Expanded Polystyrene

The Economical Choice for Roofing Insulation

Provider K 031
Course EPS 105od, 1 LU HSW/SD

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Provider #K031
Course #EPS105od

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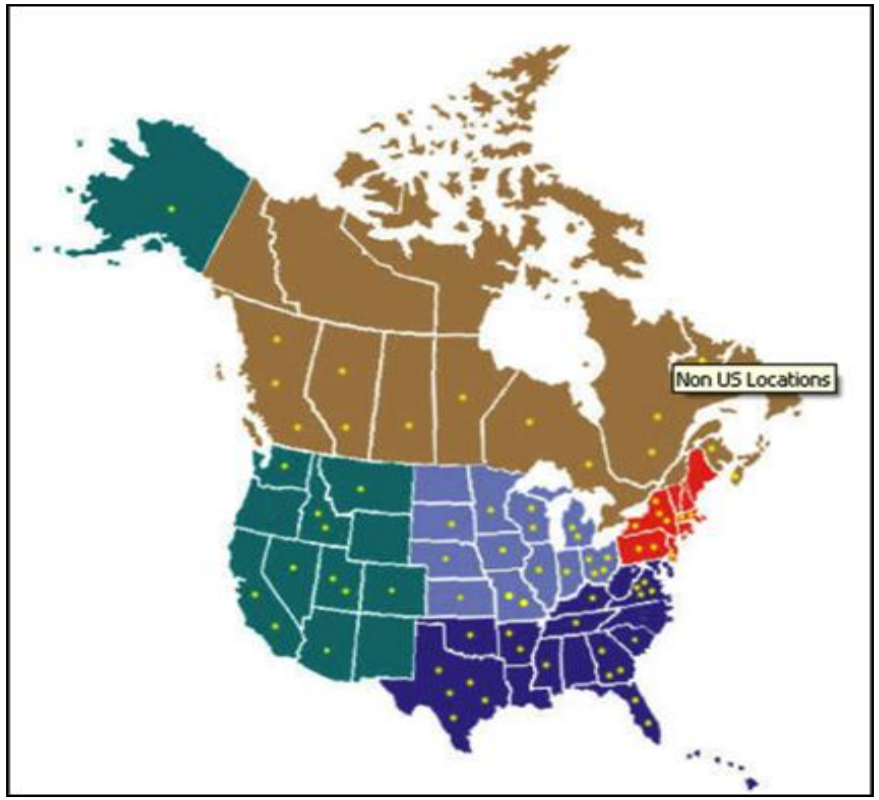
Learning Objectives

- Define and understand how Expanded Polystyrene (EPS) is manufactured
- Understand the environmental features and benefits of EPS insulation including recyclability, LEED, thermal performance, and energy efficiency.
- Understanding key physical properties of the different EPS products used in Roofing applications.
- Understand the features and benefits of the different EPS products: standard, faced, and composites and which roofing applications they are used in.
- Understand the economic advantages when using EPS in different roofing applications than other insulations. Case Study examples sited.
- Understand what key components to consider when preparing a specification for EPS vs another insulation product in a roofing application: R-Value, Compressive Strength, Codes, Product Performance, Labor Costs, LEED and Sustainability, Product Availability and Warranty.

EPS Industry Alliance

www.epsindustry.org

- Insulfoam
- Cellofoam
- Atlas
- Plastifab
- Carpenter
- ACH
- Many small local and regional companies



What is EPS?

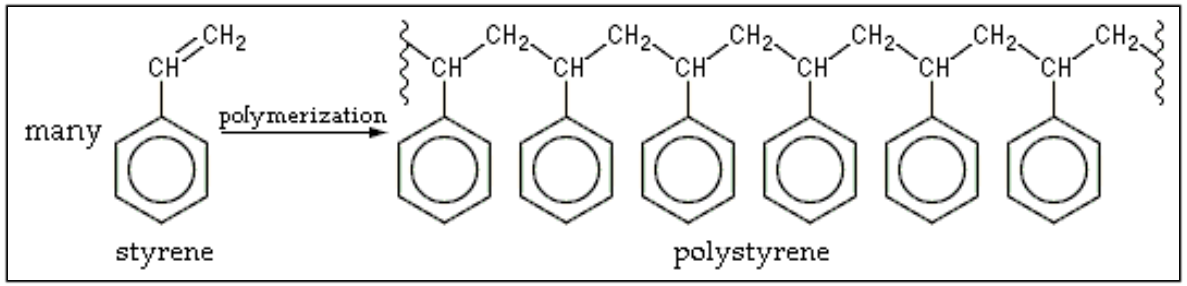
Expanded Polystyrene (EPS)

- Closed cell rigid foam insulation
- Manufactured using expandable polystyrene
- Block-molded for most construction applications (vs. shape-molded)

Physical Characteristics

- Available faced and unfaced
- Available in flat & tapered panels - 4’ x 4’, 4’ x 8’, custom sizes and as a fanfold bundle
- Available in thicknesses of 1/4” – 40”
- Densities from 1.0 - 3.0 pcf
- Compressive Resistances from 10 - 60 psi
- Stable, non-degrading R-Values

Key Raw Material



EPS is manufactured from a polystyrene resin…

- Modified and unmodified
- Varying pentane contents
- Varying Sizes

EPS Market Segments

Insulation Applications

- **Roofing**
  - Commercial
  - Residential
- **Wall Systems**
  - Sheathing
  - EIFS and One-Coat
  - Siding Backer & Profiles
  - Cavity Walls
  - SIPs
- **Perimeter & Below Slab**
- **Pre-cast panels**
- **Radiant Heating**

Non-Insulation Applications

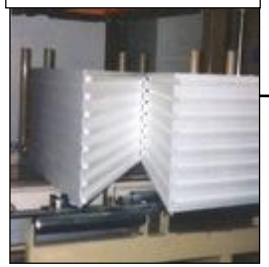
- **Geofoam**
  - Highways & Bridges
  - Lightweight Void Fill
  - Levees
  - Garden Roofing
  - Pools and Pool Decks
  - Concrete Block-outs
  - Theaters & Stadiums
- **Flotation**
- **Packaging**

EPS Manufacturing

Pre-Expansion

Block Molding

Cutting



Laminating

Finished Goods

Sustainability & Environmental Benefits

- Environmentally friendly
- Contains no HCFCs or formaldehyde
- 100% recyclable from jobsites
- Manufacturing option: contains up to 25% recycled content
- Reduces global warming
- Contributes towards LEED Certification credits
- Manufacturing option: additives to resist insects and mold

Recyclability

- If not contaminated, EPS can be removed from jobsites and used in future manufacturing
- Can be introduced into the manufacturing of new product or returned to a styrene resin

Polystyrene Insulations Reduce Global Warming

Insulation can return up to 200 times the amount of energy required to produce it, and reduce emissions by up to 100 times the volume produced during the manufacturing process

EXPANDED POLYSTYRENE
REDUCES GLOBAL WARMING

A NEW PERSPECTIVE ON EPS

It is often cited that our greatest source of immediate energy can be provided through conservation. This Environmental Profile illustrates the significant role EPS insulation can play to conserve energy and reduce global warming.

EPS ENVIRONMENTAL SCORECARD

The energy invested in the production and delivery of Expanded Polystyrene (EPS) foam insulation yields an exponential benefit to the environment by providing substantial energy savings and critical reductions in greenhouse gas emissions, when EPS is used to insulate homes in North America. In fact, EPS insulation can return up to 200 times the amount of energy required to produce it, and reduce emissions by up to 100 times the volume produced during the manufacturing process. The exceptional performance of EPS as an insulator for the built environment offers the construction industry the tools and technology needed to achieve superior thermal performance while making a significant and restorative contribution to the reduction of global warming. Architects, designers and material specifiers can be more confident than ever that they are providing an environmentally responsible choice when selecting EPS to insulate their buildings.

This Environmental Profile summarizes a life cycle analysis – conducted by Franklin Associates for the EPS Molders Association – to quantify the energy savings and greenhouse gas reductions provided by the use of EPS foam insulation in single-family residential construction, compared to the energy used and emissions generated in the production, processing and transportation of this material. As this life cycle analysis concludes, the savings are not only substantial but also rapid, providing a 100% payback in as little as three months after occupancy. These results present a powerful case for the significant contributions of EPS insulation in making homes more efficient, comfortable and environmentally sustainable.

