

## Bituthene® 3000 and Bituthene Low Temperature

### Self-adhesive, rubberized asphalt/polyethylene waterproofing membranes for basements and sub-structures

#### Advantages

- **Waterproof** – high hydrostatic head resistance
- **Cross laminated film** – provides dimensional stability, high tear strength, puncture and impact resistance
- **Cold applied** – no flame hazard; self-adhesive overlaps ensure continuity
- **Chemically resistant** – provides effective external protection against aggressive soils and ground water
- **Flexible** – accommodates minor settlement and shrinkage movement
- **Controlled thickness** – factory made sheet ensures constant, non-variable site application
- **Wide application window** –
  - **Bituthene® Low Temperature** surface and ambient temperatures between -4°C (25°F) and 16°C (60°F)
  - **Bituthene 3000** surface and ambient temperatures at 5°C (40°F) or above
- **RIPCORD® Split Release on Demand** – faster application in the straight-aways, ease of membrane positioning in detailed areas

#### Description

Bituthene 3000 and Bituthene Low Temperature are self-adhesive, rubberized asphalt/polyethylene waterproofing membranes used in basements and sub-structures.

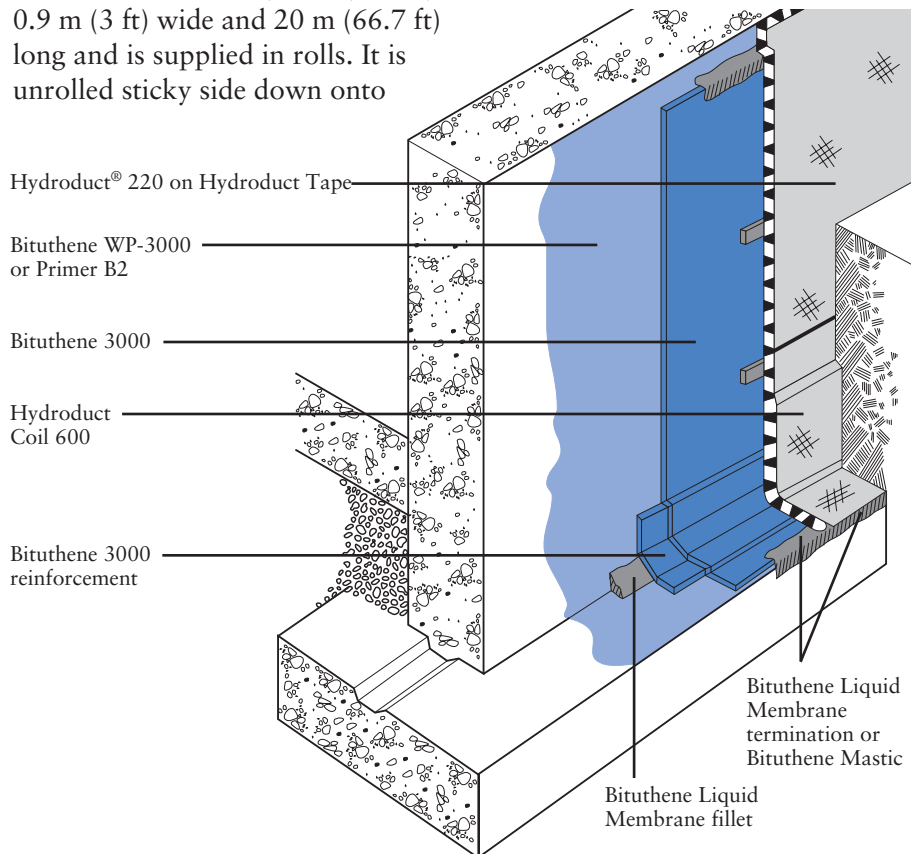
#### Use

Bituthene is ideal for waterproofing concrete, masonry and wood surfaces where in-service temperatures will not exceed 54°C (130°F). It can be applied to foundation walls, tunnels, earth sheltered structures and split slab construction, both above and below grade. (For above grade applications, see “Above Grade Waterproofing Bituthene 3000 and Bituthene Low Temperature.”)

