

**CORROSION ENGINEERING SPECIFICATION FOR
INSTALLATION**

TUFCEM[®] SPRAYABLE EPOXY SYSTEMS

1. SURFACE PREPARATION

- 1.1 Concrete substrates (either new or existing) must be structurally sound, clean and dry at the time of lining. The following ASTM Standards for surface preparation shall be applicable - D4258, D4259, D4261, D4262, D4263, and D4285.
- 1.2 Steel substrates shall be structurally sound and sufficiently rigid so as not to deflect or flex at anytime. The steel shall be prepared as per SSPC-SP5 (NACE #1) having a 2-3 mils roughness profile.

2. APPLICATION PRECAUTIONS

- 2.1 The substrate, ambient air and lining component temperatures should be between 60°F (15°C) and 90°F (32°C) at the time of application and during the curing period.
- 2.2 The substrate temperature at the time of lining application shall be at least 5°F (2.8°C) above the moisture dew point.
- 2.3 Since epoxy monolithics may blister when applied to concrete in direct sunlight, Corrosion Engineering recommends that steps be taken to shade areas, and to possibly perform the installation later in the day or early evening.
- 2.4 Keep drying winds from blowing across the finished surface of newly applied lining.
- 2.5 TUFCEM Sprayable Epoxy Systems shall be applied by qualified applicators experienced with the operation of the specialized peristaltic pump and spray equipment and the art of spraying filled resinous linings.

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- 2.6 Using suitable mechanical mixing equipment, the resin and hardener shall be first mixed together. The filler shall be added to the resin/hardener and mixing shall continue until the filler is completely wetted and a uniform color is attained. Do not whip air into the mix.
- 2.7 Using specialized peristaltic pump and spray equipment, the mixed material shall be spray applied in a workmanlike fashion to acceptable industry standards. Passes of the nozzle should overlap each other so as to ensure an even buildup of the lining.

3. CLEANING EQUIPMENT

- 3.1 The contractor must thoroughly clean his mixing and spray equipment before any of the epoxy sets up. It is suggested that toluene (toluol), xylene (xylo) or methyl ethyl ketone (MEK) be used for cleaning. Scrubbing with a steel wool pad will help to loosen any residual buildup before it hardens. Read and follow manufacturers MSDS's when handling these chemicals.

4. EXPANSION AND STRESS RELIEF JOINTS

- 4.1 Expansion and stress relief joints must be provided in all monolithic linings over all points of movement. Consult Corrosion Engineering for specific recommendations.

5. EQUIPMENT START UP PROCEDURES

- 5.1 All hoses should be in "like new" condition. A spare hose should be available on the job site.
- 5.2 Hoses with cuts or weak areas that may blister or rupture should be discarded.
- 5.3 Hoses must be clean and free of internal obstructions preventing free flow of material.
- 5.4 Check the mechanical equipment to be sure it is operable.
- 5.5 Mixing containers must be clean. Dried materials on sides of containers will break loose and clog the spray nozzle. Clean the mixing containers and mixing blade periodically during the application of the topping.

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- 5.6 Start the spray equipment motor.
- 5.7 Pour a gallon of Resin (no hardener) into material hopper. Cycle this resin through the equipment several times by directing the nozzle into the material hopper.
- 5.8 After cycling, direct the hose into a clean, empty container to collect the resin. This can be used in subsequent mixes.
- 5.9 This lubrication process must be repeated when starting up again after equipment has been cleaned. For example, after break times and lunch time.
- 5.10 Hold out several pounds of filler powder from the first mix. This mix, slightly wetter than usual, will be easier to pump and spray in order to insure that the equipment is operating properly. It will also enable the operator to get a "feel" for the equipment.
- 5.11 After one or two "wet" mixes, mix units using all the specified amount of filler powder.
- 5.12 Apply the TUFCHEM Sprayable Epoxy or TUFCHEM® Novolac Sprayable Epoxy in a continuous side-to-side pattern. Overlap each pass to provide an even build-up of topping to the specified thickness.
- 5.13 On vertical surfaces do not attempt to build the usual 1/8" specified thickness in a single application. To prevent slump, apply in multiple coats allowing ½ hour to 1 hour cure time between coats (depending on temperature).
- 5.14 If the nozzle becomes clogged, shut off the pump immediately. Remove the nozzle cap and clean thoroughly.
- 5.15 When shutting down for breaks, lunch or quitting time, all equipment, tools, hoses, and nozzles must be thoroughly cleaned. Do not permit material to remain in hopper or hoses.
- 5.16 Spray equipment, hopper and hoses can be cleaned by cycling ethylene glycol through the equipment until all residual material is removed.

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6. SAFETY PRECAUTIONS / DISCLAIMER

- 6.1 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.
- 6.2 Please contact Corrosion Engineering for specific recommendations at +1-610-833-4000 or fax +1-610-833-4000.

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