

CCS™ BINDER, BRIDGE DECK

Low Modulus Epoxy Binder For Protective Overlays

CCS Binder, Bridge Deck is a two component, low modulus epoxy binder formulated specifically for protective overlay applications. Blended with suitable aggregate, CCS Binder, Bridge Deck mortar, slurry and aggregate broadcast (chip seal) systems protect concrete and steel decks from wear and intrusion of damaging chemicals (vehicular fluids, deicing compounds, etc.). CCS Binder, Bridge Deck utilizes controlled flow viscosity for application of thick films on uneven or sloped surfaces. High aggregate loading, short cure cycle and low modulus mechanical properties make this binder ideally suited for a variety of climates and overlay applications. Each type of installation may have specific application and performance requirements. Evaluation of trial mixes particularly under low temperature conditions prior to installation is recommended. Meets ASTM C881 Type III, Grade 1, Class B and AASHTO M235 Type III, Grade 1.

Features

- Convenient 2: 1, by vol. mix ratio
- Fast cure for short downtime
- Controlled flow for uneven/sloped surfaces
- Does not embrittle; stays tough and flexible
- Resists road, auto and aircraft chemicals
- Environmentally safe - No VOC solvents

Limitations: Substrate surfaces must be dry. Minimum installation and cure temperature is 50 °F. Maximum thickness of approx. 1 inch per lift. Do not add solvents or otherwise thin this material.

Packaging & Colors: Standard package sizes of Part A + Part B are 3 and 15 gallons. Color is clear-dark amber.

Shelf Life: Three years minimum in unopened, original containers when stored between 60 and 90 °F in a dry place away from sunlight.

Chemical Resistance: Resistant to a wide range of commonly used deicing chemicals and aircraft and automotive fluids. It has limited exposure, secondary resistance to hydrocarbon solvents. Performance is a function of the specific chemical and concentration, ambient and solution temperatures, exposure times and housekeeping procedures. For information on specific chemicals and exposure conditions, contact a ChemCo Systems, Inc., technical representative.

Surface Preparation: Substrate surfaces must be dry, sound and free of all bond-inhibiting substances. Damp and wet surfaces must be dried prior to installing this product. Prepare surfaces in accordance with *ASTM D 4259* or *ACI 503R* and ChemCo Systems' specific recommendations. Cleaned concrete surfaces should have a minimum strength of 250 psi in direct tension. Steel surfaces should be cleaned to "white metal" according to SSPC SP 5. Prepared spalls and surface defects may be filled with a mortar prepared from the CCS Binder, Bridge Deck repair (see below) before overlay installation.

Aggregate Selection

Overlay and repair mortars: The preferred aggregate for most, kiln-dried, graded and bagged. The sand particles should be round to sub angular in shape. A good gradation for low void content is a 2:1 or 3:1 blend of #12 or 16 mesh and #70 or 90 mesh. If using a single sand fraction, a #20 or 30 mesh is recommended.

Slurry coat and Multiple layer broadcast systems: The recommended aggregate size is #6 x 12, 8 x 16, 12 x 20 or 20 x 40 mesh depending on the installed thickness. Vehicular surfaces: For maintenance of long-term skid resistance, consider use of polish-resistant aggregate such as aluminum oxide, silicon carbide, blast furnace slag, trap rock, etc. For all applications, the maximum particle size of the aggregate selected should not exceed 1/3 of the installed thickness.

Mixing: CCS Binder, Bridge Deck is a two-component system. The resin to hardener (Part A: Part B) mix ratio is 2:1, by volume. Premix the individual components before drawing from bulk packaging. Wear safety glasses and rubber gloves when handling the material. Transfer the appropriate quantities of Part A and Part B into a mixing container. Use quantities that can be applied before the pot life of the mixed material expires. Blend thoroughly using a Jiffy mixer blade attached to a low speed (350 - 750 rpm) electric or pneumatic drill. Proper mixing will take 2 - 3 minutes. For fluid, epoxy-rich mixtures continue mixing and slowly add aggregate to the mixing vessel. For less fluid, epoxy-lean mixtures, transfer the mixed binder into a mortar or plaster mixer, add aggregate (coarse first, fine last) and mix an additional 1 - 2 minutes.

