

Enershield® -I

Air/Water-Resistive Barrier Membrane

Class 1 Vapor Retarder

 **BASF**
The Chemical Company

Enershield®-I

DESCRIPTION

ENERSHIELD-I is a one-component fluid-applied air/water-resistive barrier that can also function as a Class I vapor retarder¹. It is based on Silica Fortified Rubber™ chemistry. This water-resistant, resilient membrane may be spray-, roller-, or brush-applied directly to approved above grade wall substrates. It provides excellent secondary moisture protection behind most wall claddings including brick, siding, metal panels, EIFS and stucco. A slipsheet is required for stucco claddings.

Do not use ENERSHIELD-I for below-grade applications or on surfaces subject to water immersion.

USES

For use over the following exterior wall substrates:

Poured concrete/unit masonry, poured concrete/unit masonry treated with Enershield-FIL, ASTM C1177 type sheathings, including DensGlass™ exterior sheathing, e²XP™ sheathing, GlasRoc® sheathing, Securock™ glass-mat sheathing, Weather Defense™ Platinum sheathing, GreenGlass® sheathing, PermaBase™ cement-board by National Gypsum and other cement-boards (ASTM C1325 Type A Exterior), Untreated Exposure I or exterior plywood sheathing (grade C-D or better), Untreated Exposure I OSB, gypsum sheathing (ASTM C79/ASTM C1396).

PACKAGING

27.2 kg per 19-liter pail (60 lbs per 5-gallon pail)

4" SHEATHING FABRIC: 101.5 mm x 54.8 m (4" x 180 ft) roll

6" SHEATHING FABRIC: 152.4 mm x 54.8 m (6" x 180 ft) roll

9" SHEATHING FABRIC: 228.5 mm x 54.8 m (9" x 180 ft) roll

COLOR

Reddish Brown

COVERAGE

Substrate

ASTM C1177 Type Sheathing

27 m² (290 ft²) per pail

Cement Board

27 m² (290 ft²) per pail

Plywood*

24 m² (265 ft²) per pail

Oriented Strand Board (OSB)*

24 m² (265 ft²) per pail

Concrete Masonry Units (CMU)*

21 m² (230 ft²) per pail

Poured Concrete

27 m² (290 ft²) per pail

Concrete / Masonry with ENERSHIELD-FIL Block Filler**

28 m² (300 ft²) per pail

Embed Sheathing Fabric

4" Sheathing Fabric

192 m (630 ft) per pail

6" Sheathing Fabric

128 m (420 ft) per pail

9" Sheathing Fabric

85 m (280 ft) per pail

* Roll or spray / backroll for optimum coverage rate. Other application methods may provide less coverage. Actual results may vary depending on surface porosity, moisture uptake or other factors.

** Minimum 30 mil wet film thickness application of ENERSHIELD-FIL.

Note:

SHEATHING FABRIC saturated with ENERSHIELD-I, when applied per manufacturer instructions, self gauges to a 30-40 mil thickness.

ENERSHIELD-I complies with the air barrier requirements of the Massachusetts State Energy Code.

Features	Benefits
ICC-ESR 3310 evaluation report	Confirms compliance with ICC-ES AC 212 and ICC-ES AC148
ABAA evaluated	Approved for projects requiring ABAA specifications and quality assurance
<1% of allowable air leakage per ASTM E2357 Air Leakage of Building Assemblies test	Easily meets air tightness requirements defined by ASHRAE 189.1, ASHRAE 90.1 and ABAA
Meets ASTM D1970 nail sealability requirements with and without Sheathing Fabric	Self sealing performance
One component, low-VOC formulation	Easy to apply, meets VOC requirements in all 50 states
TF Membrane accessory	Seamless membrane at expansion joints and transitions to roof and foundation, and across dissimilar substrates
Nonflammable as applied	Workplace safety
Mineral oil and plasticizer free	Will not dry out or crack due to loss of oil / plasticizer over time
Water based	Cleans up with water; solvent and citrus based cleaners not required
Tough, abrasion resistant	Rugged membrane resists damage after installation
Approved for use with BASF EIFS and stucco systems	Full system warranty, seamless membrane for buildings with multiple claddings
Low temperature performance with LT Additive	Extends minimum application temperature to 4° C (25° F)
180 day outdoor exposure rating	Flexible construction scheduling

Solids 74% solids. **VOC Content** 21 g/l, or 0.17 lbs/gal less water and exempt solvents per ASTM D2369 (based in part on EPA method 24).

