

POLYIMIDE FOAM

TA-301

Polyimide Foam products are a lightweight, fire resistant thermal-acoustic insulation material. Available as either open or closed cell **Polyimide Foam** is fabricated and faced into board or frame profiles, pipe covering or combined with transmission loss treatments.

Polyimide Foam Features and Benefits:

Faces Available: Closed or Perforated Glass Cloth, Reinforced Mylar, Aluminized Mylar, Kapton and Aluminum Foil. Other special application faces are also available.

Weight Reduction: Polyimide foams provide significant weight reductions. Requires fewer install fasteners.

Fire Resistant: Polyimide foams are inherently fire resistant. Low surface burn and low smoke development. No significant toxic offgasing.

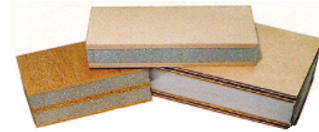
Improved Install and Habitability: Improved appearance and no fibrous shake out as compared to fibrous materials. Less waste and faster install means lower installed cost.

Applications: Shipboard hull, interior, overheads and ducts where fire resistant and lightweight thermal-acoustic insulation are required. Pipe covering used on chilled water systems to 100 degF (vapor barrier req'd) and for systems to 370 degF (fiberglass lagging req'd) Sizes from 1/4" – 10" IPS with wall thickness from 1/2" – 1" are standard.

Specifications and Approvals: DOD-I-24688, MIL-T-24708, DNV, ABS, GL, LROS

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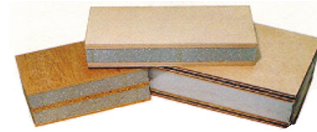


THERMAL- ACOUSTIC CONTROL MATERIALS

FLAMMABILITY		TEST METHOD	SI VALUE	US VALUE				
Oxygen Index		ASTM D-2863	45%	45%				
Radiant Panel Flame Spread Index		ASTM E-162	1	1				
Specific Optical Density of Smoke, Dm:		ASTM E-662						
	Non-Flaming		1	1				
	Flaming		3	3				
Toxic Gas Generation		Bombardier SMP 800-C						
	CO	flaming mode	<1 ppm	<1 ppm				
	CO ₂		13900 ppm	13900 ppm				
	No _x		<1 ppm	<1 ppm				
	SO ₂		<1 ppm	<1 ppm				
	HCl		<1 ppm	<1 ppm				
	HF		<1 ppm	<1 ppm				
	HBr		<1 ppm	<1 ppm				
	HCN		1 ppm	1 ppm				
Full Scale Room Test for Surface Products		ISO 9705 I/A/W	Passes HSC criteria	Passes HSC criteria				
		IMO Res. MSC.40(64)	Classified as a Fire-Restricting Material per the IMO High Speed Craft Code					
MECHANICAL								
Density		ASTM D-3574, Test A	6.4 kg/m ³	0.4 lb/ft ³				
Tensile Strength		ASTM D-3574, Test E	48 kPa	7 psi				
THERMAL								
Thermal Conductivity (k)		ASTM C-518 at mean temp. of 24°C (75°F)	0.046 W/(m-k)	0.32 (BTU-in)/(hr-ft ² °F)				
Thermal Resistivity ®		ASTM C-518 at mean temp. of 24°C (75°F)	22 (m-k)/W	3.1 (hr-ft ² .°f)/(BTU-in)				
AGING								
Steam Autoclave Aging:		ASTM D-3574, Test J,						
	Tensile strength retained	Procedure J and Test E	>90%	>90%				
	Change in weight & dimensions		<3%	<3%				
Dry Oven Aging:		ASTM C-518 and D-3574,						
	Thermal conductivity change	Test E after 989 hrs at 300°C (572°F)	<1%	<1%				
	Tensile strength retained		70%	70%				
	Change in weight & dimensions		<5%	<5%				
ACOUSTICAL								
Acoustical Absorption Coefficients		ASTM C-423 and E-795, Ty A Mounting	sabins/m ²	sabins/ft ²				
Thickness	Frequency	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	NRC
25mm (1")		0.08	0.22	0.58	0.93	0.94	0.81	0.65
50mm (2")		0.34	0.52	0.86	1.08	0.85	0.94	0.80

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THERMAL- ACOUSTIC CONTROL MATERIALS

POLYIMIDE	
Specifications per DOD-I-24688	
Density kg/m ³ (lb/ft ³) per ASTM D 3574, Test A.	4.8 to 9.6 (.36 to .72)
Thermal Conductivity W/(m-K) (BTU-in/hr-ft ² -°F) per ASTM C 518 @ 24°C (75°F)	.046 (.32)
Fire Resistance Flame Spread Smoke Developed per ASTM E 14 1/4 Scale Fire Test per Appendix DOD-I-24688 Radiant Panel Surface Flammability per ASTM D 3675 Specific Optical Smoke Density Flaming Non Flaming per ASTM E 662	<5 <5 PASS <5 <5 <10
Max Continuous Temperature °C (°F)	200 (400)

Polyimide Configurations	
PS-PL	Plain polyimide foam to Ty 1
PS-CF	Navy Cloth faced to Ty 2, Class 1
PS-GR	Grooved & Perforated CF to Ty 2, Class 2
PS-WM	PF-PL faced per Mil-I-22023 Ty 3
PS-AM	PF-PL faced with aluminized Mylar
PS-AM/CF	PF-CF with a layer of aluminized Mylar
PS-PAF	PF-PL faced with white corr & perf alum

Material	Frequency (Hz)						
	125	250	500	1000	2000	4000	NRC
PF-PL 1/2"	.04	.10	.20	.40	.35	.55	.75
PF-PL 1"	.06	.20	.45	.65	.65	.65	.75
PF-PL 2"	.15	.40	.75	.75	.75	.70	.75
PF-GR 1/2"	.05	.15	.35	.50	.60	.60	.75
PF-GR 1"	.07	.25	.70	.90	.75	.70	.75
PF-GR 2"	.25	.70	.90	.85	.75	.75	.75

Sound Absorption Coefficient
per ASTM C 423 Type A

Polyimide Specifications	PS-TLT	PS-TLT-TY3	PS-KCF
	Density kg/m ³ (lb/ft ³) per ASTM D 3574, Test A.	N/A	4.8 to 9.6 (.36 to .72)
Thermal Conductivity W/(m-K) (BTU-in/hr-ft ² -°F) per ASTM C 518 @ 24°C (75°F)	.041 (.29)	.046 (.32)	.043 (.30)
Fire Resistance Flame Spread Smoke Developed per ASTM E162 1/4 Scale Fire Test per Appendix Mil-T-24708(TLT) & 802-6335737 (KCF) Specific Optical Smoke Density Flaming Non Flaming per ASTM E 662	<25 <150 PASS <5 10	N/A N/A N/A N/A N/A	N/A N/A PASS N/A <200
Insertion Loss (dB Loss at USN specified frequency) Class 1, 2, 3	>20, >40, >60	N/A	N/A
Max Continuous Temperature °C (°F)	N/A	200 (400)	200 (400)