



Technical Products, Inc.

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Semitron® Material Specifications

Semitron® is a high performance material for use in the semiconductor industry.

Physical Properties	Units	Test	ESd 225	ESd 410C	ESd 420	ESd 480	ESd 520HR
Density	lb/in ³	D792	0.048	0.051	0.048	0.054	0.057
	g/cm ³		1.33	1.41	1.34	1.49	1.58
Water Absorption, 24 hrs.	%	D570	2.0	0.3	0.5	0.18	0.6
Water Absorption, Saturation	%	D570	-	-	2.9	-	-

Mechanical Properties	Units	Test	ESd 225	ESd 410C	ESd 420	ESd 480	ESd 520HR
Tensile Strength	psi	D638	6100	9000	11,500	14,500	12,000
Tensile Modules	psi	D638	225,000	850,000	640,000	940,000	800,000
Tensile Elongation at Break	%	D638	10	2	2	2.5	3
Flexural Strength	psi	D790	6000	12,000	14,500	22,000	20,000
Flexural Modulus	psi	D790	190,000	850,000	650,000	950,000	850,000
Compressive Strength	psi	D695	-	19,500	23,800	25,500	30,000
Compressive Modulus	psi	D695	-	600,000	370,000	600,000	600,000
Hardness Rockwell	-	D785	M74 / R109	M115 / R125	M118	R122 / M95	M108
Izod Impact Notched	ft-lb/in	D256	1.5	0.8	1.0	1.0	0.8

Thermal Properties	Units	Test	ESd 225	ESd 410C	ESd 420	ESd 480	ESd 520HR
Coefficient of Linear Thermal Expansion	X 10 ⁻⁵ in./in./°F	D696	9.3	1.8	1.9	2.8	1.5
Heat Deflection Temperature	@264 psi °F/°C	D648	225 / 107	410 / 210	410 / 210	480 / 248	520 / 271
Melting Temperature	°F/°C	D3418	- / -	n/a	410 / 210	- / -	520 / 271
Max. Operating Temperature	°F/°C	-	180 / 82	338 / 170	340 / 171	475 / 246	500 / 260
Thermal Conductivity	BTU- in/ft ² -hr.-°F	C177	-	-	1.51	-	-
	x 10 ⁻⁴ cal/cm-sec-°C		-	-	5.2	-	-
Flammability Rating	-	UL94	HB	V - 0	V - 0	V - 0	V - 0

Electrical Properties	Units	Test	ESd 225	ESd 410C	ESd 420	ESd 480	ESd 520HR
Dielectric Strength	(V/mil) short time, 1/8" thick	D149	275	-	-	-	-
Dielectric Constant	@1 KHz	D150	4.3	-	-	-	-
Surface Resistivity	Ohms/Square	EOS/ESD S11.11	10 ⁹ - 10 ¹⁰	10 ⁴ - 10 ⁶	10 ⁶ - 10 ⁹	10 ⁶ - 10 ⁹	10 ¹⁰ - 10 ¹²
Max Static Decay	sec	Mil-B-81705C	-	-	-	< 2	-

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