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BRIDGE DECK & ROADWAY REHABILITATION SYSTEMS

PRODUCT DATA SHEET: KBP 204 P SEAL

PRODUCT DESCRIPTION

KBP 204 P SEAL is a pre-promoted, high molecular weight methacrylate monomer composition that has been developed as a ***"healer/sealer"*** penetrant for re-bonding and Sealing shrinkage or related cracking in PCC, latex modified and/or silica fume(micro silica) concrete. KBP 204 P SEAL has been formulated to conform to published specifications from Cal-Trans, Nevada DOT, Oregon DOT, Virginia DOT, Washington DOT, FHWA, Bureau of Reclamations, and many other specifying authorities.

Formulated high molecular weight methacrylate systems play a distinctly different role than silane, siloxane, or epoxy sealers. KBP 204 P SEAL is a "***100% solids, completely reactive" polymer system***, with low viscosity and surface tension allowing the polymer to wick deep into cracks, pores, etc. After penetrating by gravity the system polymerizes to form a tough plastic seal. The end result is a re-bonded crack that resists the ingress of moisture or other environmental contaminants.

KBP 204 P SEAL is designed to penetrate quickly and allow return to service within a reasonable period. Typically, materials dry to touch within 1-3 hours during sunlight conditions and temperatures ranging from 55 F-100F. Surface dry may be accelerated by mechanical means. Deck temperatures, air temperatures, humidity, U.V. light exposure all play a significant role in penetration and drying characteristics. Due to temperature and humidity variations, a test area should be evaluated under anticipated construction conditions to determine specific catalyst ratios for the expected conditions.

SPECIAL FEATURES

- ***Reduced Mixing and Handling Hazard***
- ***Very*** Low viscosity for rapid surface penetration
- Fast curing properties during daytime, sunlight conditions
- Excellent adhesion to PCC, LMC, Silica Fume concrete even under damp conditions
- Low overall odor (This product conforms to Cal-Trans specifications limiting volatile organic content to 30% maximum)
- Easy handling, workability, mixing

PHYSICAL PROPERTIES- KBP 204 P SEAL-Typical Values	
Specific Gravity - ASTM D1475	1.06
Viscosity- ASTM D2196 w U/L adaptor, 50 rpm, 25C	< 25 cps
Flash Point (Setaflash) ASTM D3278	>82 C
Adhesion(Saturated Surface Dry Bond Test, Cal-Trans 551)	> 500 psi
Thin Film Tack Free Time (Cal-Trans Test Method, Cal-Trans 551)*	< 400 minutes
Vapor Pressure, mm Hg (ASTM D 323)	1 mm Hg
ASTM D-695 Compressive Strength-RT Cure (2 hours)	>2000 psi
ASTM D-695 Compressive Strength-RT Cure (24 hours)	>3000 psi
ASTM D-638 Tensile Strength (24 hours)	>2000 psi
ASTM C-882 Adhesion (hardened concrete to hardened concrete) @ 2 days, RT Cure	> 1800 psi
Surface Coverage Rate*	60-125 sq.ft./gal.

*Coverage rates for penetrants like KBP 204 P SEAL represent averages only. Field variables such as surface porosity, grooving, tining, heavy brooming, wide cracks, pop offs, etc. consume proportionately higher amounts of materials.

SEALER APPLICATION

Surface Preparation: As a sealer KBP 204 P SEAL requires minimal surface preparation. On relatively clean decks, free from significant AC deposits, the decks just need to be swept with high-pressure air to remove minor dirt and expose the cracked surface. For decks with higher amounts of contaminants, steel shot-blasting, sandblasting, scarifying or other cleaning processes may be required to provide a surface that will readily absorb the KBP 204 P SEAL materials.

Mixing: KBP 204 P SEAL

Once the deck has been cleaned, catalyze KBP 204 P SEAL using the following starting point formula:

1) 4 gallons KBP 204 P SEAL
2) 8 fl oz Cumene Hydro Peroxide (CHP)
3) 2-15 fl oz Z Cure Accelerator

Note: Modifications may be required for working under different temperature conditions or during night time application. For temps above 90 F, 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 CHP levels and Z Cure accelerator may be increased. (See catalyzation chart)

Mix the CHP peroxide into the KBP 204 P SEAL monomer first using a variable speed drill motor mixer. Each component, separately, must be stirred into the KBP 204 P SEAL monomer. Always follow the mixing steps outlined above. Take precautions by wearing appropriate protection equipment as well as having a fire extinguisher and plenty of clean water available.

