

DyTherm™ Phenolic Insulation

2.3, 3.75, 5.0, and 7.5 lb/ft³ Densities

Phenolic Rigid Foam

DyTherm™ Phenolic insulation is based on patented technology and is manufactured under a certified ISO-9001 quality program*. While reflecting the benefits of rigid polyisocyanurate insulation, DyTherm Phenolic insulation additionally has a superior resistance to burning and spread of flame, achieving 25/50 flame spread/smoke developed indices per ASTM E-84. DyTherm Phenolic insulation also has the lowest thermal conductivity of any commonly available insulation with an initial K-factor of 0.145 Btu·in/hr·ft²·°F), equating to an R-value of almost 7.

DyTherm Phenolic insulation is entirely CFC and HCFC-free with zero Ozone Depletion Potential (ODP). It has been developed to provide optimum performance with regards to insulation efficiency, fire resistance, low smoke emission, compressive strength, environment, health, safety and cost.

DyTherm Phenolic insulation is a lightweight rigid foam that is easy to transport, handle and install. Dyplast has gained a reputation for quality and consistency - - a reputation that has spread worldwide.

TEMPERATURE RANGE

DyTherm Phenolic insulation may be used for pipework and equipment operating within the process temperature range -292°F to +248°F (-180°C to +120°C).

THERMAL PERFORMANCE

DyTherm Phenolic insulation has an initial thermal conductivity of 0.145 Btu·in/hr·ft²·°F (0.021 W/m·K). This is the lowest thermal conductivity of any commonly available insulation material. A low thermal conductivity allows specified thermal performance standards to be achieved with a minimal thickness of insulation. This is particularly significant where space saving is important. A thinner insulation can facilitate installation in confined spaces; and with lower weight pipe and equipment supports and hangars can be minimized. Furthermore, it can often result in a lower surface area and therefore savings in appurtenance and finishing materials.

STRUCTURE

DyTherm Phenolic insulation has a high closed cell content and fine cell structure. DyTherm Phenolic insulation consists of a densely cross linked matrix which does not readily break down in service.

HYGIENE

DyTherm Phenolic insulation is resistant to fungus and mold growth, will not sustain vermin, and is non-fibrous and odorless.

* DyTherm Phenolic insulation has all prior certifications and approvals of Kooltherm and Koolphen. Kooltherm and Koolphen are registered trademarks of Kingspan Holdings, Ltd.

Dyplast Products is the preeminent manufacturer/ supplier of polyisocyanurate, expanded polystyrene, and phenolic rigid foam products, and also distributes a variety of complementary products. With world-class production facilities in Miami, Florida, Dyplast Products offers its customers unsurpassed technology, responsiveness, wide-ranging product configurations, and state-of-the-art quality control. Our customer-focused staff, combined with our sound financial footing, ensure we deliver incomparable value to our customers far into the future. **For information on Dyplast Products or additional technical data on this product, visit our website at www.dyplastproducts.com.**

MOISTURE RESISTANCE

DyTherm Phenolic insulation has a 95% (or greater) closed cell content, which makes it non-wicking and highly resistant to moisture penetration. This is particularly valuable in humid conditions where the build up of moisture can compromise the performance of lesser insulation materials. It is an ideal insulation material for cold, chilled and low temperature hot water pipework.

CHEMICAL RESISTANCE AND COMPATIBILITY

DyTherm Phenolic insulation is resistant to a wide range of oils, solvents and chemicals. Its compatibility with most solvent based coatings and adhesives, and polyester and epoxy resin based coatings, allows it to maintain its physical integrity when in contact with such substances.

SURFACE BURNING CHARACTERISTICS

The resistance to burning and spread of flame of DyTherm Phenolic insulation is superior to that of any other cellular plastic insulation material, regardless of facing type. In addition, there is an almost complete absence of smoke when these materials are subjected to a flame source, buying valuable time for evacuation.

As tested in accordance with ASTM E-84, DyTherm Phenolic insulation exhibits a flame spread index and smoke development index of 20/30 (2.3 lb/ft³ at 2 inch thick), making it by far the most thermally efficient insulation meeting the standards of the International Mechanical Code.

QUALITY ASSURANCE

DyTherm Phenolic insulation is manufactured to the highest quality standards under a quality control system approved to BS EN ISO 9001: 2000 / EN ISO 9001: 2000. This program is audited by independent third parties to ensure consistency in quality.

