

AEROSPACE MARKET MATERIALS

				Ultem 1000	Ultem 2300	Victrix PEEK 450G	Victrix PEEK 450GL30	Victrix PEEK 450CA30	Victrix PEEK 450FC30	Ketron PEEK HPV	Techtron HPV	Torlon 4503	Torlon 4203	Torlon 4501	Torlon 4301	
				Extruded Polyetherimide	Extruded 30% Glass Filled Polyetherimide	PEEK	30% Glass Filled PEEK	30% Carbon Fiber PEEK	Bearing Grade PEEK	Bearing Grade PEEK	Bearing Grade Polyphenylene-sulfide	Compression Molded Polyamideimide	Extruded Polyamideimide	Compression Molded Bearing Polyamideimide	Extruded Bearing Grade Polyamideimide	
				Units	ASTM Test Method											
MECHANICAL	1	Strength to Weight Ratio	ksi	-	12.9	11.3	10.9	15.1	24	-	7.6	7.6	12.9	12.8	6.9	8.3
	2	Specific Gravity @ 73 F	-	D792	1.28	1.51	1.30	1.50	1.41	-	1.44	1.43	1.40	1.41	1.45	1.45
	3	Tensile Strength @73 F, (ult)/(yld)	psi	D638	16500 (ult)	17000 (ult)	14100 (ult)	22620 (ult)	33785 (ult)	21800	17400	10900 (ult)	8000 (ult)	18000 (ult)	10000 (ult)	12000 (ult)
	4	Tensile Modulus of Elasticity @ 73 F	psi	D638	475000	800000	522000	1407000	1885000	1200000	1100000	540000	500000	600000	440000	900000
	5	Tensile Elongation at Break @ 73 F	%	D638	80	3	5	2.0	2	2.5	3	5	5	5	3	3
	6	Flexural Strength @ 73 F	psi	D790	20000	30000	24650	33785	51475	30500	-	10500	24000	24000	20000	31000
	7	Flexural Modulus of Elasticity @ 73 F	psi	D790	500000	900000	594500	1450000	2929000	1170000	-	535000	600000	600000	650000	1000000
	8	Shear Strength @ 73 F	psi	D732	15000	-	7685 (ult)	14065 (ult)	14065 (ult)	11600	-	-	-	16000	-	16400
	9	Compressive Strength, (% Deformation) @73 F	psi	D695	22000 (10)	32000 (10)	17255 (10)	31175 (10)	34800 (10)	21800	21800 (10)	-	7000 (10)	28000 (10)	18000 (10)	24000 (10)
	10	Compressive Modulus of Elasticity @73 F	psi	D695	480000	625000	-	-	-	-	-	-	350000	700000	350000	950000
	11	Hardness, Rockwell, Scale as noted @73 F	-	D785	M112 (R125)	M114 (R127)	M99(R126)	M103(R124)	M107(R124)	-	M99	M84	119 (E80)	M120 (E80)	M106 (E70)	M106 (E70)
	12	Hardness, Durometer, Shore D @73 F	-	D2240	D86	D86	-	-	-	-	-	-	D90	-	D90	-
	13	Izod Impact, (Notched) @73 F	ft-lb/in of notch	D256 TypeA	0.5	1.0	1.6	1.8	1.6	1.2	0.7	1.4	1.5	2.0	0.5	0.8
	14	Coefficient of Friction, (Dry vs. Steel) Dynamic	-	-	0.42	-	-	-	-	-	0.24	0.16	0.30	0.27	0.20	0.20
	15	Limiting PV, (with 4 to 1 factor of safety applied)	psi-ft/min	-	1875	-	-	-	-	-	13000	17000	-	17500	22500	22500
THERMAL	16	Coefficient of Linear Thermal Expansion @73 F	in/in/F	E-831 (TMA)	3.1E-05	1.1E-05	2.6E-05	1.2E-05	8.0E-06	-	1.4E-05	3.3E-05	1.5E-05	1.7E-05	2.0E-05	1.4E-05
	17	Heat Deflection Temperature @ 264 psi	F	D648	392	410	306	600	600	-	446	240	532	532	534	534
	18	Tg-Glass transition temperature, (Amorphous)	F	D3418	419	419	289	289	289	-	289	-	527	527	527	527
	19	Melting Point, (VS=Vicat Softening Temp.)	F	D3418	-	-	644	644	644	644	644	536	-	-	-	-
	20	Continuous Service Temperature in Air, (Max.)	F	-	340	340	480	480	480	599	482	430	500	500	500	500
21	Thermal Conductivity	BTU-in/hr-ft ² -F	-	0.90	1.15	1.75	2.98	6.37	1.67	1.70	2.10	1.80	1.80	3.70	3.70	
ELECTRICAL	22	Dielectric Strength, Short Term	Volts/mil	D149	830	770	480	500	-	-	-	500	580	580	-	-
	23	Volume Resistivity	ohm-cm	D257	6.7E+17	3.0E+16	4.9E+16	1.0E+16	1.4E+05	-	<1E8	>E13	2.0E+17	2.0E+17	8.0E+15	3.0E+15
	24	Dielectric Constant @ 10E6 Hz	-	D150	3.2	3.7	3.3	3.7	3.7	-	-	-	3.9	3.9	5.4	6.0
	25	Dissipation Factor @ 10E6 Hz	-	D150	0.001	0.002	0.003	0.004	-	-	-	-	0.031	0.031	0.042	0.037
26	Flammability @ 3.1 mm unless noted	-	UL94	V-O	V-O	V-O	V-O	V-O	V-O	V-O	V-O	V-O	V-O	V-O	V-O	
H ₂ O	27	Water Absorbtion, Immersion, 24 Hrs	% by wt.	D570(7)	0.25	0.18	0.50	0.11	0.06	0.06	0.05	0.01	0.35	0.40	0.30	0.28
	28	Water Absorbtion, Saturation	% by wt.	D570(7)	1.25	.90	0.50	-	-	-	0.30	0.09	1.70	1.70	1.50	1.50

