



INSTALLATION INSTRUCTIONS

PAVEPREP, PAVEPREP SA, and PAVEPREP TSA

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READ BEFORE USING THIS PRODUCT

GENERAL: PavePrep, PavePrep SA, and PavePrep TSA are heavy duty, high strength pavement repair geocomposite membranes used to reinforce and waterproof pavement cracks and joints, to reduce reflective cracking of asphalt concrete overlays, and as heavy duty bridge deck waterproofing membrane. These products are composed of a flexible, high density asphalt mastic between two layers of heat resistant, high strength reinforcing polyester fabric. PavePrep SA additionally has a polymer modified self-adhesive layer which bonds the membrane to the pavement. PavePrep TSA is a thinner version of PavePrep SA. To use, these products are unrolled and bonded to pavement surfaces and then pressure rolled to secure in place. The asphalt concrete overlay is then constructed.

PRODUCT SELECTION: PavePrep, PavePrep SA, and PavePrep TSA are used in the same applications, with the difference being that PavePrep SA and PavePrep TSA do not require a separate bonding adhesive application to install, since they incorporate an adhesive layer. PavePrep TSA is used with thinner asphalt overlays to reduce shadowing of the membrane through the asphalt concrete layer. Products are supplied in 50 ft (15.2m) long rolls in several widths ranging from 12" (0.3m) to 48" (1.2m). Following are guidelines for width selection:

<u>WIDTH</u>	<u>TYPICAL USES</u>
12" (0.3m)	Longitudinal PCC joints not spalled or deteriorated, or waterproofing edge reinforcing strips.
18" (0.46m), 20" (0.51m)	Transverse or longitudinal joints and cracks in asphalt or portland cement concrete surfaces, shoulder or edge joints between asphalt and PCC pavement, longitudinal cold joints in asphalt concrete paving, or other repaired areas. Maximum crack, joint or repaired area width should not exceed 1" (25mm) for 18" (0.46m) product, 3" (75mm) for 20" (0.51m) product, and 6" (150mm) for 24" (0.61m) product.
36" (0.91m), 48" (1.22m)	Distressed, fatigued cracked areas, previously repaired areas, utility cuts up to 18 in. (0.46m) wide for 36 in. (0.9m) wide product, and up to 30" (0.76m) wide for 48" (1.2m) wide product. These are also the standard widths used for bridge and parking deck waterproofing.

In addition to above requirements when used to reinforce cracks, joints, or repaired areas, the selected width shall extend a minimum of 9" (23cm) beyond the repair area. An exception is for longitudinal PCC joints that do not have spalling or edge deterioration as stated above, where 6" (15cm) is acceptable. Note that wider PavePrep products provide improved reflective crack reduction.

SURFACE PREPARATION PROCEDURES: For best performance, these products must only be applied to surfaces that are clean, thoroughly dry with no lingering moisture at cracks, free of contaminants, stable, relatively smooth and which have had defects repaired or treated. Surfaces are to be structurally sound and stable and not experience excessive differential vertical movement from loadings. PavePrep will not reduce reflective cracking in pavements with high differential vertical movement at cracks or joints. Obvious areas of excessive deflection such as potholes, depressed alligator cracked areas, faulted joints, subsided slabs, should be repaired and stabilized to provide a stable surface prior to use of these products. The surface should be sufficiently level or plane without protrusions or depressions, so that the membrane will be in complete contact with the surface.

Cleaning: The surface shall be swept or blown with clean moisture and oil free compressed air to remove dirt, dust, vegetation or other debris. Areas not adequately cleaned with sweeping or air may require additional scraping with shovels or other hand tools. Bonded accumulations may require more intensive cleaning such as high pressure water blasting, wire brushing or abrasive cleaning. Cleaning procedures must produce surfaces that are dry and free from dust, dirt or other contaminants. Additional cleaning procedures for several surfaces follow:

Portland Cement Concrete Surfaces – New PCC pavements usually are treated with curing agents and may be contaminated with form release oils. Curing compounds used should not contain silicone, oil or wax bases, as membrane adhesion may be affected. Form release agents should be a self-dissipating type. New PCC must be cured for at least 7 days prior to product installation. Abrasive cleaning or high pressure water blasting may be required for PCC to remove curing agents or form release compounds.

Wood Decks – Wood decks are commonly treated with preservatives, which may even accumulate on the surface. Excess preservative is to be removed by scraping and cleaning with solvent such as mineral spirits. Wood decks must be cleaned down to the wood surface. Some preservative types may not be compatible with PavePrep and may result in softening or adhesion loss.

