



## Poly Molding LLC

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## Description

Poly Tapered Insulation is a high-performance insulation consisting of a superior closed-cell, lightweight expanded polystyrene (EPS). Poly Tapered Insulation is cut from the same high-quality stock as our flat Insulation products, and meets or exceeds the requirements of ASTM C578, Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation. Poly Tapered offers a long-term, stable R-Value and has excellent dimensional stability, compressive strength and water resistant properties.

## Uses

Poly Tapered Insulation Foam is well-suited for single ply roof applications that employ ballasted, mechanically fastened TPO, PVC, EPDM and CSPE with a slip sheet, as well as low-sloped built-up, modified bitumen and fully adhered single ply roofs that incorporate cover boards. Consult local building codes and membrane manufacturers for system requirements.

## Advantages

- ◆ **Labor Savings.** There are no complicated filler panel systems. Poly Tapered Insulation can be installed in a single layer for thicknesses up to 40", and is significantly more cost-effective than extruded polystyrene, perlite and isocyanurate tapered systems.
- ◆ **Promotes Positive Drainage.** Poly Tapered Insulation is the ideal insulation for both new construction and re-roofing projects in which positive slope is desired or ponded water is a concern.
- ◆ **Environmentally Friendly.** It contains no formaldehyde or ozone-depleting HCFCs, may contain recycled material, and is 100% recyclable if ever removed or replaced.
- ◆ **Stable R-Value.** Designers are well served knowing the product's thermal properties will remain stable over its entire service life. There is no thermal drift, so the product is eligible for a Polymolding 20 year thermal performance warranty.
- ◆ **Proven Performance.** The same fundamental EPS chemistry has been in use since the mid-1950s, so the actual performance of the product is well known.
- ◆ **Water-Resistant.** Poly Tapered Insulation does not readily absorb moisture from the environment.

## Sizes

Poly Tapered is available in 4' x 4' and 4' x 8' panels with a starting thickness from 0 (1/8" actual) to a maximum end thickness of 36" in a single layer. There are no limitations to available slope per foot.

## Typical Tested Physical Properties

For typical tested physical properties, please refer to the corresponding flat Insulation Data Sheet ASTM-C578.

