

**Ultra-High Molecular Weight Polyethylene (UHMW-PE) Material Properties**

Physical Properties		Test Method ASTM
Specific Gravity	0.94	D792
Tensile Strength (73° F, psi)	4,000 – 5,500	D638
Tensile Modulus of Elasticity (73° F)	80,000 – 100,000	D638
Elongation (73° F)	200 – 450	D638
Flexural Strength (73° F)	--	D790
Flexural Modulus of Elasticity (73° F)	75,000	D790
Shear Strength (73° F)	3,500	D790
Compressive Strength (10% Def., psi)	--	D695
Compressive Modulus of Elasticity (73° F, psi)	--	D695

Mechanical Properties		Test Method ASTM
Coefficient of Friction Dynamic (Dry vs. Steel)	0.09 – 0.12	--
Hardness (Rockwell, 73°F)	R64	D785
Hardness (Durometer, 73°F)	--	D676
Tensile Impact (73° F, ft lb./in ²)	1,000	D1822
Coefficient Linear Thermal Exp. (in/in/°F)	7.2×10 ⁻⁵	D696
Deformation Under Load (122 °F, 2000 psi, %)	6-8 (6hrs.)	D621

Temperature Properties		Test Method ASTM
Deflection Temperature at 264 psi (°F)	--	D648
Deflection Temperature at 66 psi (°F)	158 – 174	D648
Melting Point (°F)	266	D789
Cont. Service Temp in Air, Max (°F)	160/180	--
Dielectric Strength Short Time (Volts/mil)	450 – 500	D149
Volume Resistivity (OHM-CM)	10 ¹⁸	D257
Dielectric Constant 60 Hz	2.3	D150
Dielectric Constant 10 ³ Hz	--	D150
Dielectric Constant 10 ⁵ Hz	--	D150

Environmental Properties		Test Method ASTM
Water Absorption Immersion at 24 Hours (%)	<0.01	D570
Water Absorption Immersion Saturation (%)	--	D570
Acid Weak (73° F)	Acceptable	--
Acid Strong (73° F)	Limited	--
Alkali Weak (73° F)	Acceptable	--
Alkali Strong (73° F)	Acceptable	--
Hydrocarbons, Aromatic (73 °F)	Limited	--
Hydrocarbons, Aliphatic (73 °F)	Acceptable	--
Ketones (73 °F)	Acceptable	--
Ethers (73 °F)	Acceptable	--
Esters (73 °F)	Acceptable	--
Alcohols (73 °F)	Acceptable	--
Inorganic Salt Solutions (73 °F)	Acceptable	--
Continuous Sunlight (73 °F)	Acceptable	--

Note: Property data shown are typical average values and will vary based on specific production lots and by size and product configuration. They should be used only as a guide to primary selection for the application of a given material and never for purchase specifications. All values shown are based on bone dry specimens.