



**Sustainable Porous Paving**

## **KBI Flexi<sup>®</sup>-Pave FAQ**

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**Updated 2021**

## **MATERIAL OVERVIEW:**

**Q: What is KBI Flexi-Pave made from?**

**A:** Recycled passenger tires, crushed stone, and KBI's proprietary binding agent.

**Q: Is KBI Flexi-Pave porous?**

**A:** Yes. The products are manufactured using a nominal 1/4" to 3/8" wire free rubber granule and crushed stone, which has an open pore structure enabling fast drainage and evacuation of water. KBI Flexi-Pave is capable of conveying 40 gpm per square foot.

**Q: What is the binding agent?**

**A:** It is a proprietary, single component, moisture cured binding agent. It is a "cold" mix, unlike epoxies and is not activated via chemical reaction. It uses ambient humidity to cure and set up. The binding agent is fully inert once cured and does not leach or emit any components into the environment.

## **MATERIAL INFORMATION:**

**Q: What is the lifespan of the product?**

**A:** KBI Flexi-Pave if maintained and without mechanical damage can be a lifetime product.

**Q: What LEED points does the product qualify for?**

**A:** KBI Flexi-Pave qualifies for up to six (6) credits. (A list of LEED credits can be found on our website and supplied upon request).

**Q: Is KBI Flexi-Pave slip-resistant?**

**A:** Yes. The surface is composed of thousands of rubber granules giving it non-slip qualities.

**Q: How does KBI Flexi-Pave react in cold weather and freeze/thaw areas?**

**A:** Freezing has not been an issue, even in very cold climates. The water drains through the KBI Flexi-Pave and into the sub base below with sufficient void space to prevent any heaving or damage, and the formation of “black ice” is rarely observed. The porous surface tends to provide better traction for both pedestrians and vehicles than conventional pavement.

The use of sand or gravel for deicing would be detrimental to the porous surface. Chemical deicers and plowing can be used to remove snow from the surface. Plows should be equipped with rubber blades. Many sites have reported that light plowing eliminates the need for salt since the remaining snow quickly drains through the KBI Flexi-Pave. This has the added benefit of reducing groundwater and soil contamination from deicing salts.

Because of the elastic properties of the urethane and the compression capabilities of rubber, the pressure exerted by freezing water does not interfere with the mechanical strength of the products. Freeze/thaw testing is available on request.

**Q: What locations have you installed in climates with snow in the winter?**

**A:** New York, Massachusetts, Maine, Connecticut, New Jersey, Pennsylvania, Michigan, Illinois, Indiana, and more!

**Q: How does it handle ice melt or chemicals?**

**A:** KBI Flexi-Pave is not affected by ice melt or any chemicals. It is also twice as effective in the application mode as the voids allow penetration of the ice melt into the pore spaces therefore reducing the application of ice melt by 50% to 70%

**Q: Does the product break down under UV exposure?**

**A:** The rubber and stone are encapsulated with a proprietary binding agent preventing direct exposure of the rubber to UV.

**Q: Will KBI Flexi-Pave fade in time with exposure to the sun?**

**A:** Everything fades at certain speeds with continual exposure to sunlight and obviously at different speeds depending upon location. KBI Flexi-Pave is designed to minimize these effects, therefore giving longevity to color-fastness.

**Q: How hot does the product get?**

**A:** KBI Flexi-Pave will reach ambient air temperature and have minimal prolonged heat retention due to its composition and volume of airspace.

**Q: Is the product fire resistant?**

**A:** Yes. It is a Class B fire rated product. Class A rating can be obtained with a specialized surface coating and is suitable for use on flat roofs or other applications requiring the maximum fire rating.

**Q: Is KBI Flexi-Pave flammable?**

**A:** No. Tire chips were tested in accordance with the Federal Hazardous Substance Act (16 CFR 1500.44) to determine whether tire material would be considered flammable (a material is considered flammable if it ignites and burns with a self-sustained flame at a rate greater than 0.1 inches per second along its major axis). From the test results, it was concluded that scrap tire material is considered a non-flammable.

