

Mitsubishi Chemical Advanced Materials TIVAR® ECO UHMW-PE, Recycled (ASTM Product Data Sheet)

Categories: Polymer; Renewable/Recycled 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 %	ASTM D570

Mechanical Properties	Metric	English	Comments
Hardness, Shore D	67	67	ASTM D2240
Tensile Strength	27.6 MPa	4000 psi	ASTM D638
Tensile Strength at 65°C (150°F)	2.76 MPa	400 psi	ASTM D638
Elongation at Break	200 %	200 %	ASTM D638
Tensile Modulus	0.676 GPa	98.0 ksi	ASTM D638
Flexural Strength	13.8 MPa	2000 psi	ASTM D790
Flexural Modulus	0.558 GPa	81.0 ksi	ASTM D790
Compressive Strength	19.3 MPa	2800 psi	10% Def.; ASTM D695
Compressive Modulus	0.414 GPa	60.0 ksi	ASTM D695
Izod Impact, Notched	NB	NB	ASTM D256
Coefficient of Friction, Dynamic	0.14	0.14	Dry vs. Steel; QTM 55007
Sand Slurry	18	18	1018 steel = 100; ASTM D4020
Limiting Pressure Velocity	0.105 MPa-m/sec	3000 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

Thermal Properties	Metric	English	Comments
CTE, linear	198 $\mu\text{m/m}\cdot^\circ\text{C}$ @Temperature -40.0 - 149 $^\circ\text{C}$	110 $\mu\text{in/in}\cdot^\circ\text{F}$ @Temperature -40.0 - 300 $^\circ\text{F}$	ASTM E831
Melting Point	135 $^\circ\text{C}$	275 $^\circ\text{F}$	Crystalline Peak; ASTM D3418
Maximum Service Temperature, Air	82.2 $^\circ\text{C}$	180 $^\circ\text{F}$	Continuous
Deflection Temperature at 1.8 MPa (264 psi)	46.7 $^\circ\text{C}$	116 $^\circ\text{F}$	ASTM D648
Flammability, UL94	HB @Thickness 3.17 mm	HB @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)	Acceptable	Acceptable	
Alkalies, Weak	Acceptable	Acceptable	
Chlorinated Solvents	Acceptable	Acceptable	
Conductive / Static Dissipative	No	No	
Continuous Sunlight	Acceptable	Acceptable	
Hot Water / Steam	Limited	Limited	
Hydrocarbons - Aliphatic	Acceptable	Acceptable	
Hydrocarbons - Aromatic	Unacceptable	Unacceptable	
Inorganic Salt Solutions	Acceptable	Acceptable	
Ketones, Esters	Limited	Limited	