## Profiles



1/4" per foot slope



1/4" per foot slope



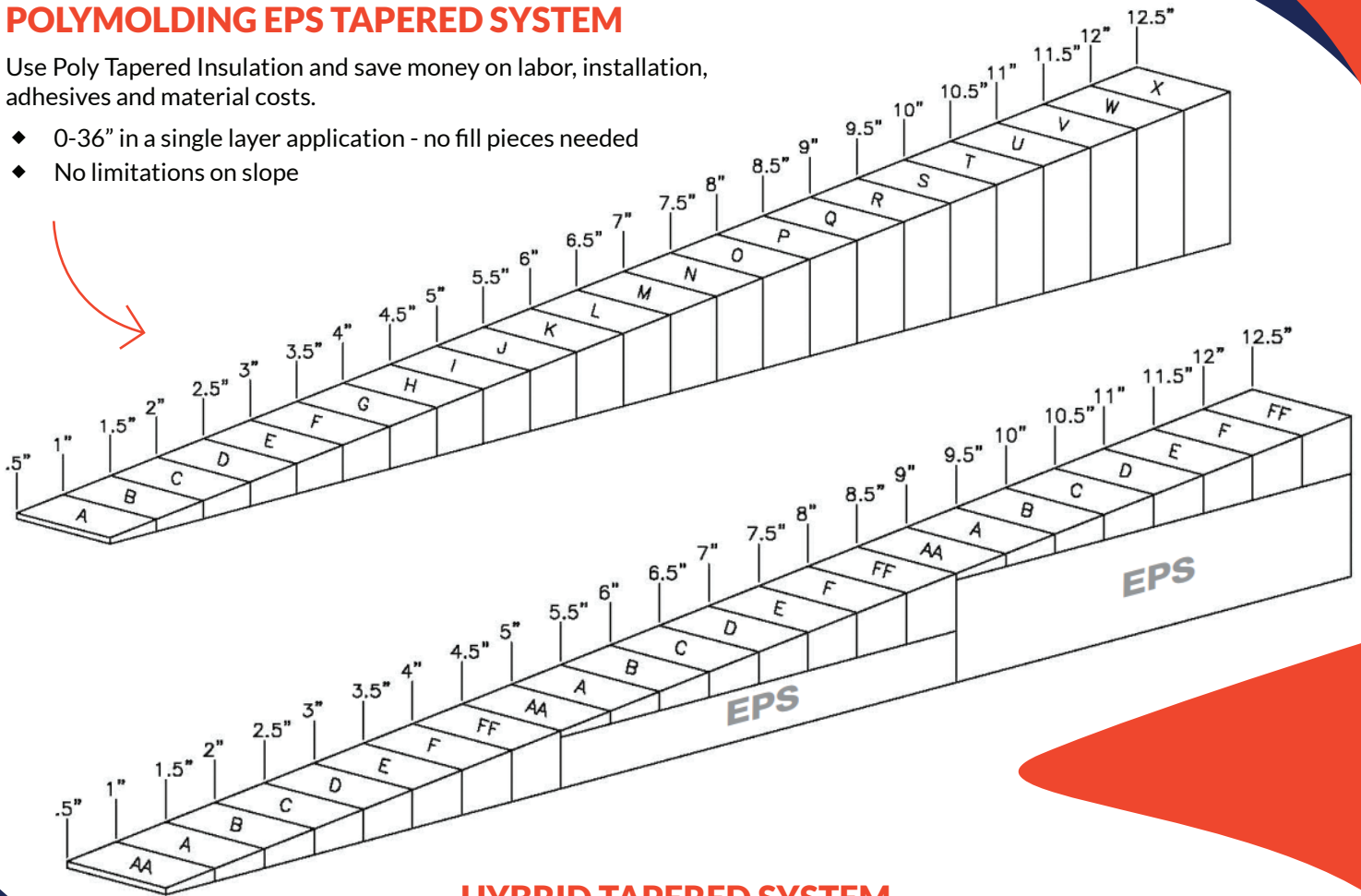
\* No separate filler panels required with thickness up to 36"



## POLYMOLDING EPS TAPERED SYSTEM

Use Poly Tapered Insulation and save money on labor, installation, adhesives and material costs.

- ◆ 0-36" in a single layer application - no fill pieces needed
- ◆ No limitations on slope



