Bituthene® System 4000 Surface Conditioner

Use

Bituthene® System 4000 Surface Conditioner is used to condition all structural concrete, masonry or wood surfaces on which Bituthene System 4000 Waterproofing Membrane will be applied.

Safety, Storage and Handling Information

- Bituthene System 4000 Surface Conditioner is nonflammable.
- Bituthene System 4000 Surface Conditioner has a freezing point of 14°F (-10°C) as packaged.
- Read product label and the Material Safety Data Sheet before use.
- Stable up to 5 freeze-thaw cycles.

Application

- Bituthene System 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, like the Bituthene System 4000 Surface Conditioner Sprayer, to apply the surface conditioner.
- Apply Bituthene System 4000 Surface Conditioner to clean, dry, frost-free surfaces at a coverage rate of 300 ft^2/gal (7.4 m^2/L).
- Surface Conditioner should not be applied so heavily that it puddles or runs.
- Back roll over all applied areas.
- Allow Bituthene System 4000 Surface Conditioner to dry one hour or until substrate returns to its original color.
- Bituthene System 4000 Surface Conditioner is clear when dry and may be slightly tacky. In general, conditioning should be limited to what can be covered within 24 hours.
- Do not prime polyethylene surfaces.
- Before Surface Conditioner dries, tools should be cleaned with water.
- After surface conditioner dries, tools should be cleaned with mineral spirits. Mineral spirits is a combustible liquid which should be used only in accordance with manufacturer's recommendations.
- Do not use solvents to clean hands or skin.
- Do not dilute with water or solvent.

Bituthene® Primer WP-3000

Use

Bituthene® Primer WP-3000 is used to prime all structural concrete, masonry or wood surfaces on which Bituthene membranes will be applied.

Safety, Storage and Handling Instructions

- Bituthene Primer WP-3000 is nonflammable.
- Store product in temperatures above freezing 32°F (0°C).
- Read product label and the Material Safety Data Sheet before use.

Application

- Bituthene Primer WP-3000 is packaged ready to use.
- Do not dilute with water or solvent.
- For best results, use a pump type air sprayer with fan tip nozzle, like the Bituthene System 4000 Surface Conditioner Sprayer, to apply the primer.
- Apply Bituthene Primer WP-3000 to clean, dry, frost-free surfaces at a coverage rate of 500-600 ft^2/gal (12-15 m^2/L).
- Primer should not be applied so heavily that it puddles or runs.
- Back roll over all applied areas.
- Allow primer to dry one hour or until concrete returns to original color.
- In general, priming should be limited to what can be covered within 24 hours.
- Do not prime polyethylene surfaces.
- Before primer dries, tools should be cleaned with water.
- After primer dries, tools should be cleaned with mineral spirits. Mineral spirits is a combustible liquid which should be used only in accordance with manufacturer's safety recommendations.
- Do not use solvents to clean hands or skin.

Bituthene® Primer B2 LVC

Use

Bituthene® Primer B2 LVC is used to prime "green" concrete, damp concrete, masonry or wood surfaces on which Bituthene waterproofing membranes will be applied.

Safety, Storage and Handling Information

- Bituthene Primer B2 LVC vapors are flammable.
- Read product label and Material Safety Data Sheet before use.

Application

- Bituthene Primer B2 LVC may be applied by roller or brush. Use a heavy nap roller made of natural material, such as lamb's wool.
- Apply it to clean dirt-free, frost-free surfaces at a coverage rate of 325-425 ft^2/gal (8-10.5 m^2/L).
- Do not apply to frozen concrete or to areas with standing or visible water.
- Do not use during wet weather.
- Allow Bituthene Primer B2 LVC to dry one hour or until tack-free.
- Deep puddles of primer should be avoided as this will lengthen drying time.
- Back roll over all applied areas.
- Avoid pouring primer directly onto a horizontal substrate.
- In general, priming should be limited to an area that can be covered with Bituthene water-proofing membrane within 24 hours.
- Although it may be used on green concrete and damp surfaces, moisture may become trapped under the Bituthene waterproofing membrane. Therefore, cover the membrane as soon as possible to minimize blistering.
- If blistering occurs, allow membrane to cool and re-roll with heavy roller.
- Blisters over 4 in. (100 mm) in diameter should be cut and patched.
- Do not prime polyethylene surfaces.
- Clean tools with mineral spirits at the end of each day. Mineral spirits is a combustible liquid and should be used only in accordance with the manufacturer's safety recommendations.
- Do not use solvents to clean hands or skin.