PERFORMANCE MODEL

The base model used to illustrate the properties and performance of EPS insulation was a specific single-family home constructed with wood-framed walls, fiberglass insulation, ½" OSB clad with wood siding on the exterior and finished with ½" gypsum drywall on the interior. The total insulated wall area of the representative home modeled was 1,791 sq. ft.

The study evaluated the net energy and environmental effects of adding EPS insulation board to the exterior of the framed wall installed under the wood siding. The base wall in the U.S. was a 2x4 wood-framed wall with R-13 fiberglass insulation. The base wall in the Canadian house was a 2x6 wood-framed wall with R-19 fiberglass insulation. Accordingly, separate results were calculated for the home as it would be constructed in the U.S. and Canada and occupied for 50 years.

EXCEPTIONAL RETURN ON NATURAL CAPITAL

ENERGY & EMISSIONS EQUATION

Expanded Polystyrene Insulations Reduce Global Warming

U.S. Model

Energy Savings Provided by Adding Exterior R-4 EPS Insulation Single Family Home - U.S.

Energy Investment	Millions Btu's
EPS Production	8.90
EPS Transportation	0.13
Total Energy Invested	9.03

Energy Savings (Millions Btu's)	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	U.S. Average
Annual Energy Savings	11.37	9.58	7.84	5.58	5.00	6.58
Payback Period in Years	0.79	0.94	1.15	1.62	1.81	1.37
Savings Over 50 Years	568	479	392	279	250	329
Return on Investment (ROI%)	6,290	5,305	4,341	3,090	2,769	3,643

Global Warming Potential (GWP) Reductions Provided by Adding Exterior R-4 EPS Insulation Single Family Home - U.S.

GWP Invested	lbs. CO_2 Equiv.
EPS Production	7.95
EPS Transportation	24
Total GWP Invested	819

GWP Reductions Compared to Base Wall	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	U.S. Average
Annual Reductions	1,669	1,354	1,155	831	777	982
Payback Period in Years	0.49	0.61	0.71	0.99	1.05	0.83
Savings Over 50 Years	83,473	67,682	57,739	41,257	38,867	49,095
Return on Investment (ROI%)	10,192	8,264	7,050	5,037	4,746	5,995

- The use of foam insulation on a building significantly increases the R-Value of walls to save energy
- Lower residential energy use translates into fewer emissions and reduced GWP

USGBC & LEED – 20 POSSIBLE POINTS

- Materials & Resources (MR) 2.1 & 2.2: Construction Waste Management = 2 Points
- Materials & Resources (MR) 3.1 & 3.2: Material Reuse = 2 Points
- Materials & Resources (MR) 4.1 & 4.2: Recycled Content = 2 Points
- Materials & Resources (MR) 5.1 & 5.2: Regional Materials = 2 Points
- Sustainable Site (SS) 7.2: Heat Island Effect Roof = 1 Point
- Energy & Atmosphere (EA) Optimize Energy Performance = 10 points
- Energy & Atmosphere (EA) Measurement & Verification = 1 point

EPS Physical Properties
ASTM C578

Typical Physical Properties							
Property	**Type I**	**Type VIII**	**Type II**	**Type IX**	**Type XIV**	**Type XV**	**Test Method**
Nominal Density (pcf)	1.0	1.25	1.5	2.0	2.50	3.0	ASTM C303
C-Value (Conductance) BTU/(hr•ft²•°F)							ASTM C518 or ASTM C177
@ 25° F	.230	.220	.210	.200	0.198	0.196	
(per inch) @ 40° F	.240	.235	.220	.210	0.206	0.198	
@ 75° F	.260	.255	.240	.230	0.222	0.217	
R-Value (Thermal Resistance) (hr•ft²•°F)/BTU							ASTM C518 or ASTM C177
@ 25° F	4.35	4.55	4.76	5.00	5.05	5.10	
(per inch) @ 40° F	4.17	4.25	4.55	4.76	4.85	5.05	
@ 75° F	3.85	3.92	4.17	4.35	4.50	4.60	
Compressive Strength (psi, 10% deformation)	10 - 14	13 - 18	15 - 21	25 - 33	40	60	ASTM D1621
Flexural Strength (min. psi)	25	30	35	50	60	75	ASTM C203
Dimensional Stability (maximum %)	2%	2%	2%	2%	2.0	2.0	ASTM D2126
Water Vapor Permeance (max. perm., 1 inch)	5.0	3.5	3.5	2.0	2.5	2.5	ASTM E96
Water Absorption (max. % vol.)	4.0	3.0	3.0	2.0	2.0	2.0	ASTM C272
Capillarity	none	none	none	none	none	none	–
Flame Spread	< 20	< 20	< 20	< 20	< 20	< 20	ASTM E84
Smoke Developed	150 - 300	150 - 300	150 - 300	150 - 300	150-300	150-300	ASTM E84

*Properties are based on data provided by resin manufacturers, independent test agencies and Insulfoam.

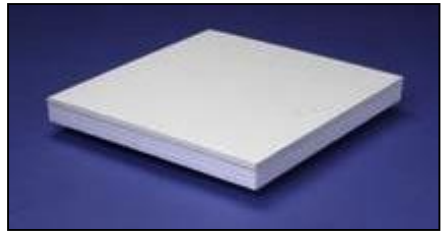
EPS Roofing Products

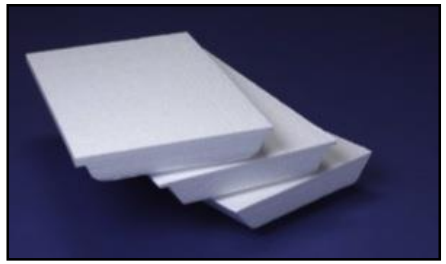
Standard Products

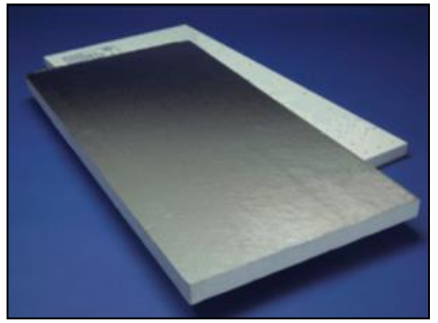
- EPS Plain Foam
- EPS Holey Board
- Metal Roof Flute-fill

Premium Products

- Fanfold Roof Underlayment
- EPS with factory-laminated fiberglass facers
- Tapered EPS
- EPS Composites







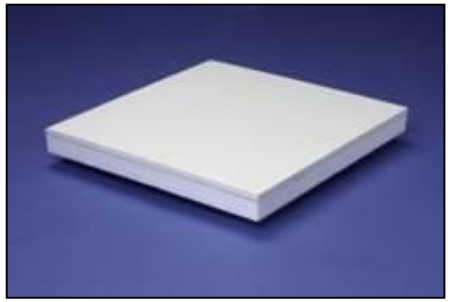
Standard EPS Products

Product Features

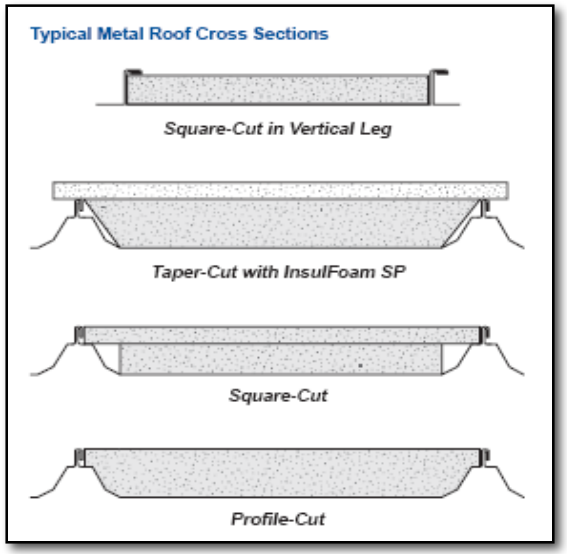
- Densities from 1.0 – 3.0 pcf
- Compressive Strengths from 10-60 psi
- Custom panels and blocks
- R-Value from 3.85 to 4.5 per inch
- Flat or tapered
- 3/8” – 40” thick

