

ChemMasters

Installation Guidelines

ChemDeck, Water Resistant, Traffic Grade Resurfacing System for Horizontal Concrete

This specification describes the resurfacing of concrete with a cement-aggregate blend, a flexible polymer liquid, and a fade resistant, water based tint.

1.0 General:

1.01 Work Included:

A. Furnish all materials, labor, tools, and equipment to repair concrete as designated by the Owner.

1.02 Related Work:

- A. Crack repair
- B. Joint fillers
- C. Water repellent coating
- D. Epoxy Floorings and Coatings

1.03 Reference Documents:

- A. Refer to applicable Material Safety Data Sheets.
- B. Refer to manufacturers technical data sheets for products specified.
- C. ASTM D 4259-88, "Standard Practice for Abrading Concrete"

1.04 Submittals:

Prior to the start of any application of the water resistant, traffic grade resurfacing system for horizontal concrete, the following submittals shall be made for review and approval:

- A. Submit literature and manufactures installation instructions.
- B. If a substitute product is being submitted to the engineer then submit independent test data substantiating that the product meets or exceeds these specifications.
- C. The manufacturer of the cementitious resurfacing materials shall certify that the product complies with the specifications.

1.05 Quality Assurance:

- A. Manufacturer qualifications: The manufacturer of the specified product shall have experience in the production and use of the product specified. The manufacturer shall be able to supply a list of projects where their products have been used on similar projects with similar jobsite and exposure conditions.
- B. Contractor Qualifications: The installation shall be performed by an applicator having at least five years prior experience with the use and application of the specified materials or similar products.

A list of projects shall be submitted to the engineer/owner so that the engineer/owner can be satisfied with the qualifications of the contractor. C. Provide a certification stating that the water resistant, traffic grade resurfacing system for horizontal concrete meets

the specified requirements and have, on hand, the manufacturer's current printed literature on the specified product.

1.06 Delivery, Storage, and Handling:

- A. Deliver the specified product in original, unopened containers with the manufacturer's name, labels, product identification, and batch numbers.
- B. Store and condition the specified product as recommended by the manufacturer.

1.07 Job Conditions:

- A. Refer to the applicable ChemMasters Technical Bulletin for the recommended temperature of surfaces to be patched and ambient air temperature during application and curing times.
- B. Do not apply at ambient or surface temperatures below 50 °F/10 °C or above 90 °F/32 °C.
- C. ChemDeck is not designed to bridge dynamic cracks. Crack movement from thermal cycling or structural stress can cause reflective cracks through the ChemDeck overlay. The use of DryDeck Membrane with scrim is recommended in these situations. Consult DryDeck Membrane technical data sheet for coverage rates and installation techniques.
- E. Maintain control, construction and expansion joints through coating. If desired, fill control and construction joints with flexible, exterior grade, urethane sealant after ChemDeck has dried and cured. When applying ChemDeck to horizontal surfaces abutting vertical surfaces and/or walls, caulk interface joint between horizontal and vertical surface following coating application. Follow caulking manufacturer's installation recommendations.
- F. Do not apply to frozen or frost covered surfaces or if rain or snow are expected before system has dried
- G. Concrete substrates must be pre-wet and kept damp during application but do not apply ChemDeck over puddles or free standing water. Do not apply any single coat of ChemDeck at a thickness greater than 25-30 mils, greater depths cause mud or map cracking and can effect bonding characteristics.
- H. Snowplows with heavy metal blades may damage the ChemDeck coating. It is advisable to keep blade from direct contact with the coating

2.0 Product:

2.01 Acceptable Manufacturers:

- A. ChemDeck, as manufactured by ChemMasters, 300 Edwards Street, Madison, Ohio, 44057-3112, 1-800-486-7866, is considered to conform to the requirements of this specification.
- B. Substitutions: The use of other than the specified product will be considered providing the contractor requests its use in writing to the Engineer. This request shall be accompanied by, (a) A certificate of compliance from an approved independent testing laboratory that the proposed substitute product meets or exceeds the specified performance criteria, tested in accordance with the specified test standards; and, (b) Documented proof that the proposed substitute product has a proven record of performance of traffic grade resurfacing.