Bituthene is 1.5 mm ( $\frac{1}{16}$  in.) thick, 0.9 m (3 ft) wide and 20 m (66.7 ft) long and is supplied in rolls. It is unrolled sticky side down onto

concrete slabs or applied onto vertical concrete faces primed with Bituthene Primer WP-3000 or Primer B2. Continuity is achieved by overlapping a minimum 50 mm (2 in.) and firmly rolling the joint.

Bituthene is extremely flexible. It is capable of bridging shrinkage cracks in the concrete and will accommodate minor differential movement throughout the service life of the structure.



## Application Procedures

### Safety, Storage and Handling Information

Bituthene products must be handled properly. Vapors from solvent-based primers and mastic are harmful and flammable. Grace Protection Board Adhesive is extremely flammable. For these products, the best available information on safe handling, storage, personal protection, health and environmental considerations has been gathered. Material Safety Data Sheets (MSDS) are available at [www.graceconstruction.com](http://www.graceconstruction.com) and users should acquaint themselves with this information. Carefully read detailed precaution statements on product labels and the MSDS before use.

### Surface Preparation

Surfaces should 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 dried (minimum 7 days for normal structural concrete and 14 days for lightweight structural concrete).

**If time is critical, Bituthene Primer B2 may be used to allow priming and installation of membrane on damp surfaces or green concrete. Priming may begin in this case as soon as the concrete will maintain structural integrity.** Use form release agents which 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 Primer B2, allow concrete to thoroughly dry following rain. Do not apply any products to frozen concrete.

Repair defects such as spalled or poorly consolidated areas. Remove sharp protrusions and form match lines. On masonry surfaces, apply a parge coat to rough concrete block and brick walls or trowel cut mortar joints flush to the face of the concrete blocks.

### Temperature

- Apply Bituthene 3000 Membrane only in dry weather and at air and surface temperatures of 5°C (40°F) and above.
- Apply Bituthene Low Temperature Membrane only in dry weather and when air and surface temperatures are between -4°C (25°F) and 16°C (60°F).
- Apply Bituthene Primer WP-3000 in dry weather above 5°C (40°F).
- Apply Bituthene Primer B2 in dry weather above -4°C (25°F). (See separate product information sheet.)

### Priming

- Apply Bituthene Primer WP-3000 by spray or roller at a coverage rate of 12-15 m<sup>2</sup>/L (500-600 ft<sup>2</sup>/gal). Allow to dry one hour or until concrete returns to original color.
- Apply Bituthene Primer B2 by a lamb's wool roller at a coverage rate of 6-8 m<sup>2</sup>/L (250-350 ft<sup>2</sup>/gal). Allow primer to dry one hour or until tack-free.
- Dry time may be longer in cold temperatures. Reprime areas if contaminated by dust. If the work area is dusty, apply membrane as soon as the primer is dry.
- **Do not apply any primer to Bituthene membrane.**

### Corner Details

The treatment of corners varies depending on the location of the corner. For detailed information on Bituthene Liquid Membrane, see separate product information sheet.

- At wall to footing inside corners –  
**Option 1:**  
Apply membrane to within 25 mm (1 in.) of base of wall. Treat the inside corner by installing a 20 mm (¾ in.) fillet of Bituthene Liquid Membrane. Extend Bituthene Liquid Membrane at least 65 mm (2½ in.) onto footing, and 65 mm (2½ in.) onto wall membrane.  
**Option 2:**  
Treat the inside corner by installing a 20 mm (¾ in.) fillet of Bituthene Liquid Membrane. Apply 300 mm (12 in.) wide strip of sheet membrane centered over fillet. Apply wall membrane over inside corner and extend 150 mm (6 in.) onto footing. Apply 25 mm (1 in.) wide troweling of Bituthene Liquid Membrane over all terminations and seams within 300 mm (12 in.) of corner.
- At footings where the elevation of the floor slab is 150 mm (6 in.) or more above the footing, treat the inside corner either by the above two methods or terminate the membrane at the base of the wall. Seal the termination with Bituthene Liquid Membrane.

