

# Enershield™-I

Vapor Impermeable Air/Water-Resistive Barrier Membrane



 **BASF**

The Chemical Company

# Enershield™-I

## DESCRIPTION

ENERSHIELD-I is a one-component fluid-applied vapor impermeable air/water-resistive barrier. This waterproof, resilient coating 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 EIFS, stucco\*, brick, siding and metal panels.

\* A slipsheet is required for stucco claddings.

## USES

For use over the following exterior wall substrates:  
ASTM C1177 type sheathings, including DensGlass™ exterior sheathing, e<sup>2</sup>XP™ 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), poured concrete/unit masonry.

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

## COLOR

Reddish Brown

## COVERAGE

Approximate coverage rates are as follows:

### Over ASTM C1177 Type Sheathing:

14–15 m<sup>2</sup> (150–160 ft<sup>2</sup>) per pail

### Over Cement Board:

15–18 m<sup>2</sup> (160–190 ft<sup>2</sup>) per pail

### Over Plywood:

9–13 m<sup>2</sup> (100–140 ft<sup>2</sup>) per pail

### Over OSB:

9–13 m<sup>2</sup> (100–140 ft<sup>2</sup>) per pail

### Over ASTM C79/C1396 Type Sheathing:

18–21 m<sup>2</sup> (190–230 ft<sup>2</sup>) per pail

### Over CMU:

7–14 m<sup>2</sup> (80–150 ft<sup>2</sup> varies with porosity) per pail

## 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

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

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

### Advantages

Meets ASTM E2357 Air Leakage of Building Assemblies requirements specified by the ABAA and listed in ASHRAE 189.1

Meets ICC-ES AC 212 water-resistive barrier tests; one fully qualified air/water-resistive barrier material for the entire building

Meets ICC-ES AC 148; can be used as a flexible flashing at rough openings or through-wall penetrations

Self-sealing; meets ASTM D 1970 Nail Sealability requirements

Approved for BASF Wall Systems products; system warranty with Senergy, Finestone, Acrocrete, and SonoWall EIFS and stucco wall claddings

Liquid-applied, continuously-bonded membrane; eliminates seams, lap joints and staples; transmits wind loads directly to the substrate

One component, water-based, very low VOC content; safe for workers and the environment, low odor, easy application

Nonflammable as applied; promotes workplace safety

Spray-, roller- or brush-applied; versatile, applicator-friendly performance

Compatible with lightweight, low-cost spray equipment; fast, easy, economical application

No primer required; single pass application on most substrates

Asphalt and plasticizer-free; easy cleanup, will not dry out or leach plasticizer after application

180-day maximum outdoor exposure; can schedule application before cladding installation

**Solids** 74% solids. **VOC Content** 11 g/l, or 0.09 lbs/gal less water and exempt solvents per ASTM D2369 (based in part on EPA method 24).



## TEST RESULTS

TEST	RESULT
<b>Air Leakage of Air Barrier Assemblies</b> ASTM E 2357	0.0007 l/s·m <sup>2</sup> (0.0001 cfm/ft <sup>2</sup> ) @ 75 Pa (1.57 psf) positive / post conditioning 0.0014 l/s·m <sup>2</sup> (0.0003 cfm/ft <sup>2</sup> ) @ 75 Pa (1.57 psf) negative / post conditioning
<b>Air Permeance of Building Materials</b> ASTM E 2178	0.0049 l/s·m <sup>2</sup> @ 75 Pa (0.00098 cfm/ft <sup>2</sup> @ 1.57 psf)
<b>Rate of Air Leakage</b> ASTM E 283	0.0185 l/s·m <sup>2</sup> @ 75 Pa (0.0037 cfm/ft <sup>2</sup> @ 1.57 psf)
<b>Water Vapor Transmission</b> ASTM E 96 Method A	0.097 Perms (grains/Hr. in Hg. ft <sup>2</sup> ) @ 26 mils wet film thickness 0.18 Perms (grains/Hr. in Hg. ft <sup>2</sup> ) @ 10 mils wet film thickness
<b>Pull-Off Strength of Coatings</b> 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)
<b>Nail Sealability</b> (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)
<b>Surface Burning</b> ASTM E 84	Flame spread = 15 Smoke developed = 95
<b>Compound Stability</b> (Elevated Temperature) ASTM D 5147 Section 15	No flowing, dripping or drop formation up to 177° C (350° F).

