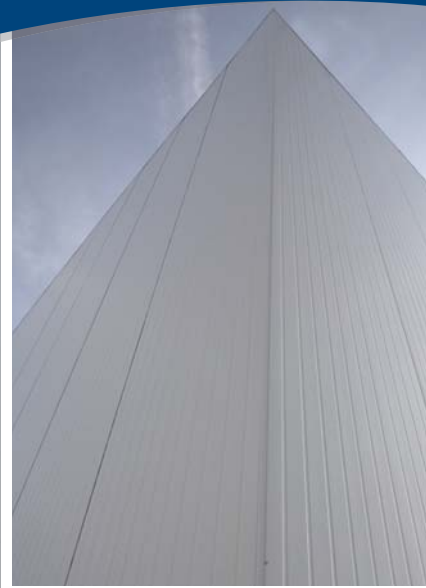


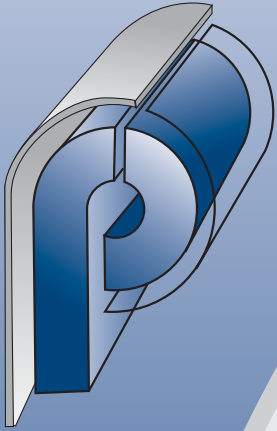
PermaTherm

INSULATION INNOVATION

ARCHITECTURAL INSULATING PANELS

www.permatherm.net





PermaTherm Architectural Insulating Panels

PermaTherm's architectural insulating panels offer architects, building owners and design-build firms unmatched flexibility in creating high performance structures.

High performance means: rapid installation time, lower maintenance cost, reliable climate control, and sustained energy savings; all with lower initial construction costs.

PermaTherm's customized panel systems offer high performance and low cost to architects, building-owners and construction contractors. With PermaTherm Panel Products you save money today and tomorrow.



PermaTherm Panel Applications

- Cold Storage Facilities
- Food Processing Facilities
- Partition Walls
- Fire Walls
- Industrial Buildings
- Commercial Buildings
- Dairies
- Roof Systems

While extensively used for exterior and interior wall systems, PermaTherm panels are utilized through a broad range of building products, including roof systems, floor systems, door assemblies, ductwork, and truck bays. The variety of exterior skins and core material combinations can be blended to accommodate nearly any project or facility needs.

PermaTherm can help you custom tailor your project needs to maximize up-front savings and long-term performance.

Panel Design

PermaTherm panels are formed in a continuous manufacturing process. In the proprietary process, metal or fiberglass skins are laminated to PermaTherm's pre-shaped expanded polystyrene cores (optional cores available). Edges are fashioned with tongue & groove connections to ensure a tight seal. The resulting composite panel is ready for easy installation, providing the ultimate in structural and thermal performance.

EXTERIOR SKINS

Stainless Steel Aluminum
Galvanized Steel Fiberglass

OPTIONAL CORES

Expanded Polystyrene Polyurethane
Density/Strength Options Mineral Wool

TEXTURES/COLORS

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PermaTherm EPS

Since 1987, PermaTherm has been an industry leading manufacturer of expanded polystyrene (EPS) products used in a variety of applications. PermaTherm EPS is the core of our building panel system. EPS isn't just foam insulation; it is an innovative building material that contributes to the design and structural, as well as thermal, integrity of building projects.

PermaTherm produces all of its own EPS, providing our customers with optimum cost value. Our custom-engineered panel products offer superior performance over other panel technologies due to exceptional thermal control, dramatic energy savings, low maintenance, durability, flexible design, and easy installation. Quality control is assured through our state-of-the-art molding and curing facility. PermaTherm panels are being used in food processing, cold storage, and other industrial and commercial buildings throughout North America.