### Joints

Properly seal all joints with waterstop, joint filler and sealant as required. Bituthene membranes are not intended to function as the primary joint seal. Allow sealants to fully cure. Pre-strip all slab and wall cracks over 1.5 mm (1/16 in.) wide and all construction and control joints with 230 mm (9 in.) wide sheet membrane strip.

### Application on Horizontal Surfaces

(Note: Preprufe® pre-applied membranes are strongly recommended for below slab or for any application where the membrane is applied before concreting. See Preprufe product information sheets.)

Apply membrane from the low point to the high point so that laps shed water. Overlap all seams at least 50 mm (2 in.). 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 760 mm (30 in.) wide, weighing a minimum of 34 kg (75 lbs) when filled. Cover the face of the roller with a resilient material such as a 13 mm (1/2 in.) plastic foam 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 at the end of the day.

### **Protrusions and Drains**

Apply membrane to within 25 mm (1 in.) of the base of the protrusion. Apply Bituthene Liquid Membrane 2.5 mm (0.1 in.) thick around protrusion. Bituthene Liquid Membrane should extend over the membrane a minimum of 65 mm (2 1/2 in.) and up the penetration to just below the finished height of the wearing course.

### **Vertical Surfaces**

Apply membrane in lengths up to 2.5 m (8 ft). Overlap all seams at least 50 mm (2 in.). On higher walls apply membrane in two or more sections with the upper overlapping the lower by at least 50 mm (2 in.). 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 150 mm (6 in.) above the footing.

Otherwise, use appropriate inside corner detail where the wall and footing meet.

### **Membrane Repairs**

Patch tears and inadequately lapped seams with membrane. Clean membrane with a damp cloth and dry. Slit fishmouths and repair with a patch extending 150 mm (6 in.) in all directions from the slit and seal edges of the patch with Bituthene Liquid Membrane. Inspect the membrane thoroughly before covering and make any repairs.

### **Drainage**

Hydroduct® drainage composites are recommended for both active drainage and protection of the membrane. See Hydroduct product information sheets.

### **Protection of Membrane**

Protect Bituthene membranes to avoid damage from other trades, construction materials or backfill. Place protection immediately in temperatures above 25°C (77°F) to avoid potential for blisters.

- On vertical applications, use Hydroduct 220 Drainage Composite. Adhere Hydroduct 220 Drainage Composite to membrane with Hydroduct Tape. Alternative methods of protection are to use 25 mm (1 in.) expanded polystyrene or 6 mm (1/4 in.) extruded polystyrene that has a minimum compressive strength of 55 kN/m<sup>2</sup> (8 lbs/in.<sup>2</sup>). Such alternatives do not provide positive drainage to the system. If 6 mm (1/4 in.) extruded polystyrene protection board is used, backfill should not contain sharp rock or aggregate over 50 mm (2 in.) in diameter. Adhere polystyrene protection board with Bituthene Protection Board Adhesive or Hydroduct Tape.
- In mud slab waterproofing, or other applications where positive drainage is not desired and where reinforced concrete slabs are placed over the membrane,

the use of 6 mm (1/4 in.) hardboard or 2 layers of 3 mm (1/8 in.) hardboard is recommended.

### **Insulation**

Always apply Bituthene membrane directly to primed or conditioned structural substrates. Insulation, if used, must be applied over the membrane. Do not apply Bituthene membranes over lightweight insulating concrete.

### **Backfill**

Place backfill as soon as possible. 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 150 mm (6 in.) to 300 mm (12 in.) lifts.

For areas which cannot be fully compacted, a termination bar is recommended across the top termination of the membrane.

### **Placing Steel**

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.

### **Approvals**

- City of Los Angeles Research Report RR 24386
- U.S. Department of Housing and Urban Development (HUD) HUD Materials Release 628E

### **Warranty**

Five year material warranties covering Bituthene and Hydroduct products are available upon request. Contact your Grace sales representative for details.

