

TECHNICAL BULLETIN

TARGET MARKET ROOFING



BUILDING TRUST



Subject: Polystyrene Insulations - Expanded Polystyrene (EPS) & Extruded Polystyrene (XPS)

21-05

The use of polystyrene (EPS or XPS) insulation boards within Sarnafil® or Sikaplan® roofing systems provide an effective means to add insulation, create a taper/cricket system, or recover an existing roof. Polystyrene insulation can also be used in combination with polyisocyanurate insulation to provide a cost-effective solution to maximize the overall R-value of the insulation package.

Warranty & Products

Roofing projects are eligible for Sika's System warranty when utilizing Sarnatherm® EPS or Sika supplied EPS boards meeting ASTM C 578 Type II (min. 1.35 lb/ft³) or Type IX (min. 1.8 lb/ft³), or Sarnatherm XPS or Sika supplied XPS boards meeting ASTM C578 Type XIII (min. 1.6 lb/ft³) or Type IV (min. 1.45 lb/ft³).

If the compressive strength is less than 20 psi, then a coverboard must be installed over the polystyrene board for load distribution and resistance purposes. The cover board can be Sika approved high density polyisocyanurate, rigid polyisocyanurate insulation, or gypsum board.

Type IX EPS and Types XIII and IV XPS do not require a cover board for load distribution and resistance purposes.

EPS insulation is not an acceptable insulation for use in Protected Membrane Assemblies (PMA).

Storage and Handling

When stored outdoors, the insulation should be stacked on pallets at least 4" (102 mm) above the surface level and protected from exposure to direct sunlight and weather using an opaque, light-colored tarpaulin. **Do not use a dark colored tarpaulin.** The factory applied packaging is intended only for protection during transit and should only be slit enough to prevent accumulation of condensation then removed prior to immediate use. 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 cover board is needed between the membrane and polystyrene insulation board. The cover board may be either ¼" (6.4 mm) thick minimum USG Securock® Gypsum Fiber Roof Board (for use only with adhered feltback membranes), USG Securock Ultralight, Georgia-Pacific DensDeck® board or a thermal slip sheet such as Atlas FR-10 or FR-50. A thermal slip sheet can only be used over Type IX EPS, Type XIII or Type IV XPS since these boards meet the minimum 20 psi compressive strength requirement noted above. A thermal slip sheet can be used over Type II EPS if the EPS is manufactured to meet the minimum 20 psi compressive strength requirement.

Polystyrene insulations may be applied directly over metal decks depending on local code requirements and provided 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" (16 mm) thick Type X core gypsum board or minimum 1/2" (51 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 membranes shall be adhered to the cover board with Sika water based adhesives unless Sarnafil G 410 SA (self-adhered) membrane is used. **Do not use Sika solvent based adhesives such as Sarnacol® 2170 and Sarnacol 2170 VC.** Feltback membranes can also be adhered to the cover board with Sarnacol® low rise urethane foam membrane adhesives. Attach boards to acceptable roof decks with Sika fasteners and plates or with Sarnacol low rise urethane foam board adhesives.

Bareback membranes cannot be installed in contact with polystyrene.

EPS Fanfold Underlayment Options

In addition to the EPS insulation boards, Sika approved EPS fanfold roofing underlayments may be used for Sikaplan mechanically attached or RhinoBond® roof systems. The fanfold products must be supplied by Sika and are ideal for Sikaplan Fastened recover applications over approved existing roof systems. The products are 1/2" (51 mm) thick, 20 psi and packaged in 4' x 50' bundles for easy handling and quick installation.

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

The fanfold underlayment assemblies are not FM Approved. Sika has UL fire ratings with EPS fanfold boards when installed over a UL Classified and listed assembly. These recover assemblies do not require a cover board to be installed between the EPS fanfold underlayment and the membrane. The recover applications are noted in the UL directory as "Maintenance and Repair".