Bituthene® Deck Prep® Surface Treatment

Use

Bituthene® Deck Prep® is ideally suited as a:

- Leveling agent for rough concrete decks for new and rehab construction
- Non-structural repair material for defects in concrete decks for new and rehab construction
- Temporary waterproofing layer
- Primer layer for Bituthene waterproofing membranes

Safety, Storage and Handling Information

- Read product label and Material Safety Data Sheet before use.

Compatibility

- Bituthene Deck Prep is completely compatible with all other Bituthene products and with existing asphalt or coal tar-based waterproofing materials.
- It is also compatible with cured silicone and polyurethane sealants.
- It is not compatible with creosote, pentachlorophenol, linseed oil or polysulfide-based sealants.

Application

- Substrate surfaces must be completely dry and free from dirt, grease, oil, dust or other debris.
- Bituthene Deck Prep may be applied at temperatures of 25°F (-4°C) or above.
- For applications below 40°F (5°C), store in a warm place prior to use for best results.
- Do not apply if wet weather is expected within 4 hours of application.
- Add the entire contents of the Part B container to Part A and mix for 3 to 5 minutes until uniform.
- A low speed (150 rpm) mechanical mixer with flat parallel blades is required.
- Once mixed, Bituthene Deck Prep should be poured directly onto the deck and spread with a squeegee or a trowel.
- Apply Bituthene Deck Prep within one hour after mixing.
- Bituthene Deck Prep should be applied in sufficient thickness to smooth all rough areas and fill all voids.
- Apply material in thicknesses not to exceed 1/2 in. (13 mm) per coat. Bituthene Deck Prep will adhere to dry, unprimed concrete.
- The product will support light foot traffic after an overnight cure. For interior applications, it may remain tacky even after fully cured.
- Apply Bituthene waterproofing membranes directly to cured Bituthene Deck Prep. No priming or conditioning is necessary.
- Clean tools and equipment with mineral spirits before the product has cured. Mineral spirits is a combustible liquid and should be used only in accordance with the manufacturer's safety recommendations.
- Do not use solvents to clean hands or skin.

GRACE ICE & WATER SHIELD®

Self-adhered roofing underlayment

Product Description

Grace Ice & Water Shield® is a premier membrane composed of two waterproofing materials—an aggressive rubberized asphalt adhesive backed by a layer of high density cross laminated polyethylene. The rubberized asphalt surface is backed with a foldless release paper that protects its adhesive quality. During application, the release paper is easily removed, allowing the rubberized asphalt to bond tightly to the roof deck. In addition, embedded in the membrane is a split release on demand feature called Ripcord®.

The full width membrane is supplied in three roll sizes. See the Product Data chart for product information.

Membrane strips are also available in 75 ft (22.9 m) long rolls at widths of 6 in. (150 mm), 9 in. (225 mm), 12 in. (300 mm) and 18 in. (450 mm).

Features & Benefits

Easy to handle and apply—The self-adhesive membrane bonds firmly to the roof deck without heat or special adhesives.

Ripcord is a unique and patented feature that makes Grace Ice & Water Shield easier to apply by giving the applicator a split release on demand. Faster application of the membrane in the straightaways, as well as ease of membrane positioning in detailed areas (valleys, around dormers, etc.), are just some of the benefits.

Foldless release paper—The foldless release paper provides multiple performance enhancements: fewer edge catches, 180° pull-back, ease of membrane cutting (single cuts) and membrane positioning, quicker "one-man installs" resulting in an easier, more productive release.

Seals around nails—The rubberized asphalt layer in Grace Ice & Water Shield seals around roofing nails, resisting leakage caused by water back-up behind ice dams, or from wind-driven rain.