2.02 Performance Criteria:

- A. Application Temperature 50 °-90 °F 10 °-32 °C
- B. Drying Time
 - 1. ChemDeck 4-6 hours
 - 2. Polyseal WB 8 hours
 - 3. Pedestrian Traffic 8 hours
 - 4. Pneumatic Tire Traffic 3 days
- C. Standard Colors: Light Concrete Gray, French Gray, Brick Red, Buff and White
- D. Results based on 28 day air cure psi MPa
 - 1. Compressive Strength (ASTM C-109): 5200 35.85
 - 2. Tensile Strength (ASTM C-190): 715 4.9
 - 3. Flexural Strength (ASTM C-348): 1650 11.4
 - 4. Shear Bond Adhesion (ASTM C-882): 560 3.9
 - 5. Impact Resistance (MIL-D-313) No cracking or delamination, (2 lb./1.8 Kg steel ball dropped from 8 Ft./2.4M height onto coated steel panel)
 - 6. Water Permeability (ASTM E-96): 1.98 perms/in
 - 7. Scaling Resistance (ASTM C-672): 50 cycles 0%loss
 - 8. Absorption Rate of Water <2% (Weight gain by 4 in./10.1 cm coated concrete cube after 21 days water immersion)

2.03 Materials:

- A. Traffic grade resurfacing system for horizontal concrete:
 - 1. A cement-aggregate blend, a flexible polymer liquid, and a fade resistant, water based tint.
 - 2. For surfaces with dynamic or wide cracks, the use of DryDeck Membrane with scrim as a base for ChemDeck is advisable.
 - 3. When dry, ChemDeck surfaces must be sealed using Polyseal WB with matching tint to protect the ChemDeck resurfacing system and provide dirt repellancy.
- B. The products must produce superior flexural and tensile characteristics coupled with exceptional abrasion characteristics and shall be approved before use by the Engineer.

3.0 Execution:

3.01 Surface Preparation:

- A. All surfaces to be coated with ChemDeck must be thoroughly clean and free of oil, grease, dirt, dust, loose or spalled concrete or mortar, curing and sealing compounds, paints, silicone based sealers or other contaminants which prevent proper adhesion.
- B. Acid etching or mechanical abrasion is recommended to open pores of concrete and achieve a 1/16 inch/1.6 mm profile. Severely spalled or aged concrete may not require this step. Consult your ChemMasters' distributor or salesperson for an evaluation of your specific project.

3.02 Mixing:

- A. Proper mixing is critical. Read all directions prior to beginning. Consult ChemMasters ' Technical Service staff with questions or for recommendations in special situations.
- B. CHEMDECK MIX RATIOS WATER LIQUID POWDER
 - 1. Mortar 2 qts./1.9L 2 qts./1.9L 40 lbs./18 Kg

2. Primer 2.5 gal./9.5L 50 lbs./22.7Kg

3. Topcoat 2 gal./7.6L 50 lbs./22.7Kg

C. Pour entire contents of ChemDeck Tint into the pail of ChemDeck Liquid and blend until a uniform color is achieved. Use the tinted ChemDeck Liquid when mixing all coats of ChemDeck for optimum depth of shade and uniformity of color. Always add the powder to the liquid in the ratios listed above.

D. Using a mechanical drill and mixing prop, blend for 1-2 minutes until mixture is uniform in color, smooth and free of lumps. ChemDeck initially has a grainy appearance but as the mix becomes properly blended, the texture becomes creamy.

E. ChemDeck has a working time of 30 minutes at 70 °F./21 °C. with 50% humidity or less. Warmer temperatures and higher humidity reduce pot life. Material placed in direct sunlight on warm days dries more rapidly than in shaded areas. Do not mix more material than can be placed within the working time. Do not re-temper.

3.03 Application:

A. Place material immediately after mixing. Dispose of any material that takes initial set prior to application. Rinse impeller blade and application tools in water immediately after each use to prevent build up of hardened material. Saturate concrete surfaces to the point of rejection with clean, potable water then allow surface to dry to damp prior to applying ChemDeck. Remove any puddles or standing water. Surface must remain damp during application procedure, re-dampen if necessary, do not allow to dry.

B. Prior to resurfacing, repair any nonmoving cracks, voids or surface defects over 1/16 inch/1.6 mm in width or depth up to a maximum of 2 inches in width and depth with ChemDeck mixed to a mortar consistency. Fill voids, cracks and deep spalls, compacting mortar to remove any air pockets and insure adequate adhesion to substrate. Finish with a light broom texture. Do not apply any curing compounds or sealers to mortar. Under extremely hot, dry or windy conditions, cover repaired area with wet burlap or towelling until mortar achieves initial set.