Milled Asphalt Concrete Surfaces – Milled asphalt concrete surfaces are highly textured and may have difficult to remove embedded fines and dust in the surface. Cleaning should use high pressure compressed air. If the surface texture contains vertical surfaces or the texture is over 1/4" (6mm) deep, a leveling course should be used prior to membrane installation.

Repair of Cracks, Joints & Other Distresses: Cracks and joints in asphalt concrete or PCC surfaces between 1/4" (6mm) and 2" (50mm) wide shall be cleaned and sealed with an approved hot-applied or chemically curing sealant suitable for use in the project climatic area. Emulsified or cutback sealants are not be used due to membrane softening that may occur. Sealant shall be applied flush with the surface or slightly recessed, with no excesses on the pavement surface. Follow manufacturer and agency instructions for installation. Cracks or joints over 2" (50mm) wide, or other voids, such as potholes, spalled areas, severely fatigued (alligatored) cracked areas, shall be cleaned of loose pavement or debris and patched to surface level with approved materials including Crafco PolyPatch, Mastic 1, TechCrete, a 3/8" (1cm) maximum sized hot mixed asphalt concrete, or a quality cold applied patching material.

Note that solvent containing products must be allowed to fully cure prior to membrane placement, or adhesive loss, softening or blistering of the membrane may occur as solvent evaporates. Vertical elevation differences greater than 3/8" (1 cm) shall be ground or milled smooth or wedged with an approved patching material or sealant.

BONDING TO THE PAVEMENT:

PavePrep: A properly applied layer of bonding adhesive is required to adhere PavePrep to surfaces. Adhesive shall be hot applied paving asphalt cement meeting ASTM D6373, "Standard Specification for Performance Graded Asphalt Binder", grades PG 70-10, PG 64-16 or PG 64-22 in moderate to hot climates and PG 58-22 or 58-28 in cooler climates. Asphalt cement is to be evenly spray or squeegee applied at 300 to 350°F (149 - 177°C) to the pavement surface at 0.15 gsy (0.70 l/sm) and shall extend approximately 1-2" (25 to 50mm) beyond the PavePrep edges. For milled asphalt concrete pavement surfaces, application rate should be 0.20 gsy (0.93 l/sm). Adhesive application rate may need to be slightly adjusted depending on the porosity and texture of the pavement. **CAUTION: Excess adhesive application may cause PavePrep slippage during paving.** PavePrep is to be applied quickly into the hot adhesive to assure adhesion. If stronger bond is desired, Crafcoc PCF-100 may be used instead of the hot asphalt cement. PCF-100 used as bonding adhesive should be applied at 360-400°F (182-204°C) at a rate of 0.15 to 0.20 gsy (0.70 to 0.93 l/sm). **Solvent cutback asphalts or emulsified asphalts are not to be used as bonding adhesive for adhering PavePrep to the pavement surface.**

PavePrep SA and TSA: PavePrep SA and TSA are self-adhesive and bond adequately when surface temperature is above 70°F (21°C). For surface temperatures of 50°F (10°C) to 70°F (21°C), primer shall be used to improve adhesion. Crafcoc Asphalt Primer (Part No. 33140) or equivalent applied at 200 to 400 ft²/gallon (0.12 to 0.24 l/sm) is recommended. Application rate depends on surface condition, porosity and texture. Primer application should result in a completely wetted surface without puddling. **CAUTION: Primer must completely cure prior to membrane installation.** Cure time depends on weather conditions - temperature, cloud cover, wind and humidity. At 70°F (21°C) and sunny, curing will take from 30 minutes to 2 hours. Below 55°F (13°C), primer should be allowed to cure for at least 16 hours or overnight. Minimum temperature for primer application is 45°F (7°C). Primer is cured sufficiently when tacky when touched with no transfer to one's finger. All primed areas must reach this state of cure prior to membrane installation. PavePrep SA or TSA is to be applied the same day as when the primer becomes fully cured. If not installed that day, the surfaces shall be re-primed. If it is undesirable to wait for solvent based primer to cure, alternatively priming can consist of the same hot asphalt cements or PCF-100 as listed above for PavePrep, except that the application rate should be .05 to .10 gsy (0.24 to .47 l/sm). When PavePrep SA or TSA is installed on milled surfaces or as bridge deck waterproofing, priming shall always be used.

