

TECHNICAL BULLETIN

TARGET MARKET ROOFING



BUILDING TRUST



Subject: Expanded Polystyrene (EPS)

16-06

The use of expanded polystyrene (EPS) insulation boards within our roofing systems may provide an effective means for adding insulation, taper/cricket system or as a recover layer over existing roof installations.

Warranty & Suppliers

Roofing projects are eligible for System warranties when utilizing a Type II EPS boards supplied by Sika Corporation – Roofing (Sika). EPS insulation is not acceptable for installation in Protected Membrane Assemblies (PMA). Approved suppliers for our EPS boards are AFM Corporation, Insulfoam, and Atlas EPS.

Storage and Handling

When stored outdoors all material should be protected from exposure to direct sunlight using an opaque, light-colored tarp. Do not use a dark colored tarp. Factory applied packaging is intended only for protection during transit. When stored outdoors or on the job site, the insulation should be stacked on pallets at least 4 in (102 mm) above the surface level and completely covered with a light colored weatherproof covering such as a tarpaulin. The temporary factory applied packaging should only be slit enough to prevent accumulation of condensation and then removed prior to immediate use. Roof insulation that becomes wet or damaged should be removed and replaced with dry insulation.

Approval Requirements

To achieve an external fire rating of Class A or B a thermal barrier is needed between the membrane and polystyrene insulation board. This barrier may be either 1/4 in (6.4 mm) thick minimum U.S.G. Securock, Georgia-Pacific DensDeck board or a thermal slip-sheet such as Atlas FR-10 or FR-50.

Polystyrene insulations may be applied directly over metal decks depending on local code requirements and providing the property is NOT insured by Factory Mutual (FM). Underwriters Laboratories (UL) approves polystyrene insulation direct to steel deck. UL Standard 1256, Fire Test of Roof Deck Constructions, tests roof deck constructions subjected to internal fire exposure. UL Standard 790, Test Methods for Fire Tests of Roof Coverings, tests fire resistance performance of roof coverings subjected to external fire exposure.

FM requires a thermal barrier such as 5/8 in (15.8 mm) thick Type X core gypsum board or minimum 1/2 in (12.7 mm) thick DensDeck board between the steel deck and polystyrene insulation. Check with local building officials for direct to steel deck applications.

System Requirements

Sika polystyrene insulations are for use on all deck types, new, re-roof, and re-cover applications (nailable and non-nailable). With adhered systems, the membrane shall be adhered to the thermal barrier board¹ with Sarnacol® water based adhesives or Sarnacol low rise urethane foam membrane adhesives (felt-backed membranes only). Boards may be attached to roof decks with Sarnafasteners and Sarnaplates or with Sarnacol low rise urethane foam board adhesives (insulation boards shall be 4' x 4', 1.2 m x 1.2 m) over acceptable deck types. All adhered systems or mechanically fastened systems using a vapor/air retarder shall be installed in accordance with specified uplift requirements per the job specifications. A minimum of 6 fasteners per 4' x 8' (1.2 m x 2.4 m) board shall be used in a mechanically attached system without a vapor/air retarder. With a vapor retarder, fastener density is equivalent to that required for an adhered system. Consult Sika Roofing Technical Department for further information or questions. When installing the RhinoBond® system over EPS board, the RhinoBond PS Cardboard Disc must be placed under the RhinoBond plate to minimize melting or scorching of the EPS insulation. The EPS insulation must have an acceptable facer for compatibility and meet UL fire code listings.

Fanfold Underlayment Options

In addition to the standard EPS insulation boards, we are offering fanfold roofing underlayment options for Sikaplan® mechanically attached or RhinoBond roof systems. The R-Tech® FF and ThermalStar® LRi™ products are premium fanfold roofing underlayments, ideal for recover applications over approved existing roof systems, with the Sikaplan Fastened roof system. The products are ½ inch (12.7 mm) thick, 20 psi and are packaged in 4' x 50' (1.2 m x 15.3 m) bundles for easy handling and quick installation.

When installing the RhinoBond system over the EPS fanfold board, the RhinoBond PS Cardboard Disc must be placed under the RhinoBond plate to minimize melting or scorching of the EPS fanfold insulation.

The fanfold underlayment assemblies are not FM Approved. We do have UL fire ratings with these boards when installed over a UL Classified and listed assembly. These recover assemblies do not require a thermal barrier to be installed between the EPS and the membrane. In the UL Directory the recover applications are noted as "Maintenance and Repair". Following are the UL recover fire rating listings when the fanfold boards are used.