C. Primer: The primer coat is thin and insures proper bond to the substrate. Prime entire surface area after cracks and voids have been repaired and mortar has taken final set. Stir mixed material occasionally during application process to insure proper aggregate distribution. Using a clean brush or broom, scrub initial coat into prepared surface at a rate of 450-500 Ft. ²/11-12 M ² per unit creating a nominal 20-25 wet mil thick coating. Proper adhesion of this base coat is critical.

D. Allow primer coat to dry completely. ChemDeck is ready to be re-coated when you can walk on primed surface and not mar or scuff finish.

E. For optimum performance and appearance it is important to maintain recommended coverage rates. Thin coats of ChemDeck produce the best results. Thicker application causes mud cracking and possible reduction in bonding capabilities.

F. TOPCOAT:

1. Mix Topcoat at the recommended ratio of liquid to powder using a drill and mixing prop as outlined previously. Apply topcoat at a rate of 400-450 Ft. ²/10-11 M ² to entire area then texture with a medium nap roller, brush or sponge float as desired.

Alternately, the topcoat can be finished to a smooth texture and a spatter coat applied to create a slip resistant texture.

2. If area is subject to heavy or abrasive vehicular traffic or if additional wear resistance is required or if a heavier texture is desired, apply an additional topcoat of ChemDeck. A

final coat may be sprayed or spattered with a hopper gun to produce a rough texture or trowelled to create decorative swirl patterns.

G. TEXTURING: For best results when a textured finish is desired, apply the topcoat with a wide squeegee, fresno trowel or steel trowel. Finish to a very smooth appearance.

H. OPTIONAL SPATTER COAT: Spatter the final coat with a hopper gun covering 60 - 70% of the surface. Allow spatter coat to dry for 5-10 minutes. Wearing spiked shoes to prevent dislodging the freshly placed ChemDeck, trowel surface in a half-moon or other desired pattern. Trowel in one direction only, do not use back and forth motions.

I. DECORATIVE FINISHES:

1. ChemDeck may be used to create a decorative appearance of brick or stone on plain concrete using templates or tape. Primer coat and first topcoat may be tinted to represent mortar joints.

2. Allow these initial coats to dry before fastening template to surface as recommended by template manufacturer or applying masking tape to simulate mortar joints.

3. Apply an additional topcoat of ChemDeck in the color required for the brick or stone work and finish as desired.

4. For a more pronounced profile, additional coats of ChemDeck may be applied at the normal application rate. Do not apply at thicknesses greater than those recommended. Build up in thin coats to avoid mud or map cracking.

5. Allow ChemDeck to dry thoroughly before removing tape or template to avoid marring the surface then seal with clear Polyseal WB at recommended coverage rates.

J. SEALING:

1. Allow ChemDeck to dry over night before applying tinted Polyseal WB.

2. Roll, brush or spray sealer at 200-300 Ft. per gallon/5-7 M per liter for first coat and allow to dry to tack free.

3. Finally, apply second coat of Polyseal WB at right angles to first at a rate of 400-500 Ft. per gallon/10-12 M per liter.

3.04 Curing:

A. Following sealer application, allow full deck system to cure thoroughly before opening area to traffic, 8 hours for pedestrians, 3 days for pneumatic tire vehicles.

3.05 Cleaning:

A. Clean tools and equipment with soap and water before ChemDeck or Polyseal WB dries and hardens. If materials dry and harden, mechanical removal is required.

4.0 Compensation:

4.01 Method of Measurement:

A. The water resistant, traffic grade resurfacing system for horizontal concrete shall be measured by the cubic foot repaired in place, and the quantity to be paid for shall be the cubic feet repaired actually placed.

4.02 Basis of Payment:

A. The water resistant, traffic grade resurfacing system for horizontal concrete will be paid for at the contract unit bid price per cubic foot repaired, as stipulated in the schedule of Bid Prices, which payment shall be full compensation for furnishing and installing all materials, labor, tools, equipment, and other incidentals necessary to complete the specified operation. Payment will be made on the percentage of the work completed during each estimate period as determined by the Owner.