**Q: If it is porous, can grass grow through, such as it does at cracks in asphalt?**

**A:** Yes. Grass can grow through the product. However, if weed barrier or filter fabric is placed underneath KBI Flexi-Pave, you will eliminate grass growing through.

**Q: What about weeds?**

**A:** In areas that have weed growth issues we would recommend filter fabric or weed barrier use.

**Q: Will sediment loading cause a reduction of flow rate or sealing of portions of the pavement?**

**A:** Test reports from a UCF study indicate that KBI Flexi-Pave is very difficult to "seal." In fact, in the study they actually attempted to seal, in their large field plots, all of the porous paving materials and then ran a standard street sweeper/vacuum across each to see how much material was removed. In KBI Flexi-Pave, they actually recovered slightly more material than they applied due to removal of fines from the base material.

**Q: Can KBI Flexi-Pave be installed over tree roots?**

**A:** Yes. KBI Flexi-Pave is a great product around trees allowing natural ground water recharge. Being poured in place and flexible, it won't crack or pothole, minimizing maintenance and reducing liability claims.

**Q: Is it safe around trees and vegetation?**

**A:** Yes. No leaching or off gassing occurs with the product. It allows positive ground water recharge to promote healthy root growth and reduce surface seeking roots that are looking for water and nutrients.

**Q: What guidelines are required for use around trees or plantings?**

**A:** Certified installers work with arborist and landscape professionals to ensure correct installs around trees and plantings so that no damage will be done to these areas.

**Q: Is KBI Flexi-Pave chemically resistant?**

**A:** Yes. The encapsulation of the rubber and rock by the binding agent is chemically resistant.

**Q: What's the difference in cost compared to concrete or asphalt?**

**A:** It is hard to compare permeable to non-permeable surfacing. Current pricing will vary by market area. KBI Flexi-Pave will normally run \$10.00 to \$12.00 installed per square foot on a site-specific basis.

**Q: How often does it require maintenance or repair and under what circumstances?**

**A:** KBI Flexi-Pave does not "tear" under normal conditions. Repair only occurs with wrongful use and mechanical damage (track vehicles, forklifts, booms, and other heavy construction equipment). KBI can provide recommendations on routine maintenance requirements based on the application.

**Q: Does KBI Flexi-Pave shrink?**

**A:** No, KBI Flexi-Pave includes natural rubber components (recycled tires) which do not shrink over time. KBI has installed products in various climates and locations with no concerns nor required repairs due to shrinkage. Synthetic rubber products (such as EPDM safety surfacing) tend to dry out over time. Once EPDM and other synthetic products dry out, they shrink and separate, creating trip hazards and maintenance issues.

## **SPECIFICATIONS:**

**Q: Do you have any technical papers or information you can send me regarding this product?**

**A:** Yes. Please request a complete informational packet, if needed.

**Q: Do you have CAD drawings?**

**A:** We have basic engineered cross section templates that engineers can use to facilitate their specific projects.

## **INSTALLATION:**

**Q: Is the sub-base standard washed rock typical of other pervious paving systems?**

**A:** Yes. Compacted clean #57 stone used with woven and non-woven geo textiles. KBI also offers a Titan series that uses geocellular structural media as a sub base.

**Q: What is an acceptable base prep?**

**A:** This is on a case-by-case basis depending on application.

**Q: What does the base material need to be?**

**A:** This will vary on engineered applications; standard load bearing will be 4-inches of #57 compacted stone. Non-load bearing can be almost any surface.

**Q: How thick is the product installed?**

**A:** Typical standard is 1½” and 1” for special applications such as over laying existing concrete or asphalt surfaces.