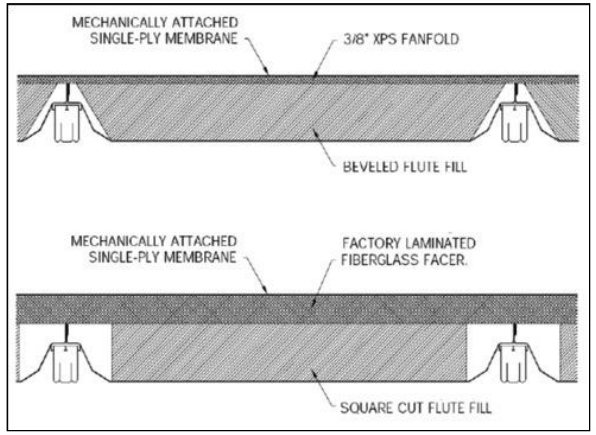
Product Benefits

- May contain recycled content (depending on the spec)
- 100% recyclable
- No HCFCs or dyes
- Energy Star & LEED compliant
- Building Code Compliant
- UL and FM Listings
- Provides the most R-Value per dollar



EPS Flute Fill





Product Attributes

- Any size, shape and length to 16’
- Any density from 1.0 – 3.0 pcf
- Able to completely fill the flutes
- Can obtain a UL Class A rating
- Compatible with all metal roof systems
- Manufactured to meet ASTM C 578

Premium EPS Products
facers, laminates, composites

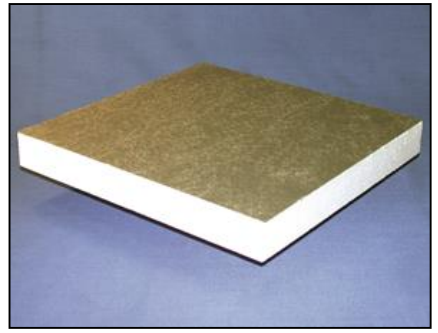
Factory-applied Materials

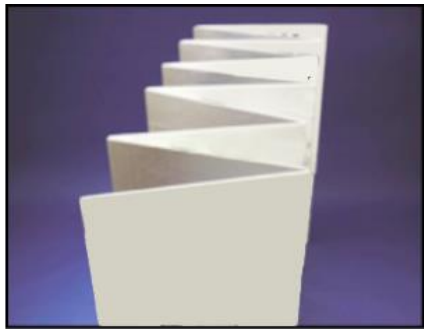
- Polymeric facers (white, silver, printed)
- Fiberglass facers
- Assorted cover boards (OSB, Gypsum, etc.)

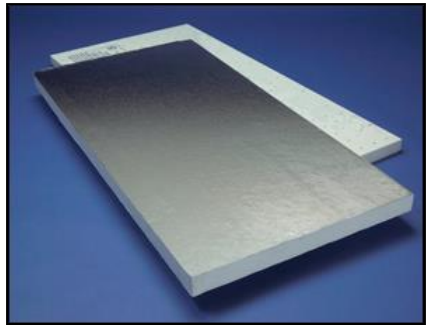
Product Benefits

- Added durability and job-site handling
- Improved roof system fire resistance
- Reduced material handling
- Reduced field-applied insulation adhesives
- Improved misuse, abuse and hail resistance

Premium EPS Product Features are the same as Standard EPS



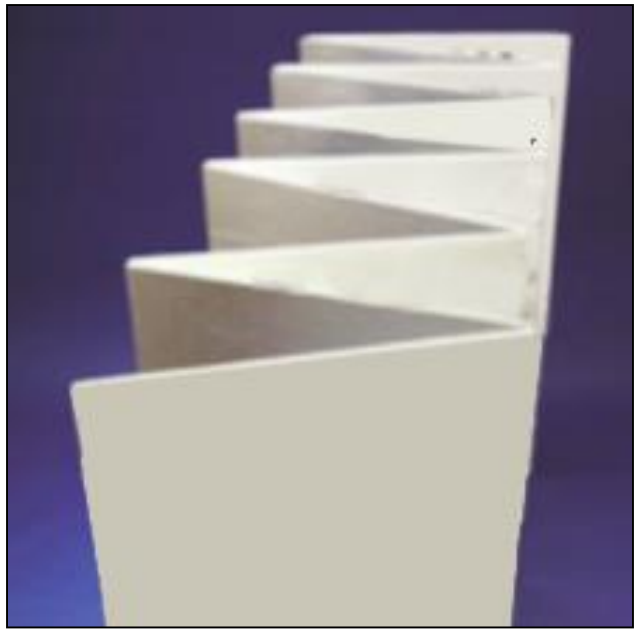




EPS Fanfold Roof Underlayment

Lightweight, separator board for re-cover applications

EPS Fanfold – Product Attributes



- A full 2-Sq. fanfold bundle (4‘ x 50‘ with 25 - 2’ x 4’ individual panels)
- Thicknesses of ⅜", ½" or ¾"
- Typical nominal density of 1.25 pcf
- Manufactured to meet or exceed ASTM C578
- Also available in 4'x8' panels up to 5” thick

EPS Fanfold – Advantages

- Compatible with PVC, TPO & EPDM membranes (verify with manufacturer)
- Maintains existing roof system’s UL Classification (verify with manufacturer)
- Lightweight – a full 2-square bundle weighs less than 11 pounds
- 1 bundle = more than six 4' x 8' sheets
- User friendly - lays flat, easy to install
- Easy to ship – up to 800 SQ per T/L

Cost Comparison

Re-cover System; Separator Board Required

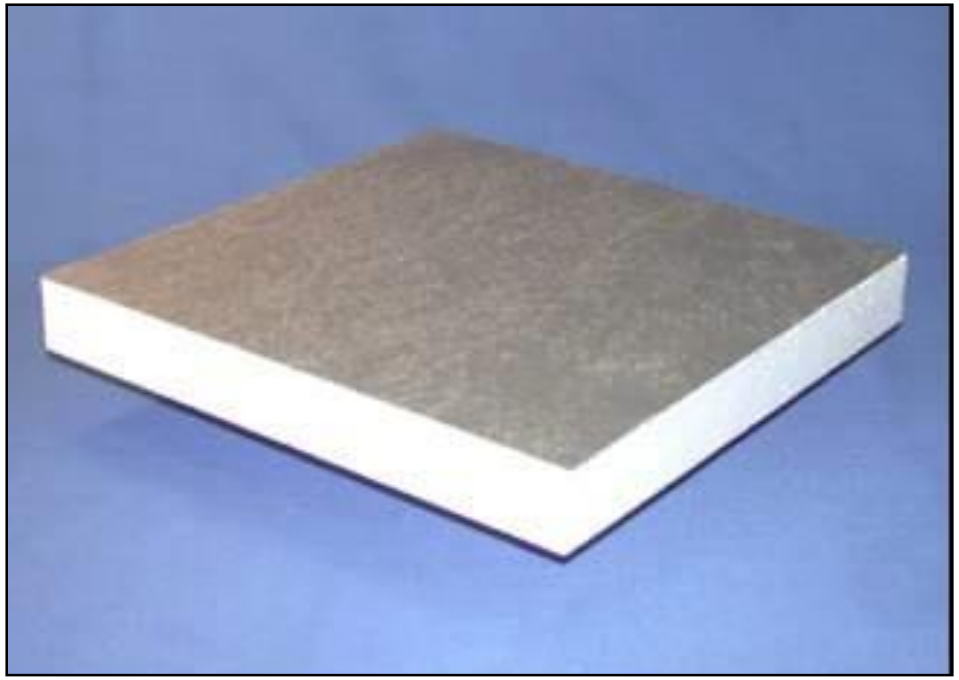
Labor Costs	**Fanfold**	**Other Cover Boards**
Thickness	1/2"	1/4“ or 1/2"
Man-hours/SQ to Install	.15	.35
Typical hourly labor rate	$72.00	$72.00
Labor cost/SQ	$10.80	$25.20
Material Costs ($/SQ)		
1/2" Fanfold	$18.00	—
1/2" Wood fiber or perlite	—	$23.00
1/4" Gypsum Board	—	$37.00
Installed Cost/SQ	**$28.80**	**$48.20 - $62.20**

$14.40 in labor savings!

