



SPECIALTY CONSTRUCTION PRODUCTS

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Installation

Guidelines

For

ChemMasters

Safe-Cure & Seal EPX

Duraguard 310CRU

These are ChemMasters recommendations for the installation of our epoxy / urethane coating system and do not take precedence over Ohio Department of Transportation installation requirements.

A. Equipment: Equipment needs vary from job to job. Safe-Cure & Seal EPX and Duraguard 310CRU may be applied using solvent resistant rollers, power rollers, brushes or airless spray equipment. Application equipment must be clean and free of foreign matter, oil residue and water.

B. Surface Preparation: Remove dust, dirt, oil, wax, curing compounds, efflorescence, laitance, coatings and other foreign materials from surfaces to be sealed. Any chemicals used in the cleaning process should be approved by ChemMasters prior to use. Repair any structurally unsound surfaces, weak sections or spalled areas.

Two acceptable methods of final surface preparation are:

1. Water blast concrete to expose the sand matrix portion of concrete and leave a surface texture consistent with 100 grit sandpaper.
2. Sandblast or soda blast the surface to expose sand matrix portion of concrete and texture of 100 grit sandpaper. After blasting, air broom or power sweep the surface to remove dust and sand from the surface and opened pores.

Install suitable traps, filters, drip pans and other separation devices in the cleaning equipment so oil and other foreign material are not deposited on the surface. Apply the sealer within 48 hours of surface preparation.

C. Primer Mixing & Application: Safe-Cure & Seal EPX is a two-component, water-based, clear epoxy primer that must be mixed prior to application. Safe-Cure & Seal EPX is shipped as a 4 gallon unit which consists of a 5 gallon plastic pail that contains 3.2 gallons of Part B and a 1 gallon can that contains 0.8 gallons of Part A. The mix ratio of B: A. is 4:1.

In cooler temperatures Safe-Cure & Seal EPX should be conditioned to at least 60°F.

To mix, pour all of the Part A into the pail containing the Part B and mix with a low rpm drill and paddle for 3 minutes. Let epoxy rest for about 5 minutes to induct and then mix again for 1 minute. Apply material within 30 minutes of mixing.

Only apply sealer when the surface temperature is 50°F (10°C) or above, but below 90°F (32°C). Temperature must be 5°F above dew point and relative humidity below 90%. Safe-Cure & Seal EPX can be applied using brushes, rollers or airless spray equipment (30:1 equipped with fan tips of 0.25 – 0.40). Spray hose lines should be primed with water before running Safe-Cure & Seal EPX through them. The appropriate application rate for ODOT projects is 150 square feet per gallon (3.6 square meter per liter). This rate should be carefully monitored. Clean tools and equipment used to apply Safe-Cure & Seal EPX with soap and water before the epoxy dries. If spraying, hose lines should be cleaned with soap and water.

D. Topcoat Mixing & Application: Duraguard 310CRU is a two-component, solvent-based, pigmented, chemical resistant urethane. Duraguard 310CRU is the topcoat of the epoxy / urethane coating system. It is available in any federal standard color. Refer to the plans for colors for specific projects. Duraguard 310CRU is only to be applied as a topcoat over concrete primed with Safe-Cure & Seal EPX. Duraguard 310CRU is not to be applied directly to concrete. Duraguard 310CRU can be applied over Safe-Cure & Seal EPX as soon as the epoxy is tack free. At 70°F, the Safe-Cure & Seal EPX may be tack free in 4-6 hours, depending on humidity. Duraguard 310CRU topcoat must be applied within 72 hours of the primer application. If this window is missed, the surface must be pressure washed prior to application of the urethane in order to roughen the epoxy and allow the urethane to bond. Proper pressure washing of the epoxy primer entails using approximately

3,000 to 4,000 psi pressurized water to clean the surface. The intent is to down-gloss the surface of the epoxy primer, which has the effect of opening the pores of the epoxy for better acceptance of the urethane topcoat. Do not remove primer down to bare concrete. If any Safe-Cure & Seal EPX primer is fully removed, re-application in those areas is required prior to application of urethane topcoat. It is also required that the surface be totally dry prior to Duraguard 310CRU application.