**Q: How long does the product take to set or become ready to use?**

**A:** 24-hours with clear/normal weather conditions.

**Q: Can KBI Flexi-Pave be installed in the rain?**

**A:** No. KBI Flexi-Pave is a moisture-cured product and if the product were actually mixed in the rain the curing would be greatly speeded up, causing the mixture to stiffen and making it impossible to work with. However, when KBI Flexi-Pave has just been installed the rain will accelerate the curing process, which is why in certain cases a light mist of water is used to accelerate the curing process.

**Q: How is KBI Flexi-Pave married/adjoined to existing hardscape?**

**A:** KBI Flexi-Pave can be placed next to and adjoined to any existing product.

**Q: Can KBI Flexi-Pave be installed against concrete or asphalt?**

**A:** Yes. It can be applied next to any adjoining material.

**Q: How does the product handle cold joints?**

**A:** It is a poured in place product with no heat or compaction being used, so cold joints are a moot point as there are no designed or installed joints.

**Q: What conditions and temperature can the product be installed?**

**A:** Flexi-Pave can be installed in temperatures from 32-degrees to 120-degrees. It cannot be installed in wet weather as it is a moisture-cured process.

**Q: How do you patch or repair the product in the case of mechanical damage or is the product needs to be removed for piping, wiring, or mechanical work?**

**A:** Remove the area you need to work on by cutting out and mixing a new batch to complete the repaired area.

**Q: What about leeching?**

**A:** KBI Flexi-Pave has no leeching or off gassing once completed and cured stages.

**Q: What about VOC?**

**A:** There is no VOC release from the product in the cured stage. In the install phase (wet form) the product has a 0.002 VOC release, which is well below federal guidelines. Within 24 hours (cured) there is no VOC releasing.

**Q: Does the product require forming (similar to concrete) prior to installation?**

**A:** Forms are not required for standard applications. The product has enough mass to not need pre-built forms in most applications.

**Q: Does use of the product require coordination with a local plant or manufacturer?**

**A:** No. The only coordination required is contacting KBI directly to facilitate production and shipment of materials. Materials are drop shipped to your local Certified Installer or the jobsite to minimizing cost, handling, scheduling and waste.

**Q: Does KBI do ground preparation?**

**A:** Yes. Our Certified Installers can do complete turnkey installations.

**Q: How much weight will KBI Flexi-Pave hold?**

**A:** With 4-inches of #57 compacted sub-base and 1 ½"-inches KBI Flexi-Pave HD2000, can support 40,000 lbs. per square foot.

**Q: Based on the porosity, what keeps it from washing out underneath the product?**

**A:** It diffuses the water pressure as it passes through the product.

**Q: How many people does it take to install the product?**

**A:** Certified Installers have standard 4 or 5 man crews. Small installations can be completed with 1-2 people depending on the application.

**Q: Are expansion joints required?**

**A:** No. KBI's flexible material serves as one large expansion joint.

## **MAINTENANCE:**

**Q: How is the product maintained?**

**A:** In most applications little or no maintenance is required. If installed in parking lot or driveway application and silt-over occurs vacuuming or low pressure washing can rejuvenate the area to 100% recoverability. An over roll of binder may be required after approximately 5 years.

**Q: How is KBI Flexi-Pave unclogged or de-silted?**

**A:** All porous pavement systems can be silted in or clogged. Flexi-pave is the only one that can be recovered to 100% by vacuuming and light sweeping.

**Q: How often does it have to be cleaned and maintained?**

**A:** This will depend on the application and area installed in. Some application will require no maintenance and others will require a periodic cleaning. (Vacuuming or light sweeping of the surface).

**Q: If a section is patched, will the patch work be visible?**

**A:** Only for a brief period after the patch is installed. Over time (a few weeks to a few months) it will assimilate to look like part of the original install.

**Q: Can KBI Flexi-Pave be snow plowed?**

**A:** Yes. It can be plowed and the use of snow blowers is acceptable. Rubber edges and plowing slightly above the graded finish are recommended in both cases.

