

Mitsubishi Chemical Advanced Materials TIVAR® SuperPlus UHMW-PE, Glass-filled Cross-linked & Heat Stabilized Extreme Wear Resistant (ASTM Product Data Sheet)
Categories: Polymer; Thermoplastic; Polyethylene (PE); High Density (HDPE); High Density Polyethylene (HDPE), UHMW PE Ultra High Molecular Weight

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

Physical Properties	Metric	English	Comments
Specific Gravity	0.960 g/cc	0.960 g/cc	ASTM D792
Water Absorption	<= 0.010 %	<= 0.010 %	Immersion, 24hr; ASTM D570(2)
Water Absorption at Saturation	<= 0.010 %	<= 0.010 %	Immersion; ASTM D570(2)

Mechanical Properties	Metric	English	Comments
Hardness, Shore D	70	70	ASTM D2240
Tensile Strength	36.5 MPa	5300 psi	ASTM D638
Tensile Strength at 65°C (150°F)	2.76 MPa	400 psi	ASTM D638
Elongation at Break	300 %	300 %	ASTM D638
Tensile Modulus	0.421 GPa	61.0 ksi	ASTM D638
Flexural Strength	21.4 MPa	3100 psi	ASTM D790
Flexural Modulus	0.586 GPa	85.0 ksi	ASTM D790
Compressive Strength	20.7 MPa	3000 psi	10% Def.; ASTM D695
Compressive Modulus	0.414 GPa	60.0 ksi	ASTM D695
Izod Impact, Notched	NB	NB	ASTM D256 Type A
Coefficient of Friction, Dynamic	0.15	0.15	Dry vs. Steel; QTM55007
Limiting Pressure Velocity	0.0701 MPa-m/sec	2000 psi-ft/min	4:1 safety factor; QTM 55007

Electrical Properties	Metric	English	Comments
Surface Resistivity per Square	>= 1.00e+15 ohm	>= 1.00e+15 ohm	ASTM D257
Dielectric Constant	2.3 @Frequency 1e+6 Hz	2.3 @Frequency 1e+6 Hz	ASTM D150
Dielectric Strength	90.6 kV/mm	2300 kV/in	Short Term; ASTM D149
Dissipation Factor	0.00050 @Frequency 1e+6 Hz	0.00050 @Frequency 1e+6 Hz	ASTM D150

Thermal Properties	Metric	English	Comments
CTE, linear	121 µm/m-°C @Temperature -40.0 - 149 °C	67.0 µin/in-°F @Temperature -40.0 - 300 °F	ASTM E831
Thermal Conductivity	0.409 W/m-K	2.84 BTU-in/hr-ft²-°F	
Melting Point	135 °C	275 °F	Crystalline, Peak; ASTM D3418
Maximum Service Temperature, Air	104 °C	220 °F	Long Term
Deflection Temperature at 1.8 MPa (264 psi)	46.7 °C	116 °F	ASTM D648
Flammability, UL94	HB @Thickness 3.17 mm	HB @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)	Acceptable	Acceptable	
Alkalies, Weak	Acceptable	Acceptable	
Chlorinated Solvents	Acceptable	Acceptable	
Conductive / Static Dissipative	No	No	
Continuous Sunlight	Limited	Limited	
Hot Water / Steam	Limited	Limited	
Hydrocarbons - Aliphatic	Acceptable	Acceptable	
Hydrocarbons - Aromatic	Unacceptable	Unacceptable	

Inorganic Salt Solutions	Acceptable	Acceptable
Ketones, Esters	Limited	Limited
Descriptive Properties		
Machinability	3	1-10, 1=Easier to Machine



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