KWIK BOND POLYMERS

BRIDGE DECK & ROADWAY REHABILITATION SYSTEMS

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PRODUCT DATA SHEET: PPC™ MLS+

PRODUCT DESCRIPTION

PPC™- MLS+ is Kwik Bond's hybrid polymer multi-layer bridge deck overlay system designed for rapid strength gain, and ease of application. PPC™-MLS+ is easily mixed with battery operated drill motor mixes and applied with notched squeegees, or with current automated installation equipment. Because the hybrid polymer system gains strength so quickly, multiple layers can be applied rapidly and yet return traffic with a normal production shift. PPC™-MLS+ has the following performance advantages:

- PPC™-MLS+ exceeds the specifications established in AASHTO T-34 Task Force Guidelines
- PPC™-MLS+ has high strength characteristics in both compression and tensile properties
- PPC™-MLS+ develops high friction numbers for anti-skid
- PPC™-MLS+ when mixed and applied properly, can return traffic safely within 2 hours at temperatures down to 40 F.
- PPC™-MLS+ has superior adhesion to Portland cement concrete
- PPC™-MLS+ is impermeable to the intrusion of moisture and chlorides

PPC™-MLS+ is designed to seal Portland cement concrete bridge decks, improve coefficient of friction, and reduce salt damage to bridge decks. PPC™-MLS+ is best suited as part of a bridge deck preservation strategy for increased life expectancy.

Additionally, the MLS+ system includes Kwik Bond's KBP 204 penetrating primer. The two materials are totally compatible. The + side of this approach adds the insurance of a material that penetrates, by gravity, bridge deck cracks deeply and re-bonds (heals) the cracks using a 100% solids, 100% reactive healer/sealer primer. Competitive alternatives do not have this flexibility in design.

PHYSICAL PROPERTIES - KBP PPC MLS	
Weight per gallon	9.5 lbs
Viscosity	1000-2000 cps
Tensile Strength (ASTM D-638)	2650 psi – 3,900psi
Tensile Elongation at Break (ASTM D-638)	30-40%
Compressive Strength (ASTM C-579)	>5000psi
Flexural Strength (ASTM D-790)	4000-4600psi
Bond Strength (ASTM C-1583)	>250psi

TYPICAL APPLICATIONS

Thin overlay, nominal 1/4" - 3/8" for increasing friction and protecting structures from moisture and chloride intrusion:

- Bridge Decks
- Parking Garages
- Sidewalks

Aggregates must be cleaned, washed, kiln- dried with a maximum moisture content of 1.2%. Angular quartz aggregates, basaltic materials or emery with a Moh hardness of 6 or greater are acceptable. Slight variations in the sieve analysis indicated above are acceptable.

SURFACE PREPARATION

Surface Prep:
Shot-blasting and sandblasting are normally used to remove surface contaminants from Portland cement concrete decks prior to applying polymeric overlay systems. The final surface should be clean, free of oils, dirt, curing compounds, and other materials that may affect the adhesion of the polymer system. Unsound concrete areas should be located by using a chain-drag or hammer. The unsound areas must be removed and repaired until a sound concrete base is established.

Patching Steps: Saw cut (dry blade) a minimum ¾" depth shoulder around the edge of the prepared area

1. Chip out the delaminated, unsound PCC areas
2. Blow off dust from saw cutting operations and chipping operations
3. Patch unsound areas with PPC™ "EASY" Patch
4. Fill the prepared area to rough grade; strike-off to final grade

MLS+ APPLICATION

In conformance with AASHTO Task Force 34-polymer overlay systems for rehabilitation of bridge decks, the following steps are outlined:

KBP 204 Primer: Mix 1 gallon KBP 204 "healer/sealer" primer with 3 fluid ounces of 6% Cobalt Drier (Dark Blue Material). Stir for 10 seconds. Add 3 fluid ounces of Cumene Hydro Peroxide and stir for another 30 seconds. Immediately dump the entire pail contents onto the PCC surface Application rate ranges from 70-100 sf/gal depending on porosity and surface texture of the deck. Re-distribute the primer using a paint brush for small area or rollers, squeegees, brooms for larger areas, wet-out the entire surface of the area to be repaired. KBP 103/204 is very fluid and will wet the surface quickly. The excess will rapidly build-up at the lowest points in the prepared area. Excess primer is undesirable. Apply primer carefully to have as little excess build-up as possible. Some build-up is unavoidable. Note: This mix design represents a starting point for

anticipated temperatures of 70 F during daytime conditions. Modifications may be required for working under different temperature conditions or during night time application. For very warm temperatures, night time application should be considered. Reducing CHP levels to 1 fl oz per gallon during elevated temperatures should be evaluated. During cold night time application, both catalyst and accelerator concentrations will need to be increased.