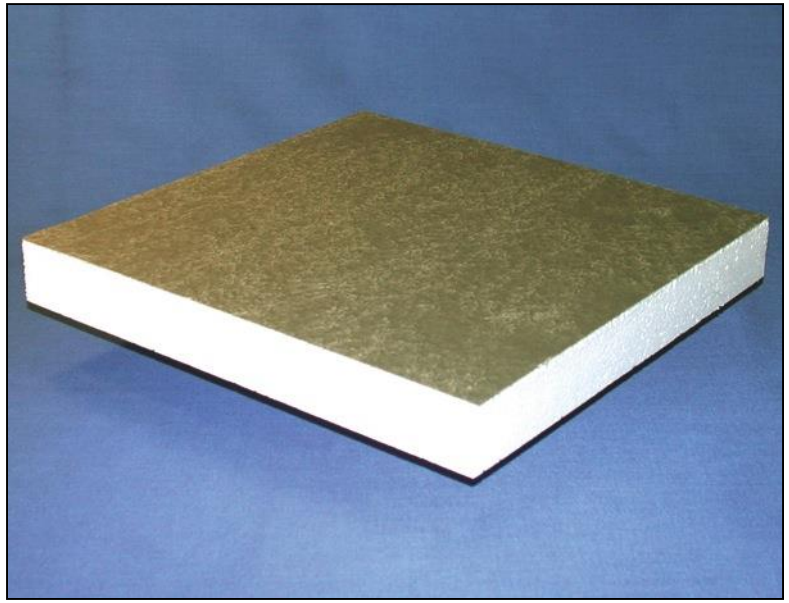
This means a $19.40 to $33.40/SQ advantage.
That’s a $20,000 to $34,000 savings on a 1,000 SQ project!!

EPS with a Fiberglass Facer

Fiberglass facer is factory-laminated; developed specifically for mechanically attached single ply systems



EPS/ Fiberglass Facer – Product Attributes



- Standard panel sizes of 4’ x 8 ‘or 4’ x 4’ ; custom sizes available
- Any thickness from 1” to 7”
- Standard nominal density of 1.25 pcf; custom densities available
- Manufactured to meet ASTM C 578

EPS/Fiberglass Facer – Advantages

- Compatible with PVC, TPO & EPDM membranes
- UL Class A and UL 1256 Direct-to-Deck
- IBC Compliant
- No slip sheet required

Cost Comparison

Mechanically Fastened System: High R-Value Specified, Hybrid System

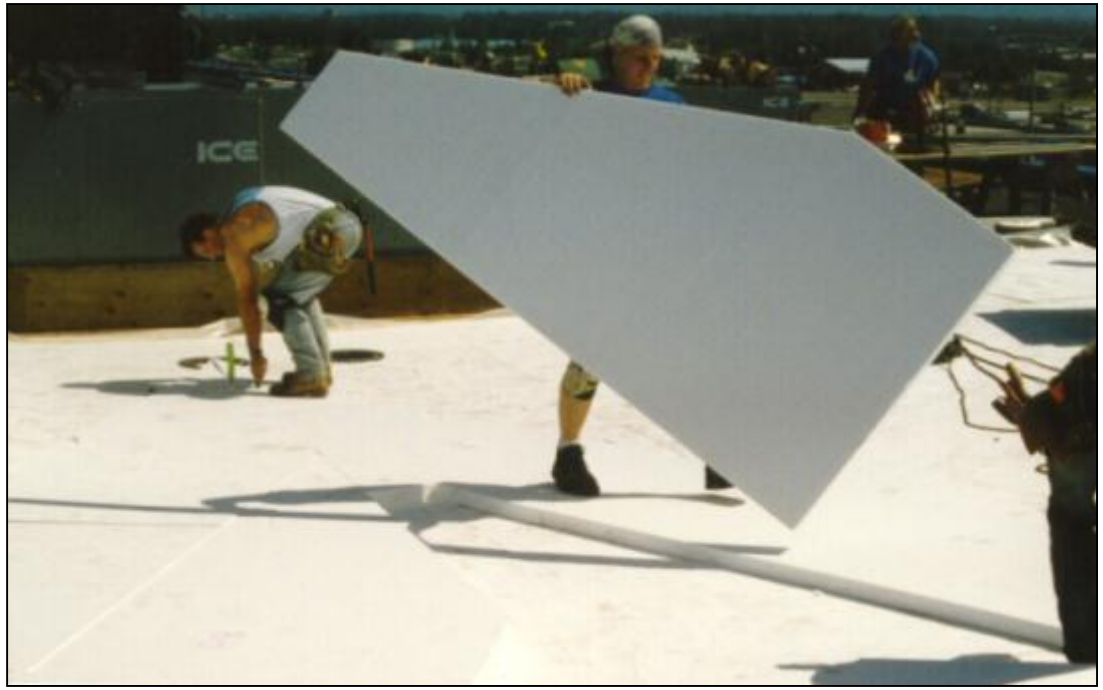
	EPS/FG + EPS Type I		Isocyanurate
R-Value Needed	6.4	23.6	30
R/in	4.25	4.17	6.0
Thickness Required	1.5"	5.7"	5.0"
Cost/SQ	$25.30	$76.95	$160.00
Other Costs ($/SQ)			
EPS w facer	$13.00	$0.00	$0.00
Add'l Materials & Handling	$1.00	$1.00	$0.00
Final Cost/SQ	$117.25		$160.00

Tapered EPS

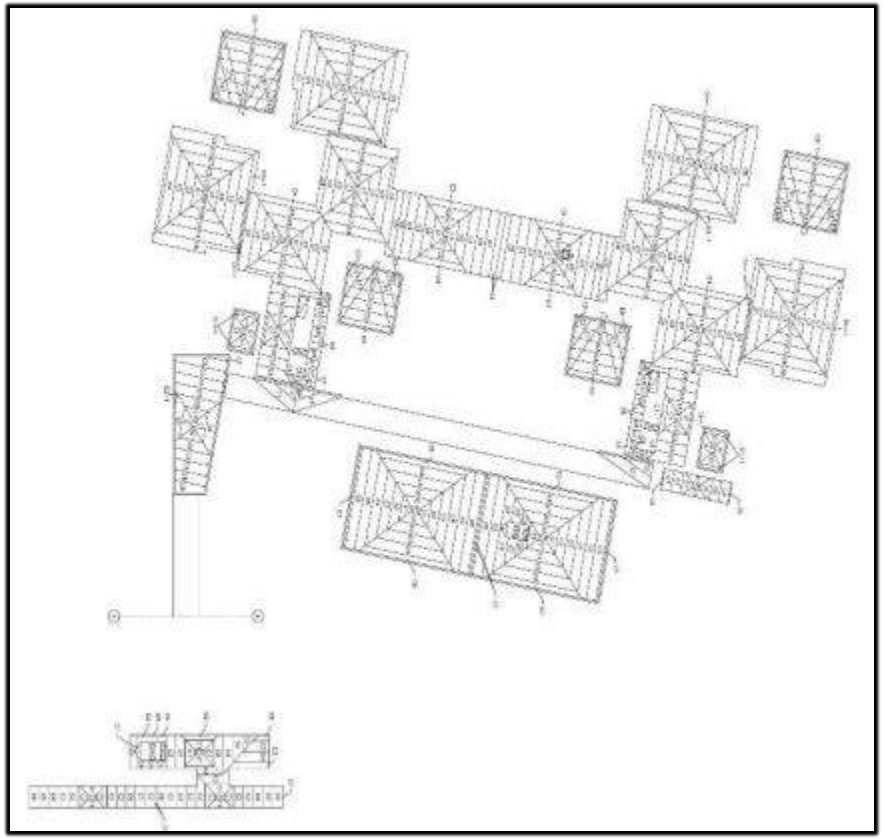
facilitates positive drainage in low-slope and flat roof systems

Tapered EPS - Advantages

- Panels to 40” thick
- Any slope from 1/16” to unlimited max
- Any density from 1.0 – 3.0 pcf
- Custom crickets, saddles, valleys & ridges
- Easy to Install
- Significant material & labor savings



Tapered EPS – Saves Time and Money



Material & Labor Savings

- EPS provides more R-Value for the dollar than any other roof insulation
- Fewer pieces to ship, handle & install
- Single-layer systems up to 40″ thick
- Significant insulation adhesive savings vs. multi-layered tapered systems

Product Versatility

- Compatible with all major roof membranes
- Compatible with all other insulations; excellent hybrid system opportunity

Shop Drawings & Take-offs

- In-house tapered take-off and design services

Tapered System Quote-Form

Fax to: MIKE LUCAS
Company: INSULFOAM

Phone: 954-465-8293
Fax:

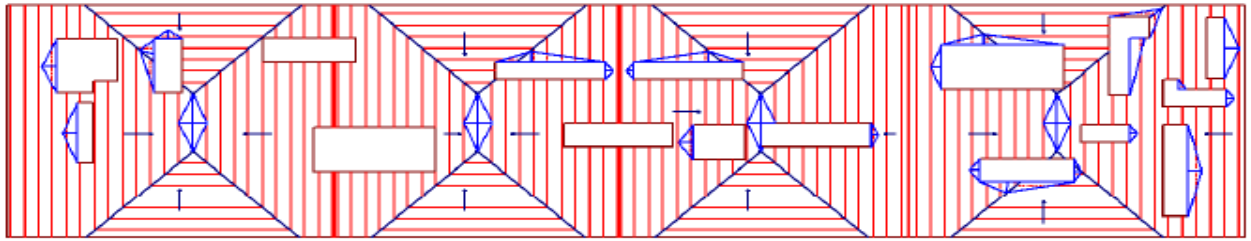
Date:

Forward to:

Project: PASSENGER TERMINAL BUIL
Location:
Job #: FL-90256

Tapered System Information

Tapered System:	ISO Taper system	
Tapered Area:	249.32	Squares
Cricket Area:	9.62	Squares
Slope(s):	1/4"	/ft
Cricket Slope:	1/2"	/ft
Minimum Start:	0.50"	
Maximum Height:	14.00"	
Fill Insulation:	N/A	
Base Layer:	N/A	
Overlay:	N/A	
Average R-Value:		



Labor Information

Total Squares of Material:	845.25
Total Squares of Application:	805.33
Approx.Squares of Waste:	39.92

Price: $ 74,676.45

Notes:

Approximate Cost to Install: $20,000

Tapered System Quote-Form

Fax to: MIKE LUCAS
Company: INSULFOAM

Phone: 954-465-8293
Fax:

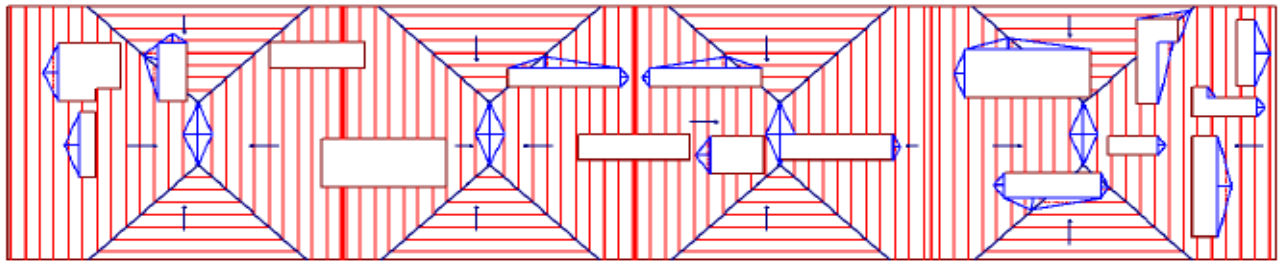
Date:

Forward to:

Project: PASSENGER TERMINAL BI
Location:
Job #: FL-90256

Tapered System Information

Tapered System:	ISO Taper/ EPS Fill	
Tapered Area:	249.32	Squares
Cricket Area:	9.62	Squares
Slope(s):	1/4"	/ft
Cricket Slope:	1/2"	/ft
Minimum Start:	0.50"	
Maximum Height:	14.00"	
Fill Insulation:	N/A	
Base Layer:	N/A	
Overlay:	N/A	
Average R-Value:		



Labor Information

Total Squares of Material:	581.22
Total Squares of Application:	563.78
Approx.Squares of Waste:	17.44

Price: $ 56,688.18

Notes: **Approximate Labor to Install: $14,000**

Tapered System Quote-Form

Fax to: MIKE LUCAS
Company: INSULFOAM

Phone: 954-465-8293
Fax:

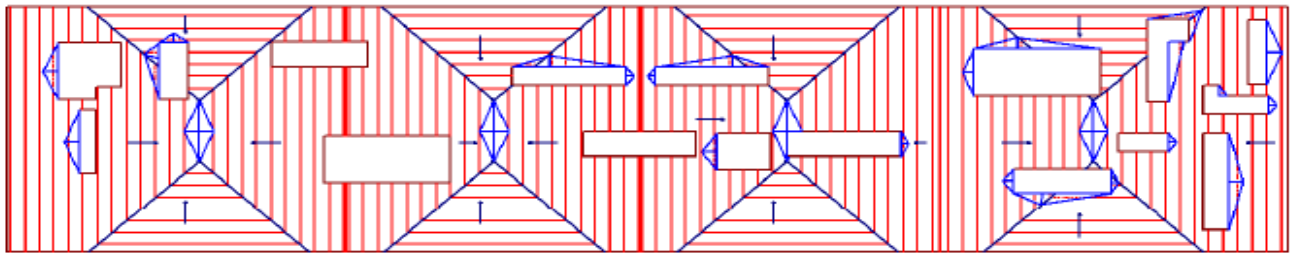
Date:

Forward to:

Project: PASSENGER TERMINAL BUILDIN
Location:
Job #: FL-90256

Tapered System Information

Tapered System:	EPS / 1.25 # DENSITY	
Tapered Area:	249.32	Squares
Cricket Area:	9.62	Squares
Slope(s):	1/4"	/ft
Cricket Slope:	1/2"	/ft
Minimum Start:	0.50"	
Maximum Height:	14.00"	
Fill Insulation:	N/A	
Base Layer:	N/A	
Overlay:	N/A	
Average R-Value:	38.4	



Labor Information

Total Squares of Material:	591.28
Total Squares of Application:	561.71
Approx.Squares of Waste:	29.57

Price: $52,272.00

Notes: Price Includes 1.0" EPS/Fiberglass laminate

Approximate Labor to Install: $14,000

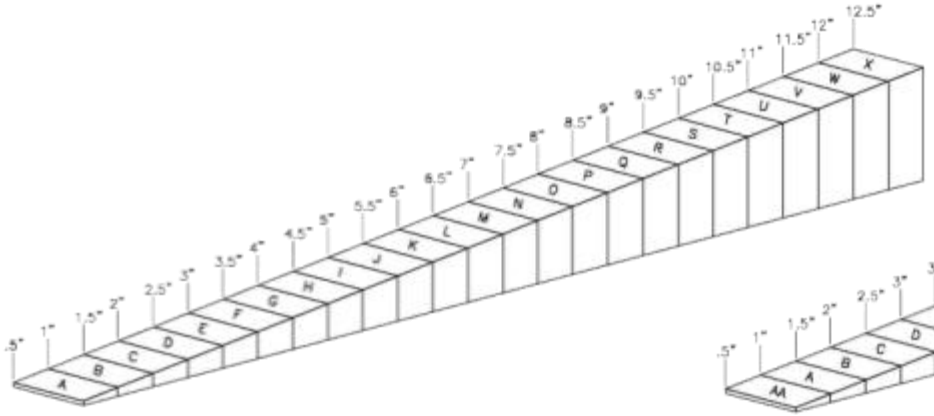
Cost Comparison

Tapered System	Sqs. Handled	Material $	Labor $
ISO	805	$75k	$20k
Taper ISO w/ Flat EPS	560	$57k	$14k
Taper EPS w/ 1” EPS/FG	560	$52k	$14k

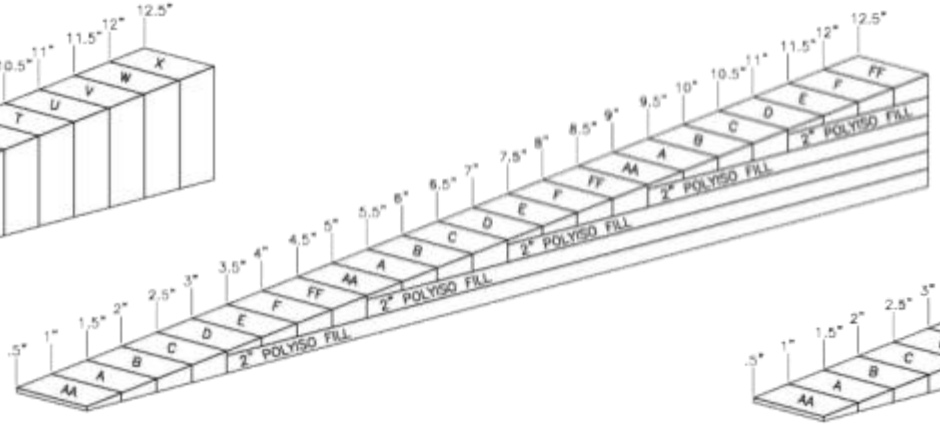
Rule of Thumb: 30% less expensive than other tapered systems