Notes

1. Based on 2012 IBC definitions



TEST RESULTS

TEST	RESULT
Air Leakage of Air Barrier Assemblies ASTM E 2357	0.0007 l/s·m ² (0.0001 cfm/ft ²) @ 75 Pa (1.57 psf) positive / post conditioning 0.0014 l/s·m ² (0.0003 cfm/ft ²) @ 75 Pa (1.57 psf) negative / post conditioning
Air Permeance of Building Materials ASTM E 2178	0.0049 l/s·m ² @ 75 Pa (0.00098 cfm/ft ² @ 1.57 psf)
Rate of Air Leakage ASTM E 283	0.0185 l/s·m ² @ 75 Pa (0.0037 cfm/ft ² @ 1.57 psf)
Water Vapor Transmission ASTM E 96 Method A	0.09 Perms (grains/Hr. in Hg. ft ²) @ 26 mils wet film thickness 0.18 Perms (grains/Hr. in Hg. ft ²) @ 10 mils wet film thickness
Pull-Off Strength of Coatings ASTM D 4541	Pass - Min. 110 kPa (15.9 psi) or substrate failure (Tested over exterior gypsum sheathing, ASTM C1177 glass-mat sheathing, cement board, OSB, plywood; pvc and galvanized flashing)
Nail Sealability (without Sheathing Fabric) ASTM D 1970	Pass - No water penetration at galvanized roofing nail penetration under 127 mm (5") head of water after 3 days at 4° C (40° F)
Compound Stability (Elevated Temperature) ASTM D 5147 Section 15	No flowing, dripping or drop formation up to 177° C (350° F).
Surface Burning ASTM E 84	Class A Flame Spread (<25) Class A Smoke Developed Spread (<450)
Multi-Story Fire Tests NFPA 285	Passed using several wall designs. Engineering analyses available upon request.
Resistance to Fungal Defacement ASTM D 5590	Pass

ICC-ES AC 212 Acceptance Criteria for Water-Resistive Coatings used as Water-Resistive Barriers over Exterior Sheathing

Sequential Testing - Structural, Racking, Restrained Environmental Conditioning and Water Penetration

- 1. Structural:** ASTM E 1233 Procedure A No cracking at joints or interface of flashing
- 2. Racking:** ASTM E 72 No cracking at joints or interface of flashing
- 3. Restrained Environmental Conditioning:** ICC-ES AC 212 No cracking at joints or interface of flashing
- 4. Water Penetration :** ASTM E 331 No water penetration after 90 min @ 299 Pa (6.24 psf)
Tested over OSB and gypsum sheathing

Sequential Testing - Weathering

- 1. UV Light Exposure:** ICC-ES AC 212 No cracking or bond failure to substrate
- 2. Accelerated Aging:** ICC-ES AC 212 No cracking or bond failure to substrate
- 3. Hydrostatic Pressure Test:**
AATCC 127-1985 No water penetration

Freeze-Thaw
ASTM E 2485 (Method B) No sign of deleterious effects after 10 cycles (Tested over exterior gypsum sheathing, ASTM C1177 glass-mat sheathing, cement board, OSB, plywood)

Water Resistance
ASTM D 2247 No sign of deleterious effects after 14 day exposure (Tested over exterior gypsum sheathing, ASTM C1177 glass-mat sheathing, cement board, OSB, plywood)

Tensile Bond
ASTM C 297 >103 kPa (15 psi) Tested over exterior gypsum sheathing, ASTM C1177 glass-mat sheathing, cement board, OSB, plywood, CMU; pvc and galvanized flashing

Tensile Bond (before & after freeze-thaw)
ASTM C 297 >103 kPa (15 psi) avg; no failure of the lamina after 10 cycles freeze-thaw (Tested over various substrates)



TEST RESULTS

ICC-ES AC 148 Acceptance Criteria for Flexible Flashing Materials

Sequential Testing - Weathering

- | | |
|--|--|
| 1. UV Light Exposure: ICC-ES AC 148 | No cracking or bond failure to substrate |
| 2. Accelerated Aging: ICC-ES AC 148 | No cracking or bond failure to substrate |
| 3. Hydrostatic Pressure Test:
AATCC 127-1985 | No water penetration |

Peel Adhesion

ASTM D 3330 Method F

Tested over ASTM C1177 glass-mat sheathing, OSB, plywood, pvc and uncoated aluminum

After UV Exposure

Pass

After Accelerated Aging

Pass

After Elevated Temperature Exposure

Pass

After Water Immersion

Pass

Nail Sealability after Thermal Cycling

ASTM D 1970 (Modified), AAMA 711

Pass

Tensile Strength after UV Exposure

ASTM D 5034, AAMA 711

All samples meet the minimum requirement of 3.5 N/mm (20 lbs/in)