Placement: KBP 204 P SEAL

After proper proportioning and mixing, distribute the KBP 204 P SEAL mixture on the concrete surface as soon as possible. Spread sealer at a rate of 80-120 square feet per gallon, consistent with the listed project specifications (other application rates are acceptable). Use a squeegee, roller, broom, low pressure sprayer, etc. to distribute the material uniformly. Some areas may selectively absorb greater amounts of KBP 204 P SEAL and create dry spots. These areas should receive additional amounts of KBP 204 P SEAL to fill the pores and cracks to the point of refusal to absorb further. Elevated temperatures and UV light significantly increases the reactivity of KBP 204 P SEAL and reduces work time. Cold temperatures greatly retard the surface cure of the KBP 204 P SEAL. Field adjustment of accelerators and/or promoter activators will be required to obtain the proper surface cure within the traffic closure windows. A DEMONSTRATION under EXPECTED JOB CONDITIONS must be conducted PRIOR to actual construction to determine the correct catalyst quantities. Differing levels of catalyst should be evaluated to determine surface cure characteristics obtainable under the prevailing job site conditions. Temperature, humidity, fog, night time versus daylight conditions have an effect on the cure response of the KBP 204 P SEAL system. Normally, traffic may be returned in 1.5-3 hours. ***Contact Kwik Bond Polymers technical department for recommendations and suggestions.***

Once the KBP 204 P SEAL monomer mixture has been distributed properly, wait approximately 10-20 minutes and then broadcast a commercial grade of 8 x 20 sand blast sand. The intent of broadcasting sand is to provide initial traction to the treated surface. Other gradations of sand have been used successfully. Commonly available grades of sand blast sand, No. 8, 8 x 12, and 20 mesh have been used successfully. The application rate of the broadcast sand is typically 2 lbs per 100 square feet of surface. Sufficient sand should be broadcast to meet the skid resistance requirements of the specification. Any technique may be used to broadcast the sand including hand throwing, fertilizer spreaders, salt spreaders, drop spreaders, etc. Significant quantities of excess loose sand need to be removed from the deck prior to returning traffic.

For night time applications, Sealer cure speeds will be reduced. A thin, oily residue may remain on areas of the Sealed surface under cold, damp conditions. Temperatures should be 50 F and rising during application. Colder temperatures, low fog, dew, etc. will drastically slow cure times. Under these conditions some un-reacted monomer will leave an oily residue on the surface. The oily residue may alter skid resistance properties of the treated surface even though the surface traction sand has been applied and is well bonded. This residual oiliness can be resolved by distributing approximately 5 lb/100 sf of surface area with diatomaceous earth plus mechanically sweeping the area. A skid tester may be utilized to verify bridge deck friction values.

CLEAN UP

Wipe off excess materials with disposable absorbent materials. Solvents like MEK, acetone, lacquer thinner, orange cleaner are excellent cleaners if used before the KBP 204 Sealer hardens. Read and follow the safety and handling recommendations for these materials.

PACKAGING

- Cumene Hydro Peroxide (CHP)- available in 1 gallon containers
- KBP 204 P Seal - 4 gallon pails, 50 gallon drums, 250 gallon Totes.
- Z-Cure is available in 1 gal and 5 gallon pails
- Other packaging may be available

STORAGE

KBP 204 P SEAL and CHP should be stored in a COOL, DRY location and in their original containers at temperatures less than 80 F. Containers need to remain tightly SEALed to prevent contamination. The shelf life for these materials is typically 6-9 months. When stored at elevated temperatures, the KBP 204 P SEAL reactive monomer may gel prematurely. CHP can have reduced activity after a lengthy storage period. Retest all component materials prior to use on a project.

SAFETY

Workers should wear appropriate protective clothing, gloves, and eye protection. For most outdoor applications the use of an organic vapor respirator is not required by OSHA. However, sensitive individuals may desire to wear an organic vapor respirator due to the chemical odors. Additional safety equipment includes a fire extinguisher, fresh water for eye rinse. Workers should have a change of clothing in case of accidental contamination of clothing. All KBP 204 P SEAL monomer components have a very low order of dermal toxicity. However, continued contact with the skin, especially catalyzed material, may lead to redness, swelling, blisters, or other effects. Sensitive workers may react much more rapidly. These effects are typical of other commonly used construction chemicals. All efforts should be made to prevent contact. Read MSDS sheets for additional information and first aid procedures.