THE GUND COMPANY

MANUFACTURERS & FABRICATORS OF ENGINEERED MATERIAL SOLUTIONS

OIL & GAS MATERIAL COMPARATIVE DATA SHEET

		Low Pressure Rigid Laminates			High Pressure Rigid Laminates					Molded Materials		Filament Wound Tubes				Thin Walled Tube Applications < 0.25"
Product Grades	TGC	N155	N180	N220	G-5	G-9	G-10	G-11	FR4	G160 BMC	G160 SMC	G2018	G2019	G2039	G1050 (ER1050)	G2040
	NEMA	GPO-1	GPO-1	GPO-1	G-5	G-9	G-10	G-11	FR4							
	IEC	UPGM 201	UPGM 201	UPGM 201	SIGC 201	MFGC 201	EPGC 201	EPGC 203	EPGC 202							
Construction		High-Temp Glass Polyester	High-Temp Glass Polyester	High-Temp Glass Polyester	Glass Melamine	Glass Melamine	Glass Epoxy	High-Temp Glass Epoxy	Flame Retardent Glass Epoxy	High-Temp Glass Molding	High-Temp Glass Molding	High-Temp Epoxy Glass Tubing	High-Temp Epoxy Glass Tubing	High-Temp Epoxy Glass Tubing	High-Temp Epoxy Glass Tubing	High-Temp Epoxy Glass Tubing
Standard Thickness Available	**in**	0.031 - 2.00 0.118 - 1.50	0.031 - 2.00 0.118 - 1.50	0.031 - 2.00 0.118 - 1.50	0.031 - 4.00	0.008 - 6.00	0.006 - 5.00	0.010 - 5.00	0.010 - 6.00			0.062 - 2.00	0.062 - 2.00	0.062 - 2.00		0.062 - 2.00
	cm	0.079 - 5.080 0.300 - 3.810	0.079 - 5.080 0.300 - 3.810	0.079 - 5.080 0.300 - 3.810	0.07874 - 10.16	0.02032 - 15.24	0.01524 - 15.24	0.025 - 127	0.025 - 127			0.157 - 5.08	0.157 - 5.08	0.157 - 5.08		0.157 - 5.08
Mechanical Properties		**Units**														
Rockwell Hardness		M Scale	--	--	--	115	115	98	115	98						
Tensile Strength, Lengthwise and Crosswise	LW	ksi	12.0	16.0	11.0	--	44	43	41	40	8.0	27.0	30.0	20.0	20.0	28.3	30.0
	CW		--	--	--	--	34	39	--	32							
Compressive Strength		ksi	40.0	46.0	32.0	65	70	44	50	66	25.0	20.0	30.0	30.0	30.0	22.0	30.0
Flexural Strength, Lengthwise and Crosswise	LW	ksi	26.0	29.0	32.0	50	61	63	80	65	28.0	40.0				50.0	
	CW		22.0	32.0	--	--	51	54	70	52							
Shear Strength		ksi	--	18.0	12.0	--	18	19	21	21.5	12.0	18.0	4.3	2.8	2.8		4.0
IZOD Impact Strength, LW		ft-lbs./in.^{2}	9.5	12	11	10.0	12.5	8.4[1]	18	7.9	10.0	14.0					
Bonding Strength		lbs.	--	1080	1080	--	1.9	2.3	2.2	2.3							
Electrical Properties		**Units**														
Arc Resistance		Seconds	150	180	180	180	185	130	185	130							
Dielectric Strength		V/mil	450	500	550	300	540	485	485	800							
Breakdown Voltage		kV	30	45	50	--	65	47[2]	>50	66							
Surface Resistivity		Ohms/Sq.	--	--	--												
Physical Properties		**Units**														
Water Absorption		%	0.25	0.25	0.25	0.4	0.6	0.13	0.01	0.1	0.25	0.25	< 0.2 %	< 0.2 %	< 0.2 %		< 0.2 %
Specific Gravity		g/cc	0.66	0.690	0.61	1.85	1.77	1.91	1.8	1.39	1.83	1.83	2.0 - 2.2	2.0 - 2.2	2.0 - 2.2		1.8 - 2.0
Thermal Properties		**Units**														
Relative Temprature Index		°C	155	180	210	50	130	170	130	95							
Flame Resistance		Class	UL 94 V-0	UL 94 HB	E23105	UL94 V-0	UL94 V-0	UL 94 HB	UL 94 HB	UL94 V-0			UL 94 HB	UL 94 HB	UL 94 HB		UL 94 HB
Thermal Class		Class	F	H	--	F	B	B	F	B							

[1]: Material Property Cond. D-48/50 at 3mm Notched

[2]: Material Property Cond. A at 3mm