Cold Temperature Pliability

ASTM D 1970, AAMA 711

No cracking after bending around a 25 mm (1") mandrel after 2 hour exposure to -18° C (0° F)

Resistance to Peeling

AAMA 711

No signs of distress or failure after 24 hours of exposure at room temperature, 50° C (122° F), 65° C (149° F), 80° C (176° F)

Enershield®-I

MIXING

1. Use directly from original packaging or prepare in a container that is clean and free of foreign substances. Do not use a container which has contained or been cleaned with a petroleum-based product.
2. Mix ENERSHIELD-I with a clean, rust-free paddle and drill until thoroughly blended. Dilution of Enershield-I is not recommended.
3. Additives other than LT ADDITIVE are not permitted.
4. Close container when not in use.
5. Clean tools and equipment with water immediately after use. Dried material can only be removed mechanically.

APPLICATION

Job Conditions

To apply ENERSHIELD-I at ambient temperatures below 4°C (40°F) but greater than -4°C (25°F), thoroughly blend 1 full quart of LT ADDITIVE with one full 5-gallon pail of ENERSHIELD-I. When using LT ADDITIVE, extended drying time can be expected. Do not apply ENERSHIELD-I to frozen or frost-laden substrates.

Do not apply ENERSHIELD-I in ambient temperatures below 4°C (40°F) or onto substrates below 4°C (40°F) unless LT ADDITIVE is used.

Walls shall be capped to prevent moisture and precipitation from entering wall during construction.

Limit the weather exposure of ENERSHIELD-I to a maximum of 180 days.

Surface Preparation

Substrate shall be dry, clean, sound and free of release agents, paint or other residue or coatings.

Unsatisfactory conditions shall be reported to the general contractor and corrected before application of ENERSHIELD-I.

Equipment

Use a 20 mm (3/4") nap roller or paint brush. If spraying, refer to *Spray Application of Enershield-HP/Enershield-I/Enershield-FIL* technical bulletin for spray application equipment and application instructions.

Note: If using roller application, it is necessary to pre-wet the synthetic roller pad with water and spin out the excess water. The pre-wetting only needs to be done once at the start of application.

Procedure

1. Substrate shall be of a type acceptable by BASF and shall be installed per substrate manufacturer's instructions and local code requirements.
2. Apply ENERSHIELD-I to fasteners, sheathing joints, and rough openings as outlined in *Enershield Application Guidelines for Joint Treatment and Flashing Rough Openings on Framed Construction* technical bulletin or *Enershield Application Guidelines for Flashing Rough Openings on Concrete and Masonry Construction* technical bulletin.

- 3.a. Immediately place and center SHEATHING FABRIC over wet ENERSHIELD-I at knot holes and check cracks that may exist in plywood or OSB. Completely saturate SHEATHING FABRIC with ENERSHIELD-I.
- b. If using roller, brush, or trowel application, allow to dry to the touch before applying ENERSHIELD-I to entire wall surface. If spraying, "wet on wet" application is acceptable.
4. Refer to *Spray Application of Enershield-HP / Enershield-I / Enershield-FIL* technical bulletin for spray application equipment and application instructions.
- 5.a. Apply ENERSHIELD-I to DensGlass™ exterior sheathing, e²XP™ sheathing, GlasRoc® sheathing, Securock™ glass-mat sheathing, Weather Defense™ Platinum sheathing, GreenGlass® sheathing, PermaBase™ cement-board by National Gypsum and other cement-boards (ASTM C1325 Type A Exterior), gypsum sheathing (ASTM C79/ASTM C1396) plywood, OSB, concrete or CMU substrate(s) with a 20 mm (3/4") nap roller or spray to a consistent, minimum 13 wet mil thickness. Prior to application of the second coat, visually inspect to assure that the surface is blister free and coating is free of voids and pinholes. Repair if needed and then apply a second coat after the initial coating is sufficiently dry. A minimum of two (2) 13 mil wet coats of ENERSHIELD-I is required. ENERSHIELD-I may be sprayed onto ASTM C1177 sheathing to a 26-mil thickness in one wet application. **Note: Refer to *Spray Application of Enershield-HP/Enershield-I/Enershield-FIL* technical bulletin for spray application equipment and application instructions.**
- b. One application of ENERSHIELD-I at a minimum of 26-mil wet film thickness on concrete/masonry substrates that have been treated with a fully cured coat of ENERSHIELD-FIL. For concrete/masonry substrates that have not been treated with ENERSHIELD-FIL, two (2) minimum 13-mil applications of Enershield-HP are required. **Note: Lightweight CMU or other CMU with high porosity may require additional Enershield-I to produce an acceptable result.**
- c. Visually inspect the ENERSHIELD-I for voids, pinholes, surface deficiencies, etc. Repair deficiencies and areas that are not intact. Apply additional ENERSHIELD-I as necessary such that ENERSHIELD-I is free of voids, pinholes, etc. All sheathing joints, terminations, inside and outside corners must be reinforced with 4" or 9" SHEATHING FABRIC or TF MEMBRANE 4 or 9.