Installing

Overlay and repair mortars: Prime the substrate with mixed binder components at a thickness of 8 - 10 mils (160 - 200 sq ft/gal). Apply the epoxy mortar to the primed substrate while the primer is still tacky. The mortar may be rodded, tamped, screeded or troweled into place. Clean application tools frequently.

Slurry coats: Blend 1 part by volume of premixed binder and 2 - 2 1/2 parts by volume of aggregate in a mortar mixer for 2 - 3 minutes. Apply the slurry in a thickness of 3/8 inch and strike-off with a screed bar. Broadcast additional aggregate (10-14 lb/sq yd) into the surfacing until all wet spots are gone. Allow curing 5-6 hours, removing excess aggregate by sweeping and open to traffic. (Continued on next page)

TYPICAL PROPERTIES ⁽¹⁾

Property ⁽²⁾	Test Method	Value
Mix Ratio, A:B,	by vol by wt	2: 1 100: 45
Color:	Part A Part B Mixed	VISUAL Light amber Dark amber Dark amber
Weight per Gallon, lb:	Part A Part B Mixed	ASTM D 1475 9.3 8.3 9.0
Viscosity, cp:	Part A Part B Mixed	ASTM D 2393 1750 425 1100
Gel Time, 60 gm, minutes	ASTM D 2471	30
Thin Film Hard Dry Time, hours	ASTM D 1640	5
Tensile Strength, psi	ASTM D 638	2300
Elongation at Break, %	ASTM D 638	65
Bond Strength to Dry ASTM C 109 Cement Mortar, psi:	ASTM D 4541	500 (3)

- (1) The properties listed are typical and descriptive of the product and should not be used for specification purposes. For specification preparation, reference the ChemCo Systems, Inc., product guideline specification.
- (2) Cure schedule, 7 days at 73° + 4 F and test temperature, 73° ± 4 F.
- (3) Cure schedule, 6 hours at 73° ± 4 F and test temperature, 73° ± 4 F. Compressive strength of cement mortar, 4500 psi.

Installing (cont.)

Multiple layer broadcast systems: Apply mixed binder at a rate of approx. 45 sq ft/gal by roller, squeegee or spray. Uniformly broadcast aggregate (8 - 10 lb/sq yd) until no wet spots are visible. Allow curing for 2 - 5 hours. Remove excess aggregate by sweeping. Apply the second coat at approx. 30 sq ft/gal. Broadcast aggregate at 12 - 14 lb/sq yd. Remove excess after 2 - 5 hour cure. Repeat process, if necessary to build-up to the specified thickness. Allow extra cure time for the top layer (4 - 6 hours). Remove all excess aggregate by sweeping and open to traffic.

Clean up: Excess mixed product is best removed from the work area and tools before it hardens. Use of rags and solvents, such as; acetone or heavy-duty detergents facilitate cleaning. Cured product may be removed from tools by soaking in an epoxy stripper.

Handling and Toxicity: This bulletin does not accompany the product when sold. For hazard warnings, safe handling and first aid instructions, CAREFULLY READ THE MATERIAL SAFETY DATA SHEETS AND CONTAINER WARNING LABELS.

Part A: Liquid epoxy resin, HMIS Health Hazard Rating - 2 (Moderate Hazard). Warning! Causes eye and skin irritation. May cause allergic skin reaction. Harmful if swallowed. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. Avoid prolonged or repeated contact with skin.

Part B: Liquid epoxy hardener, HMIS Health Hazard Rating - 3 (Serious Hazard). Contains alkaline amines. Danger! Causes severe eye and skin burns. May cause allergic skin and respiratory reaction. Combustible, corrosive. Do not get in eyes or skin or on clothing. Avoid breathing vapor. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Keep away from heat and open flame.

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