ISO-25® Polyisocyanurate Insulation

25/50 Flame/Smoke Rated at 1.5 Inch

ISO-25® IS BACK! After many months and considerable investment, Dyplast Products is the first manufacturer since the discontinuation of CFC and HCFC blowing agents to achieve an ASTM E84 rating of 25 flame spread and 50 smoke development on its 1.5" thick insulation. Dyplast's ISO-25 polyisocyanurate rigid foam is produced with nominal 2.0 lb/ft³ density, and represents the highest R-value to thickness ratio of any commercially available insulation, and meets the stringent International Mechanical Code requirements for interior pipe and panel insulation. ISO-25 offers exceptional performance in applications from -297F to +300F. With roughly twice the insulating value of cellular glass at significantly lower cost, ISO-25 is the obvious choice for chill water, LNG, cryogenic, and other low temperature applications. ISO-25 provides superior performance in virtually all aspects when compared to polystyrene, polyurethane, phenolic, and fiberglass, achieving levels of thermal efficiency otherwise unattainable.

ISO-25 is produced as a continuous foam bunstock with the ability to custom size the bun, allowing fabrication to virtually any shape or size while reducing waste. For specific standard stock bun sizes contact the sales department at 1-800-433-5551 or logon to our website for ISO-25 sizing (www.dyplastproducts.com/ISO_bun_sizing.htm). Our proprietary production process utilizes hydrocarbon blowing agents creating a portfolio of ISO products with physical properties superior to prior generation formulations.

THERMAL EFFICIENCY

ISO-25's initial K-factor of 0.15 equates to a high 6.67 R-factor. With its high R-factor, ISO-25 can achieve the same insulating value with as little as half the thickness required by alternative insulating materials. Less insulation leads to thinner walls, more space, and fewer and tighter energy-losing seams - - further enhanced by the availability of larger pieces (for example, 24-foot panels or blocks). Less insulation in mechanical applications also equates to reduced quantities of expensive vapor retarders, jackets, and mastics. The lighter weight of ISO-25 compared to cellular glass (roughly one-third) reduces structural support requirements.

High thermal insulation efficiency is achieved by infusing cells with gases having low thermal conductivity. All such rigid foam insulation (including polyurethane, extruded polystyrene, and polyisocyanurate) lose a small amount of their insulating value over time as air displaces insulating gases. ISO-25's smaller, stronger cell structure and our proprietary cell-gas formulation work together to impede gas transfer across cell boundaries, thus reducing loss of thermal efficiency. It is important to note that ISO-25's service temperatures are normally well below 75F, and that thermal aging is reduced considerably at lower operating temperatures. Thicker insulation, vapor barriers, and metal jacketing also limit gas diffusion.

Dyplast Products is the preeminent manufacturer of polyisocyanurate and expanded polystyrene rigid foam products, and also distributes a variety of complementary products. With new 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.**

SURFACE BURNING CHARACTERISTICS

The International Mechanical Code requires insulation installed within air plenums to meet stringent flame-spread and smoke-development ratings when tested in accordance with ASTM E84. The 25 flame-spread and 50 smoke-development rating ensures a high degree of safety during catastrophic events. When comparing surface burning characteristics of alternative products, care must be taken to consider the installed insulation system as a whole. For example, a well-designed ISO-25 insulation system can even enhance the overall flame/smoke performance of the overall pipe/equipment system. On the other hand, cellular glass' flame/smoke ratings may be compromised by the use of the sealants or jacketing often recommended by suppliers. There is also the matter of insulation system integrity during a fire. ISO-25 may be charred by flame, but maintains its integrity (i.e. doesn't melt) and continues to protect the insulated system.

CERTIFICATIONS

Physical properties are independently tested and audited from witnessed samples by an independent laboratory (RADCO). ISO-25's 25/50 flame spread/smoke development rating has been certified by INTERTEK.