Dual barrier protection—Rubberized asphalt and polyethylene are combined to form two waterproofing barriers providing maximum protection.

Membrane will not crack, dry out or rot—Grace Ice & Water Shield resists attacks from fungus and bacteria; maintains its integrity for long lasting protection.

Protects under all standard sloped roof coverings—Grace Ice & Water Shield protects under slate, tile, cedar shakes or metal, as well as under conventional asphalt shingles.

Slip resistant surface—Grace Ice & Water Shield has a slip resistant embossed surface to maximize traction and safety for applicators.

Proven track record—Grace Ice & Water Shield is the name brand in roofing underlayments with a 30-year track record of protecting roofs from ice dams and wind-driven rain.

Reroofable—Unlike granular surfaced membranes, Grace Ice & Water Shield will not adhere to the underside of the exposed roof covering. In retrofit applications, Grace Ice & Water Shield can be applied over the old Grace underlayment (except over Grace Basik®, Grace Tri-Flex® and Grace Tri-Flex®Xtreme™) making re-roofing easier, less costly (since there is no need for removing the existing underlayment), more durable and environmentally friendly (as the structural deck remains intact avoiding the need to purchase additional wood decking).

Grace technical support—Grace Ice & Water Shield is backed by a team of local technical support personnel that help ensure every application goes smoothly.

Guidelines for Use

Grace Ice & Water Shield is used as an underlayment for sloped roofs to resist water penetration due to water back-up behind ice dams or wind-driven rain. Grace Ice & Water Shield also offers leak protection in trouble prone spots like valleys, skylights, protrusions and other flashing areas.

Ice Dams

Grace Ice & Water Shield should be used in conjunction with roof designs that minimize ice dam formation. In cold climates, it is particularly important to provide proper insulation and ventilation to reduce the size of ice dams and to avoid interior condensation. Cathedral ceilings must include ventilation between rafters to allow for air flow to a ridge vent. Well ventilated cold roof designs are particularly important in alpine regions to reduce the size of ice dams which could contribute to structural damage.

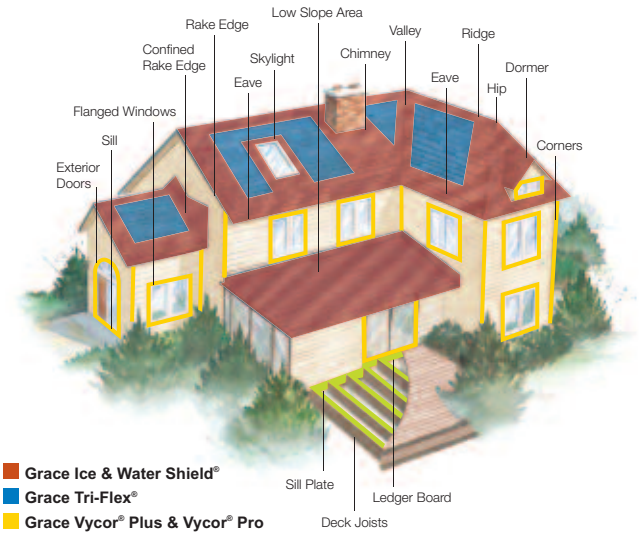
Several variables will influence the height of ice dams and the membrane coverage required.

1. **Climate**—The annual snow fall will affect the amount of membrane needed.
2. **Slope**—On a low slope, ice dams will extend farther inward from the roof edge.
3. **Overhang**—A wide overhang will require more membrane to reach the appropriate point on the roof.
4. **Insulation and ventilation**—A very well insulated building with a cold, well ventilated attic will have smaller ice dams.
5. **Valleys**—Any valleys formed by projections such as dormers or roof direction changes are likely to trap more snow and cause larger ice dams.
6. **Exposure**—A northern exposure or shaded areas will generally contribute to larger ice dams. While gutters may make it easier for an ice dam to start, large dams can occur on roofs with no gutters.

   Removing snow from a roof edge or installing heat cables may not prevent ice dam formation, but may shift the location of the ice dam. Under certain conditions, a dam can form at the edge of the remaining snow.