Tapered Systems Options

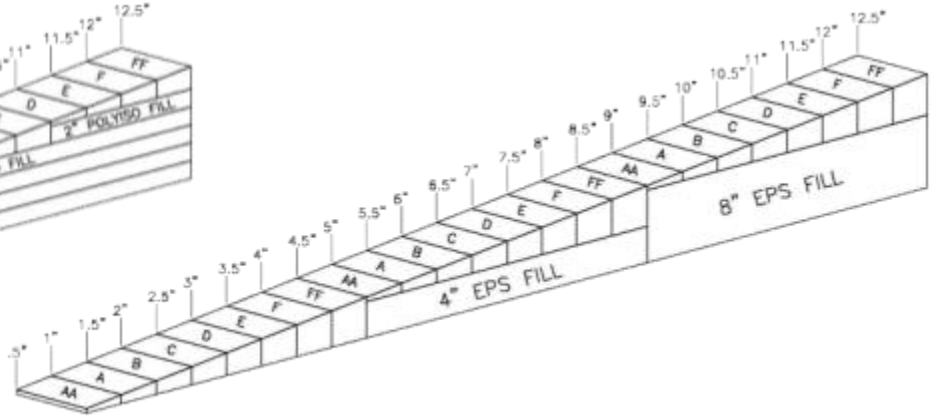
EPS-only Tapered System



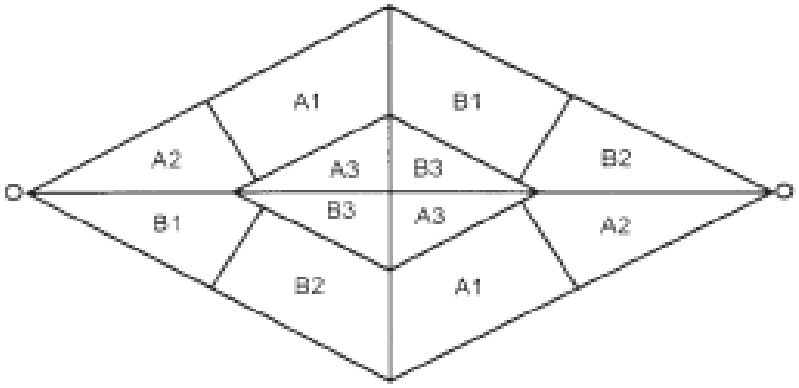
Polyiso-only Tapered System



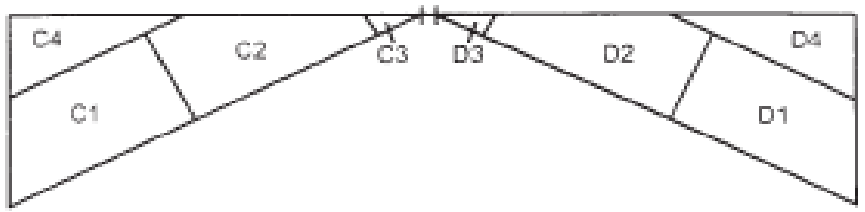
Hybrid System – EPS Fill over Polyso



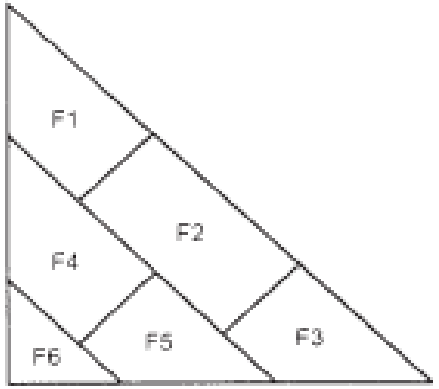
Extensive Design Capabilities



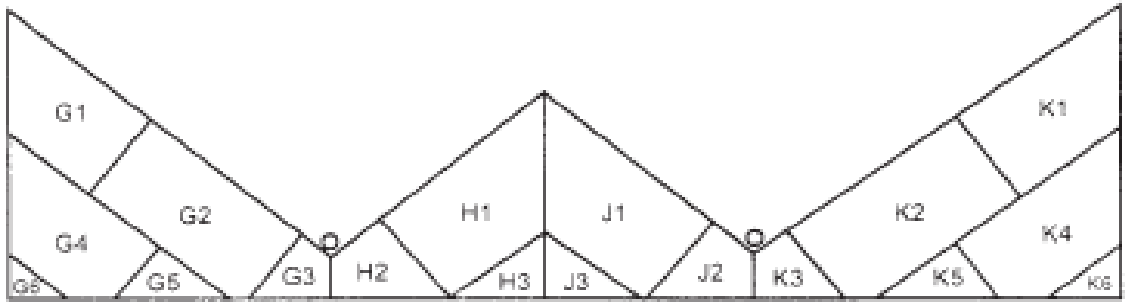
DIAMONDS BETWEEN DRAINS



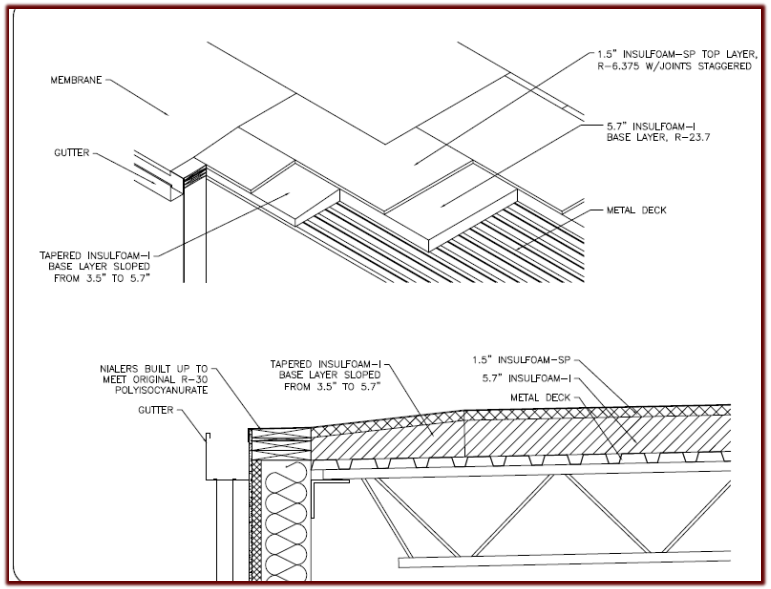
DRAIN TO SCUPPERS

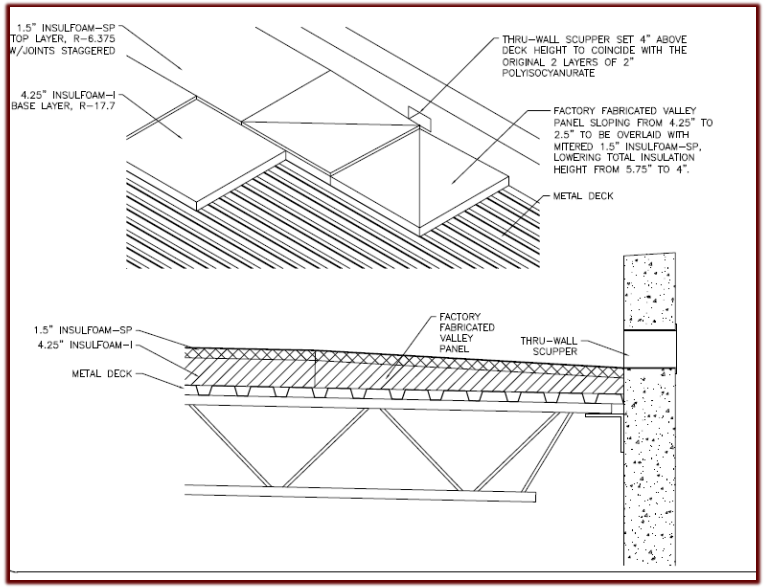


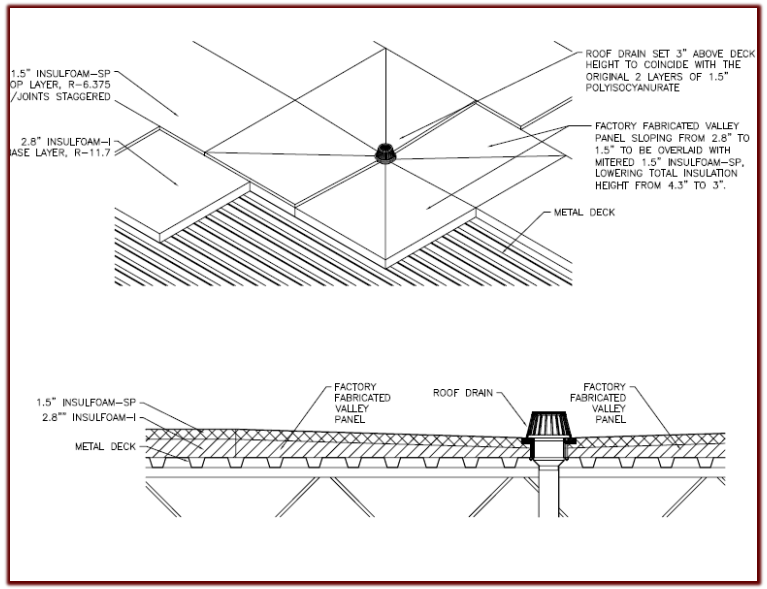
DRAIN CORNERS



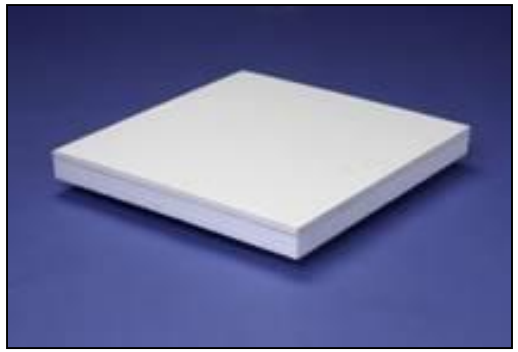
INSET PERIMETER DRAINS

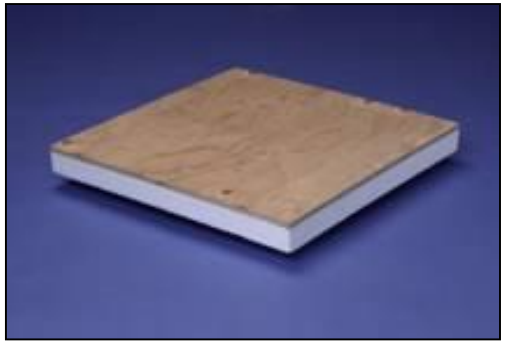

MEMBRANE
1.5" INSULFOAM–SP TOP LAYER, R–6.375 W/JOINTS STAGGERED
5.7" INSULFOAM–I BASE LAYER, R–23.7
GUTTER
METAL DECK
TAPERED INSULFOAM–I BASE LAYER SLOPED FROM 3.5" TO 5.7"
NIALERS BUILT UP TO MEET ORIGINAL R–30 POLYISOCYANURATE
TAPERED INSULFOAM–I BASE LAYER SLOPED FROM 3.5" TO 5.7"
1.5" INSULFOAM–SP
5.7" INSULFOAM–I
METAL DECK
GUTTER


1.5" INSULFOAM–SP TOP LAYER, R–6.375 W/JOINTS STAGGERED
4.25" INSULFOAM–I BASE LAYER, R–17.7
THRU–WALL SCUPPER SET 4" ABOVE DECK HEIGHT TO COINCIDE WITH THE ORIGINAL 2 LAYERS OF 2" POLYISOCYANURATE
FACTORY FABRICATED VALLEY PANEL SLOPING FROM 4.25" TO 2.5" TO BE OVERLAID WITH MITERED 1.5" INSULFOAM–SP, LOWERING TOTAL INSULATION HEIGHT FROM 5.75" TO 4".
