



# THE GUND COMPANY

MANUFACTURERS & FABRICATORS OF ENGINEERED MATERIAL SOLUTIONS

## ENGINEERING RESOURCE

### SWITCHGEAR AND ELECTRONICS MATERIAL COMPARATIVE DATA SHEET

Product Grades			TGC	Angles & Channels GPO-3	GPO-3	APO-1	N155	N220	G-7	G-9	G-10	G-11	FR4	Arboron	XX	CE	Polycarbonate GP	Polycarbonate V-0	PolyPro FR	Vulcanized Fiber (Fish Paper)	Nomex®	PET Electrical Grade	Mica M
			NEMA	--	GPO-3	GPO-1	GPO-1	GPO-1	G-7	G-9	G-10	G-11	FR4	--	XX	CE	--	--	--	--	--	--	--
			IEC	--	UPGM 203	UPGM 201	UPGM 201	UPGM 201	SIGC 201	MFGC 201	EPGC 201	EPGC 203	EPGC 202	--	PFCP 203	PFCP 202	--	--	--	--	--	--	--
Materials of Construction				Glass Polyester	Glass Polyester	Glass Polyester	High-Temp Glass Polyester	High-Temp Glass Polyester	High-Temp Glass Silicone	Glass Melamine	Glass Epoxy	High-Temp Glass Epoxy	Flame Retardant Glass Epoxy	Paper Phenolic With Melamine Face	Paper Phenolic	Canvas Phenolic	Thermo-plastic	Flame Retardant Thermo-plastic	Flame Retardant Thermo-plastic	Laminated Cellulose	High-Temp Aramid Paper	Polyester Film	Silicone Bonded Mica paper
Standard Sizes - other sizes available at request			120" Long	36" x 72" 48" x 96"	36" x 72" 48" x 96"	36" x 72" 48" x 96"	36" x 72" 48" x 96"	36" x 72" 48" x 96"	36" x 48" 48" x 96" 48" x 120"	36" x 48" 48" x 96" 48" x 110"	36" x 48" 48" x 96" 48" x 120"	36" x 48" 48" x 96" 48" x 120"	36" x 48" 48" x 96" 48" x 120"	48" x 96" 60" x 120" 60" x 144"	36" x 48" 48" x 96"	36" x 48" 48" x 96"	36" x 72" 48" x 96"	48" x 96" 76" x 96"	24" wide rolls 48" x 96"	24" x 24" 48" x 96"	36" wide rolls	Rolls slit to width	41" x 98"
Standard Thickness Range			0.125"-0.375"	0.094"-2.00"	0.031"-2.00"	0.031"-2.00"	0.031"-2.00"	0.031"-2.00"	0.125"-6.0"	0.008"-6.0"	0.006"-6.0"	0.010"-6.0"	0.010"-6.0"	0.125"-1.00"	0.008"-4.0"	0.008"-4.0"	0.031"-0.50"	0.031"-0.50"	0.010"-0.125"	0.008"-0.125"	0.002"-0.030"	0.005"-0.014"	0.004"-3.0"
Mechanical Properties		Test Method	Units																				
Rockwell Hardness		ASTM D-785	Mscale	100	100	100	100	100	100	115	98	115	98	113	95	100	100	70	--	--	--	--	--
Tensile Strength	LW	ASTM D-638	ksi	12.5	9	9.5	12	11	--	44	43	34	40	22	13.5	11	9.5	9.5	4.4	18	0.3	2	22
	CW	ASTM D-638	ksi	--	--	--	--	--	--	34	39	--	32	14	11.5	9	9.5	9.5	4.4	10	--	2	--
Compressive Strength		ASTM D-695	ksi	29.5	33	33	40	32	45	70	44	50	66	45	25	34	12.5	12.5	--	35	--	--	58
Flexural Strength	LW	ASTM D-790	ksi	25	23	20	26	21	18	61	80	71	65	30	22	17.5	13.5	13.5	5.9	15	--	--	24
	CW	ASTM D-790	ksi	--	20	--	22	--	15	51	70	61	52	24	17	15	13.5	13.5	5.9	13	--	--	--
Shear Strength		ASTM D-732	ksi	--	14	13	15	12	--	18	19	21	21.5	13	11.5	14	10	10	--	--	--	--	--
IZOD Impact Strength LW		ASTM D-256	ft-lb/in	9.6	9	8.5	9.5	11	17	12.5	15	18	7.9	0.5	0.5	1.95	15	2.4	1.2	2.5	--	--	--
Bonding Strength		ASTM D-229	ksi	--	1.4	1.2	1.2	1.2	0.75	1.9	2.3	2.2	2.3	0.66	1	1.7	--	--	--	0.9	--	--	--
Electrical Properties		Test Method	Units																				
Arc Resistance		ASTM D-495	Sec	>180	190	180	150	180	200	185	130	185	130	88	--	15	--	--	--	125	--	--	420
Dielectric Strength		ASTM D-149	VPM	225	450	450	450	550	350	540	485	610	800	129	500	550	400	400	2200	200	1000	--	625
Breakdown Voltage		ASTM D-149	kV	45	45	40	30	50	55	65	50	65	66	60	40	40	--	--	22	--	--	7.5	--
Comparative Tracking Index		UL-746	V	>600	>600	>600	>600	>600	--	>400	>200	>200	>230	>600	--	--	--	>175	>600	--	--	2	500
Physical Properties		Test Method	Units																				
Water Absorption		ASTM D-570	%	0.25	0.25	0.25	0.25	0.25	0.19	0.6	0.02	0.1	0.1	0.9	2	2	0.15	0.15	0.01	63	10	0.6	1
Specific Gravity		ASTM D-792	g/cc	1.8	1.8	1.83	1.83	1.7	1.88	1.85	1.77	1.91	1.8	1.39	--	1.37	1.2	1.2	1.035	1.2	1	1.4	2.1
Thermal Properties		Test Method	Units																				
Relative Temp. Index	Electric	UL-746B	°C	130	130	130	155	220	170	50	130	170	130	95	130	125	125	125	110	115	220	140	500
	Mechanical	UL-746B	°C	130	130	130	155	210	220	140	140	180	140	95	130	125	125	125	110	110	220	120	500
Flame Resistance		UL94	--	V-0	V-0	V-0	HB	HB	V-0	V-0	HB	HB	V-0	V-0	HB	HB	V-2	V-0	V-0	HB	V-0	VTM-2	V-0
Thermal Class		NEMA	--	B	B	B	F	R	F	B	B	F	B	--	B	A	A	A	A	A	R	A	R

All of the information, suggestions, and recommendations pertaining to the properties and uses of the products herein are based upon tests and data believed to be accurate; however, the final determination regarding the suitability of any material described herein for the use contemplated, 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, warranty of merchantability or fitness for a particular purpose. The Gund Company will not be liable for incidental or consequential loss or damage.