Drying Time

Allow to dry completely, typically 2 to 4 hours at 25°C (77°F) and 50% relative humidity. Protect from rain and from temperatures less than 4°C (40°F) until dry.

LIMITATIONS

Shipping & Storage

Protect BASF materials during transportation and installation to avoid physical damage. Store BASF materials in a cool, dry place protected from freezing. Store at no less than 4°C (40°F). Protect from extreme heat and direct sunlight.

Stacking

Do not stack pallets.

Shelf Life

Approximately 2 years, properly stored in original containers.

TECHNICAL SUPPORT

Consult the BASF Wall Systems Technical Services Department for specific recommendations concerning all other applications. Consult the Enershield website, www.enershield.basf.com, for additional information about products and systems and for updated literature.

HEALTH AND SAFETY

Caution

May be harmful if vapors or mist are inhaled, if absorbed through skin, or if swallowed. May cause eye, skin and respiratory tract irritation. Swallowing this product can cause kidney damage.

Precautions

Avoid getting in eyes, on skin, or on clothing. Avoid breathing vapors or mist. Wear safety glasses or goggles, impervious gloves, and clothing with long sleeves and pants. If TLV or PEL can be exceeded, wear respirator selected by a technically qualified person. Wash thoroughly after handling. Wash contaminated clothing before reuse.

Spills

Wipe up small spills with rags. Absorb larger spills with sand, vermiculite, or kitty litter; sweep up and place in a suitable container for disposal.

First Aid

Eyes: For eye contact, rinse eyes with water. Remove any contact lenses, and continue flushing with plenty of water for several minutes. Seek medical attention if irritation develops and persists.

Skin: For skin contact, wash affected areas with plenty of water, and soap if available, for several minutes. Seek medical attention if irritation develops and persists.

Internal: If inhaled, remove from area to fresh air. Seek medical attention if respiratory irritation develops or if breathing becomes difficult. If swallowed, give 3-4 glasses of water, but do not induce vomiting unless directed to do so by a physician. Do not give anything by mouth to an unconscious or convulsing person. Get medical attention.

Read Material Safety Data Sheet before using this product.

Solids

74% solids

VOC Content

21 g/l, or 0.17 lbs/gal less water and exempt solvents per ASTM D2369 (based in part on EPA method 24).

For medical emergencies only call CHEMTREC at (800) 424-9300.

WARRANTY

BASF warrants this product to be free from manufacturing defects and to meet the technical properties on the current Product Bulletin, if used as directed within shelf life. Satisfactory results depend not only on quality products but also upon many factors beyond our control. BASF MAKES NO OTHER WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO ITS PRODUCTS. The sole and exclusive remedy of Purchaser for any claim concerning this product, including but not limited to, claims alleging breach of warranty, negligence, strict liability or otherwise, is shipment to purchaser of product equal to the amount of product that fails to meet this warranty or refund of the original purchase price of product that fails to meet this warranty, at the sole option of BASF. In the absence of an extended warranty issued by BASF, any claims concerning this product must be received in writing within one (1) year from the date of shipment and any claims not presented within that period are waived by Purchaser. BASF WILL NOT BE RESPONSIBLE FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL (INCLUDING LOST PROFITS) OR PUNITIVE DAMAGES OF ANY KIND.

Purchaser must determine the suitability of the products for the intended use and assumes all risks and liabilities in connection therewith. This information and all further technical advice are based on BASF's present knowledge and experience. However, BASF assumes no liability for providing such information and advice including the extent to which such information and advice may relate to existing third party intellectual property rights, especially patent rights, nor shall any legal relationship be created by or arise from the provision of such information and advice. BASF reserves the right to make any changes according to technological progress or further developments. The Purchaser of the Product(s) must test the product(s) for suitability for the intended application and purpose before proceeding with a full application of the product(s). Performance of the product described herein should be verified by testing and carried out by qualified experts.



For the most current version of this literature, please visit our website at www.enershield.basf.com.

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