METAL DECK
1.5" INSULFOAM–SP
4.25" INSULFOAM–I
METAL DECK
FACTORY FABRICATED VALLEY PANEL
THRU–WALL SCUPPER

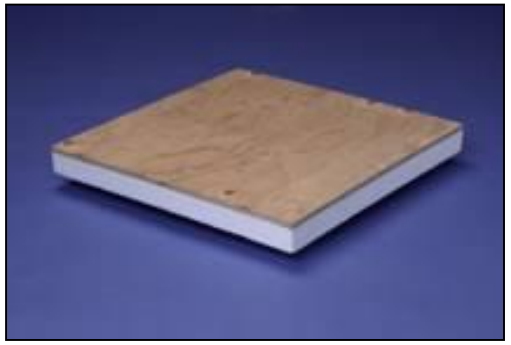

1.5" INSULFOAM–SP TOP LAYER, R–6.375 W/JOINTS STAGGERED
2.8" INSULFOAM–I BASE LAYER, R–11.7
ROOF DRAIN SET 3" ABOVE DECK HEIGHT TO COINCIDE WITH THE ORIGINAL 2 LAYERS OF 1.5" POLYISOCYANURATE
FACTORY FABRICATED VALLEY PANEL SLOPING FROM 2.8" TO 1.5" TO BE OVERLAID WITH MITERED 1.5" INSULFOAM–SP, LOWERING TOTAL INSULATION HEIGHT FROM 4.3" TO 3".
METAL DECK
1.5" INSULFOAM–SP
2.8"" INSULFOAM–I
METAL DECK
FACTORY FABRICATED VALLEY PANEL
ROOF DRAIN
FACTORY FABRICATED VALLEY PANEL

EPS Composites



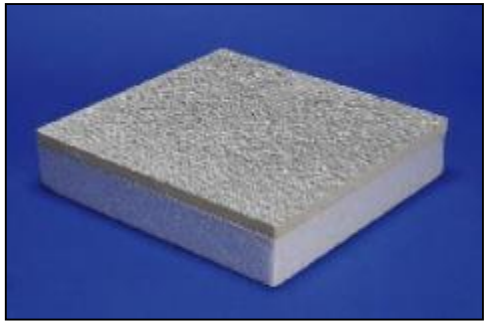


EPS Composites
Product Attributes



- Available in overall thickness up to 7” in a single layer
- Available with assorted cover boards - OSB, plywood, DensDeck®, wood fiber, perlite & gypsum
- Typically provided with (nom. 1 pcf density); also available in custom densities up to 3.0 pcf

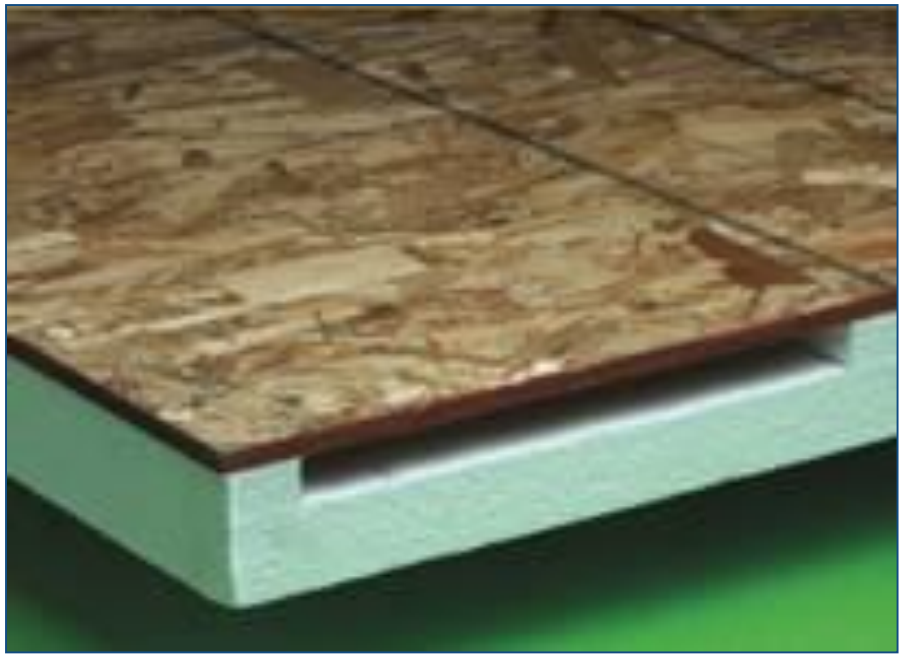
EPS Composites - Advantages



- Significant material- and/or labor- savings on:
  - high R-Value projects
  - projects requiring cover boards
  - projects using insulation
- Provides a more abuse-resistant roof system
- Enables the application of fully adhered or hot-mopped systems over EPS

