

P R O D U C T I N F O R M A T I O N

Grace Ice & Water Shield®

Self-Adhered Roofing Underlayment For Premium Roof Leak Protection

Description

Grace Ice & Water Shield® has been the premier self-adhesive underlayment product used in domestic roof protection under shingles for more than 20 years. It has performed in the critical areas under the most severe climatic conditions to protect against wind driven rain and the effects of ice dam build up beneath the shingles.

Because of the unique properties of Grace Ice & Water Shield, these benefits are also applicable in its use under a wide range of metal roofing materials, on low and high slope designs.

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 membrane is supplied in 20 metre rolls, 1 metre in width.



Features and Benefits

- **Easy to Handle and Apply**
The self-adhesive membrane bonds firmly to the roof deck without heat or special adhesives. Water cannot seep under the membrane. Watertight seams are easily formed. **RIPCORD** is a unique, patented feature that makes Grace Ice & Water Shield easier to apply by giving the applicator "split-release on demand." Faster application of the membrane in the straight-aways, 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 and, therefore, an easier, more productive release.

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Aesthetically Pleasing: Unlike other forms of ice dam protection, Grace Ice & Water Shield is concealed by the finished roofing, preserving the architectural appearance of the roof.

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; maintaining 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.

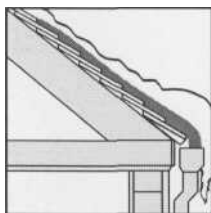
PRODUCT DATA

Roll Length	22.9 m (75 ft)	11.0 m (36 ft)
Roll Width	914 mm (36 in.)	914 mm (36 in.)'
Roll Size	20.9m ² (225 ft ²)	10.4 m ² (108 ft ²)
Packaging	corrugated cartons	corrugated cartons
Roll Weight	27.9 kg (61.4 lbs)	15.3 kg (33.6 lbs)
Rolls per Pallet	35	25

PERFORMANCE PROPERTIES

Property	Value	Test Method
Color	Gray-Black	
Thickness, Membrane	1.02 mm (40 mil)	ASTM D3767 Method A
Tensile Strength, Membrane	1720 kN/m ² (250 psi)	ASTM D412 (Die C Modified)
Elongation, Membrane	250%	ASTM D412 (Die C Modified)
Low Temperature Flexibility	Unaffected @ -29°C (-20°F)	ASTM D1970
Adhesion to Plywood	525 N/m (3.0 lbs/in. width)	ASTM D903
Permeance (max)	2.9 ng/m ² s Pa (0.05 Perms)	ASTM E96
Material Weight Installed (max)	1.3 kg/m ² (0.3 lb/ft ²)	ASTM D461

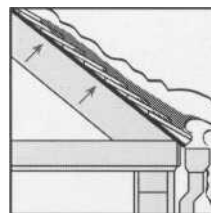
Ice Dams



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.

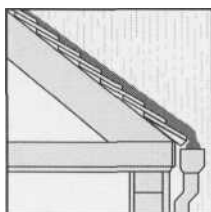


As the ice dam grows, water is trapped behind it and backs up under the shingles. Eventually it reaches the roof deck and leaks through, damaging the interior of the structure.

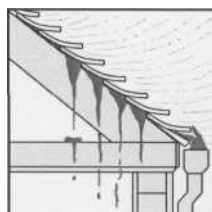


Grace Ice & Water Shield resists this leakage because of the seal around the fasteners, ability to make watertight laps, and the membrane's bond to the deck.

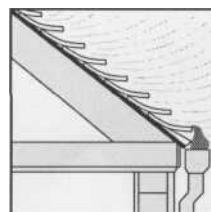
Wind Driven Rain



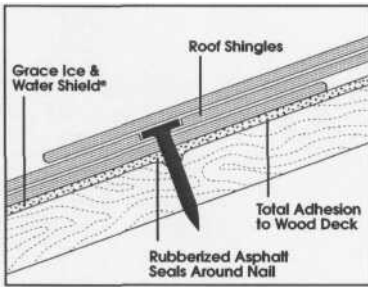
Sloped roofs are not waterproof. They protect structures by shedding rain water.



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.



Seals around nails or fasteners. Fully adheres to deck, resisting leaks from wind-driven rain or water backup due to ice dams.

Proven Track Record: Grace Ice & Water Shield is the name brand in roofing underlayments with a 25 year track record of protecting roofs from ice dams and wind-driven rain.

Reroofable: Unlike some granular surfaced membranes, Grace Ice & Water Shield will not adhere to the underside of the exposed roof covering. Grace Ice & Water Shield can be applied over the old Grace underlayment (except over Grace Basik®) in retrofit applications, making reroofing 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 backup 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 designs which 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.

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. Repair deck areas before installing the membrane.

Prime concrete, masonry surfaces and Dens-Glass 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). Apply Perm-A-Barrier WB Primer at a rate of 6-8 m²/L (250-350 ft²/gal). Priming is not required for other suitable surfaces provided that they are clean and dry.