INSTALLATION:

Weather and Temperature: The minimum surface temperature for installation of PavePrep products is 50°F (10°C). When installation will be performed during cooler weather conditions (when overnight temperatures drop to below 40°F(4°C)), PavePrep products shall be stored in an area maintained at a minimum temperature of 50°F (10°C) for at least 12 hours immediately prior to use. During installation, weather must be dry, with no rain, drizzle or fog. Additionally, installation should not occur at temperatures less than the dew point due to the possibility of surface moisture which may reduce adhesion.

Placement: PavePrep is unrolled onto the prepared surface and into the hot bonding adhesive. PavePrep SA and TSA are unrolled while removing the release film, onto the prepared (primed if necessary) surface. The woven silvery side is placed face up. During unrolling, the product should be kept in tension to minimize wrinkling. PavePrep products can also be installed by cutting into strips and placing individually instead of unrolling. When installing PavePrep, it must be placed into the hot bonding adhesive layer quickly so that the bottom fabric is saturated. Application trolleys are available to assist with unrolling and application. PavePrep products are to be laid straight, smooth and wrinkle free.

Pavement Cracks, Joints or Other Repairs –PavePrep, PavePrep SA or PavePrep TSA of appropriate width is installed centered over the crack or joint with a minimum of 9" (23 cm) of membrane on each side of the crack or joint, except for longitudinal joints in PCC pavements where 6" (15 cm) on each side is the minimum. Bonding adhesive or primer applications shall extend approximately 1 - 2" (25 - 50mm) beyond each side of the membrane installation. At joints in the membrane, it is recommended that the PavePrep product strips be butted. Butt joints are sealed with a 1/16 - 1/8" (1.5 - 3 mm) band of PCF-100 applied at 320-375F (160-191C) or other approved sealing mastic applied 1 - 2" (25 - 50 mm) wide to assure waterproofing. Joints can also be made by overlapping, however, this results in thicker areas which can reflect through and be seen in the asphalt concrete overly surface. If overlapped, laps should be 2 to 5" (5 to 13cm) wide, and for PavePrep, the lap must be tacked with a layer of hot bonding adhesive to establish adhesion.. Note at overlaps, PavePrep SA and TSA do not require adhesive. Laps should be installed to shed water and be in the direction of paving. If transverse and longitudinal strips overlap, the longitudinal is to be installed over top of the transverse. Overlaps resulting in 3 layers are not permitted.

Bridge Deck and Horizontal Surface Waterproofing Installations – All bridge deck surfaces (portland cement concrete, asphalt concrete or wood) shall be primed prior to installation of PavePrep SA or TSA. PavePrep does not require primer due to use of hot bonding adhesive which functions as a primer. Waterproofing membranes are commonly installed in varying manners for different deck surface designs. Typical membrane installations include installing to the edge of the surface, tucking tightly into the corner and bonding to a vertical curb surface to the overlay level, or installing with a supplemental edge reinforcing strip at the corner. The waterproofing membrane installation must extend vertically to the desired level of waterproofing. The membrane installation must not cross working joints in the deck surface. Membrane installation is to start at the low side and proceed to the high side so that laps shed water. Laps are to be 2 to 5" (5 to 13 cm) and all PavePrep laps are to be tacked with hot asphalt cement or PCF-100 installed at temperature not exceeding 375F (191C). All laps, exposed edges, joints or other discontinuities in the membrane are to be sealed with Crafcoc PCF-100 (installed at correct temperatures listed in the previous section) or other approved sealing mastic. Contact Crafcoc for additional information. Sealing should consist of applying a 1 - 2" (2.5 - 5 cm) wide layer of sealant or mastic, centered at the edge of the overlap and approximately 1/16 - 1/8" (1.5 - 3 mm) thick. If cold applied mastic is used, it must cure at least 24 hours prior to opening to traffic or placing the overlay. If a pavement is installed on top of the membrane, the top edges shall be sealed with PCF 100, or approved sealing mastic.

Penetrations, Drains, Manholes, and Protrusions – At penetrations in the surface, such as drains, manholes, gutters, wide expansion joints, etc, place the membrane over the opening, and then carefully and neatly cut to remove membrane material from the opening to the edge of the opening. Seal all edges with PCF-100 or cold applied mastic. Edge reinforcing strips 12 inch (30 cm) wide can also be used to provide additional reinforcement at edges. At protrusions above the membrane, cut membrane strips to place around the protrusion to the desired waterproofing level and also around the corners and extending onto the surface that the protrusion penetrates. The reinforcing should extend at least 6 inches (15 cm) on the surface from the protrusion in all directions. Full membrane surface is then applied, up to the protrusion with edges sealed with mastic.