   Local building codes should be consulted for specific requirements.

Use Grace Ice & Water Shield on all of these critical areas



Installation Procedure

Surface Preparation

Install Grace Ice & Water Shield directly on a clean, dry, continuous structural deck. Some suitable deck materials include plywood, wood composition, wood plank, metal, concrete, or gypsum sheathing. Remove dust, dirt, loose nails, and old roofing materials. Protrusions from the deck area must be removed. Decks shall have no voids, damaged, or unsupported areas. Wood planks should be closely butted together. Repair deck areas before installing the membrane.

Prime concrete, masonry surfaces and DensGlass Gold® with Perm-A-Barrier® WB Primer. Prime wood composition and gypsum sheathing with Perm-A-Barrier WB Primer if adhesion is found to be marginal (refer to Technical Letter 12, *Use on Oriented Strand Board (OSB) Roof Sheathing*). Apply Perm-A-Barrier WB Primer at a rate of 250–350 ft^2/gal (6–8 m^2/L). Priming is not required for other suitable surfaces provided that they are clean and dry.

Membrane Installation

Apply Grace Ice & Water Shield in fair weather when the air, roof deck, and membrane are at temperatures of 40°F (5°C) or higher. Apply roof covering material at temperatures of 40°F (5°C) or higher.

Cut the membrane into 10–15 ft (3–5 m) lengths and reroll loosely. Peel back 1–2 ft (300–600 mm) of release liner, align the membrane, and continue to peel the release liner from the membrane. Press the membrane in place with heavy hand pressure. Side laps must be a minimum of 3.5 in. (90 mm) and end laps a minimum of 6 in. (150 mm). For valley and ridge application, peel the release liner, center the sheet over the valley or ridge, drape, and press it in place. Work from the center of the valley or ridge outward in each direction and start at the low point and work up the roof.

Alternatively, starting with a full roll of membrane, unroll a 3–6 ft (1–2 m) piece of membrane leaving the release liner in place. Align the membrane and roll in the intended direction of membrane application. Carefully cut the release liner on top of the roll in the cross direction being careful not to cut the membrane. Peel back about 6 in. (150 mm) of the release liner in the opposite direction of the intended membrane application exposing the black adhesive. Hold the release liner with one hand and pull the roll along the deck with the release liner, leaving the applied membrane behind. Use the other hand to apply pressure on the top of the roll. Stop frequently to press the membrane in place with heavy hand pressure. When finished with the roll go back to the beginning, reroll and pull the remaining release paper from the material, finishing the installation.

For successive membrane courses, align the edge of the release liner with the dashed line provided on the surface of the membrane to achieve the 3.5 in. (90 mm) side lap.

Consistent with good roofing practice, install the membrane such that all laps shed water. Always work from the low point to the high point of the roof. Apply the membrane in valleys before the membrane is applied to the eaves. Following placement along the eaves, continue application of the membrane up the roof. The membrane may be installed either vertically or horizontally.

Use smooth shank, electro-plated galvanized nails for fastening shingles to get the best seal. Hand nailing generally provides a better seal than power-activated nailing. If nailing of the membrane is necessary on steep slopes during hot or extreme cold weather, backnail and cover the nails by overlapping with the next sheet.

Extend the membrane on the roof deck above the highest expected level of water back-up from ice dams and above the highest expected level of snow and ice on the wall sheathing on vertical side walls (dormers) and vertical front walls for ice dam protection. Consider a double layer of membrane in critical areas, such as along the eaves or in valleys and in climates where severe ice dams are anticipated. Apply the membrane to the entire roof deck for wind-driven rain protection. Apply a new layer of Grace Ice & Water Shield directly over the old Grace underlayment in retrofit applications following the standard membrane application procedure.

