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 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
	Outgassing: TML	ASTM E595	%	0.29
	Outgassing: CVCM	ASTM E595	%	0.01
	Outgassing: WVR	ASTM E595	%	0.10
THERMAL	Coefficient of Thermal Expansion: Perpendicular @ Room Temperature	ISO 11359-2	$/°C \cdot 10^{-6}$	26.04
	Coefficient of Thermal Expansion: Parallel @ -196°C	ISO 11359-2	$/°C \cdot 10^{-6}$	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^2	139
	Charpy Impact Strength: Room Temp	ISO 179	KJ/m^2	131
	Charpy Impact Strength: -196°C	ISO 179	KJ/m^2	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)
	Parallel Shear: Room Temp.	ASTM D3846	MPa	73.5
	Parallel Shear: -100°C	ASTM D3846	MPa	141.5
	Parallel Shear: -196°C	ASTM D3846	MPa	148
	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 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

We manufacture and fabricate a complete line of components for market-specific applications (left column). As TGC better understands these markets – we can expand into other applications for our products.

As an employer, we are one family, acting in accordance with our Core Values: respect, trust, growth, passion, connection, teamwork, integrity, and performance. Collectively, we recognize and serve others so that lives are transformed!

Material Families:

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

Engineering Capabilities:

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

Conversion Capabilities:

- Die, Laser & Knife Cutting
- Waterjet Cutting
- Rotary Die Cutting

Manufacturing Capabilities:

- Compression Molding
- Autoclave & Light RTM Molding
- Pultrusion / Extrusion of Rods & Shapes
- Filament, Convolute & Wet Winding Tubes
- Additive & Injection Molding
- Infusion & B-Stage Composites Lay-Up
- Hand Lay-Up & Spray-Up Molding

Fabrication Capabilities:

- 5-Axis Machining
- CNC Milling
- Routing
- Turning & Lathe Cutting
- Punching
- Bending

THE GUND COMPANY GLOBAL FOOTPRINT