Duraguard 310CRU is shipped as a 4 gallon unit which consists of a 5 gallon metal pail that contains 3 gallons of Part A and a 1 gallon can that contains 1 gallon of Part B. In cooler temperatures Duraguard 310CRU should be conditioned to at least 60°F before mixing.

Duraguard 310CRU must be mixed thoroughly prior to application. The mix ratio of A: B is 3:1. To mix a complete unit, pour all of the Part B in the 1-gallon can into the 5-gallon pail containing the Part A. Mix with a low rpm drill and paddle for 3 minutes.

Only apply Duraguard 310CRU when the surface temperature is 50° F (10°C) or above, but below 90°F (32° C). Temperature must be 5°F above dew point and relative humidity below 90%.

Apply Duraguard 310CRU within 90 minutes of mixing. If product is left in mixing container in a large mass, the working time (pot life) is drastically reduced. Duraguard 310CRU can be applied using airless spray equipment (30:1 equipped with fan tips of 0.25 – 0.40 or power rollers), or solvent resistant brusher or rollers. If spraying, hose lines must be primed with solvent prior to application of Duraguard 310CRU. After application, lines should be cleaned with solvent. Clean tools and equipment used to apply Duraguard 310CRU with MEK, xylene, xylol, glycol ether or pm acetate before the urethane dries.

The ODOT approved application rate for Duraguard 310CRU is 200 square feet per gallon. This rate should be closely monitored to ensure proper

coating performance and uniform color. Sags and runs are not acceptable in the sealer. Duraguard 310CRU dries tack free in 6-24 hours depending on temperature and humidity.

E. Sealing Horizontal Surfaces: The above application information pertains to vertical non-traffic surfaces only. For sealing horizontal applications, for sealing sidewalks or other horizontal surfaces subject to repetitive foot traffic or vehicular traffic, surface preparation is the same as above. Duraguard 100 replaces Safe-Cure & Seal EPX as the primer for the Duraguard 310CRU. Duraguard 100 is a two-component, clear epoxy primer that must be mixed prior to application. Duraguard 100 is shipped as a 3-gallon unit, which consists of a 5-gallon metal pail that contains 2 gallons of Part A and a 1-gallon can that contains 1 gallon of Part B. The mix ratio of A: B is 3:1. Only apply sealer when the surface temperature is 50°F (10°C) or above, but below 90°F (32°C). Temperature must be 5°F above dew point and relative humidity below 90%. Duraguard 100 can be applied using brushes, rollers or squeegee.

In cooler temperatures Duraguard 100 should be conditioned to at least 60°F.

To mix, pour all of the Part B into the pail containing the Part A and mix with a low rpm drill and paddle for 3 minutes. Apply material within 30 minutes of mixing at 200Ft²/gallon; Duraguard 100 left in a large mass (3 gallon) greatly reduces this time. Recoat time on Duraguard 100 is from tack free to 24 hours after mixing.

Broadcast 1-1/2 lbs. per square yard (0.8 kg/m²) of silica sand into the wet Duraguard 100 and encapsulate with paint roller into the Duraguard 100 producing a non-skid surface satisfactory to the Engineer. Surface should then be top-coated with Duraguard 310 CRU.

F. Test Site/Application: Apply sealer to a measured coverage areas on both horizontal and vertical surfaces, and on different concrete types,

demonstrating the visual effects for the epoxy/urethane sealer application at the required coverage rate.

Use at least ½ gallon (2 liter) of sealer, following the ChemMasters recommended method of application, for the total of the test surfaces. Apply to the deck, safety curb or sidewalk for the horizontal test surfaces and use an abutment parapet or pier face for the vertical test surface so different textures are tested.