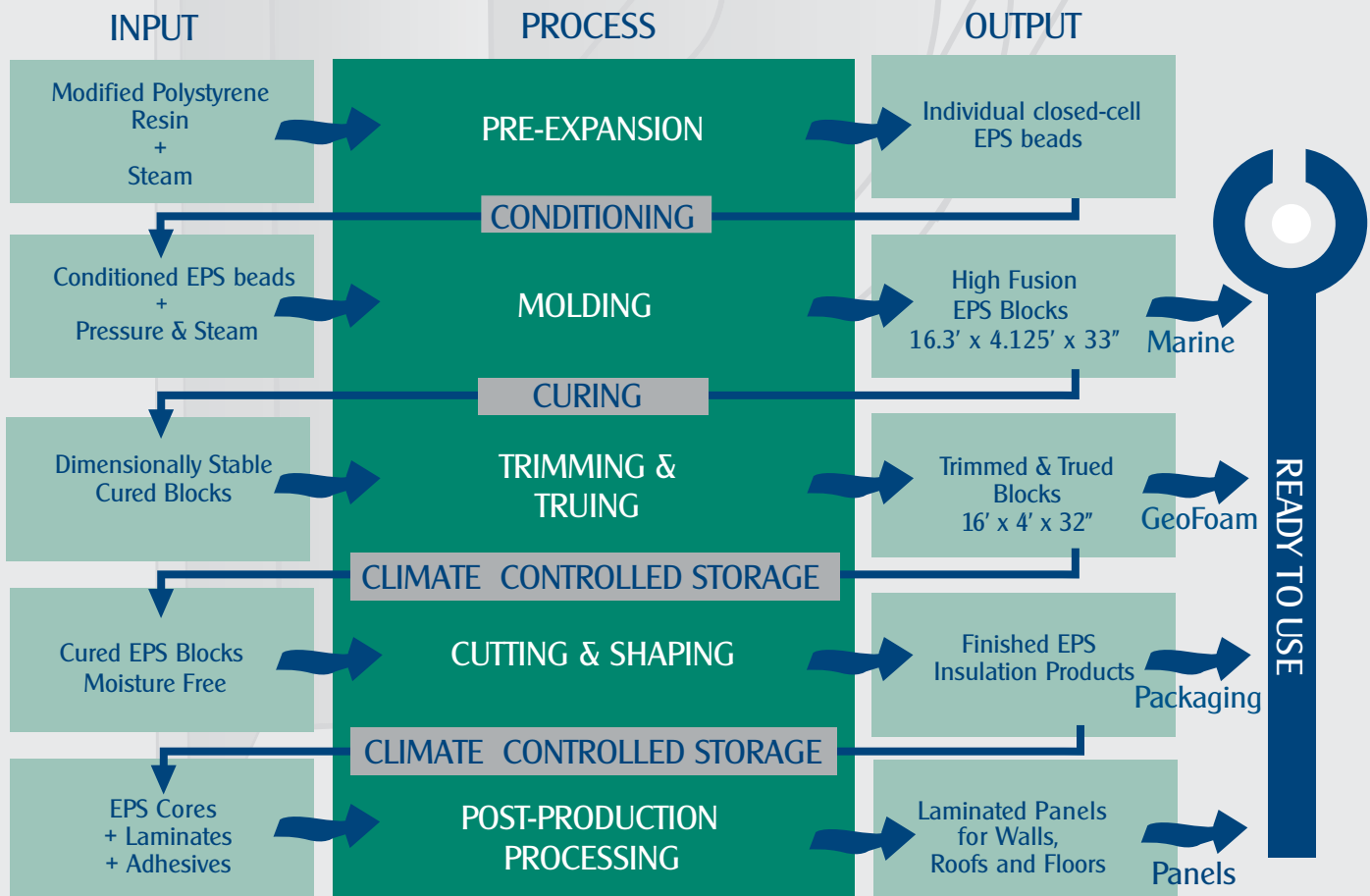
PermaTherm insulation products have been tested by Underwriters Laboratories and meet the requirements of the Standard Mechanical Code and International Mechanical Code.

Cold Storage

EPS R-value increases as temperature decreases. The majority of the cold storage industry is focused on the safe storage and transportation of food-related products, yet a large, growing segment of cold storage facilities serves non-food agricultural, pharmaceutical, and floral clients. PermaTherm's panel systems offer a superior alternative for projects that require stringent environmental control. Architects, construction companies, and owners increasingly turn to PermaTherm for high performance and low life-cycle cost.



PermaTherm's Manufacturing Process



EPS Physical Properties

Physical Properties	ASTM Method	Units	1 lb Density	2 lb Density
Density, Minimum	D1622	lb/ft ³	0.9	1.8
Density, as tested	D1622	lb/ft ³	1.0	2.0
Density, Range	D1622	lb/ft ³	0.9-1.14	1.8-2.2
Compressive Strength	D1621	lb/in ²	10-24	25-33
Shear Strength	C273	lb/in ²	18-22	33-37
Shear Modulus	C273	lb/in ²	280-320	600-640
Modulus of Elasticity	C273	lb/in ²	180-220	460-500
Tensile Strength	D1623	lb/in ²	16-20	23-27
Flexural Strength	C203	lb/in ²	25-30	50-75
Thermal Conductivity: K-Factor @1"	C177/C518	BTU-in/ hr-ft ² -F		
@ 25F (-3.9C)			0.23	0.20
@ 40F (4.4C)			0.24	0.21
@ 75F (43.3C)			0.26	0.23
Thermal Resistance: R-Factor @1"	C177/C518	hr-ft ² -F/ BTU		
@ 25F (-3.9C)			4.35	5.00
@ 40F (4.4C)			4.17	4.76
@ 75F (43.3C)			3.85	4.35
Water Absorption	C272	%	<4.0	<2.0
Water Vapor Transmission	E96	perm-inch	2.0-5.0	0.6-2.0
Capillarity			None	None
Coefficient, Thermal Exp.	D696		0.000035	0.000035
Long Term Service Temp		F	167	167
Maximum Exposure Temp		F	180	180
Oxygen Index	D2863		24.0	24.0