General Physical Properties (Densities 2.3 , 3.75, 5.0, 7.5 lb/ft³)

Property	Test Method	Unit	Typical Values			
			2.3	3.75	5.0	7.5
Nominal Density	ASTM D 1622	lb/ft ³	2.3	3.75	5.0	7.5
Thermal Conductivity at +50°F	ASTM C 518 (initial)	Btu-in/hr-ft ² -°F	0.145	0.20	0.208	0.222
Color			Grey / Pink	Grey	Grey	Grey
Closed Cell Content	ASTM D 2856 Method B	%	≥ 95	≥95		
Operating Temperature Limits	Upper Limit	°F	+248	+248	+248	+248
	Lower Limit	°F	-292	-292	-292	-292
Minimum Compressive Strength at +73°F	ASTM D 1621					
	Parallel	psi	22	46	86	145
	Perpendicular	psi	15	25	64	116
Minimum Tensile Strength at +73°F	ASTM D 1623					
	Parallel	psi	22	44	75	116
	Perpendicular	psi	16	31	51	87
Linear Dimensional Stability	ASTM D 2126					
	+199.4°F for 24 hour	%	≤ 1	≤ 1	≤ 1	≤ 1
	-22°F for 24 hours	%	≤ 1	≤ 1	≤ 1	≤ 1
Linear Expansion Coefficient	ASTM D 696	ft/ft-K	40-70 x 10 ⁻⁶	40-70 x 10 ⁻⁶	40-70 x 10 ⁻⁶	40-70 x 10 ⁻⁶
Friability for 10 mins	ASTM C 421	%	< 30	< 40	< 30	< 10
Surface Burning Characteristics						
Flame Spread @ 2 in thick	ASTM E 84		20			
Smoke Density @ 2 in thick	ASTM E 84		30			

1. Physical properties are measured at 70-75F unless otherwise indicated.
2. These are nominal values obtained from representative product samples, and are subject to normal manufacturing variances.
3. Average values through the foam cross section.
4. Frequent and severe thermal cycling can produce dimensional changes significantly greater than those listed here. Special design considerations must be made in systems subject to severe cycling.
5. This numerical flame spread data is not intended to reflect hazards presented by this or any other material under actual fire conditions.

FEATURES AND BENEFITS

Dimensionally stable; Superior insulating value; Excellent Moisture Resistance; <25/50 Flame Spread /Smoke Development; Easy to handle and shape in the field; Sheets can be cut to close tolerance; fabrication available to virtually any shape/size; Environmentally friendly (Zero-ODP); High strength; Chemically resistant; Low life-cycle cost; Light-weight.

APPLICATIONS

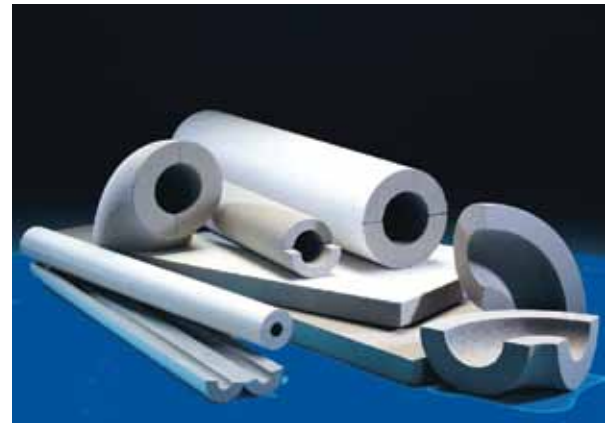
Pipe, tank, and vessel insulation; Panel insulation for refrigeration and freezers; Core material for architectural and panelized construction; Panel insulation for shipping containers and rail cars; Flat panels for duct and air plenum insulation.

INDUSTRIES

Refrigeration/freezer manufacture; Commercial HVAC and chill water systems; LNG, LOX and other cryogenic facilities; Commercial building construction; Refrigerated transportation.

INSTALLATION

When using DyTherm as part of an insulation system with vapor retarders, mastics, and jacketing, vapor retarders may be field-applied or factory-applied by an authorized fabricator. (See Installation Guidelines)



DISCLAIMER OF WARRANTIES AND LIABILITIES

Characteristics, properties, performance of materials, and application specifications herein described are based on data obtained under controlled conditions. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. Dyplast Products makes no implied warranties of any type, including without limitation, any warrant of merchantability or fitness of purpose. In no event will Dyplast Products be responsible for damages of any nature whatsoever resulting from the use of or reliance upon this information or the product to which information refers. No agent, sales representative, or employee is empowered to change, alter, or amend this provision, unless approved in writing by a duly authorized officer of Dyplast Products.



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