BITUTHENE® 4000 Membrane (US Version)

Membrane and Surface Conditioner System

Product Description

GCP Applied Technologies’ (“GCP”) BITUTHENE®4000 Waterproofing Membrane System combines a 60 mil (1.5 mm) flexible, pre-formed Membrane of a high performance, cross laminated, HDPE carrier film with a unique, tacky, self-adhesive rubberized asphalt compound and BITUTHENE®4000 Surface Conditioner. BITUTHENE®4000 Membrane Surface Conditioner is water based primer and is specifically formulated to promote adhesion by binding dust and concrete efflorescence, to help provide a suitable surface for the BITUTHENE®4000 Waterproofing Membrane. For convenience BITUTHENE®4000 Surface Conditioner is packaged inside each roll of BITUTHENE®4000 Membrane.

Product Advantages

- Waterproofing combined with high hydrostatic head resistance
- Excellent adhesion—special adhesive compound engineered to work with BITUTHENE® 4000 Surface Conditioner
- Cross laminated, high density polyethylene carrier film—provides high tear strength, puncture and impact resistance
- Cold applied—simple application to substrates, including low temperature applications
- Reduced inventory and handling costs—BITUTHENE®4000 Surface Conditioner is included with each roll of Membrane
- Wide application temperature range—excellent bond at temperatures as low as 25°F (-4°C) --and above
- Flexible—elongation in excess of 300% and designed to accommodate a wide range of building configuration details
- RIPCORD® integrated filament —split release on demand feature allows the splitting of the release paper into two (2) pieces for ease of installation in detailed areas
System Components

Membrane

BITUTHENE®4000 Membrane – Self-adhered, rubberized asphalt waterproofing Membrane.

Ancillary Components (the most current Data Sheets for all system components are available on gcpat.com)

- BITUTHENE® 4000 Surface Conditioner – Water-based latex primer adhesive with added alcohol to allow application at low temperatures
- BITUTHENE® Adhesive Primer B2 LVC – Low VOC, solvent based primer to increase adhesion of BITUTHENE® 4000 Membrane to concrete surfaces
- BITUTHENE® Liquid Membrane – Two component, elastomeric, liquid applied detailing compound
- BITUTHENE® Mastic – Rubberized asphalt based mastic
- PREPRUFE® Detail Tape – Double sided self-adhesive tape
- HYDRODUCT® Drainage Composite – High impact and creep resistant geo-composite and protection layer
- BITUTHENE® Deck Prep – Surface leveler for application to uneven or rough concrete surfaces

Limitations of Use

- BITUTHENE® 4000 Membrane and BITUTHENE® Surface Conditioner are specifically designed for use as detailed in this Product Data Sheet and are not intended for any other use. Contact GCPAT Technical Support if any other use is anticipated or intended.
- BITUTHENE® 4000 Membrane is designed for waterproofing surfaces where in service temperatures will not exceed 130°F (54°C).
- Special Note: When this information is printed from the gcpat.com global website, a footer appearing on this document may contain wording restricting it’s applicability to the United States. Note that the information and references in this document also apply to North, Central and South America.

Safety and Handling Information

Read and understand the product label and Safety Data Sheet (SDS) for each system component. All users should acquaint themselves with this information prior to working with the products and follow the precautionary statements. SDSs can be obtained by contacting your local GCP representative or office, by calling GCP toll free at 1–866–333–3SBM (3726) and in some cases from our web site at gcpat.com.

Storage

BITUTHENE®4000 Membrane should be stored upright. Storage temperatures should not be below 25°F (-4°C) and should not exceed 90°F (32°C).
Installation

Technical Support, Details, and Technical Letters

The most up to date detail drawings and technical letters are available at gcpat.com. For complete application instructions, please refer to the current GCP Applied Technologies Contractor Handbook and Literature on (www.gcpat.com). Documents in hardcopy as well as information found on websites other than www.gcpat.com may be out of date or in error. Before using this product it is important that information be confirmed by accessing www.gcpat.com and reviewing the most recent product information, including without limitation Product Data Sheets and Contractor Manuals, Technical Bulletins, Detail Drawings and detailing recommendations. Please review all materials prior to installation of BITUTHENE®4000 Membrane. For technical assistance with detailing and problem solving please call toll-free at (866) 333-3SBM (3726).

