AIP PRECISION MACHINING

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THERMOSETS MATERIALS

					G10, FR4	G5, G9	G7	X	XX	XXX	C, CE	L, LE	Composite Bearing Grade TL	Composite Bearing Grade TX	Composite Bearing Grade HT	Composite Bearing Grade HX
			Units	ASTM Test Method	Glass cloth Reinforced Epoxy	Glass cloth Reinforced Melamine	Glass cloth Reinforced Silicone	Paper Phenolic	Paper Phenolic	Paper Phenolic	Canvas Phenolic	Linen Phenolic	Polyester Cloth	Polyester PTFE Cloth	Aramid Cloth	Aramid PTFE Cloth
MECHANICAL	1	**Strength to Weight Ratio**	ksi	-												
	2	**Specific Gravity** @ 73 F	-	D792	1.82	1.90	1.68	1.36	1.34	1.32	1.35	1.34	1.25	1.25	1.20	1.20
	3	**Tensile Strength** @73 F, (ult)/(yld)	psi	D638	40000	37000	23000	20000	16000	15000	9500	12500	8000	8000	8700	8700
	4	**Tensile Modulus of Elasticity** @ 73 F	psi	D638	-	-	-	-	-	-	-	-	470000	470000	630000	630000
	5	**Tensile Elongation at Break** @ 73 F	%	D638	-	-	-	-	-	-	-	-	-	-	-	-
	6	**Flexural Strength** @ 73 F	psi	D790	55000	55000	23000	25000	15000	13500	17000	15000	-	-	-	-
	7	**Flexural Modulus of Elasticity** @ 73 F	psi	D790	2700000	2500000	1400000	1800000	1400000	1300000	950000	1050000	280000	280000	-	-
	8	**Shear Strength** @ 73 F	psi	D732	19000	20000	17000	12000	11000	10000	11500	11750	12000	12000	-	-
	9	**Compressive Strength,** (% Deformation) @73 F	psi	D695	60000 (10)	70000 (10)	45000 (10)	36000 (10)	34000 (10)	32000 (10)	37000 (10)	37000 (10)	17400 (10)	17400 (10)	23500 (10)	23500 (10)
	10	**Compressive Modulus of Elasticity** @73 F	psi	D695	-	-	-	-	-	-	-	-	-	-	-	-
	11	**Hardness, Rockwell,** Scale as noted @73 F	-	D785	M110	M120	M100	M110	M105	M110	M104	M105	M100	M100	M105	M105
	12	**Hardness,** Durometer, Shore D @73 F	-	D2240	-	-	-	-	-	-	-	-	-	-	-	-
	13	**Izod Impact,** (Notched) @73 F	ft-lb/in of notch	D256 TypeA	7.0	12.0	8.5	4.0	1.3	1.0	3.2/2.3	2.5/1.8	>10	>10	>10	>10
	14	**Coefficient of Friction,** (Dry vs. Steel) Dynamic	-	-	-	-	-	-	-	-	-	-	0.10	.03-.05	.12-.18	.09-.12
	15	**Limiting PV,** (with 4 to 1 factor of safety applied)	psi-ft/min	-	-	-	-	-	-	-	-	-	-	-	-	-
THERMAL	16	**Coefficient of Linear Thermal Expansion** @73 F	in/in/F	E-831 (TMA)	-	-	-	-	-	-	-	-	2.5E-05	2.5E-05	1.5E-05	1.5E-05
	17	**Heat Deflection Temperature** @ 264 psi	F	D648	-	-	-	-	-	-	-	-	-	-	-	-
	18	**Tg-Glass transition temperature,** (Amorphous)	F	D3418	-	-	-	-	-	-	-	-	-	-	-	-
	19	**Melting Point,** (VS=Vicat Softening Temp.)	F	D3418	-	-	-	-	-	-	-	-	-	-	-	-
	20	**Continuous Service Temperature in Air,** (Max.)	F	-	285	285	465	285	285	285	265	265	266	266	482	482
	21	**Thermal Conductivity**	BTU-in/hr-ft2-F	-	-	-	-	-	-	-	-	-	1.20	-	0.70	-
ELECTRICAL	22	**Dielectric Strength,** Short Term	Volts/mil	D149	400	350	350	500	500	470	150/360	150/360	-	-	-	-
	23	**Volume Resistivity**	ohm-cm	D257	-	-	-	-	-	-	-	-	-	-	-	-
	24	**Dielectric Constant** @ 10E6 Hz	-	D150	5.2	7.1	4.2	6.0	5.5	5.3	-,5.8	-,5.8	-	-	-	-
	25	**Dissipation Factor** @ 10E6 Hz	-	D150	0.025	0.017	0.003	0.060	0.045	0.038	.1,.055	.1,.055	-	-	-	-
	26	**Flammability** @ 3.1 mm unless noted	-	UL94	V-O	V-O	V-O	HB	HB	HB	HB	HB	-	-	-	-
H_2O	27	**Water Absorbtion,** Immersion, 24 Hrs	% by wt.	D570(7)	0.10	0.40	0.15	1.10	0.55	0.45	1.2,.75	.9,.7	<.1	<.1	<.1	<.1
	28	**Water Absorbtion,** Saturation	% by wt.	D570(7)	-	-	-	-	-	-	-	-	<.1	<.1	<.1	<.1