Precautions & Limitations

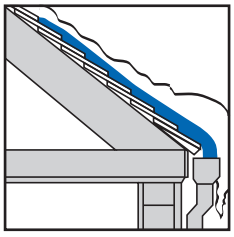
- Slippery when wet or covered by frost.
- Consistent with good roofing practice, always wear fall protection when working on a roof deck.
- Release liners are slippery. Remove from work area immediately after membrane application.
- Do not leave permanently exposed to sunlight. Cover within 30 days.
- Place metal drip edges or wood starter shingles over the membrane.
- Do not fold over the roof edge unless the edge is protected by a drip edge, gutter or other flashing material.
- Do not install on the chamfered edges of wood plank.
- Do not install directly on old roof coverings.
- Certain product applications are prohibited in hot desert areas in the southwestern United States. Check with your Grace Construction Products representative.
- Check with the manufacturer of the metal roofing system for any special requirements when used under metal roofing. Do not install directly under roof coverings especially sensitive to corrosion, such as zinc, without providing proper ventilation.
- Do not install under copper, Cor-Ten®, or zinc metal roofing in high altitudes. These roofs can reach extremely high temperatures due to the low reflectivity, high absorption, and high conductivity of the metals. Use Grace Ultra for these roof types. Check with your Grace Construction Products representative.
- Provide proper roof insulation and ventilation to help reduce ice dams and to minimize condensation. Grace Ice & Water Shield is an air and vapor barrier.
- Repair holes, fishmouths, tears, and damage to membrane with a round patch of membrane extending past the damaged area 6 in. (150 mm) in all directions. If fasteners are removed leaving holes in the membrane, they must be patched. The membrane may not self-seal open fastener penetrations.
- Do not install fasteners through the membrane over unsupported areas of the structural deck, such as over the joints between adjacent structural panels.
- Due to its slight asphaltic odor, do not apply where the membrane is exposed to interior living space. Refer to product literature for more complete information.
- Not compatible with EPDM or TPO; use Grace Ultra for tie-ins (refer to Technical Letter 5, *Chemical Compatibility*).
- Not compatible with polysulfides, flexible PVC, or high concentrations of resin (pitch). For more information, refer to Technical Letter 5.

Code Compliance

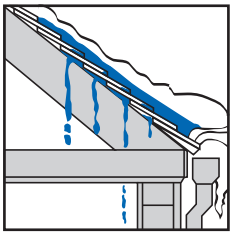
Grace Ice & Water Shield meets the following standards:

- Underwriters Laboratories Inc. Class A fire classification under fiber-glass shingles and Class C under organic felt shingles (per ASTM E108/UL 790)
- Underwriters Laboratories Inc. Classified Sheathing Material Fire Resistance Classification with Roof Designs: P225, P227, P230, P237, P259, P508, P510, P512, P514, P701, P711, P717, P722, P723, P732, P734, P736, P742, P803, P814, P818, P824
- International Code Council Evaluation Services (ICC-ES) Report No. ESR-1677
- Miami-Dade County Product Control Approved. Report No. 09-0107.08
- City of Los Angeles RR 25330
- Florida State Approval Report No. FL289-R3
- U.S. Department of Housing and Urban Development (HUD) Materials Release No. 1068g

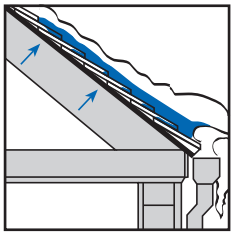
Ice Dams



Water from melting snow over the heated portion of the house runs down the roof. It freezes at the cold eave and an ice dam begins to form preventing drainage.

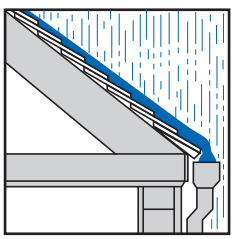


As the ice dam grows, water is trapped behind it and backs up under the shingles. Eventually it reaches the roof deck and leaks through, damaging the interior of the structure.

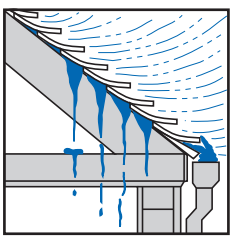


Grace Ice & Water Shield resists this leakage because of the seal around the fasteners, ability to make watertight laps, and the membrane's bond to the deck.

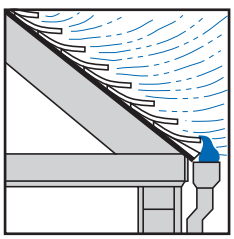
Wind-Driven Rain



Sloped roofs are not waterproof. They protect structures by shedding rain water.