Temperature

- Apply BITUTHENE® 4000 Membrane and Conditioner only in dry weather and when air and surface temperatures are 25 °F (−4 °C) or above.
- BITUTHENE® Adhesive Primer B2 LVC and BITUTHENE® Surface Conditioner should only be applied in dry weather when the temperature is above 25 °F (−4 °C). (See separate product information sheets and applicable application instructions.)

Surface Preparation

Surfaces must be structurally sound and free of voids, spalled areas, loose aggregate and sharp protrusions. Remove contaminants such as grease, oil and wax from exposed surfaces. Remove dust, dirt, loose stone and debris. Concrete must be properly cured (minimum 7-days for normal weight structural concrete and 14-days for lightweight structural concrete).

Dry weather application of BITUTHENE®4000 Membrane and BITUTHENE®Surface Conditioner is preferred. If time is critical and damp conditions are unavoidable, BITUTHENE®Adhesive Primer B2 LVC may be used in place of BITUTHENE®Surface Conditioner. The use of BITUTHENE®Adhesive Primer B2 LVC may allow priming and installation of BITUTHENE®4000 Membrane on damp surfaces or green concrete. Using BITUTHENE®Adhesive Primer B2 LVC priming may begin as soon as the concrete will maintain structural integrity. Only use form release agents that will not transfer to the concrete. Remove forms as soon as possible from below horizontal slabs to prevent entrapment of excess moisture. Excess moisture may lead to blistering of the Membrane. Cure concrete with clear, resin-based curing compounds which do not contain oil, wax or pigment. Except with BITUTHENE®Primer B2 LVC as noted above, before application of BITUTHENE®Surface Conditioner and BITUTHENE®4000 Membrane allow concrete to thoroughly dry following any rain. Do not apply any products to frozen concrete.

Repair substrate defects such as spalled or poorly consolidated areas. Remove sharp protrusions and form match lines. For rough or uneven deck surfaces use BITUTHENE®Deck Prep as a repair and leveling agent. See BITUTHENE®Deck Prep product information sheet for details. On masonry surfaces such as rough concrete block and brick walls, apply a parge and trowel cut mortar joints flush to the face of the concrete blocks and bricks.
Surface Conditioning

BITUTHENE®4000 Surface Conditioner is ready to use and can be applied by spray or roller. For best results, use a pump-type air sprayer with fan tip nozzle. Apply BITUTHENE®4000 Surface Conditioner to clean, dry, frost-free surfaces at a coverage rate of 300 ft²/gal (7.4 m²/L). Coverage should be uniform. Surface conditioner should not be applied so heavily that it puddles or runs. Do not apply conditioner directly to BITUTHENE®4000 Membrane. Allow BITUTHENE®4000 Surface Conditioner to dry until the substrate returns to its original (dry) color. At low temperatures or in high humidity conditions, dry time may be extended to greater than one hour.

BITUTHENE®4000 Surface Conditioner is clear when dry and may remain slightly tacky. In general, conditioning should be limited to what can be covered within 24-hours. In situations where long dry times may prevail, substrates may be conditioned up to 24-hours in advance. Substrates must be reconditioned if dirt or dust accumulates on the conditioned surface. Tools should be cleaned with water before surface conditioner dries.

Application on Horizontal Surfaces

Note: GCP PREPRUFE®300R and 300R Plus pre-applied Membranes are strongly recommended and are the preferred products for below slab applications or for any application where the Membrane is applied before concrete is poured. See PREPRUFE®Membrane waterproofing product information sheets at gcpat.com.

All horizontal surfaces to receive BITUTHENE®4000 Membrane should be sloped to drain at least 1/8 in./ft. (11 mm/m). When a minimum slope of 1/8 in. /ft. (11 mm/m) cannot be achieved, 2 layers of BITUTHENE®4000 Membrane or 8-mils of BITUTHENE®Deck Prep and 1-layer of BITUTHENE®4000 Membrane may be an option. Under these conditions and prior to initiating application contact your local GCP representative.