## **WARRANTY:**

**Q: Is there a warranty for the product?**

**A:** KBI offers 5-year warranties on most non-vehicular applications.

**Q: How much does the extended warranty cost?**

**A:** The price will vary on application, maintenance plan and also depend on the length of the options selected.

## **COLORS, PAINTING & STRIPING:**

**Q: What colors are available?**

**A:** There are 6 standard colors; however, custom coloring is available. Please see our website for color samples and customization options.

**Q: How is the product colored?**

**A:** KBI Flexi-Pave rubber is coated at the time of processing.

**Q: Can you match the color of an existing surface?**

**A:** Yes. Custom colors are available.

**Q: Can you do logos?**

**A:** Yes.

**Q: As the product weathers, can it be re-colored?**

**A:** It does not weather like most materials but yes it can be repainted if necessary. Paint coatings are durometer matched to our product to prevent lifting and chipping of surface colored installations.

**Q: Can it be line striped or painted?**

**A:** Yes. It can be pinned, striped or painted and car stops can also be installed the same as with traditional surfacing options.

**Q: What kind of paint is used to line stripe?**

**A:** Standard striping paint is used; no special paint is required.

## **OTHER APPLICATIONS & USES:**

**Q: What applications can KBI Flexi-Pave be used in?**

**A:** Flexi-Pave can be used on many application traditional materials can be used, such as: sidewalks, trails, bike paths, parking stalls, tree surrounds, and cart paths.

**Q: Is this material suitable for children's play areas, such as jungle gyms, swings, and slides, where they call fall a fair distance?**

**A:** Yes. KBI Flexi-Pave P2000 (all rubber option) meets ASTM 1292-99 for 7 foot fall criteria.

**Q: Can KBI Flexi-Pave be used on pool decks?**

**A:** Yes. Our KBI Flexi-Pave P2000 (which is all rubber) can be used for pool decks effectively.

**Q: Can KBI Flexi-Pave be installed in parking lots?**

**A:** Yes. For perimeter drains and drainage strips with correct engineering. Under most circumstances trafficked areas and parking lots are not a recommended application. KBI offers an all stone option called Perma-Drive for such areas.

**Q: How does the product perform around beach or sandy areas?**

**A:** It can be installed in any area with the correct engineering.

## **OTHER IMPORTANT QUESTIONS:**

**Q: What is the price comparison to concrete and asphalt?**

**A:** As an engineered product, it is important to look at all cost implications such as whole life costs (maintenance, repair, liability and replacement) for a project and not only initial materials cost.

**Q: Is KBI Flexi-Pave ADA Compliant?**

**A:** Yes. KBI Flexi-Pave exceeds ADA compliance requirements.

**Q: How do you clean the mixer?**

**A:** The mixer and all tools should be treated with bio-diesel or vegetable oil during the install process. Scraping all excess buildup of materials when finishing the project is required.

**Q: Do you have any installed product near me that I can look at?**

**A:** Please contact us for reference sites near your location.

**Q: What parts of the country do you or would you operate in?**

**A:** KBI operates nationally across North America and through affiliates in the UK and EU.

**Q: Can we buy the material and install it ourselves?**

**A:** No. In order to install the product, you must be a trained and Certified Installer of KBI. KBI offers certification to contracting, landscape and surfacing contractors as well as “in house” staff for municipalities and universities.

**Q: How long does it take to get the material delivered?**

**A:** Two to three weeks from the date of order and once the required deposit has been received.

**Q: How long does it take to get pricing and freight quotes?**

**A:** Certified Installers already have pricing guidelines and freight quotes take 1-day or less to process.

**Q: How does KBI Flexi-Pave compare to porous asphalt and concrete?**

**A:** It far exceeds the capabilities of traditional porous paving systems. Superior features include Dynamic voids, 100% recoverability in cleaning, 33% grade capability, no forms, seamless, no adverse effect in freeze thaw conditions, and no effects with ice melt products.

**Q: Does KBI Flexi-Pave have an odor?**

**A:** During installation, there is a mild odor to the binding agent (similar to new carpet or paint). Once cured, the odor goes away.