Storm-driven winds can cause sloped roof coverings to lift. Rain can then be easily driven under the roof covering directly to the unprotected roof deck where it causes leaks and damage to the interior of the structure.



Grace Ice & Water Shield applied beneath the sloped roof covering helps prevent wind-driven rain from entering the structure.

Product Data

Roll length	75 ft (22.9 m)	66.6 ft (20.2 m)	36 ft (11.0 m)
Roll width	36 in. (914 mm)	36 in (914 mm)	36 in. (914 mm)
Roll size	225 ft^2 (20.9 m^2)	200 ft^2 (18.6 m^2)	108 ft^2 (10.4 m^2)
Packaging	Corrugated cartons	Corrugated cartons	Corrugated cartons
Roll weight	61.4 lbs (27.9 kg)	55 lbs (24.9 kg)	33.6 lbs (15.3 kg)
Rolls per pallet	35	35	25

Performance Properties

Property	Value	Test Method
Color	Gray-black	
Thickness, membrane	40 mil (1.02 mm)	ASTM D3767 method A
Tensile strength, membrane	250 psi (1720 kN/m^2)	ASTM D412 (Die C modified)
Elongation, membrane	250%	ASTM D412 (Die C modified)
Low temperature flexibility	Unaffected @ -20°F (-29°C)	ASTM D1970
Adhesion to plywood	3.0 lbs/in. width (525 N/m)	ASTM D903
Permeance (max)	0.05 Perms (2.9 ng/m^2s Pa)	ASTM E96
Material weight installed (max)	0.3 lb/ft^2 (1.3 kg/m^2)	ASTM D461

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For technical assistance call toll free at 866-333-3SBM (3726)

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GRACE

Hydroduct® 660 Drainage Composite for Horizontal Applications

Technical Letter 19

Hydroduct® 660 was developed to eliminate the problem of choosing which drainage composite to use in projects with more than one type of overburden. Hydroduct 660 Drainage Composite is recommended for all horizontal applications.

Hydroduct 660 Drainage Composite combines the best attributes of Grace's previous drainage composites. The high impact, creep resistant drainage core has a compressive strength of 21,000 lbs/ft² (1,000 kN/m²) and a drainage flow rate through the core of 16 gal/min./ft (200 L/min./m). High strength, nonwoven filter fabric is uniquely designed to provide enhanced permittivity with superior resistance to damage on the job site. In addition it incorporates a backing film on the flat side of the core to protect sheet and fluid applied waterproofing systems.

Hydroduct 660 Drainage Composite serves as both a drainage course and protection for Bituthene® and Procor® waterproofing membranes. As protection for these waterproofing membranes, drainage composites should be placed immediately following the installation of waterproofing membrane.

In high wind or areas of heavy construction traffic it may be necessary to secure the drainage composite to the waterproofing membrane with Hydroduct Tape or temporary ballast. Overburdens should be installed as soon as possible to prevent construction trade damage.

Insulated Decks

In insulated designs, drainage composite should be placed directly on waterproofing membrane and under insulation. While insulation manufacturers may recommend placement of insulation as close as possible to the structure, it is equally important and good design practice to provide drainage at the waterproofing membrane level. (Reference ASTM C 898 "Guide for use of High Solids Content, Cold Liquid Applied Elastomeric Waterproofing Membrane with Separate Wearing Course" and ASTM C 981 "Guide for Design of Built-Up Bituminous Membrane Waterproofing Systems for Building Decks".)

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Shelf Life
Technical Letter 5

The shelf life of Grace Vycor® Self-Adhered Flashings (Grace Vycor Plus, Grace Vycor V40, Grace Vycor Aluminum, Grace Vycor PRO and Grace Vycor Deck Protector®) is highly dependent on storage conditions. In general, these products should be stored in their original, unopened packaging at ambient temperatures between 40–90°F (5–32°C) under dry conditions and protected from exposure to direct sunlight.

Grace Vycor Self-Adhered Flashings should be used within one year from the date of manufacture.

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