



TIVAR 1000 Virgin Natural (UHMW-PE)

Physical Properties	Metric	English	Comments
Specific Gravity	0.93 g/cc	0.0336 lb/in ³	ASTM D792
Water Absorption	Max 0.01 %	Max 0.01 %	Immersion, 24hr; ASTM D570 (2)
Water Absorption at Saturation	Max 0.01 %	Max 0.01 %	Immersion; ASTM D570(2)

Mechanical Properties

Hardness, Shore D	66	66	ASTM D2240
Tensile Strength, Ultimate	40 MPa	5800 psi	ASTM D638
Elongation at Break	300 %	300 %	ASTM D638
Tensile Modulus	0.689 GPa	100 ksi	ASTM D638
Flexural Modulus	0.758 GPa	110 ksi	ASTM D790
Flexural Yield Strength	24.1 MPa	3500 psi	ASTM D790
Compressive Strength	20.7 MPa	3000 psi	10% Def., 73°F; ASTM D695
Compressive Modulus	0.552 GPa	80 ksi	ASTM D695
Shear Strength	33.1 MPa	4800 psi	ASTM D732
Coefficient of Friction	0.12	0.12	Dry vs. Steel; QTM55007
Limiting Pressure Velocity	0.0701 MPa-m/sec	2000 psi-ft/min	4:1 safety factor; QTM 55007
Izod Impact, Notched	NB	NB	ASTM D256 Type A

Electrical Properties

Surface Resistivity per Square	Min 1e+015 ohm	Min 1e+015 ohm	ASTM D257
Dielectric Constant	2.3	2.3	(1MHz); ASTM D150
Dielectric Strength	90.6 kV/mm	2300 V/mil	Short Term; ASTM D149
Dissipation Factor	0.0005	0.0005	(1MHz); ASTM D150

Thermal Properties

CTE, linear 68°F	216 µm/m-°C	120 µin/in-°F	(-40°F to 300°F); ASTM E831
Thermal Conductivity	0.409 W/m-K	2.84 BTU-in/hr-ft ² -°F	
Melting Point	135 °C	275 °F	Crystalline, Peak; ASTM D3418
Maximum Service Temperature, Air	82.2 °C	180 °F	Long Term
Deflection Temperature at 1.8 MPa (264 psi)	46.7 °C	116 °F	ASTM D648
Flammability, UL94 (Estimated Rating)	HB	HB	1/8 inch

Qualitative Processing Properties

Compliance - FDA	Compliant	
Machinability	3	1-10, 1=Easier to Machine
Service in Alcohols	Acceptable	
Service in Aliphatic Hydrocarbons	Acceptable	
Service in Aromatic Hydrocarbons	Unacceptable	
Service in Chlorinated Solvents	Acceptable	
Service in Ethers	Limited	
Service in Ketones	Limited	
Service in Strong Acids	Limited	
Service in Strong Alkalies	Acceptable	
Service in Sunlight	Limited	
Service in Weak Acids	Acceptable	
Service in Weak Alkalies	Acceptable	

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