MITSUBISHI CHEMICAL ADVANCED MATERIALS

Mitsubishi Chemical Advanced Materials Duratron® PI D7000 PI Unfilled Polyimide (ASTM Product Data Sheet)

Categories:	Polymer; Thermoplastic; Polyimide, Thermoplastic
Material Notes:	Quadrant Engineering Plastic Products is now Mitsubishi Chemical Advanced Materials.

Physical Properties	Metric	English	Comments
Specific Gravity	1.37 g/cc	1.37 g/cc	ASTM D792
Water Absorption	0.70 %	0.70 %	Immersion, 24hr; ASTM D570(2)
Water Absorption at Saturation	3.8 %	3.8 %	ASTM D570(2)

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell R	128	128	ASTM D785
Hardness, Shore D	90	90	ASTM D2240
Tensile Strength	121 MPa	17500 psi	ASTM D638
Tensile Strength at 150°C (300°F)	82.7 MPa	12000 psi	ASTM D638
Tensile Strength at 65°C (150°F)	110 MPa	16000 psi	ASTM D638
Elongation at Break	6.0 %	6.0 %	ASTM D638
Tensile Modulus	3.72 GPa	540 ksi	ASTM D638
Flexural Strength	172 MPa	25000 psi	ASTM D790
Flexural Modulus	3.79 GPa	550 ksi	ASTM D790
Compressive Strength	186 MPa	27000 psi	10% Deformation; ASTM D695
Compressive Modulus	2.62 GPa	380 ksi	ASTM D695
Shear Strength	110 MPa	16000 psi	ASTM D732
Izod Impact, Notched	0.534 J/cm	1.00 ft-lb/in	ASTM 256 Type 'A'
Coefficient of Friction, Dynamic	0.29	0.29	Dry vs. Steel; QTM 55007
K (wear) Factor	302 x 10^{-8} mm³/N-M	150 x 10^{-10} in³-min/ft-lb-hr	QTM55010
Limiting Pressure Velocity	0.525 MPa-m/sec	15000 psi-ft/min	4:1 safety factor; QTM 55007

Electrical Properties	Metric	English	Comments
Surface Resistivity per Square	>= 1.00e+13 ohm	>= 1.00e+13 ohm	EOS/ESD S11.11
Dielectric Constant	3.2 @Frequency 1.00e+6 Hz	3.2 @Frequency 1.00e+6 Hz	ASTM D150
Dielectric Strength	15.6 kV/mm	395 kV/in	Short Term; ASTM D149
Dissipation Factor	<= 0.0050 @Frequency 1.00e+6 Hz	<= 0.0050 @Frequency 1.00e+6 Hz	ASTM D150

Thermal Properties	Metric	English	Comments
CTE, linear	40.5 µm/m-°C @Temperature -40.0 - 149 °C	22.5 µin/in-°F @Temperature -40.0 - 300 °F	ASTM E831
Thermal Conductivity	0.216 W/m-K	1.50 BTU-in/hr-ft²-°F	ASTM E1530
Melting Point	304 °C	580 °F	
Maximum Service Temperature, Air	260 °C	500 °F	Continuous
Deflection Temperature at 1.8 MPa (264 psi)	354 °C	670 °F	ASTM D648
Glass Transition Temp, Tg	349 °C	660 °F	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	

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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