Apply Membrane from the low point to the high point so that laps shed water. Overlap all seams at least 2 in. (50 mm). Stagger all end laps. Roll the entire Membrane firmly and completely as soon as possible. Use a linoleum roller or standard water-filled garden roller less than 30 in. (760 mm) wide, weighing a minimum of 75 lbs (34 kg) when filled. Cover the face of the roller with a “conforming” material such as 1/2 in. (13 mm) plastic foam sheeting or two wraps of indoor-outdoor carpet to allow the Membrane to fully contact the primed substrate. Seal all T-joints and Membrane terminations with BITUTHENE®Liquid Membrane by the end of the day of Membrane application.

Application on Vertical Surfaces

Apply BITUTHENE®4000 Membrane in lengths up to 8 ft (2.5 m). Overlap all seams at least 2 in. (50 mm). On walls higher than 8 feet apply Membrane in two or more “shingled” lifts with the upper sheet overlapping the lower by at least 2 in. (50 mm). Roll all Membrane with a hand roller.
Terminate the Membrane at grade level. Press the Membrane firmly to the wall with the butt end of a hardwood tool such as a hammer handle or secure into a reglet. Failure to use heavy pressure at terminations can result in a poor seal. A termination bar may be used to ensure a tight seal. Terminate the Membrane at the base of the wall if the bottom of the interior floor slab is at least 6 in. (150 mm) above the footing. Otherwise, use appropriate inside corner detail where the wall and footing meet. A 1/8 in. (3 mm) x 1 in. (25 mm) aluminum termination bar aligned with the top of the membrane is recommended for terminations on CMU, in earth covered decks, and in earth bermed applications where soil cannot be fully compacted. See Technical Letter 26 BITUTHENE® Membrane Terminations for additional information.

**Membrane Repairs**

Patch tears and inadequately lapped seams with additional Membrane. Clean damaged Membrane with a damp cloth and dry. Slit fish-mouths and repair with a patch extending 6 in. (150 mm) in all directions from the slit and seal edges of the patch with BITUTHENE® Liquid Membrane. Inspect all Membrane thoroughly before covering and repair all damaged areas.

**Drainage**

HYDRODUCT® Drainage composites are recommended for both active drainage and protection of the Membrane. See HYDRODUCT® Drainage composite Product Data Sheets at gcpat.com.

**Insulation**

Always apply BITUTHENE® 4000 Membrane directly to primed or conditioned structural substrates. Insulation, if used, must be applied over the Membrane. Do not apply BITUTHENE® Membranes over insulation or lightweight insulating concrete.

**Flood Testing (Horizontal Surfaces Only)**

Flood test all horizontal applications with a minimum 2 in. (51 mm) head of water for 24-hours. Mark any leaks and repair when the Membrane is dry. Before flood testing, be sure the structure will withstand the dead load of the water. For highly sloped decks, segment the flood test to avoid excessively deep water near drains. Conduct the flood test 24-hours after completing the application of BITUTHENE® 4000 Membrane Waterproofing System. Immediately after flood testing is completed, and all necessary repairs have been made, install HYDRODUCT® Drainage Composite to protect the BITUTHENE® and damage by other trades.

As an alternate to flood testing, appropriate, electronic leak detection may be used to check the integrity of the system.

**Protection of Membrane**

To prevent damage from other trades, construction materials or backfill protect BITUTHENE® 4000 Membrane immediately after application. To avoid potential blisters place protection immediately where temperatures above 77°F (25°C).
- On vertical applications, use HYDRODUCT® 220 Drainage Composite. Adhere HYDRODUCT® 220 Drainage Composite to Membrane with PREPRUFE® Detail Tape. Alternative methods of protection are to use nominal 1.0 lb/ft³ (16kg/m³), min. 1 in. (25 mm) expanded polystyrene or min.1/4 in. (6 mm) extruded polystyrene that has a minimum compressive strength of 8 lbs/in² (55 kN/m²). Such alternatives do not provide positive drainage to the system. If 1/4 in. (6 mm) extruded polystyrene protection board is used, backfill must not contain sharp rock or aggregate over 2 in. (50 mm) in diameter. Or any debris that might puncture the protection board and/or the Membrane. See Technical 27 Letter Protection Courses Used with GCP Waterproofing Systems for additional information.
- In mud slab waterproofing, or other applications where positive drainage is not specified and/or where reinforced concrete slabs are placed over the Membrane, the use of 1/4 in. (6 mm) hardboard or 2 layers of 1/8 in. (3 mm) hardboard is required to protect the Membrane.

