INSTALLATION SPECIFICATION PENNCOAT™ 210 221 AND 227 EPOXY LININGS

1. SCOPE

1.1 This specification governs the installation of Penncoat™ 210 221 and 227 Linings. If not noted otherwise the specification shall be applicable to all systems. Due to lining application thicknesses and installation techniques differences between the systems will be noted.

1.2 This specification shall also be used in conjunction with information presented on all applicable technical data sheets (TDS's) including CE-251 Penncoat 210, CE-266 Penncoat 221 Lining, and CE-285 Penncoat 227 Lining and associated specifications referenced therein.

1.3 For installation instructions for vinyl ester-based linings refer to specification CES-259.

2. MATERIAL ENVIRONMENTAL AND SUBSTRATE CONDITIONS

2.1 Product and substrate temperatures are important. In cooler temperatures, 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 should ideally be 70°F (21°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 materials are applied. If temperatures are below 50°F (10°C) consult Armor.

2.4 The work site must be protected from precipitation until the lining has achieved dry to touch stage.

3. STEEL SURFACE PREPARATION

3.1 For splash, spill and non-thermal-cycling conditions, a 2-3 mil anchor profile is acceptable with a SSPC-SP10 and NACE #2, near white surface cleanliness. In certain applications this can be relaxed to SSPC-SP6/NACE #3. Consult Armor for a project-specific review.

3.2 For tank immersion service conditions, highly corrosive environments and thermal cycling, the steel substrate should be clean, dry and have a minimum anchor profile of 3 mils. Steel surfaces should be abrasive blasted in accordance with Steel Structures Painting Council Specification SSPC-SP5 and/or NACE #1. Consult Armor before selecting any of these materials for this service environment.

4. CONCRETE SURFACE PREPARATION

4.1 Concrete surfaces should exhibit a minimum surface tensile bond strength of 200 psi (1.4 MPa) when tested in accordance with ASTM C1583, most current revision or similar.

4.2 Applicable ASTM Standards for surface preparation are as outlined in NACE No. 6/SSPC-SP 13. Criteria for acceptance shall be as noted in section 6. Mechanical methods such as abrasive blasting or scarifying are the preferred methods. Chemical methods such as acid etching and detergents should be utilized to remove

laitance, oil and grease or when mechanical methods cannot be utilized. Read and follow manufacturers' SDS and safety precautions when handling these chemicals.

4.3 Concrete expels air during the day and intakes air during the night. The best time to apply linings is late afternoon or early evening at which time concrete is least likely to expel air. Other precautions such as shading the work area from sunlight to minimize the heating of the substrate will also reduce expulsion of air.

4.4 A primer is suggested when using Penncoat 221 and 227. Penncoat 210 does not need a primer for bond, however application of a primer in all cases does minimize outgassing from the concrete and reduces pinholes.

5. MIXING OF COMPONENTS

5.1 Do not attempt coating application if substrate temperature is within 5°F (3°C) of dew point or if relative humidity is greater than 95%.

5.2 Consult product data sheets for mix ratio information. Base components should be mixed thoroughly prior to adding hardener. Add hardener to resin in accordance with dosage rates specified on the data sheet and mix for the minimum time as noted on the product data sheet. Do not thin.

5.3 When a primer is used, allow it to cure until dry to touch before proceeding with topcoat application.

5.4 An appropriate paint mixing blade should be used, along with a variable speed drill to ensure proper mixing.

6. APPLICATION

6.1 Penncoat 221 is applied by flat trowel only. Penncoat 210 and 227 can be applied by brush, roller or spray.

6.2 The pot life or working time of the material is mass sensitive: the larger the volume the shorter the pot life. Do not catalyze more material than can be used within the pot life. When ambient temperature exceeds 80°F (27°C) the pot life can be extended by cooling the materials. Materials should be stored at 70°F (21°C) 24 hours prior to use for optimum handling properties. If plural component application equipment is used, materials are not premixed, and pot life is not a factor. Mixing chamber and spray tip must be kept clean and flushed with solvent.

6.3 For the optional Penncoat 227 MR (mat reinforced) variant, embed mat reinforcement into wet primer layer after application onto the substrate. Flood the mat with mixed primer, working the resin into the mat, smoothing with a serrated roller to eliminate wrinkles. Once the primer layer with mat has hardened proceed with base and topcoat layers.

7. RECOAT COMMENTS

7.1 Applicator should always plan the work so that the primer and lining are applied within the shortest time possible.

7.2 Penncoat Linings can be top coated after dry to touch has been achieved on the basecoat, but no longer than 48 hours after application of the basecoat. If this window has passed, clean and lightly abrade the base coat before continuing.

8. CURE TIME AND TEMPERATURES

8.1 Consult individual product data sheets for specific work life, set time and full cure time information.

9. CLEAN-UP

9.1 All mixing equipment, spray equipment, rollers and brushes should be cleaned immediately after use. Solvents recommended for clean-up are MEK or xylene. When using these materials read and follow the supplier's safety data sheets.

10. STORAGE AND SHELF LIFE

10.1 Consult individual product data sheets for specific shelf-life information.

10.2 Refer to applicable SDS's for storage compatibility with other chemicals.

11. SAFETY PRECAUTIONS DISCLAIMER CONTACT INFORMATION

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

11.2 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.

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

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