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Torlon 5530	VespeI SP-1	Tectron PPS	40% Glass Filled Ryton PPS	Celazole PBI	50% Woven Carbon Fiber PEEK	60% Woven Carbon Fiber PEKK
Compression Molded 30% GF Polyamideimide	Dupont Polyimide	Extruded Polyphenylene- sulfide	Compression Molded 40% GF PPS	Polybenzi- midazole		
9.3	8.7	7.4	7.7	17.7	-	-
1.61	1.43	1.35	1.70	1.30	-	-
14000 (ult)	12500 (ult)	13500 (ult)	13000 (ult)	23000 (ult)	91000	105705
500000	-	500000	730000	850000	8700000	7830000
3	8	15	2.0	3	1	-
20000	16000	21000	23000	32000	120000	116580
800000	450000	575000	1000000	950000	700000	591600
-	13000	9000	-	-	-	-
18000 (10)	19300 (10)	21500 (10)	24000 (10)	50000 (10)	83000	75690
350000	350000	430000	1300000	900000	800000	764100
M120 (E77)	(E45)	M95(R125)	M94(R125)	M125 (E105)	-	-
D90	-	D85	D86	-	-	-
0.7	0.8	0.6	1.0	0.5	-	-
0.20	0.29	0.40	-	0.24	-	-
20000	-	-	-	37500	-	-
2.5E-05	3.0E-05	2.8E-05	2.5E-05	1.3E-05	-	-
520	680	250	490	800 (DMA)	-	-
527	-	-	-	750 (DMA)	-	-
-	-	540	540	-	-	-
500	-	425	450	650	-	-
2.50	2.40	2.00	2.10	2.80	-	-
700	560	540	385	550	-	-
2.0E+17	1E15-1E16	4.5E+16	-	1.0E+14	-	-
6.3	3.6	3.0	-	-	-	-
0.220	0.003	0.001	-	-	-	-
V-O	-	V-O	V-O	V-O	-	-
0.30	0.24	0.01	0.02	0.40	0.05	-
1.50	1.30	0.03	0.03	-	-	-

PRECISION MACHINED PLASTIC COMPONENTS