Membrane Rolling: Just after applying to the surface, PavPrep products are to be pressure rolled to establish a tight and full continuous bond with the underlying surface. For pavements and bridge decks, pneumatic rollers are recommended, but static steel wheel rollers can also be used. Rolling should consist of at least 3 passes. For milled surfaces, pneumatic rollers are required so that full surface contact is established. Rolling shall be sufficient to establish complete adhesion of the PavPrep product to the surface.

Installation, Inspection and Repair: Following rolling, installation is inspected for deficiencies and repaired if required. PavPrep products must be fully adhered to the pavement surface. If present, blisters shall be punctured to allow air to escape, then pressed into place. Minor wrinkles less than 3/8" (1 cm) can be slit and re-adhered. Small punctures, slits, etc can be covered with sealing mastic. Larger areas of damaged membrane should be removed and patched using standard installation procedures, and membrane with edges sealed with mastic. All joints and edges should be inspected for adhesion and sealing. If deficiencies are noted, they are to be corrected before proceeding with additional construction.

Traffic: After installation on pavement or bridge deck surfaces, PavPrep products can be immediately paved on. Many times, though it is necessary to be opened to traffic prior to overlay construction. PavPrep products are resistant to traffic for temporary short time periods, preferably less than 24 hours, but can be up to 7 days. **CAUTION: PavPrep products are more slippery than pavement especially when wet. Precautions must be taken to limit skid resistance hazards such as reducing speed and providing signage warnings.** At severe traffic loading areas, such as turning, braking and high slopes of over 5%, traffic exposure should be less than 24 hours. After the surface has been exposed to traffic, it must be inspected for damage and repaired if necessary prior to paving.

PAVING WITH ASPHALT CONCRETE: Paving can occur immediately over PavPrep products. Following installation, the membranes may be exposed to rain without damage, but they must be dry prior to paving. Minimum compacted asphalt concrete thickness is 1 1/2" (3.8 cm). The asphalt concrete mixture type used should be as specified by the highway agency. Note that in some cases with overlays from 1 1/2 to 2 1/2 inch, a shadowing effect, in which the membrane pattern is seen in the overlay surface, may occur due to the thickness of the PavPrep membrane. If shadowing is occurring, use of PavPrep TSA, a leveling course or 2 lift paving can eliminate the effect.

Tack Coat: A tack coat must be applied to the PavPrep product surface prior to paving. Recommended tack coat application rate is 0.10 to 0.12 gsy (.24 to .29 l/sm) (residual) of paving grade asphalt cement or standard emulsified asphalt tack coat materials. Cutback tack coats are not permitted because they may soften the membrane.

Placing Asphalt Concrete: Asphalt concrete is placed using standard procedures with the following exceptions: Windrow paving that places hot windrows of asphalt concrete mix on top of the membrane must not be used. Screed burners should be turned off as the close heat may damage the membrane. Laydown should proceed smoothly and uniformly to minimize starting and stopping which may damage the membrane. Mix should be placed from low to high points. When paving over PavPrep products, laydown temperature should not exceed 350°F (177°C).

Compaction: Use of dual drive rollers is recommended. Compaction should occur using standard procedures, except that when using vibratory rollers, amplitude should be set low and frequency high. Mix shoving may occur during compaction in rare cases with some mixes due to the varying surface characteristics of the pavement and the membrane. If shoving occurs, slowing the rolling speed, using dual drive or pneumatic rollers, or lowering laydown and compaction temperatures may reduce the effect.

STORAGE: PavPrep products must be protected from and not be exposed to moisture or rain during shipping and prior to installation. The plastic wrap on the pallets does not protect the product from moisture. Product which has been exposed to moisture and is wet may not adhere adequately. Any material that becomes wet prior to installation shall be removed from the jobsite and discarded. Storage temperature shall not exceed 120°F (49°C). During storage, the plastic release liner may change color due to being in contact with the asphalt adhesive. This change is normal and does not adversely affect the product.

SAFETY PRECAUTIONS: Prior to use, the user must read the Material Safety Data Sheets for these products. Installation requires use of cutting tools, rollers and other equipment and workers may be in traffic environments or on elevated or below grade surfaces. Adequate safety precautions and traffic control measures are to be taken to protect workers during the installation process. Primers, if used, may contain combustible or flammable solvents. Adequate fire protection measures are to be taken during primer installation as specified in the primer MSDS.

ADDITIONAL INFORMATION: For additional information, refer to Product Data Sheets and Material Safety Data Sheets for these products or contact CrafcO, Inc. at www.crafcO.com.