

## PRODUCT DATA SHEET: KBP 204

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### PRODUCT DESCRIPTION

KBP 204 primer/sealer is a formulated, 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 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 is a **“100% solids, completely reactive”**, low viscosity penetrant, that wicks deep into cracks, pores, etc and then 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 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. During nighttime and high humidity conditions, 5 hours or more may be needed to obtain proper surface dry times. 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 areas should be evaluated under anticipated construction conditions to determine specific catalyst ratios for the expected conditions.

**SPECIAL FEATURES**

- **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

<b>PHYSICAL PROPERTIES - Typical Values</b>	
Specific Gravity - ASTM D1475	1.06
Viscosity- ASTM D2196 w U/L adaptor, 50 rpm, 25C	<.025 Pa-s
Flash Point (Setaflash) ASTM D3278	>82 C
Adhesion(Saturated Surface Dry Bond Test, Cal-Trans 551)	> 3.5 M Pa
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 (7 Days)	>2000 psi
ASTM C-882 Adhesion (hardened concrete to hardened concrete) @ 2 days, RT Cure	> 1800 psi
Surface Coverage Rate*	80-125 sq.ft./gal.

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

\*\*Primer excluded

\*\*\* Calculated

**SEALER APPLICATION**

**Surface Preparation:** As a sealer KBP 204 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 sealer materials.

**Mixing:** KBP 204 Sealer

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

- 1) 4 gallons KBP 204
- 2) 20 fl oz Promoter 8020
- 3) 8 fl oz Cumene Hydro Peroxide(CHP)
- 4) 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 Promoter 8020 and CHP levels may be increased. Adding higher levels of Z Cure accelerator is also suggested. (See catalyzation chart)

Mix the CHP peroxide into the KBP 204 monomer first using a variable speed drill motor mixer. Next, add the Promoter 8020 and mix again for about 30 seconds. **SPECIAL WARNING!!!** KBP Promoter 8020 and Cumene Hydro Peroxide are INCOMPATIBLE MATERIALS. These materials must NEVER contact each other DIRECTLY! A FLASH FIRE will OCCUR! Each component, separately, must be stirred into the KBP 204 monomer. Always follow the mixing steps outlined above. Mix these materials carefully and recognize the potential hazards. Take precautions by wearing protective clothing as well as having a fire extinguisher and plenty of clean water available.

**Placement:** KBP 204 Sealer

After proper proportioning and mixing, distribute the KBP 204 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 sealer and create dry spots. These areas should receive additional amounts of KBP 204 sealer to fill the pores and cracks to the point of refusal to absorb further. Elevated temperatures and UV light significantly increases the reactivity of the KBP 204 sealer and reduces work time. Cold temperatures greatly retard the surface cure of the KBP 204 sealer. 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 system. Under daytime conditions, traffic may be returned in 1.5-3 hours. Under night time conditions the traffic return time can run from 3-5 hours or longer depending on the exact environmental conditions. **Contact Kwik Bond Polymers technical department for recommendations and suggestions.**

Once the KBP 204 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 square yard 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.

## PRIMER APPLICATION

**Surface Preparation:** Primer application is an essential component to the success of the PPC 1121 polyester polymer concrete overlay system. The Primer is a part of our **“Plus” Program** for our MLS and Easy Patch Products. The Primer not only improves overall bonding characteristics for PPC overlay technology, it additionally acts as **“Bridge Insurance Policy”** with its ability to penetrate and re-bond PCC cracks.

For bridge deck overlay applications, the PCC deck surface must be free of curing compounds, oils, deleterious compounds, scaling concrete, and any other condition that may lead to a weakened surface. Preparation methods may consist of micro milling, diamond grinding, steel shot-blasting, hydro-milling, high pressure water blasting, sand blasting, or other mechanical means. Optimally, cement binder paste of the PCC deck surface should be removed, sufficiently, to expose aggregate.

**Mixing:** KBP 204 Primer

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|----|-----------|-----------------------|
| 1. | 4 gallons | KBP 204               |
| 2. | 8 fl oz.  | 6% Cobalt Drier       |
| 3. | 8 fl oz   | Cumene Hydro Peroxide |
| 4. | 1-4 fl oz | Z Cure Accelerator    |

Mix in the same manner and follow the identical precautions as in the Sealer application. Because the KBP 204 has a very low viscosity (thin), materials blend together easily. Do NOT over agitate! High speed agitation may lead to splashing. Avoid contact with eyes, skin, clothing. Be sure to read and follow the information provided in this Product Data Sheet and the Material Safety Data Sheet provided. **DO NOT MIX 6% COBALT and CUMENE HYDRO PEROXIDE directly!!! A FLASH FIRE WILL OCCUR!!**

For information on high volume spray applications, contact Kwik Bond Polymers technical department for suggestions.

**Primer Placement:** Use the same procedures as listed for the sealer placement. Spread rates are the same. Once the methacrylate primer is placed on the deck, sand is not required. The primer will be covered with the polyester polymer concrete material. The primer should be placed in such a manner that it will be covered with the polyester polymer concrete within the current work shift. Primer should not be placed too far in advance of polyester polymer concrete placement in case of equipment break downs, weather, or other variables. Primer that is not covered within a normal work shift with polyester polymer concrete must a) be removed by some methodology or b) covered with a polyester chip seal during the work shift. The primer, uncovered, will remain slightly oily to the touch and may fail skid resistance requirements.

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## 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.

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## PACKAGING

- Cumene Hydro Peroxide (CHP)- available in 1 gallon containers
- KBP 204 monomer- available in 4 gallon pails, 50 gallon drums, 250 gallon Totes.
- Promoter 8020- available in 4.5 gallon pails.
- 6% Cobalt Drier- available 1 gal and 4 gallon containers.
- Z-Cure is available in 1 gal and 5 gallon pails
- Other packaging may be available

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## STORAGE

KBP 204, Promoter 8020 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. Promoters and CHP should be stored in separate locations. The shelf life for these materials is typically twelve months. When stored at elevated temperatures, the KBP 204 reactive monomer may gel prematurely. CHP, Promoter 8020 can have reduced activity after a lengthy storage period. Retest all component materials prior to use on a project.

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## SAFETY

NEVER MIX PROMOTER 8020 or 6% COBALT DRIER with CHP together DIRECTLY! A Flash Fire will occur! Take steps to prevent these materials from contacting one another during mixing, storage, clean up, and/or shipping.

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 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.

The technical data furnished is true and accurate to the best of our knowledge. However, no guarantee of accuracy is given or implied. We suggest that you evaluate these recommendations and suggestions in conjunction with your specific application. Kwik Bond Polymers, LLC warrants its product(s) to be free from manufacturing defects conforming to its most recent material specifications. In the event of defective materials, Kwik Bond Polymers, LLC's liability will be limited to the replacement of material or the material value only at the sole discretion of Kwik Bond Polymers, LLC We assume no responsibility for coverage, suitability of application, performance or injuries resulting from use. 2-1-2009