Placing Steel

On horizontal applications when placing steel over properly protected Membrane, use concrete bar supports (dobies) or chairs with plastic tips or rolled feet to prevent damage from sharp edges. Use special care when using wire mesh, especially if the mesh is curled.

Backfill

Place backfill as soon as possible. (see Protection of Membrane above) Use care during backfill operation to avoid damage to the waterproofing system. Follow generally accepted practices for backfilling and compaction. Backfill should be added and compacted in 6 in. (150 mm) to 12 in. (300 mm) lifts.

Approvals

- City of Los Angeles Research Report RR 24386
- Miami-Dade County Code Report NOA 15.0728.10
- U.S. Department of Housing and Urban Development (HUD) HUD Materials Release 628
- BITUTHENE® 4000 Membranes carry a Underwriters’ Laboratory Class A Fire Rating (Building Materials Directory, File TFGUR.7910) when used in either of the following constructions:
  - Limited to noncombustible decks at inclines not exceeding 1/4 in. (6 mm) to the horizontal 1 ft (0.3 m). One layer of BITUTHENE® Waterproofing Membrane, followed by one layer of 1/8 in. (3 mm) protection board, encased in 2 in. (50 mm) minimum concrete monolithic pour.
  - Limited to noncombustible decks at inclines not exceeding 1/4 in. (6 mm) to the horizontal 1 ft (0.3 m). One layer of BITUTHENE® Waterproofing Membrane, followed by one layer of DOW Styrofoam PD Insulation Board [2 in. (50 mm) thick]. This is covered with one layer of 2 ft x 2 ft x 2 in. (0.6 m x 0.6 m x 50 mm) of concrete paver topping.
## Physical Properties for BITUTHENE® 4000 Membrane

<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>TYPICAL VALUE</th>
<th>TEST METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>Dark gray-black</td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td>3 ft x 66.7 ft roll (200 ft²)</td>
<td></td>
</tr>
<tr>
<td>Thickness</td>
<td>60 mils (1.5 mm) nominal</td>
<td>ASTM D3767—method A</td>
</tr>
<tr>
<td>Flexibility, 180° bend over 1 in.</td>
<td>Unaffected</td>
<td>ASTM D1970</td>
</tr>
<tr>
<td>(25 mm) mandrel at -25°F (-32°C)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tensile strength, Membrane, die C</td>
<td>325 psi (2240 kPa) minimum</td>
<td>ASTM D412¹</td>
</tr>
<tr>
<td>Tensile strength, film</td>
<td>5,000 psi (34.5 MPa) minimum</td>
<td>ASTM D882¹</td>
</tr>
<tr>
<td>Elongation, ultimate failure of rubberized</td>
<td>300% minimum</td>
<td>ASTM D412¹</td>
</tr>
<tr>
<td>asphalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crack cycling at -25°F (-32°C), 100 cycles</td>
<td>Unaffected</td>
<td>ASTM C836</td>
</tr>
<tr>
<td>Lap shear</td>
<td>20 lbs (89 N)</td>
<td>ASTM D1002²</td>
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<tr>
<td>Peel strength</td>
<td>11 lbs/in. (1926 N/m)</td>
<td>ASTM D903⁴</td>
</tr>
<tr>
<td>Puncture resistance, Membrane</td>
<td>50 lbs (222 N) minimum</td>
<td>ASTM E154</td>
</tr>
<tr>
<td>Resistance to hydrostatic head</td>
<td>&gt;230 ft (&gt;70m) of water</td>
<td>ASTM D5385</td>
</tr>
<tr>
<td>Permeance</td>
<td>&lt;0.1 perms</td>
<td>ASTM E96, section 12—water method</td>
</tr>
<tr>
<td>Water absorption</td>
<td>&lt;0.1%</td>
<td>ASTM D570</td>
</tr>
</tbody>
</table>

Footnotes:
1. The test is run at a rate of 2 in. (50 mm) per minute.
2. The test is conducted at a speed of 4 in. (102 mm) per minute.
3. Individual Roll Length may vary +/- 1%
4. Test conducted with Bituthene Surface Conditioner at minimum application temperature
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