Membrane Installation

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

Cut the membrane into 3-5 m (10-15 ft) lengths and reroll loosely. Peel back 300-600 mm (1-2 ft) 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 90 mm (3.5 in.) and end laps a minimum of 150 mm (6 in.). 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 1-2 m (3-6 ft) 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 150 mm (6 in.) 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 90 mm (3.5 in.) 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, electroplated 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 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, 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. Place metal drip edges or wood starter shingles over the membrane.

Precautions and 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.
- 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 150 mm (6 in.) in all directions. If fasteners are removed leaving holes in the membrane, it 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; use Grace Ultra for tie-ins (refer to Technical Letter 5).
- 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

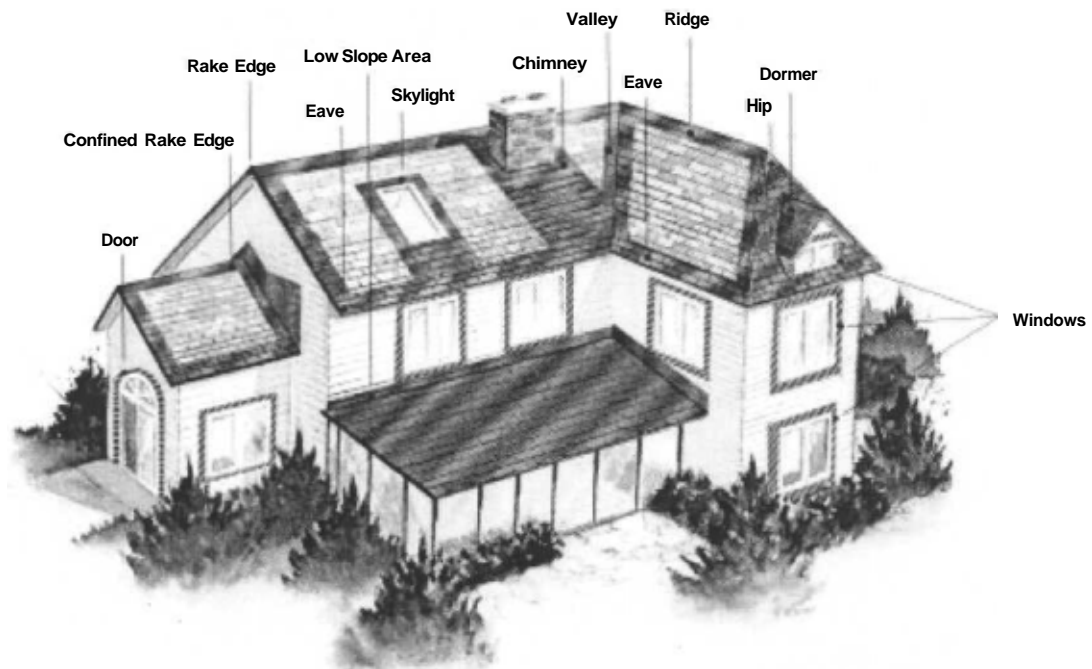
- International Conference of Building Officials (ICBO-ES) Report No. 3997
- Southern Building Code Congress International (SBCCIPST & ESI) Report No. 941338
- Building Officials and Code Administrators (BOCA-ES) Evaluation Report No. 94-33
- Miami-Dade County NOA 99-1108.05
- Canadian Construction Materials Centre (CCMC) 12693-R
- U.S. Department of Housing and Urban Development (HUD) Materials Release 10566
- City of Los Angeles RR 25330

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

You know the "danger zones" where most roof leaks happen. Protect those areas with Grace Ice & Water Shield, and you create a self-sealing barrier that neither melting snow nor wind-driven rain can penetrate through or travel beneath. It takes surprisingly little Grace Ice & Water Shield to make danger zones safe. It adds very little to the cost of a

roofing job, but the benefits of using it are obvious . . . and important. That's why it's an easy sell.

The more danger zones a sloped roof has, the more sense it makes to use Grace Ice & Water Shield. It neutralizes the danger zones in a way felts can't.



GRACE UNDERLAYMENTS PRODUCT SELECTION MATRIX

Application Guidelines	Grace Ultra	Grace Ice & Water Shield*	Grace Select	Grace Basik*
Desert Southwest United States	●	⊗	⊗	○*
Under Copper, Zinc or Cor-Ten® In High Altitude Climates	●	⊗	⊗	⊗
Under Architectural Metal Roofs	●	●	○	⊗
Roofing In High Altitude/Alpine Region	●	●	⊗	⊗
Premium Protection From Severe Ice Dams	●	●	⊗	⊗
As A Vapor Barrier	●	●	●	○
As A Temporary Roof (see product specific appropriate exposure guidelines)	●	●	○	○


*For application on wood substrates only

● Best

○ Good

⊗ Not Recommended

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

 Visit our web site at www.graceconstruction.com

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Cor-Ten is a registered trademark assigned to USX Corporation
Dens-Glass Gold is a registered trademark of G-P Gypsum Corporation

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