

Mitsubishi Chemical Advanced Materials Semitron® MPR 1000 (ASTM Product Data Sheet)
Categories: Polymer; Thermoplastic; Polyamide-imide (PAI)

Material Notes: Quadrant Engineering Plastic Products is now Mitsubishi Chemical Advanced Materials.

Physical Properties	Metric	English	Comments
Specific Gravity	1.48 g/cc	1.48 g/cc	ASTM D792
Water Absorption	0.28 %	0.28 %	Immersion, 24hr; ASTM D570(2)
Water Absorption at Saturation	3.4 %	3.4 %	ASTM D 570(2)

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell M	106	106	ASTM D785
Tensile Strength	103 MPa	15000 psi	ASTM D638
Elongation at Break	5.0 %	5.0 %	ASTM D638
Tensile Modulus	6.89 GPa	1000 ksi	ASTM D638
Flexural Strength	172 MPa	25000 psi	ASTM D790
Flexural Modulus	7.58 GPa	1100 ksi	ASTM D790
Compressive Strength	165 MPa	24000 psi	10% Def.; ASTM D695
Compressive Modulus	3.28 GPa	475 ksi	ASTM D695
Shear Strength	83 MPa	12000 psi	ASTM D732
Izod Impact, Notched	0.69 J/cm	1.3 ft-lb/in	ASTM D256 Type A
Limiting Pressure Velocity	0.210 MPa-m/sec	6000 psi-ft/min	4:1 safety factor; QTM 55007

Electrical Properties	Metric	English	Comments
Surface Resistivity per Square	$\geq 1e+13$ ohm	$\geq 1e+13$ ohm	ASTM D257
Dielectric Constant	3.68 @Frequency 1e+6 Hz	3.68 @Frequency 1e+6 Hz	ASTM D150
Dielectric Strength	22.4 kV/mm	570 kV/in	Short Term; ASTM D149
Dissipation Factor	0.008 @Frequency 1e+6 Hz	0.008 @Frequency 1e+6 Hz	ASTM D150

Thermal Properties	Metric	English	Comments
CTE, linear	27.0 $\mu\text{m/m}\cdot^\circ\text{C}$ @Temperature -40.0 - 150 $^\circ\text{C}$	15.0 $\mu\text{in/in}\cdot^\circ\text{F}$ @Temperature -40.0 - 302 $^\circ\text{F}$	ASTM E831
Thermal Conductivity	0.510 W/m-K	3.54 BTU-in/hr-ft ² - $^\circ\text{F}$	
Maximum Service Temperature, Air	260 $^\circ\text{C}$	500 $^\circ\text{F}$	Long Term
Deflection Temperature at 1.8 MPa (264 psi)	279 $^\circ\text{C}$	534 $^\circ\text{F}$	ASTM D648
Glass Transition Temp, Tg	275 $^\circ\text{C}$	527 $^\circ\text{F}$	ASTM D3418
Flammability, UL94	V-0 @Thickness 3.17 mm	V-0 @Thickness 0.125 in	Estimated Rating

Compliance Properties	Metric	English	Comments
3A-Dairy	No	No	
Canada AG	No	No	
FDA	No	No	
NSF	No	No	
USDA	No	No	
USP Class VI	No	No	

Chemical Resistance Properties	Metric	English	Comments
Acids, Strong (pH 1-3)	Limited	Limited	
Acids, Weak	Acceptable	Acceptable	
Alcohols	Acceptable	Acceptable	
Alkalies, Strong (pH 11-14)	Unacceptable	Unacceptable	
Alkalies, Weak	Limited	Limited	
Chlorinated Solvents	Acceptable	Acceptable	
Continuous Sunlight	Limited	Limited	
Hot Water / Steam	Limited	Limited	
Hydrocarbons - Aliphatic	Acceptable	Acceptable	
Hydrocarbons - Aromatic	Acceptable	Acceptable	
Inorganic Salt Solutions	Acceptable	Acceptable	
Ketones, Esters	Acceptable	Acceptable	