PPC™-MLS+ Layer 1: Mix 2.5 gallons of PPC™-MLS+ Binder Resin with 5-8 fluid ounces of MEKP-DDM9. Use a battery operated drill motor mixer for mixing. Mix for 30 seconds or so. Pour material on primed area. Spread material using notched squeegees (or automated mixing equipment) at a rate of 2.5 gallons per 100 square feet. (See temperature chart below for Z-Cure accelerator recommendations) As soon as possible and prior to gelling, broadcast the graded aggregate at a rate of approximately 10-12 lbs per square yard. As soon as Layer 1 gains sufficient strength to retain the aggregate, the excess can be removed by air sweeping, power brooming and/or vacuuming.

PPCTM-MLS+ Layer 2: Mix 5 gallons of PPC™-MLS+ Binder Resin with 8-15 fluid ounces of MEKP-DDM9. Follow the same mixing procedures as the first step. Spread the mixed material using a notched squeegee (or automated mixing equipment) at a rate of 5 gallons per 100 square feet. Broadcast aggregate at the rate of 14-15 lbs per square yard.

When the final coat has achieved sufficient strength to hold the aggregate, sweep or vacuum up any excess remaining on the surface. Traffic can safely be returned within 45 minutes to an hour and half after final sweeping.

A minimum gel time of 25 minutes is required for maximum aggregate adhesion and bond strength.

Mix Guidance for KBP PPC MLS to Achieve 30 minute Thin Film Gel Time

Substrate Temperature		Zcure Addition Level		
Fahrenheit	Celcius	Zcure (%Wt)	Zcure (oz/gal)	Zcure (ml/gal)
41	5	2	2.8	83
50	10	1.25	1.7	50
60	15	0.75	1	30
68	20	0.4	0.6	18
77	25	0.175	0.25	7
86	30	0.15	0.2	6
95	35	0.075	0.1	3
104	40	0.05	0.03	1
113	45	0	0	0

STANDARD PACKAGING

PPC™-MLS+ Components
- PPC™ MLS+ Binder resin-available in 4 gallon and 55 gallon containers
- MEKP-DDM9- available in 1 gallon containers

PPC™ "EASY" Patch
- .43 cf Pre-Packaged Patch Kit
- Larger kits available upon request

KBP 103/204™-Primer
- KBP 103/204 primer-available in 4 gallon pails, 50 gallon drums
- 6% Cobalt Drier-available in pre-packaged bottles, 1-gallon cans, 4-gallon pails
- Cumene Hydro Peroxide- available in 1-gallon bottles
- Z Cure- available in pre-packaged bottles, 1 gal cans, 5 gal pails
- (+ Version)

STORAGE

Aggregates, PPC™-MLS+ Resin, PPC™ "EASY" Patch, KBP 204 and catalyst components should be stored in a cool, dry location and in their original containers. The shelf life for these materials, properly stored at temperatures 80 F and below, greater than 12 months. At elevated temperature, storage shelf life is reduced. Store all bagged aggregates in a clean, dry location away from moisture.

SAFETY

PPC™-MLS+ and PPC™ Patch systems consist of polymer materials that have been used safely for over 20 years. However, there are certain safety issues that need to be readily understood. PPC™-MLS+ Resin and "EASY" patch Binder Resin are FLAMMABLE! Safety equipment and protective gear should be available for those unexpected emergency situations. Emergency equipment includes clean water for accidental contact in the eyes, fire extinguishers, and emergency center addresses, phone numbers, protective clothing, eye protection, and chemical resistant gloves. Organic vapor respirators are not normally required. For individuals highly sensitive to chemical vapors, organic vapor respirators are suggested.

KBP 103/204 primer is a three-component system. The 6% Cobalt Drier and the Cumene Hydro Peroxide are INCOMPATIBLE materials. They must NEVER be mixed together by themselves! A FLASH FIRE WILL OCCUR! To safely mix the KBP 103/204 primer, follow the mixing instructions EXACTLY! Follow the mixing instructions outlined in this product data sheet and safety will be maintained.