

**Mitsubishi Chemical Advanced Materials Semitron® CMP XL20 (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	1.40 g/cc	1.40 g/cc	ASTM D792
Water Absorption	0.40 %	0.40 %	Immersion, 24hr; ASTM D570(2)
Water Absorption at Saturation	1.7 %	1.7 %	ASTM D 570(2)
Outgassing - Total Mass Loss	1.85 %	1.85 %	ASTM E595
Collected Volatile Condensable Material	0.00 %	0.00 %	ASTM E-595
Chemical Properties	Metric	English	Comments
Ionic Impurities - Na (Sodium)	3.9 ppm	3.9 ppm	ICP/MS
Ionic Impurities - K (Potassium)	0.50 ppm	0.50 ppm	ICP/MS
Ionic Impurities - Fe (Iron)	1.5 ppm	1.5 ppm	ICP/MS
Mechanical Properties	Metric	English	Comments
Hardness, Rockwell E	80	80	ASTM D785
Hardness, Rockwell M	120	120	ASTM D785
Tensile Strength	138 MPa	20000 psi	ASTM D638
Tensile Strength at 150°C (300°F)	103 MPa	15000 psi	ASTM D638
Tensile Strength at 65°C (150°F)	124 MPa	18000 psi	ASTM D638
Elongation at Break	10 %	10 %	ASTM D638
Tensile Modulus	3.96 GPa	575 ksi	ASTM D638
Flexural Strength	165 MPa	24000 psi	ASTM D790
Flexural Modulus	4.14 GPa	600 ksi	ASTM D790
Compressive Strength	165 MPa	24000 psi	10% Def.; ASTM D695
Compressive Modulus	2.76 GPa	400 ksi	ASTM D695
Shear Strength	110 MPa	16000 psi	ASTM D732
Izod Impact, Notched	1.1 J/cm	2.0 ft-lb/in	ASTM D256
Coefficient of Friction, Dynamic	0.35	0.35	dry vs. steel; QTM55007
K (wear) Factor	>= 2010 x 10 <sup>-8</sup> mm <sup>3</sup> /N-M	>= 1000 x 10 <sup>-10</sup> in <sup>3</sup> -min/ft-lb-hr	QTM 55010
Limiting Pressure Velocity	0.140 MPa-m/sec	4000 psi-ft/min	4:1 safety factor applied; QTM 55010
Electrical Properties	Metric	English	Comments
Surface Resistivity per Square	>= 1.00e+16 ohm	>= 1.00e+16 ohm	ASTM D257
Dielectric Constant	4.2 @Frequency 1e+6 Hz	4.2 @Frequency 1e+6 Hz	ASTM D150
Dielectric Strength	23 kV/mm	580 kV/in	Short Term; ASTM D149
Dissipation Factor	0.026 @Frequency 1e+6 Hz	0.026 @Frequency 1e+6 Hz	ASTM D150
Thermal Properties	Metric	English	Comments
CTE, linear	30.6 µm/m-°C @Temperature -40.0 - 150 °C	17.0 µin/in-°F @Temperature -40.0 - 302 °F	ASTM E831
Thermal Conductivity	0.259 W/m-K	1.80 BTU-in/hr-ft <sup>2</sup> -°F	
Maximum Service Temperature, Air	260 °C	500 °F	Continuous
Deflection Temperature at 1.8 MPa (264 psi)	278 °C	532 °F	ASTM D648
Glass Transition Temp, Tg	275 °C	527 °F	Amorphous; ASTM D3418
Flammability, UL94	V-0 @Thickness 3.17 mm	V-0 @Thickness 0.125 in	
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
Conductive / Static Dissipative	No	No
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



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