Technical Bulletin 603

Epoxy Novolac Coating High Build System for Concrete Protection

Five Star® Epoxy Novolac Coating is a two-component, 100% solids, highly chemical resistant epoxy coating for horizontal and vertical applications effective on both steel and concrete. Five Star® Epoxy Novolac Primer is a two-component, highly chemical resistant, penetrating epoxy primer/sealer used to prime concrete. It is recommended that Five Star® Epoxy Novolac Primer always be used with Five Star® Epoxy Novolac Coating when coating concrete. Five Star® Epoxy Novolac Primer is not intended to prime steel surfaces.

Prior to priming the concrete substrate, the surface must be cleaned, properly roughened, free from contaminants, and free from excessive moisture. If the system is replacing an existing coating system or being used to stop "chemical attack", Five Star Products recommends that the existing concrete be tested for contaminant exposure prior to applying the new system. Residual chemicals in the concrete may interfere with the bond of the new coating system.

Moisture Testing:
On new or existing concrete, a primer or coating should not be applied if the moisture in the concrete is above 5%. The moisture content and moisture vapor drive should be taken before any surface preparation of new concrete begins and prior to applying the coating on existing concrete.

- ASTM F2170[1] (standard test for Rh moisture content in a concrete substrate) and ASTM F1869[2] (test method for measuring moisture vapor emission rate) are the preferred test methods for determining moisture results through objective and quantitative analysis.
- ASTM D4263[3] (Plastic Sheet Test) is not recommended to determine Rh and moisture drive in the substrate.

Estimating Coating Coverage:

- Use 290 sq.ft. @ 5 wet mil thickness (26.9 sq.m. @ 125 microns) per unit of Five Star® Epoxy Novolac Primer. Allow for slight loss due to mixing, application, and substrate conditions. Contact Five Star Products if spreading at different thicknesses.
- Use 310 sq.ft. @ 20 mils (29.0 sq.m. @ 510 microns) per unit of Five Star® Epoxy Novolac Coating. Contact Five Star Products if spreading at different thicknesses.

Application Steps Epoxy Novolac Primer and Coating:

1. Abrasive blast/mechanically prepare the substrate to remove all concrete laitance, curing compounds, grease/oil residue, and waxes to produce a clean surface with a texture profile. Refer to ICRI 310.2R (formerly 03732) *Selecting and Specifying Concrete Surface Preparations for Sealers, Coatings, Polymer Overlays, and Concrete Repair* for further details.

2. For optimum performance, all components should be conditioned between 65°F and 85°F (18°C to 29°C).
   A. Thoroughly premix Component A (resin) and Component B (hardener) individually before combining them.
   B. Place all of Component A and Component B into a suitable container. Component A and Component B are mixed in a 3:1 ratio by volume.
   C. Mix Component A and Component B with a slow speed mixer for no more than 3 minutes. Avoid air entrapment.
   D. Place mixed material immediately. Mix only that amount of material that can be placed within 35 minutes.

[1] ASTM F2176 *Standard Specification for Mechanical Couplings Used on Polyethylene COnduit, Duct, and Innerduct*
[2] ASTM F1869 *Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride*
[3] ASTM D4263 *Concrete Moisture Test*

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3. Apply Epoxy Novolac Primer at 3 to 5 mils DFT by roller or squeegee and back roll with 3/8” nap roller. Allow to fully cure before proceeding.
   A. If outgassing of the substrate occurs, lightly abrade; if outside the recoat window, abrade the existing primer coat with a 120-grit emery cloth floor machine and wipe clean with IPA, acetone, or xylene to remove all dust and debris.

   Repeat Epoxy Novolac Primer application during decreasing temperatures.

4. Apply Epoxy Novolac Coating at 15 to 20 mils thickness by roller or squeegee and back roll with 3/8” nap roller to provide a uniform finish. While the coating is “wet” or freshly laid, broadcast clean silica quartz aggregate to rejection. On completion there should be no coating visible through the broadcast media.

   A. If a thicker system is required, allow Step 4 to fully cure and remove all residual debris by broom sweeping and vacuum. Apply an additional Epoxy Novolac Coating at 15 to 20 mil DFT by squeegee and back roll with 3/8” nap roller to provide a uniform finish. While the coating is “wet” or freshly laid, broadcast clean silica quartz aggregate to rejection. On completion, there should be no coating visible through the broadcast media.

5. Allow the broadcast step(s) to fully cure and remove all residual broadcast media and debris by broom sweeping and vacuum.

6. Apply Epoxy Novolac Coating at 8 to 10 mil DFT by squeegee and back roll with 3/8” nap roller to provide a uniform finish. Allow to fully cure.

7. Apply an additional Epoxy Novolac Coating at 8 to 10 mil DFT by squeegee and back roll with 3/8” nap roller to provide a uniform finish. Allow to fully cure.

8. After the final coating step has fully cured, sawcut and fill all expansion and isolation joints with the appropriate joint sealant to meet the operating requirements.

For further technical support, contact your local Five Star® Technical Sales Representative.

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