### **Technical Services**

Support is provided by full time, technically trained Grace representatives and technical service personnel, backed by a central research and development staff.

## Supply

### Bituthene 3000 or

|                                  |  |
|----------------------------------|--|
| <b>Bituthene Low Temperature</b> | 0.9 m x 20 m roll (18.6 m <sup>2</sup> ) 3 ft x 66.7 ft (200 ft <sup>2</sup> ) |
| Roll weight                      | 38 kg (83 lbs) gross   |
| Palletization                    | 25 rolls per pallet  |
| Storage                          | Store upright in dry conditions below +35°C (95°F).                            |

### Ancillary Products

|                                  |  |
|----------------------------------|--|
| <b>Bituthene WP-3000</b>         | 18.9 L (5 gal) pail/24 pails per pallet  |
| <b>Bituthene Primer B2</b>       | 18.9 L (5 gal) pail/48 pails per pallet  |
| <b>Bituthene Liquid Membrane</b> | 5.7 L (1.5 gal) pail/100 pails per pallet or 15.1 L (4 gal) pail/24 pails per pallet |
| <b>Hydroduct Tape</b>            | 2.5 cm x 61.0 m (1 in. x 200 ft) roll/6 rolls per carton                             |
| <b>Bituthene Mastic</b>          | 12 – 0.9 L (30 oz) tubes/carton or 18.9 L (5 gal) pail/36 pails per pallet           |

### Complimentary Materials

|                                  |   |
|----------------------------------|---|
| <b>Hydroduct</b>                 | See separate data sheets.               |
| <b>Protection Board Adhesive</b> | 18.9 L (5 gal) pail/36 pails per pallet |

**Equipment by Others:** Soft broom, utility knife, brush or roller for priming

## Physical Properties

| Property   | Typical Value  | Test Method                         |
|--|--|-------------------------------------|
| Color  | Dark gray-black  |                                     |
| Thickness  | 1.5 mm (1/16 in.) nominal                                  | ASTM D3767 – Method A               |
| Flexibility, 180° bend over 25 mm (1 in.) mandrel at -32°C (-25°F) | Unaffected   | ASTM D1970                          |
| Tensile Strength, Membrane, Die C                                  | 2240 kPa (325 lbs/in. <sup>2</sup> ) minimum               | ASTM D412 Modified <sup>1</sup>     |
| Tensile Strength, Film   | 34.5 MPa (5,000 lbs/in. <sup>2</sup> ) minimum             | ASTM D882 Modified <sup>1</sup>     |
| Elongation, Ultimate Failure of Rubberized Asphalt                 | 300% minimum   | ASTM D412 Modified <sup>1</sup>     |
| Crack Cycling at -32°C (-25°F), 100 Cycles                         | Unaffected   | ASTM C836                           |
| Lap Adhesion at Minimum Application Temperature                    | 3000: 700 N/m (4 lbs/in.)<br>Low Temp: 880 N/m (5 lbs/in.) | ASTM D1876 Modified <sup>2</sup>    |
| Peel Strength  | 1576 N/m (9 lbs/in.)                                       | ASTM D903 Modified <sup>3</sup>     |
| Puncture Resistance, Membrane                                      | 222 N (50 lbs) minimum                                     | ASTM E154                           |
| Resistance to Hydrostatic Head                                     | 60 m (200 ft) of water                                     | ASTM D5385                          |
| Permeance  | 2.9 ng/m <sup>2</sup> sPa<br>(0.05 perms) maximum          | ASTM E96, Section 12 – Water Method |
| Water Absorption   | 0.1% maximum   | ASTM D570                           |

#### Footnotes:

1. The test is run at a rate of 50 mm (2 in.) per minute.
2. The test is conducted 15 minutes after the lap is formed and run at a rate of 50 mm (2 in.) per minute at 5°C (40°F).
3. The 180° peel strength is run at a rate of 300 mm (12 in.) per minute.

**For Technical Assistance call toll free at 866-333-3SBM (3726).**

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