Thermal Resistance (1 lb Density @ 40F)

Thickness (inches)	2	3	4	6	8	10	12
R-Value	8	13	17	25	33	42	50

Panel Manufacturing Tolerances

- Length:
 Up to 20 feet: +/- 1/8 inch
 Over 20 feet: +/- 3/16 inch
- Width:
 32-48 inches: +/- 1/8 inch
- Thickness:
 2-12 inches: +/- 1/8 inch
- Squareness: +/- 1/8 inch (measured 6 inches from end)
- Lateral Bow:
 Up to 10 feet: +/- 3/32 inch
 10 ft to 20 ft: +/- 3/16 inch
 Over 20 feet: +/- 3/8 inch
- Flatness: +/- 3/16 inch per 2 foot span
- Joints: Male/female joint edges flush, with no more than 1/8 inch deviation

Maximum Wall Spans for Uniform Loads

(Units in Feet for 26-Gauge Steel Panel Skins)

Core Thickness	Total Uniform Load (lb/sq ft)						
	5	10	20	30	40	50	60
2 inch	18	13	9	7	6	5	3
3 inch	22	16	10	9	6	5	4
4 inch	25	18	13	10	8	7	6
5 inch	30	22	15	12	9	8	7
6 inch	32	23	16	13	10	9	8
8 inch	36	25	19	15	12	11	10
10 inch	41	29	20	17	14	12	11

Surface Panel Burning Characteristics (1 lb Density)

	ASTM Method	UL Rating
Flame Spread @ 6"	E 84	0
Smoke Density @ 6"	E 84	100
Hot Surface	C 41	Pass



Time Tested Performance

PermaTherm panels have been used in food processing, cold storage, floral, pharmaceutical, warehouse, and other building applications across the Nation. Thousands of structures, from 10,000 to over 350,000 ft² are testimony to the quality and reliability of our products. PermaTherm has worked closely with its clients in perfecting its panel products through a broad range of commercial & industrial building applications. This dynamic continues today as our clients' challenges shape our constantly evolving panel products of tomorrow.



The PermaTherm Panel Advantage

- ⦿ EPS R-value increases as temperature decreases
- ⦿ Lowest operating cost over building life
- ⦿ Greater span capability with less steel
- ⦿ Permanent R-value over panel life
- ⦿ Lowest cost R-value/square foot
- ⦿ Heat-reflective external finishes
- ⦿ EPS is HCFC and CFC-free
- ⦿ Void-free cores and joints
- ⦿ Rapid Installation



PermaTherm Panel Approvals

- ⦿ ASTM E84 25/50 Flame/Smoke certification
- ⦿ Florida Building Code product approvals
- ⦿ UL listed insulation material
- ⦿ USDA approved surfaces
- ⦿ UL listed fire panels



Accessories

Doors

U Channels

Inside Trim

Outside Trim

Roof Coatings

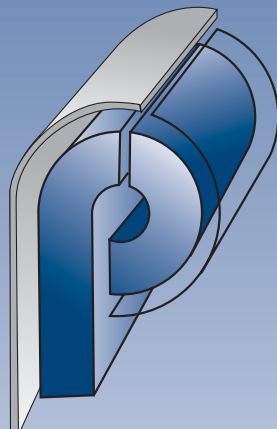
Ceiling Hangars

Attachment Items

Environmental Attributes

PermaTherm's Insulating Panels not only contribute points under the requirements of the U.S. Green Building Council's LEED (Leadership in Energy & Environmental Design) Green Building Rating System, but can also qualify under the National Institute of Standards and Technology's BEES program (Building for Economic and Environmental Stability).

PermaTherm's commitment to energy efficiency, sustainability and environmental responsibility is evident in the products and services offered by the Company. For additional information on environmental attributes or our commitment, visit us at www.permatherm.net.



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