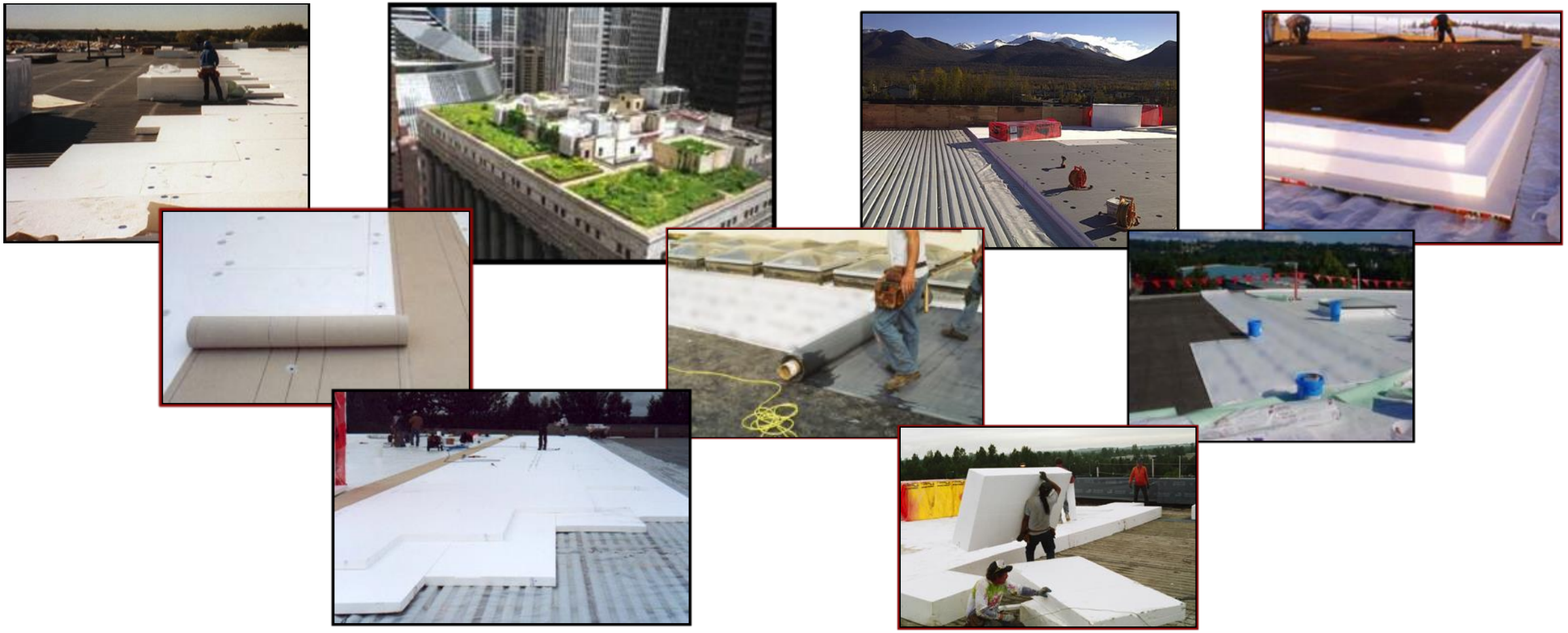
Vented EPS Composite

Vented nail board insulation; for use in steep-slope roofing applications



- Ideal for asphalt shingle applications requiring a vented substrate
- Available in overall thickness from 1.5” - 7”
- Venting channels are available in standard ½”, ¾” and 1” depths; also available in custom widths and depths.

Suitable for virtually all roofing applications



Extensive Code Approvals

- FM
- UL
- ASTM
- ICC - ES
- IBC
- Miami Dade
- State of Florida
- Various State Approvals

EPS Advantages in Roofing
Bottom line

- Most affordable
- Proven performer
- Job-specific customization available
- Thickest profile available – saves labor
- Compatible with all roof systems
- Readily available
- Warranted non-prorate R-Value

Key Questions when specifying EPS

What does the specification call for regarding:

- R-Value
- Compressive Strength or Density
- One or two layers
- Building and Fire Codes

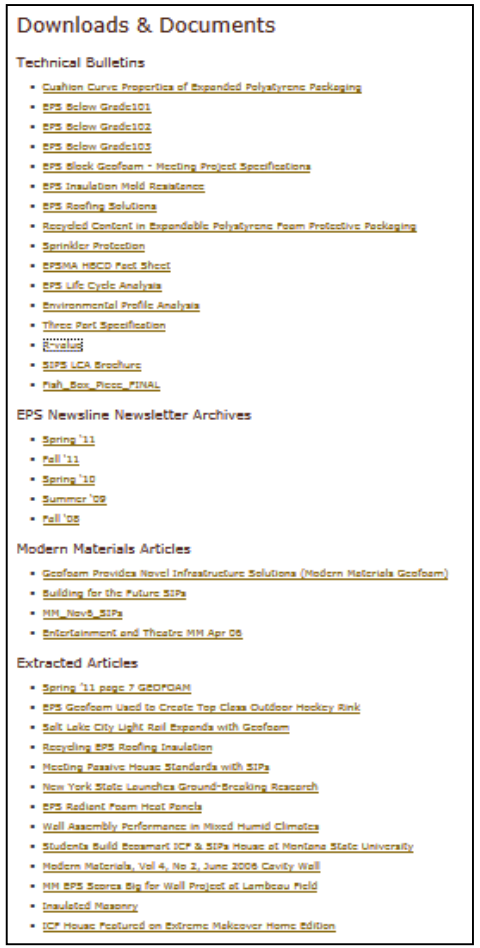
Other Considerations:

- Labor & Material costs
- LEED & Recyclability,
- Special custom features

Learning Objectives

- Define and understand how Expanded Polystyrene (EPS) is manufactured
- Understand the environmental features and benefits of EPS insulation including recyclability, LEED, thermal performance, and energy efficiency.
- Understanding key physical properties of the different EPS products used in Roofing applications.
- Understand the features and benefits of the different EPS products: standard, faced, and composites and which roofing applications they are used in.
- Understand the economic advantages when using EPS in different roofing applications than other insulations. Case Study examples sited.
- Understand what key components to consider when preparing a specification for EPS vs another insulation product in a roofing application: R-Value, Compressive Strength, Codes, Product Performance, Labor Costs, LEED and Sustainability, Product Availability and Warranty.

Resources



Downloads & Documents

Technical Bulletins

- Cushion Curve Properties of Expanded Polystyrene Packaging
- EPS Below Grade101
- EPS Below Grade102
- EPS Below Grade103
- EPS Block Geofoam - Meeting Project Specifications
- EPS Insulation Mold Resistance
- EPS Roofing Solutions
- Recycled Content in Expandable Polystyrene Foam Protective Packaging
- Sprinkler Protection
- EPSMA HBCD Fact Sheet
- EPS Life Cycle Analysis
- Environmental Profile Analysis
- Three Part Specification
- Rivalea
- SIPS LCA Brochure
- Fish_Box_Piece_FINAL

EPS Newsline Newsletter Archives

- Spring '11
- Fall '11
- Spring '10
- Summer '09
- Fall '08

Modern Materials Articles

- Geofoam Provides Novel Infrastructure Solutions (Modern Materials Geofoam)
- Building for the Future SIPs
- MM_Nov8_SIPs
- Entertainment and Theatre MM Apr 08

Extracted Articles

- Spring '11 page 7 GEOFOAM
- EPS Geofoam Used to Create Top Class Outdoor Hockey Rink
- Salt Lake City Light Rail Expands with Geofoam
- Recycling EPS Roofing Insulation
- Meeting Passive House Standards with SIPs
- New York State Launches Ground-Breaking Research
- EPS Radiant Foam Heat Panels
- Wall Assembly Performance in Mixed Humid Climates
- Students Build Ecosmart ICF & SIPs House at Montana State University
- Modern Materials, Vol 4, No 2, June 2006 Cavity Wall
- MM EPS Source Big for Wall Project at Lambeau Field
- Insulated Masonry
- ICF House Featured on Extreme Makeover Home Edition

- www.EPSIndustry.org
- Manufacturers’ websites
- UL and FM

Questions?

Thank you for your time!