Uniform appearance and the final color shall visually match the test section. Re-coating, removal and re-application or other methods recommended by ChemMasters will be required to correct final appearance.

H. Traffic: Allow traffic on deck shoulder areas after 12 hours of drying time for an epoxy/urethane sealer.

I. Safety Precautions: Follow precautions defined on the ChemMasters MSDS. Provide the Engineer a copy of the MSDS sheet for information before any work commences.

J. Protection of Adjoining Surfaces and the Public: Protect the public during all operations, especially when applying sealer to the fascia or the underside portions of a bridge that spans an area used by the public.

During sealing, mask off, or use other means of protection, for surfaces not being sealed. Protect asphalt and mastic type surfaces from spillage and heavy overspray. Do not apply sealers to joint sealants which have not cured according to the manufacturer's instructions. Joint sealants, traffic paints and asphalt overlays may be applied to the treated surfaces 48 hours after the sealer has been applied. Protect nearby steel, aluminum or glass surfaces when non-epoxy overspray could be deposited on those surfaces.

K. Environmental Requirements: Protect plants and vegetation from over spray by covering with drop cloths.

L. Storage: Deliver unopened drums or containers of the sealer to the job site with the ChemMasters lot numbered container intact. Store all sealer components in tightly sealed containers, in a dry location, out of direct sunlight and heat at storage temperatures of 75°F (24°C) or lower

M. Adverse Weather:

1. If the surface is rained on after surface preparation is complete and Safe-Cure & Seal EPX has not yet been applied, the surface must be examined prior to epoxy application to ensure that it is still clean and free of dirt or other environmental contaminants. If dirt is visible a light pressure washing to clean the surface will be required. Allow the surface to dry prior to Safe-Cure & Seal EPX application.

2. If it rains between the applications of the epoxy and the urethane there is no need for further surface preparation unless the primed wall becomes contaminated with dirt or debris. If this is the case, a low-pressure water rinse is required to clean the surface. The surface must be thoroughly dry before application of Duraguard 310CRU.

3. If it rains after either the epoxy or urethane is applied, but before the material fully cures (approximately 4 hours), the coating must be carefully inspected for damage. Once dry, the surface should be examined for runs or soft spots. If detected, another application of epoxy or urethane may be warranted in order to rectify the damaged areas. If significant soft or uncured areas are detected, these areas will require full removal down to the previous layer or to the concrete substrate.

4. Since it is commonly required to apply the epoxy / urethane coating onto the first 9-inches of horizontal wearing surface of the bridge deck, it is necessary to lightly abrade the concrete surface, especially if a HMWM (high molecular weight Methyl Methacrylate) has been applied to the deck's surface for the sealing of cracks. This can be accomplished by using a hand-held

grinding wheel equipped with a grinding stone or wire brush wheel. A brush blasting with sand is also an acceptable method. Water blasting is not a suitable preparation method on a horizontal surface. Although Ohio D.O.T. does not specify a silica sand broadcast, ChemMasters would suggest that silica sand broadcast into the surface of the freshly applied HMWM sealer is a satisfactory approach. This method will require prior acceptance by the ODOT Project Engineer.

N. Recoating: Any area to be recoated must be clean and sound. Damaged concrete must be removed, repaired, replaced as needed to produce a structurally sound substrate. Areas where the epoxy / urethane sealer is to be recoated should be sanded or ground to the texture of 100-grit sandpaper. Loose, chipped or unsound areas of Duraguard 310 should be removed and edges sanded to feather edge. The entire repaired area should be water blasted exposing the sand matrix portion of concrete and leave a surface texture consistent with 100 grit sandpaper.

If recoating is delayed more than 48 hours or surface becomes contaminated area should again power blasted with water. Surfaces to be recoated must be clean and dry. Area can then be primed with Safe Cure and Seal EPX and top-coated with Duraguard 310 CRU following application directions.