



# THE GUND COMPANY

MANUFACTURERS & FABRICATORS OF ENGINEERED MATERIAL SOLUTIONS

## Cryo G-10 Maintains Electrical, Mechanical, and Physical Properties in Space

Cryogenic environments where temperatures can reach extremely frigid temperatures of -200°C or lower often pose significant problems for typical composite materials. When exposed to cryogenic environments, materials tend to become hard and brittle, increasing their susceptibility to damage. High-performance specialized materials are essential for maintaining critical electrical, mechanical, and physical properties in these harsh environments.

**The Gund Company is a renowned custom composites manufacturer and a leading industry expert in engineered high-pressure laminate composites for extreme subzero environments, such as Cryo G-10.**

Cryo G-10 is a specialized continuous filament woven fiberglass sheet bonded with low-temperature epoxy resin. The non-brominated material can maintain excellent electrical, mechanical, and physical properties in cryogenic environments ranging from -270°C to 135°C.

The Gund Company works directly with engineers to design customized solutions for a wide range of critical applications, from next-gen composite materials to specialty machined components for extreme cryogenic conditions, to meet the needs of the space exploration industry.



		ASTM/ISO		TYPICAL VALUES
PROPERTIES (HPL from B Stage)		Test Method	Units	CRYO G-10
PHYSICAL	Glass Content from LOI		%	70.5
	Density		gm/c.c.	2.00
THERMAL	Coefficient of Thermal Expansion: Perpendicular @ Room Temperature	ISO 11359-2	/°C·10 <sup>-6</sup>	26.04
	Coefficient of Thermal Expansion: Parallel @ -196°C	ISO 11359-2	/°C·10 <sup>-6</sup>	8.08
	Thermal Conductivity: Room Temperature	ISO 8302	W/m°C	0.235
	Thermal Conductivity: -196°C	ISO 8302	W/m°C	0.28
MECHANICAL	IZOD Impact Strength: Room Temperature	ISO 180	KJ/m <sup>2</sup>	139
	Charpy Impact Strength: Room Temp	ISO 179	KJ/m <sup>2</sup>	131
	Charpy Impact Strength: -196°C	ISO 179	KJ/m <sup>2</sup>	148
	In-Plane Shear Strength: Room Temperature	ASTM D3846	KSI (MPa)	10.5 (73)
	In-Plane Shear Strength: -100°C	ASTM D3846	KSI (MPa)	20.5 (142)
	In-Plane Shear Strength: -196°C	ASTM D3846	KSI (MPa)	21 (148)
	Compressive Strength: Room Temperature	ASTM D695	KSI (MPa)	84 (583)
	Compressive Strength: -100°C	ASTM D695	KSI (MPa)	120 (826)
	Compressive Strength: -196°C	ASTM D695	KSI (MPa)	141 (974)
	Tensile Strength: Room Temperature	ISO 527-4	KSI (MPa)	78 (537)
	Tensile Strength: 100°C	ISO 527-4	KSI (MPa)	102 (708)
	Tensile Strength: 196°C	ISO 527-4	KSI (MPa)	109 (754)
	Flexural Strength: Room Temperature	ISO 178	KSI (MPa)	82 (567)
	Flexural Strength: -100°C	ISO 178	KSI (MPa)	126 (870)
	Flexural Strength: -196°C	ISO 178	KSI (MPa)	156 (1,076)

The Gund Company custom fabricates insulation materials to the exact specifications and drawings specified by our customers. We offer our customers the proper product for their specific application. A variety of dimensions and diameter sizes are available. Product colors vary according to material type.

## CRYO G-10

The data supplied are typical values. They are not to be considered specification values. All of the information, suggestions, and recommendations about these properties and uses of the products herein are based on tests and data believed to be accurate; however, the final determination regarding the suitability of any material described herein for the contemplated application, the manner of such use, and whether the use infringes any patents is the sole responsibility of the user. There is no warranty - expressed or implied - including, without limitation, warranties of merchantability or fitness for a particular purpose. Under no circumstances shall we be liable for incidental or consequential loss or damage.



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## MARKETS



*Switchgear*



*Electronics*



*Power Generators*



*Motor Applications*



*Transformers*



*Metals Processing*



*Electric Vehicles*



*Military/Aerospace*



*Oil & Gas*



*Medical*



*Space*

## OUR EXPERTISE IS YOUR COMPETITIVE ADVANTAGE

The Gund Company provides a wide range of material solutions from rigid, glass epoxy composites to high-temperature, silicone sponges.

We take a consultative approach to understanding your application by working with your engineers and buyers to find materials that fit the application. By understanding the most important material properties, we often find cost-reduction opportunities. Our Application Engineering Teams have decades of material experience and look forward to working with you on your upcoming project.

### Material Families:

- Thermoset Rigid Laminates and Composites
- Flexible Laminates, Papers, Films, and Felts
- Thermoplastic Materials
- Elastomeric Materials

### Our Manufacturing Capabilities Include:

- Compression Molding
- Pultrusion
- Filament & Convoluted Wound Tube
- Infusion & B-Stage Composites Lay-up and Molding
- Injection Molding
- Extrusion of Thermoplastics

### Our Engineering Capabilities Include:

- Custom Material Development
- Resin Formulation
- Laboratory Testing
- Comparative Materials Evaluation



## THE GUND COMPANY GLOBAL FOOTPRINT – LOCAL SERVICE

