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BRIDGE DECK & ROADWAY REHABILITATION SYSTEMS

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## PRODUCT DATA SHEET: KBP FLEX

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### PRODUCT DESCRIPTION

KBP FLEX is a flexibilized, high molecular weight methacrylate sealer composition that has been developed for sealing and shrinkage or related cracking in Portland cement concrete, latex modified and/or silica fume(micro silica) concrete. KBP FLEX has been formulated to conform to published specifications for Montana DOT, Cal-Trans, Nevada DOT, Virginia DOT, Washington DOT, FHWA, Bureau of Reclamations, and many other specifying authorities. Formulated high molecular weight methacrylate systems plays distinctly different role than silane or siloxane sealers. KBP FLEX is a 100% solids, low viscosity penetrant, that wicks deep into cracks, pores, etc and then polymerizes to form a tough plastic seal. The end result is a sealed crack that resists the ingress of moisture or other environmental contaminants. KBP FLEX is designed to penetrate quickly and allow return to service within a reasonable period. Typically, material is dry to the touch within 1-3 hours during sunlight conditions and temperatures ranging from 50 F-100F. During nighttime, low temperature, and high humidity conditions, 5 hours or more may be needed to obtain proper surface dry times.

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### SPECIAL FEATURES

- Fast curing properties during daytime, sunlight conditions
- Excellent adhesion to Portland cement concrete, latex modified concrete, silica fume concrete even under damp conditions
- Flexible
- Easy handling, workability, mixing

PHYSICAL PROPERTIES	
Weight per gallon	8.7 lbs
Specific Gravity	1.05
Viscosity (Brookerfield RVT)	<25 cps
Flash Point (Seta-flash)	200 F
Vapor Pressure @20 C (calculated)	.6 mm Hg
% Reactive Solids	100%
Adhesion (SSD Bond Test) (Cal-Trans 551)	600 psi
Gel Time - 50 ml@ 72 F	30 min
Thin Film Tack Free Time (surface cure) (Cal-Trans 551)	250 min
Tensile Elongation (ASTM D-638)	30%
Tensile Strength (ASTM D-638)	2000psi

\* Coverage rates range from 60-150 sf/gal for penetrants like KBP FLEX. Field variables such as surface porosity, grooving, tining, heavy brooming, wide cracks, pop offs, etc. consume proportionately higher amounts of materials.

**SEALER APPLICATION**

**Surface Prep:**

As a sealer, KBP FLEX requires minimal surface preparation. On relatively clean decks, free from significant AC deposits, the decks just needs 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, sand blasting, scarifying or other cleaning may be required to provide a surface that will readily absorb the KBP Flex sealer materials.

**Mixing:**

KBP FLEX: Once the deck has been cleaned, catalyze KBP FLEX using the following formula:

- I. 4 gallons KBP FLEX (pre-promoted with Promotor 8020)
2. 12 fl. oz. Cumene Hydro Peroxide (CHP)
3. 4 fl oz. Z Cure Accelerator (optional - see temperature chart)

**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 (>85° 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, CHP levels may be increased. Adding additional Z Cure accelerator is also suggested. (see temperature chart)

Premix the pre-promoted KBP FLEX monomer first using a variable speed drill motor mixer. Next, add the CHP and mix again for about 30 seconds. **SPECIAL WARNING!!!** Promoter 8020 in the prepromoted KBP FLEX and Cumene Hydro Peroxide are INCOMPATIBLE MATERIALS. These materials must NEVER contact each other DIRECTLY - this why you must thoroughly mix the prepromoted material! A FLASH FIRE will OCCUR! Each component, separately, must be stirred into the KBP FLEX 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:**

After proper proportioning and mixing, distribute the KBP FLEX mixture on the concrete surface as soon as possible. Spread sealer at a rate of 60-120 square feet per gallon, consistent with the listed project specifications. Use a squeegee, roller, broom, low pressure sprayer, etc. to distribute the material uniformly. Some areas may selectively absorb greater amounts of KBP FLEX sealer and create dry spots. These areas should receive additional amounts of KBP FLEX 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 FLEX sealer and reduces work time. Cold temperatures greatly retard the surface cure of the KBP FLEX sealer. Field adjustment of accelerators and/or promoter activators may be required to obtain the proper surface cure within the traffic window allowed. It is important that a test area be evaluated under the same conditions expected on the concrete surface. Differing levels of catalyst should be evaluated to determine surface cure characteristics obtainable under the prevailing job site conditions. Temperature, humidity, fog, night time application conditions have a major effect on the cure response of the KBP FLEX 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 hours or longer depending on the exact environmental conditions. Contact Kwik Bond Polymers technical department for recommendations and suggestions.

Once the KBP FLEX monomer mixture has been distributed properly, wait approximately 10-15 minutes and then broadcast a commercial grade of 8/20 sand blast sand. The intent of broadcasting sand is to provide initial traction to the treated surface. 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 significant quantities of oily residue may remain 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 bonded. Test with a skid tester to verify that it is safe to return the bridge deck to active traffic. Note: Diatomaceous Earth can be lightly broadcast onto any oily residue spots to absorb the inhibited monomer residual. Broom the diatomaceous earth and discard excess sweepings.

**Clean Up:**

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

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**STANDARD PACKAGING**

- KBP FLEX pre-promoted - available in 18.9L drums
- Cumene Hydro Peroxide (CHP)- available in 450ml plastic bottles
- Z Cure Accelerator (optional) -1 gal and 5 gal containers
- Special packaging may be available upon request. Note: Accelerators are available for lower temperature applications.

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**STORAGE**

KBP FLEX, Promoter 8020 and CHP should be stored in a COOL, DRY location and in their original containers. Containers need to remain tightly sealed to prevent contamination. Promoter 8020 and CHP should be stored in separate locations. The shelf life for these materials is one year from the date of manufacturing. When stored at elevated temperatures, above 80 F, the KBP FLEX reactive monomer may gel prematurely. CHP and 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 and 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 FLEX 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 customers evaluate these recommendations and suggestions in conjunction with their specific application. Kwik Bond Polymers, LLC warrants its products 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. Kwik Bond Polymers, LLC assumes no responsibility for coverage, suitability of application, performance or injuries resulting from use. 11-14-2012