## HYBRID TAPERED SYSTEM

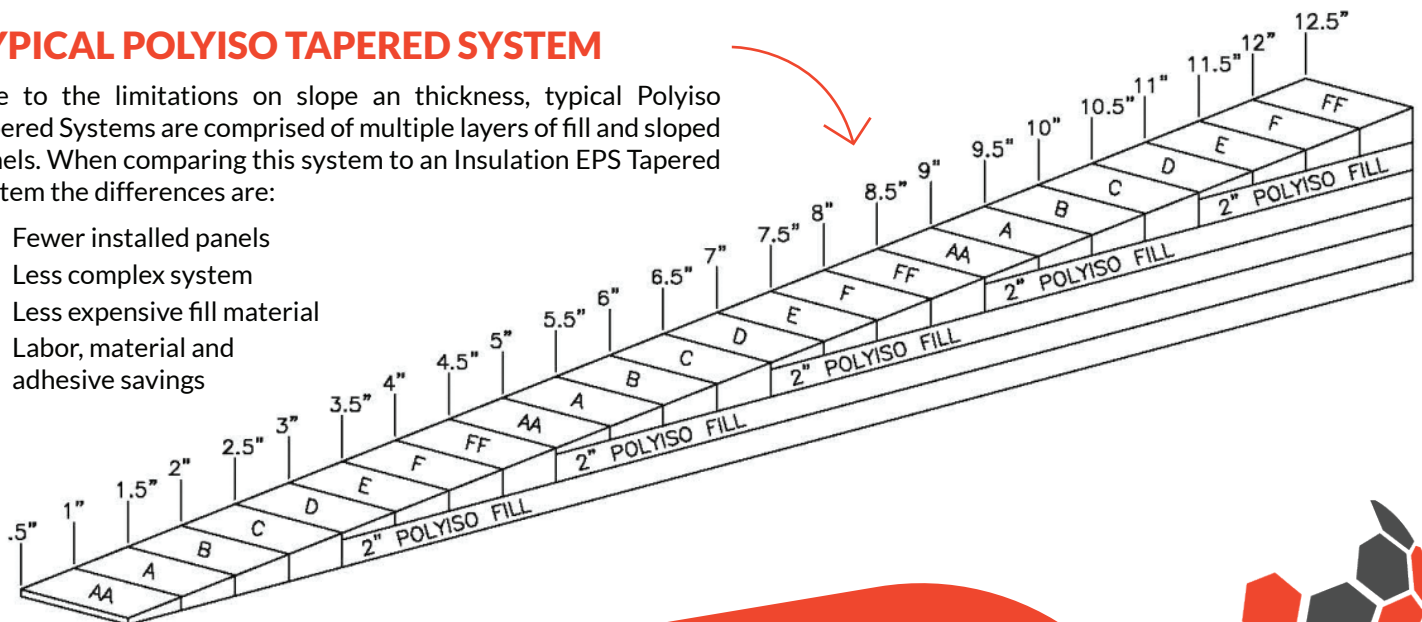
Insulation EPS is approved in Hybrid Tapered Systems where the EPS is used as the fill with a top layer of polyiso. This system has increased labor and material savings and is approved for Fully Adhered Systems.

Contact your local Polymolding sales rep and they will create a custom design to meet your job specific needs.

## TYPICAL POLYISO TAPERED SYSTEM

Due to the limitations on slope and thickness, typical Polyiso Tapered Systems are comprised of multiple layers of fill and sloped panels. When comparing this system to an Insulation EPS Tapered System the differences are:

- ◆ Fewer installed panels
- ◆ Less complex system
- ◆ Less expensive fill material
- ◆ Labor, material and adhesive savings





## Description

Flute-Fill is a custom-made, high-performance insulation consisting of a superior closed-cell, lightweight expanded polystyrene (EPS). Flute-Fill is cut from the same high quality stock as our flat Insulation products and, upon request, will be manufactured to meet or exceed the requirements of ASTM C578, Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation. Flute-Fill offers a long-term, stable R-Value and has excellent dimensional stability, compressive strength and water resistant properties.

## Uses

Flute-Fill is specifically manufactured for use over standing seam metal roof systems that are to be re-covered with new roof systems. Flute-Fill can be taper-cut or square-cut to fit in the bottom of the metal roof system's flutes. Flute-Fill can also be profile-cut to match the shape of the existing metal roof. Consult local building codes and the new roof system manufacturer for system requirements.

## Sizes

Flute-Fill is custom-manufactured for each specific application, and is readily available in a variety of lengths, widths and shapes to meet virtually any job condition.

