standalone immersion lining, prepare in accordance with NACE No. 2/SSPC-SP 10/SA 2.5.

5.3 Pennguard HP Epoxy Primer (CE-314) may be used as a primer on prepared steel substrates to prevent re-rusting of freshly blasted surfaces. Consult Installation Specification CES-150 for details.

6. PREVIOUSLY COATED SUBSTRATES

6.1 Consult Armor Technical Service for guidance regarding other previously coated surfaces.

7. MIXING

7.1 Remove the lid from the Pennchem 97 Membrane pail. Inspect Part A and Part B containers for leaks. Verify there is no water present on or in the Part A base component and the pail is free of dents in the side wall that may inhibit the mixing blades' access to the bottom corners of the pail.

7.2 Use a heavy-duty variable speed drill with a 3/4" (16-18 mm) chuck and sufficient torque to deliver a consistent speed under load. Fit drill with a Jiffler mix blade, Model DC312, with 2 x 6.5" (165 mm) propeller blades, shown below. Use of any other equipment to mix Pennchem 97 Membrane requires prior written approval from Armor as incomplete mixing can prevent full cure and severely compromise system performance.

7.3 Using drill mixer and mix blade specified above, pre-mix Part A by itself for a minimum of one minute. If temperatures are below 65°F (18°C), mix Part A for a minimum of 90 seconds.

7.4 Good mixing technique is essential to fully disperse the small volume of thin Part B hardener into the large volume of thick Part A base. Move the blade around the base of the pail in a circular motion. Simultaneously lift the blade from the base of the pail without bringing the blade above the surface of the compound and continue the circular motion around the side of the pail. During mixing, intermittently hold the mix blade at a 30-degree angle within the mixture. Sweep the sides and corner of the pail with the mixing blade.

7.5 Open the can of Part B. While mixing Part A, take a full 15 to 20 seconds to slowly pour Part B into the vortex created by the mixing blade in Part A.

7.6 When the material temperature is 65°F (18°C) or higher, mix for at least three (3) minutes using good mixing technique. When the temperature of the components is 50°F (10°C) mix for at least five (5) minutes using good mixing technique. Use a timer to prevent under-mixing.

7.7 Apply membrane immediately after mixing. No induction time is required. Work life is 45-60 minutes at 70°F (21°C).

7.8 Protect membrane components and mixed material from contact with moisture or other contaminants.

8. APPLICATION

8.1 Apply Pennchem 97 Membrane with a flat trowel to a uniform thickness of 1/8-inch (3.0 mm), or in accordance with project specifications. Build up to the specified thickness in a minimum of two passes at 1/16-inch (1.5 mm) per coat, wet-on-wet, to reduce the risk of pinholes in the corrosion protection barrier. Apply subsequent membrane layers before the previous layer is tack-free.

8.2 Wet membrane does not bond well to cured membrane, so work should be staged to avoid applying fresh material over tack-free material. However, if the previous membrane layer cures to a tack-free state, allow it to cure firm then abrade the surface lightly to remove gloss before applying subsequent layers. It is difficult to abrade membrane that has just reached tack-free condition.

8.3 Best practice is always to apply the membrane in two layers to minimizing pin holes from outgassing. Layers may be applied wet on wet.

8.4 If using Pennchem 97 as a brick mortar, consult Armor.

9. CURE

9.1 The membrane is ready to be placed in service when it is dry to the touch. Air and substrate surface temperatures, relative humidity, sun and rain exposure affect the rate of cure.

9.2 The membrane achieves initial set in 5-6 hours at 70°F (21°C) and 50% relative humidity. Approximate cure time required to receive foot traffic is 48 hours at 60°F (17°C), 24 hours at 70°F (22°C), and 12 hours at 90°F (32°C) at 50% relative humidity.

9.3 Firm but still slightly tacky—not wet—membrane on floors may be dusted to prevent boots sticking and enable installation of brick, tile, or polymer concrete over the membrane to proceed at the earliest opportunity. Use common sense and good judgment to determine if the lining has achieved sufficient cure to proceed without damaging the lining.

10. REMEDIAL WORK AND REPAIRS

10.1 Cut out the nonconforming membrane and scrape off residue to expose the primer or substrate.

10.2 Wire brush or abrade the exposed primer or substrate and the surface of the adjacent membrane extending 2 inches (50 mm) around the area to be repaired. Reapply the membrane, overlapping the existing, abraded membrane, in accordance with specifications above.

11. CLEANUP

11.1 Clean tools with mineral spirits.

12. INSPECTION, TESTING AND RECORDKEEPING

12.1 At a minimum, every two hours during application, record the dew point, ambient air, substrate, and material temperature in the mixing and application areas. For each kit, record the actual time part A was premixed and part B was mixed with part A. Use the Cure Verification Card provided inside each Pennchem 97 Membrane kit and check each for full cure the next day. Continuously monitor ambient temperature and relative humidity and substrate temperatures at a variety of locations on the lined surface during cure.

13. SAFETY PRECAUTIONS, DISCLAIMER, CONTACT INFORMATION

13.1 Consult current Safety Data Sheets (SDS's) before commencement of work.

13.2 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.

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

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