

AMORPHOUS MATERIALS

			Udel	Ultem 1000	Ultem 1000	Ultem 2300	Ultem 2300	Semtron ESD410	Radel A	Radel R R-5500	Hydex 202	Hydex 301 Clear	Hyzod M Poly- carbonate	Glass Filled Poly- carbonate		
			Extruded Polysulfone	Extruded Polyetherimide	Injection molded Polyetherimide	Extruded 30% Glass Filled Polyetherimide	Injection Molded 30% GF Polyetherimide	Static Dissapative Polyetherimide	Extruded Polyether- Sulfone	Extruded Polyphenyl- Sulfone	Extruded Rigid Poly- Urethane	Extruded Rigid Poly- Urethane	Extruded Polycarbonate	Extruded 20% Glass Filled Polycarbonate		
			Units	ASTM Test Method												
MECHANICAL	1	Strength to Weight Ratio	ksi	-												
	2	Specific Gravity @ 73 F	-	D792	1.24	1.28	1.27	1.51	1.51	1.41	1.37	1.29	1.20	1.20	1.20	1.35
	3	Tensile Strength @ 73 F, (ult)/(yld)	psi	D638	10200 (ult)	16500 (ult)	15200 (yld)	17000 (ult)	24500 (yld)	9000	12200 (yld)	11000 (ult)	10000 (yld)	10000 (yld)	10500 (ult)	16000 (yld)
	4	Tensile Modulus of Elasticity @ 73 F	psi	D638	360000	475000	-	800000	1260000	850000	385000	340000	260000	310000	320000	860000
	5	Tensile Elongation at Break @ 73 F	%	D638	30	80	7	3	3	2	40-80	30	90	140	100	6
	6	Flexural Strength @ 73 F	psi	D790	15000	20000	22000	30000	33000	12000	18700	15500	13000	14000	13000	19000
	7	Flexural Modulus of Elasticity @ 73 F	psi	D790	400000	500000	480000	900000	1300000	850000	377000	345000	280000	340000	350000	800000
	8	Shear Strength @ 73 F	psi	D732	9000	15000	15000	-	14000	-	-	9000	-	-	9200	-
	9	Compressive Strength, (% Deformation) @73 F	psi	D695	13000 (10)	22000 (10)	21900 (10)	32000 (10)	30700 (10)	19500 (10)	-	13400 (10)	-	12000 (10)	11500 (10)	16000 (10)
	10	Compressive Modulus of Elasticity @ 73 F	psi	D695	375000	480000	480000	625000	938000	600000	-	280000	-	-	300000	-
	11	Hardness, Rockwell, Scale as noted @73 F	-	D785	M82 (R128)	M112 (R125)	M109	M114 (R127)	M114	M115(R125)	M88	M80 (R120)	(R123)	M74 (R123)	M75 (R126)	M91 (R122)
	12	Hardness, Durometer, Shore D @73 F	-	D2240	D80	D86	-	D86	-	D85	-	D80	-	-	D80	-
	13	Izod Impact, (Notched) @73 F	ft-lb/in of notch	D256 TypeA	1.3	0.5	1.0	1.0	2.0	0.8	1.6	2.5	10.0	2.4	1.5	2.0
	14	Coefficient of Friction, (Dry vs. Steel) Dynamic	-	-	-	0.42	-	-	-	0.18	-	-	-	-	-	0.22
	15	Limiting PV, (with 4 to 1 factor of safety applied)	psi-ft/min	-	-	1875	-	-	-	12000	-	-	-	-	-	-
THERMAL	16	Coefficient of Linear Thermal Expansion @73 F	in/in/F	E-831 (TMA)	3.1E-05	3.1E-05	3.1E-05	1.1E-05	1.1E-05	1.8E-05	2.7E-05	3.1E-05	3.7E-05	3.2E-05	3.9E-05	1.5E-05
	17	Heat Deflection Temperature @ 264 psi	F	D648	340	392	392	410	410	410	397	405	280	210	290	295
	18	Tg-Glass transition temperature, (Amorphous)	F	D3418	374	419	-	419	-	428	-	428	-	-	293	-
	19	Melting Point, (VS=Vicat Softening Temp.)	F	D3418	-	-	-	-	442 (VS)	-	439 (VS)	-	292 (VS)	228 (VS)	N/A	330
	20	Continuous Service Temperature in Air, (Max.)	F	-	300	340	340	340	340	338	356	300	275	200	250	266
21	Thermal Conductivity	BTU-in/hr-ft2-F	-	-	0.90	.22 W/M-C	1.15	-	-	-	2.40	-	-	1.30	1.47	
ELECTRICAL	22	Dielectric Strength, Short Term	Volts/mil	D149	425	830	830	770	770	-	383	360	570	635	400	490
	23	Volume Resistivity	ohm-cm	D257	5.0E+16	6.7E+17	1.0E+17	3.0E+16	3.0E+16	1E5-1E7	1.0E+17	>1E15	4.6E+15	1.5E+16	2.0E+16	1.0E+17
	24	Dielectric Constant @ 10E6 Hz	-	D150	3.1	3.2	-	3.7	-	-	-	3.4	3.4	3.4	3.2	3.13
	25	Dissipation Factor @ 10E6 Hz	-	D150	0.001	0.001	-	0.002	-	-	-	0.002	.025 (60Hz)	.025 (60Hz)	0.001	.0009 (60Hz)
	26	Flammability @ 3.1 mm unless noted	-	UL94	HB	V-O	5VA(1.9mm)	V-O	V-O(.25mm)	V-O	V-O (.5mm)	V-O	HB	HB (6.1mm)	V-2	V-O
H ₂ O	27	Water Absorbtion, Immersion, 24 Hrs	% by wt.	D570(7)	.30	0.25	0.25	0.18	0.16	0.30	0.54	0.37	0.15	0.14	0.20	0.16
	28	Water Absorbtion, Saturation	% by wt.	D570(7)	.60	1.25	1.25	.90	.90	1.25	-	1.10	1.40	1.40	0.40	0.29