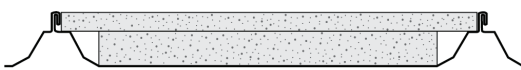
## Typical metal roof Cross Sections



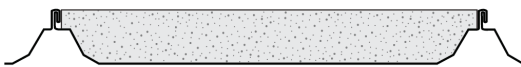
*Square-Cut in Vertical Leg*



*Taper-Cut with InsulFoam SP*



*Square-Cut*



*Profile-Cut*

## Advantages

- ◆ **Versatile.** Flute-Fill can be manufactured in a range of sizes, densities, thicknesses and profiles to meet any job-specific needs.
- ◆ **Cost-Effective.** Flute-Fill reduces concerns with flute spanability and minimizes the need for additional insulation. Minimizing the use of insulation above the flutes also reduces the possible need to raise curbs and other rooftop units.
- ◆ **Environmentally Friendly.** Flute-Fill contains no formaldehyde or ozone-depleting CFCs or HCFCs, contains recycled material, and is 100% recyclable if ever removed and replaced.
- ◆ **Stable R-Value.** Designers are well served knowing the product's thermal properties will remain stable over its entire service life. There is no thermal drift, so the product is eligible for a Polymolding 20 year thermal performance warranty.
- ◆ **Water-Resistant.** Flute-Fill does not readily absorb moisture from the environment.
- ◆ **Proven Performance.** Proven Performance. The same fundamental EPS chemistry has been in use since the mid-1950s, so the actual performance of the product is well known.



## TAPERED ROOF INSULATION

The performance risks associated with a roof that does not have positive drainage have been known in the roofing industry for many years and are covered further in the Roof Decks Section of this manual. Poly Tapered offers the designer an easy and economical means of adding positive slope to virtually any building. To facilitate the installation process Polymolding LLC provides detailed shop drawings.

Poly Tapered Insulation systems can be used for new, re-roof and re-cover projects. Assemblies can include complete and integral systems that incorporate sloped panels for the field of the roof as well as crickets and saddles to further assist in directing water to drainage outlets.

There are several basic elements that should be considered for every project: minimum slope required, locations of drains (internal and external), mechanical equipment, curbs, expansion and control joints, allowable overall insulation thickness (imposed by parapets or equipment curbs), and alternative system layouts. Alternative tapered layouts and additional roof drains should be considered when existing project conditions limit the performance of a system.

Poly Tapered Insulation is available in six standard slopes: "A" panels have a slope of 1/8" per foot, "B" panels have a slope of 3/16" per foot, "C" panels have a slope of 1/4" per foot, "D" panels have a slope of 3/8" per foot, "E" panels have a slope of 1/2" per foot and "F" panels have a slope of 3/4" per foot. Custom slopes are available upon request. To facilitate installations, each panel is hand-labeled at the Polymolding plant. Tapered insulation panels can be provided in thicknesses up to 36".

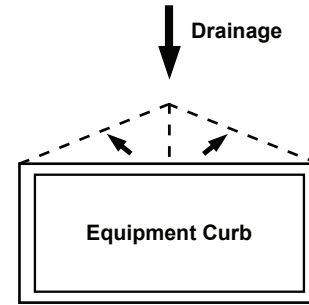
The ability to produce specific panels (up to 36" thick) for each course of insulation eliminates many of the complexities associated with those tapered insulation systems in which individual panel thickness is limited to approximately 3". With fewer pieces to handle, Tapered Insulation systems are significantly less labor-intensive to install.

## CRICKETS AND SADDLES

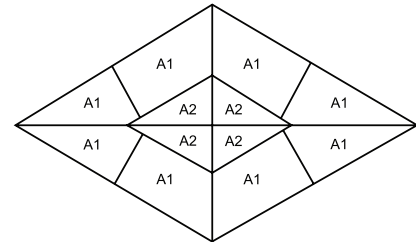
Directing water to or from specific areas of the roof can be achieved quite easily with Poly Tapered cricket and saddle systems. These materials can be used with numerous other insulation systems or integrated into a total Tapered Insulation package.

In the roofing industry, the terms cricket and saddle are often used interchangeably. For this manual, the term saddle is defined as a relatively small, elevated area of a roof that is constructed to divert water around a chimney, curb or other projection.

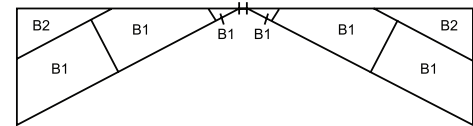
An example is given below.



