AIP PRECISION MACHINING

724 Fentress Boulevard
Daytona Beach, Florida 32114
Web: AIPprecision.com
email: AIP.Sales@AIPprecision.com

EXTREME PERFORMANCE MATERIALS

					Torlon 4503	Torlon 4203	Torlon 4203L	Torlon 4501	Torlon 4301	Torlon 4301	Torlon 5530	Torlon 5030	Celazole PBI	Duratron HP	Vespel SP-1	Duratron 150
			Units	ASTM Test Method	Compression Molded Polyamideimide	Extruded Polyamideimide	Injection Molded Polyamideimide	Compression Molded Bearing Polyamideimide	Extruded Bearing Grade Poly-amideimide	Injection Molded Bearing Polyamideimide	Compression Molded 30% GF Polyamideimide	Injection Molded 30% GF Polyamideimide	Polybenzi-midazole	High Purity Polyimide	Dupont Polyimide	Graphite Filled Polyimide
MECHANICAL	1	**Strength to Weight Ratio**	ksi	-												
	2	**Specific Gravity** @ 73 F	-	D792	1.40	1.41	1.41	1.45	1.45	1.45	1.61	1.60	1.30	1.34	1.43	1.38
	3	**Tensile Strength** @73 F, (ult)/(yld)	psi	D638	18000 (ult)	18000 (ult)	22000 (ult)	10000 (ult)	12000 (ult)	19000	14000 (ult)	24000 (ult)	23000 (ult)	13500 (ult)	12500 (ult)	9600 (ult)
	4	**Tensile Modulus of Elasticity** @ 73 F	psi	D638	500000	600000	600000	440000	900000	760000	500000	1200000	850000	578000	-	650000
	5	**Tensile Elongation at Break** @ 73 F	%	D638	5	5	15	3	3	7	3	4	3	3	8	2
	6	**Flexural Strength** @ 73 F	psi	D790	24000	24000	28000	20000	31000	25000	20000	36000	32000	23000	16000	13000
	7	**Flexural Modulus of Elasticity** @ 73 F	psi	D790	600000	600000	700000	650000	1000000	750000	800000	1000000	950000	530000	450000	610000
	8	**Shear Strength** @ 73 F	psi	D732	-	16000	15000	-	16400	13000	-	24500	-	-	13000	-
	9	**Compressive Strength,** (% Deformation) @73 F	psi	D695	17000 (10)	28000 (10)	32000 (10)	18000 (10)	24000 (10)	24000 (10)	18000 (10)	38000 (10)	50000 (10)	19000 (10)	19300 (10)	17000 (10)
	10	**Compressive Modulus of Elasticity** @73 F	psi	D695	350000	700000	700000	350000	950000	950000	350000	600000	900000	410000	350000	390000
	11	**Hardness, Rockwell,** Scale as noted @73 F	-	D785	M119 (E80)	M120 (E80)	M120 (E80)	M106 (E70)	M106 (E70)	M106 (E70)	M120 (E77)	M125 (E77)	M125 (E105)	M120	(E45)	M110
	12	**Hardness,** Durometer, Shore D @73 F	-	D2240	D90	-	-	D90	-	-	D90	-	-	-	-	-
	13	**Izod Impact,** (Notched) @73 F	ft-lb/in of notch	D256 TypeA	1.5	2.0	2.5	0.5	0.8	1.1	0.7	1.3	0.5	0.6	0.8	0.5
	14	**Coefficient of Friction,** (Dry vs. Steel) Dynamic	-	-	0.30	0.27	0.35	0.20	0.20	0.20	0.20	0.19	0.24	0.23	0.29	0.27
	15	**Limiting PV,** (with 4 to 1 factor of safety applied)	psi-ft/min	-	-	17500	-	22500	22500	30000	20000	-	37500	32500	-	41500
THERMAL	16	**Coefficient of Linear Thermal Expansion** @73 F	in/in/F	E-831 (TMA)	1.5E-05	1.7E-05	1.7E-05	2.0E-05	1.4E-05	1.4E-05	2.5E-05	1.0E-05	1.3E-05	2.0E-05	3.0E-05	1.9E-05
	17	**Heat Deflection Temperature** @ 264 psi	F	D648	532	532	532	534	534	534	520	539	800 (DMA)	592	680	599
	18	**Tg-Glass transition temperature,** (Amorphous)	F	D3418	527	527	527	527	527	527	527	527	750 (DMA)	613	-	613
	19	**Melting Point,** (VS=Vicat Softening Temp.)	F	D3418	-	-	-	-	-	-	-	-	-	-	-	-
	20	**Continuous Service Temperature in Air,** (Max.)	F	-	500	500	500	500	500	500	500	500	650	580	-	580
	21	**Thermal Conductivity**	BTU-in/hr-ft2-F	-	1.80	1.80	1.80	3.70	3.70	3.70	2.50	2.50	2.80	1.53	2.40	3.74
ELECTRICAL	22	**Dielectric Strength,** Short Term	Volts/mil	D149	580	580	580	-	-	-	700	840	550	-	560	-
	23	**Volume Resistivity**	ohm-cm	D257	2.0E+17	2.0E+17	2.0E+17	8.0E+15	3.0E+15	8.0E+15	2.0E+17	2.0E+17	1.0E+14	>1E14	1E15-1E16	>1E13
	24	**Dielectric Constant** @ 10E6 Hz	-	D150	3.9	3.9	3.4	5.4	6.0	5.4	6.3	6.5	-	-	3.6	-
	25	**Dissipation Factor** @ 10E6 Hz	-	D150	0.031	0.031	0.031	0.042	0.037	0.042	0.220	0.023	-	-	0.003	-
	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
H_2O	27	**Water Absorbtion,** Immersion, 24 Hrs	% by wt.	D570(7)	0.35	0.40	0.33	0.30	0.28	0.28	0.30	0.30	0.40	0.62	0.24	0.65
	28	**Water Absorbtion,** Saturation	% by wt.	D570(7)	1.70	1.70	1.70	1.50	1.50	1.50	1.50	1.50	-	-	1.30	-