

**Mitsubishi Chemical Advanced Materials TIVAR® HPV Food Grade UHMW-PE (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	0.930 g/cc	0.930 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	65	65	ASTM D2240
Tensile Strength	40.7 MPa	5900 psi	ASTM D638
Tensile Strength at 65°C (150°F)	2.76 MPa	400 psi	ASTM D638
Elongation at Break	390 %	390 %	ASTM D638
Tensile Modulus	0.386 GPa	56.0 ksi	ASTM D638
Flexural Strength	20.7 MPa	3000 psi	ASTM D790
Flexural Modulus	0.531 GPa	77.0 ksi	ASTM D790
Compressive Strength	20.7 MPa	3000 psi	10% Def.; ASTM D695
Compressive Modulus	0.524 GPa	76.0 ksi	ASTM D695
Izod Impact, Notched	29.4 J/cm	55.0 ft-lb/in	ASTM D4020
Coefficient of Friction, Dynamic	0.090	0.090	Dry vs. Steel; QTM55007
Sand Slurry	16.5	16.5	1018 Steel = 100
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	>= 1e+14 ohm	>= 1e+14 ohm	ASTM D257

Thermal Properties	Metric	English	Comments
CTE, linear	144 µm/m-°C @Temperature -40.0 - 149 °C	80.0 µin/in-°F @Temperature -40.0 - 300 °F	ASTM E831
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	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	Yes	Yes	
NSF	No	No	
USDA	Yes	Yes	
USP Class VI	No	No	

Descriptive Properties			
Sand Water Wheel		101	ASTM G65; TIVAR® 1000 = 100