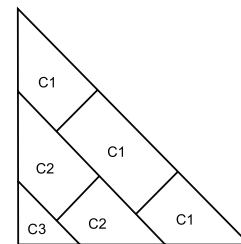
A cricket is defined as a small structure that directs surface water to drains, frequently located in a valley, and often constructed like a small hip-roof or a pyramid with a diamond shape base. Several examples are given below.



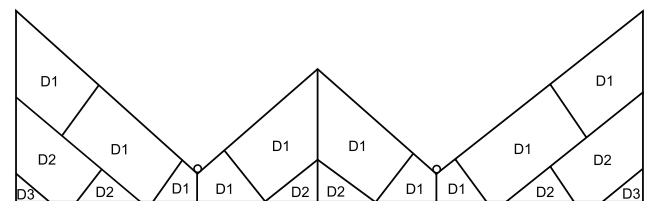
**Diamonds Between Drains**



**Drain To Scuppers**



**Drain Corners**



**Inset Perimeter Drains**



## PHYSICAL PROPERTIES

The physical properties provided in this manual are average values determined by Polymolding, Insulation raw material suppliers and independent testing agencies. Testing results were obtained under controlled laboratory conditions and do not represent minimum standards. Polymolding is not obligated to manufacture its products per a designer's specifications or physical standards unless agreed to in advance by Polymolding. It is the purchaser's obligation to ensure any purchased Polymolding materials meet a specification's physical properties.

## ASTM - C578

### Typical Physical Properties of Polymolding EPS\*

Property	Type I	Type VIII	Type II	Type IX	Type XIV	Type XV	Test Method
<b>Nominal Density</b> (pcf)	1.0	1.25	1.5	2.0	2.50	3.0	ASTM C303
<b>C-Value (Conductance)</b> BTU/(hr•ft <sup>2</sup> •°F) @ 25° F @ 40° F (per inch) @ 75° F	.230 .240 .260	.220 .235 .255	.210 .220 .240	.200 .210 .230	0.198 0.206 0.222	0.196 0.198 0,217	ASTM C518 or ASTM C177
<b>R-Value (Thermal Resistance)</b> (hr•ft <sup>2</sup> •°F)/BTU @ 25° F @ 40° F (per inch) @ 75° F	4.35 4.17 3.85	4.55 4.25 3.92	4.76 4.55 4.17	5.00 4.76 4.35	5.05 4.85 4.50	5.10 5.05 4.60	ASTM C518 or ASTM C177
<b>Compressive Strength</b> (psi, 10% deformation)	10 - 14	13 - 18	15 - 21	25 - 33	40	60	ASTM D1621
<b>Flexural Strength</b> (min. psi)	25	30	35	50	60	75	ASTM C203
<b>Dimensional Stability</b> (maximum %)	2%	2%	2%	2%	2.0	2.0	ASTM D2126
<b>Water Vapor Permeance</b> (max. perm., 1 inch)	5.0	3.5	3.5	2.0	2.5	2.5	ASTM E96
<b>Water Absorption</b> (max. % vol.)	4.0	3.0	3.0	2.0	2.0	2.0	ASTM C272
<b>Capillarity</b>	none	none	none	none	none	none	-
<b>Flame Spread</b>	< 20	< 20	< 20	< 20	< 20	< 20	ASTM E84
<b>Smoke Developed</b>	150 - 300	150 - 300	150 - 300	150 - 300	150 - 300	150 - 300	ASTM E84

### Typical Physical Properties of Sheathing

Property	Type I	Type VIII	Type II	Type IX	Test Method
<b>Compressive Strength</b> (psi, 10% deformation)	13	16	20	28	ASTM D1621
<b>Flexural Strength</b> (psi)	33	40	50	70	ASTM C203
<b>Water Vapor Transmission</b> (perms)	< 1.0	< 1.0	< 1.0	< 1.0	ASTM E96
<b>Absorption</b> (% vol.)	< 1.0	< 1.0	< 1.0	< 1.0	ASTM C272