WATER VAPOR TRANSMISSION

For optimum performance and longevity, insulation systems for low temperature applications must be designed to control condensation. One primary design strategy is to specify high insulation efficiency since if the surface temperature of the insulation system can be maintained above the dewpoint, condensation will not occur. Since a minimal amount of condensation may be acceptable (or unavoidable) in humid environments, a secondary design strategy is to also demand insulation with low water vapor transmission. In this regard, no other insulation alternative offers ISO-25's combination of superior R-factor and low water vapor permeability.

ISO-25® POLYISOCYANURATE RIGID FOAM INSULATION SERIES 200 (2 lb density)

Physical Properties[1]		ASTM Method	English Units[2]	Metric Units[2]
Density[3]		D 1622	2.1 lb/ft^3	33.7 kg/m^3
Compressive Strength[3]		D 1621		
Parallel to Rise			24 lb/in^2	165 kPa
Perpendicular to Rise			25 lb/in^2	171 kPa
Thermal Conductivity: K-Factor @ 1" (initial)		C 518	0.15 BTU·in/hr·ft^2·F	0.021 W/m·C
Thermal Conductivity: K-Factor @ 1" (projected aged 6-months)		C 518	0.18 BTU·in/hr·ft^2·F	0.025 W/m·C
Thermal Resistance: R-Value @ 1" (initial)		C 518	6.67 hr·ft^2·F/BTU	1.20 m^2·C/W
Closed Cell Content		D 2856	>95 %	>95 %
Water Absorption				
24-hour immersion		C 272	0.013 % by volume	0.013 % by volume
Water Vapor Permeance		E 96	3.28 perm-inch	4.76 ng/Pa·s·m
Service Temperature[4]			-297 to +300F	-183 to +149C
Dimensional Stability[3,5]		D 2126		
@ -40F (-40C), 7 days:	Length		<-0.1 % Change	<-0.1 % Change
	Volume		< 0.1 % Change	< 0.1 % Change
@ 158F (70C)/97% RH, 7 days:	Length		<-0.5 % Change	<-0.5 % Change
	Volume		< 1.5 % Change	< 1.5 % Change
@ 212F (100C), 7 days:	Length		<-0.5 % Change	<-0.5 % Change
	Volume		< 3.1 % Change	< 3.1 % Change
Surface Burning Characteristics[6]				
Flame Spread @ 1.5" (3.81 cm)		E 84	25	25
Smoke Density @ 1.5" and below (3.81 cm)			50	50
Flame Spread @ 4" (10.16 cm)			25	25
Smoke Density @ 4" (10.16 cm)			170	170
Hot Surface		C 411	PASS	PASS

1. Physical properties are measured at 70-75F unless otherwise indicated and all test values are from independent certified testing laboratories.
2. These are nominal values obtained from representative product samples, and are subject to normal manufacturing variances.
3. Average value through the foam cross section.
4. Above 300F, discoloration and charring will occur, resulting in an increased K-Factor in the discolored area.
5. Frequent and severe thermal cycling can produce dimensional changes significantly greater than listed here. Special design considerations must be made in systems subject to severe cycling.
6. This numerical flame spread data is not intended to reflect hazards presented by this or any other material under actual fire conditions.
7. TBD (to be determined): Product is currently being tested by independent laboratory.

WATER ABSORPTION

Water absorption by insulation can degrade thermal insulating performance. ISO-25's excellent resistance to water absorption and high R-factor help ensure long-term thermal performance remains superior to polystyrenes, phenolic foams, fiberglass, and even cellular glass - - which has water absorption of 0.2% (per manufacturer data) but has considerably lower insulating value. Proper installation of vapor retarders can further improve performance of the complete ISO-25 insulating system.

LIMITATIONS AND 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.

FEATURES AND BENEFITS

- Dimensionally stable
- Superior insulating value
- Excellent Moisture Resistance
- Easy to handle, shape in the field
- Sheets can be cut to 1/32" tolerance
- Variable bunstock sizing in 3 dimensions
- Fabrication available to virtually any shape/size
- Environmentally friendly (Zero-ODP)
- Chemically resistant
- Low life-cycle cost
- Light-weight

ISO-25 RECOMMENDED THICKNESSES

For insulation thicknesses on pipe and equipment, download the 3E Plus program software from http://www.pipeinsulation.org/.

Dyplast products

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