ChemCo Systems
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CCS™ Coating, Marine Structures

Epoxy Coating For Concrete And Steel Marine Applications (Underwater)

CCS Coating, Marine Structures is an epoxy coating system consisting of a base coat and an optional, contrasting color top coat. Marine Structures is two component, solvent free (0 VOC) epoxy designed for two coat application on concrete, steel and wood marine structure surfaces. They may be applied above and below the waterline and in both salt and fresh water environments. Typical wet and underwater applications include coating of concrete piers, seawalls, dock floors, drainage ditches, abutments, sewer and outfall pipes; protection of steel structure surfaces such as pilings, drilling rigs, production platforms, ship hulls, buoys, well jackets and bulkheads; and, protective coating of wooden structures such as pilings, piers, shelters and power poles. CCS Coating, Marine Structures bonds to properly prepared dry, damp, wet and submerged substrates and cures to a tough, water resistant, impervious protective surface. The coating is freeze/thaw resistant and will not embrittle. This epoxy coating is Kevlar® reinforced for extra toughness and high wear applications.

Features

Convenient 1:1, by vol. mix ratio
Pigmented top coat for contrast with base coat
Bonds to dry, damp, wet and submerged substrates
For use in both salt and fresh water environments
Cures to a tough, water resistant, impervious surface
Does not embrittle when exposed to direct sunlight
Environmentally safe - No VOC solvents

Limitations: The recommended minimum substrate temperature during installation and cure is 50°F. In underwater and tidal zone applications, the coating may have to be applied within a relatively short period of time (30 minutes to several hours) after the substrate was cleaned to achieve an adequate bond (prior to reformation of algae film). High wave action may displace the coating if exposure occurs before the coating has reached hard set. Do not add solvents or otherwise thin this material.

Colors & Packaging: Base Coat, off-white; Top Coat, concrete gray (blue-gray) Standard package sizes of Part A + Part B are 2 and 10 gallons.

Chemical Resistance: CCS Coating, Marine Structures provides excellent resistance to salt and fresh water, salt solutions, gasoline, kerosene, crude, fuel and mineral oil, most industrial waste solutions and many other chemicals. It has limited resistance to hydrocarbon solvents. Performance is a function of the specific chemical and concentration, ambient and solution temperature, exposure time and housekeeping procedures. For information on specific chemicals and exposure conditions, contact a ChemCo Systems, Inc., technical representative.

Surface Preparation: Substrate surfaces may be dry, damp, wet or submerged. Wet or dry sandblast to remove all loose and deteriorated substrate material, other surface contaminants such as tars, oils, paints, waterproofing materials, rust, barnacles, etc., that may interfere with the formation of a good bond. Cleaned concrete surfaces should have a minimum strength of 200 psi in direct tension. Steel surfaces should be cleaned to white metal according to SSPC SP 5.

Mixing: CCS Coating, Marine Structures is a high viscosity two-component underwater epoxy coating. The resin to hardener (Part A: Part B) mix ratio is 1:1, by volume. Read all safety data (SDS) information before handling the product. Wear safety glasses, rubber gloves and proper PPE when handling the materials. Premix the individual components before drawing from bulk packaging. Transfer appropriate quantities of Part A and Part B into a mixing container. 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. Prepare mixed quantities that can be applied before the pot life of the mixed material expires. **Do not mix the material underwater.**

Installing

ABOVE THE WATERLINE: Use standard techniques applicable to viscous coating materials. Apply the material after the daily substrate temperature cycle has reached its peak. When the substrate is wet, use sufficient brush pressure to displace the water with the coating.

BELOW THE WATERLINE: Apply with a stiff brush using slow, deliberate motion and sufficient pressure to displace the water on the surface with the coating. Divers installing the coating may need to anchor themselves to the substrate to provide the proper installation.

RECOATING: The recommended recoat window is 18 - 24 hours; Base Coat may be used for a second coat. The pigmented top coat is an optional use material employed when a second coat of contrasting color is desired. Top coat is most often used in applications with poor worksite visibility or when a gray color is required.

Approximate Yield

Coating Thickness.(mil)	Square feet/gallon
10	160
20	80
25	64
30	53

TYPICAL PROPERTIES (1)

Property (2)		Test Method	Value	
Mix Ratio, A:B,	by vol		1: 1	
	by wt		100: 100	
Color:		VISUAL		
			Base	Top
Part A			Off-white	Blue-gray
Part B			Off-white	Off-white
Mixed			Off-white	Blue-gray
Weight per Gallon, lb:	Part A	ASTM D 1475	10.2	10.3
	Part B		10.2	10.2
	Mixed		10.2	10.3
Viscosity, p:	Part A	ASTM D 2393	370	400
	Part B		300	300
	Mixed		335	350
Gel Time, 200 g, minutes		ASTM D 2471	45	
Cure Time @ 68° F,	soft gel, hours	CHEMCO	4.0	
	hard gel, hours		6.0	
	full cure, days		7	
Recoat Time @ 68° F, hours		CHEMCO	18-24	
Bond Strength To Immersed ASTM C 109 Cement Mortar, psi (3		ASTM D 4541	> 200 (4)	

(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 unless otherwise indicated.

(3) Test specimens conditioned, prepared and cured underwater (salt and fresh) at 68° ± 4 F.

(4) Compressive strength of cement mortar, 4500 psi.

Shelf Life: Three years minimum in unopened, original containers when stored between 60 and 90 °F in a dry place away from sunlight. Remixing of components may be required upon long-term storage.

Clean up: Excess mixed product is best removed from the work area end 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 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. For professional industrial use only.
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. 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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