Maintenance and Repair Class A, B or C

ThermalStar® LRi™.

1. Deck: NC

Incline: 1/2

Existing Deck: - Class A, B or C built up system, smooth surface, cap sheet or gravel surfaced, gravel may be removed.

Barrier Board (if gravel is removed): - ½ in. gypsum board.

Insulation: - "ThermalStar LRi Underlayment", "ThermalStar TS", "THERMALSTAR CHROME", "ThermalStar X-Pro", "INTEGRITY", or "Atlas EPS", 1/2 in. thick maximum, mechanically fastened.

Membrane: - Sika Sarnafil "Sikaplan 45", "Sikaplan 60" or "Sikaplan 80" PVC, mechanically fastened.

R-Tech® FF

1. Deck: NC

Incline: 1/2

Existing Roof System: - Class A, B or C built-up or modified bitumen system, (smooth surface, cap sheet or gravel surfaced with gravel maintained). Or Class A, B or C single-ply system (polystyrene in existing single-ply system must be below a coverboard or minimum 1 in. thickness of polyisocyanurate), to retain the existing Classification.

Insulation: - "R-TECH" Type "I", "VIII", "II", "IX" or "FanFold" 1 in. max thickness.

Membrane: - Mechanically fastened one of the following UL Classified: CSPE, EIP, PVC, EPDM, TPO or CPA.

2. Deck: C-15/32

Incline: 1/2

Existing Roof System: - Class A, B or C built-up system, smooth surface, cap sheet or gravel surfaced (gravel maintained) to retain the existing Classification.

Insulation: - "R-TECH" Type "I", "VIII", "II", "IX", "FanFold" or "Insulfoam" Type "I", "VIII", "II", "IX", 1 in. max thickness.

Membrane: - Any UL Classified CSPE, EIP, PVC, TPA, NBP, TPO or EPDM, mechanically attached. EPDM must be Classified for use in an adhered or mechanically fastened application.

AFM Foam Control

1. Deck: NC

Incline: 1/2

Existing Roof System: - Class A, B or C built-up or modified bitumen system, (smooth surface, cap sheet or gravel surfaced with gravel maintained). Or Class A, B or C single-ply system (polystyrene in existing single-ply system must be below a coverboard or minimum 1 in. thickness of polyisocyanurate), to retain the existing Classification.

Insulation: - "Foam-Control EPS", "Foam-Control EPS Tapered", or "Film Faced Foam-Control EPS", 1 in. max thickness.

Membrane: - Mechanically fastened, one of the following: CSPE, EIP, PVC, EPDM, TPO or CPA.

2. Deck: C - 15/32 Incline: 1/2

Existing Roof System: - Class A, B or C built-up system, smooth surface, cap sheet or gravel surfaced (gravel maintained) to retain the existing Classification.

Insulation: - "Foam-Control EPS", "Foam-Control EPS Tapered" or "Film Faced Foam-Control EPS", 1 in. max.

Membrane: - Any UL Classified CSPE, EIP, PVC, TPA, NBP, TPO or Reinforced FR EPDM, mechanically attached.

Warning

Care must be taken whenever solvents are present near polystyrene insulation. Solvent based adhesives are not to be used with systems incorporating polystyrene insulation. Foam plastic insulation will ignite if exposed to fire of sufficient heat and intensity. Protect foam insulation from exposure to open flame or other ignition sources during shipment, storage, and installation. Polystyrene insulations should not be used in direct contact with chimneys, heater vents, steam pipes or other surfaces where temperatures exceed 150°F (65°C). Polystyrene insulations should have additional protection in addition to normally specified cover boards in areas where dark membranes are used and where "reflected solar energy" is expected to be present. Areas adjacent to higher walls or other structures with reflective cladding should be considered for additional heat protection. For example; areas near metal or glass cladding, or near, or in between large groupings of mechanical equipment, or near higher reflective parapets, should be considered for additional heat protection. Additional heat protection for such roof areas include covering roofing membrane with Sarnafil PVC Protection Layer and then applying pavers or ballast to the affected area. Polystyrene insulation is susceptible to degradation when exposed to high temperatures or when exposed to solvents or solvent fumes. The

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typical maximum service temperature for polystyrene insulations is 165°F (74°C). Should ambient or surface temperature be expected to exceed this value, please consult the manufacturer of the insulation.

¹ Only feltbacked Sarnafil G410 is to be adhered to Securock.