## 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

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

### Sequential Testing - Weathering

- |  |  |
|--|--|
| <b>1. UV Light Exposure:</b> ICC-ES AC 212             | No cracking or bond failure to substrate |
| <b>2. Accelerated Aging:</b> ICC-ES AC 212             | No cracking or bond failure to substrate |
| <b>3. Hydrostatic Pressure Test:</b><br>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

- |  |  |
|--|--|
| <b>1. UV Light Exposure:</b> ICC-ES AC 148             | No cracking or bond failure to substrate |
| <b>2. Accelerated Aging:</b> ICC-ES AC 148             | No cracking or bond failure to substrate |
| <b>3. Hydrostatic Pressure Test:</b><br>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

- |  |      |
|--|------|
| <b>After UV Exposure</b>                   | Pass |
| <b>After Accelerated Aging</b>             | Pass |
| <b>After Elevated Temperature Exposure</b> | Pass |
| <b>After Water Immersion</b>               | 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 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

Do not apply BASF materials in ambient temperature below 4°C (40°F). Provide supplementary heat during installation and drying period (at least 24 hours after installation and until dry) when temperatures less than 4°C (40°F) prevail. Do not apply BASF materials to frozen or frost-laden surfaces.

Limit the weather exposure of ENERSHIELD-I to a maximum of 180 days. Verify surfaces are free of dirt, contaminants, or other deleterious conditions before application of cladding. Report and correct any such conditions prior to cladding application. Dry/cure times of adhesively applied EPS insulation board installed over ENERSHIELD-I may be prolonged, particularly in cool and/or damp weather. Non-cementitious adhesives are not recommended for EPS insulation board attachment to ENERSHIELD-I. Proper application is the responsibility of the user.

### Surface Preparation

Substrate shall be dry, clean, sound and free of release agents, paint or other residue or coatings. Verify substrate is flat, free of fins or planar irregularities greater than 6.4 mm in 3 m (1/4" in 10'). 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* 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. Wrap openings with SHEATHING FABRIC by applying a generous amount of mixed ENERSHIELD-I to all surfaces and immediately embedding SHEATHING FABRIC, completely saturating the SHEATHING FABRIC. If necessary, apply a second coat of ENERSHIELD-I to ensure a complete, void-free membrane.
3. Spot all fasteners and precoat sheathing joints, terminations, inside and outside corners with mixed ENERSHIELD-I using a 101 mm (4") wide by 20 mm (3/4") nap roller, brush or spray.
- 4.a. Immediately place and center SHEATHING FABRIC over wet ENERSHIELD-I at all sheathing joints, terminations, inside and outside corners, as well as knot holes and check cracks that may exist in plywood or OSB. Ensure SHEATHING FABRIC extends evenly on both sides of the sheathing joint. Completely saturate SHEATHING FABRIC with ENERSHIELD-I.
  - b. Lap SHEATHING FABRIC 63.5 mm (2 1/2") minimum at intersections.
  - c. If using roller, or brush application, allow to dry to the touch before applying ENERSHIELD-I to entire wall surface. If spraying, "wet on wet" application is acceptable.
5. Apply ENERSHIELD-I to DensGlass™ exterior sheathing, e<sup>2</sup>XP™ 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 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 sheathing 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 to a 26-mil thickness in one wet application. Backrolling may be needed to produce a pinhole-free film. If backrolling is required, a second spray application may be needed. **Note: Refer to *Spray Application* technical bulletin for spray application equipment and application instructions.**

### Drying Time

Allow to dry completely, typically 2 to 10 hours, before proceeding with EIFS or other cladding installation. Protect from rain and from temperatures less than 4°C (40°F) for 24 hours.

### For Best Performance

Prior to application of EPS insulation boards for EIFS or alternative claddings, 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. Reference *Air/Vapor/Water-Resistive Barrier Guidelines* technical bulletin for proper treatment of rough openings and sheathing joints.

## 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](http://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

11 g/l, or 0.09 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.**

air barrier  
**abaa**  
association of  
america

**AWCI**



### NOTE

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