

PYROPEL® MD-12

Lightweight, Rigid, Non-Burning Insulation

Rev. 11/19

Pyropel MD-12 is a lightweight, high-temperature, rigid insulation material. Parts made from Pyropel can be formed into complex shapes or cut from flat sheets. They will withstand continuous use up to 550°F and intermittent exposure up to 800°F. Pyropel MD-12 does not burn or melt when exposed to direct flame, emits virtually no toxic fumes and very little smoke during thermal decomposition.

Pyropel MD-12 has a porous, nonwoven structure, reinforced in three dimensions, and a density of 12 lb/ft³. It provides excellent thermal and acoustic insulation in thin sections and is not affected by most strong solvents or acids and many alkali materials.

TYPICAL PROPERTIESSIEnglish

Form:	Rigid Sheet or Shape	Rigid Sheet or Shape
Color:	Gold	Gold
Density:	.19g/cm ³	12 lb/ft ³
Glass Transition Temp (T _g):	315°C	600°F
Tensile Strength:	6.2-10.3x10 ⁶ Pa	0.9-1.5 x 10 ³ psi
Tensile Modulus:	9.7-11.7x10 ⁷ Pa	1.4-1.7 x 10 ⁴ psi
Bending Modulus:	0.7-4.1x10 ⁷ Pa	1.0-6.0x10 ³ psi
Compressive Modulus:	3.4-5.5x10 ⁶ Pa	0.5-0.8 x 10 ³ psi
% Elongation:	yield 4-5% break 10-25%	yield 4-5% break 10-25%

Service Temperature Limit:

Continuous:	285°C	550°F
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Combustion/Burn Data:

Limiting Oxygen Index (LOI)	40%	40%
OSU Heat Release	5/20 Kw-min/M ²	5/20 Kw-min/M ²
NBS Smoke Density, D _m	5	5

Thermal Conductivity (k) (ASTM-C177-85)

@ 25°C (77°F)	0.036 $\frac{W}{m \cdot ^\circ K}$	0.24 $\frac{BTU \cdot in}{Hr \cdot ft^2 \cdot ^\circ F}$
@ 93°C (200°F)	0.038	0.26
@ 204°C (400°F)	0.046	0.32

Electrical Properties

Acoustic Damping
(Impedance Tube, 0.3" thick)

	<u>10 GHz</u>	<u>18 GHz</u>	<u>Frequency</u>	<u>∞</u>
Dielectric Constant	1.34	1.32	1000	0.3
Loss Tangent	-0.017	-0.013	3100	0.7
			6300	0.8

SUGGESTED USES

Pyropel MD-12 can produced up to 3/8" and is used where insulation characteristics are important - such as a self-insulated duct, pipe or housing. Other uses include interior panels and components. Excellent fire resistance, low smoke and toxicity help ensure the survivability of passengers and crew. The acoustic and thermal insulation value of Pyropel reduces the need for additional materials saving weight and assembly labor.

Fire resistant housings, cabinets, shrouds where lightweight, thermal insulation and acoustic dampening are required for the safety and comfort of people and the proper functioning of electronic systems.

Heat shields, housings or dividers for engine and electrical areas where rigid, preformed barriers protect heat-sensitive components or prevent repair personnel from contacting hot surfaces directly.

AVAILABLE FORMS

Pyropel MD-12 is available in sheets or as preformed parts. The panels cut easily with a knife or die and can be bent into shapes and fastened. Preformed parts made to your drawings can incorporate decorative or protective surfaces. Tooling costs can be kept low for basic shapes and limited volume production can be economical compared against other options. Pyropel products can be customized to your performance and cost criteria.

Contact Pyropel, Inc. for quotes on formed parts or to explore the possible development of a grade to custom-fit your needs.

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