

General Information

Chemical Designation: UHMW is an acronym for Ultra High Molecular Weight Polyethylene. Most commonly referred to as UHMW. It is famous for its abrasive resistance, toughness, and low cost. It is also FDA and NSF compliant. It's natural color is white, but is available in black and other colors at special request.

UHMW-PE (Ultra High Molecular Weight Polyethylene)

Fillers: Typical applications include sleeve and flanged bearings for high wear industrial and manufacturing bearing applications. Custom and standard profiles exist for conveying environments. UHMW is easily machined into custom components. Though it is easily machined with standard metal working equipment, UHMW has a very high coefficient of thermal expansion making it difficult to hold close tolerance dimensions. Its main attributes are impact and abrasion resistance. Its self-lubrication properties and low cost makes UHMW a great choice for many demanding bearing and wear applications.

Unfilled

Color: White (Opaque) or Black

Specific Gravity: UHMW is available in many filled varieties, including glass, oil, MS02, thereby enhancing its bearing and wear properties to extreme levels.

0.93

Technical Information

Specification	Test	Value	Units
Density, 73°F	D792	.93	gm/cm ³
Tensile Strength @ Yield, 73°F	D638	5800	psi
Tensile Modulus of Elasticity, 73°F	D638	120,000	psi
Tensile Elongation (at break), 73°F	D638	200	%
Flexural Strength, 73°F	D790		psi
Flexural Modulus of Elasticity	D790	110,000	psi
Shear Strength, 73°F	D732		psi
Compressive Strength – Ultimate		750	psi
Compressive Strength at 2% Deformation	D695		psi
Compressive Strength at 10% Deformation	D695	1,000	psi
Deformation Under Load			%
Compressive Modulus of Elasticity, 73°F	D695		
Compressive Strength to Laminate (Modulus)		750	psi
Compressive Strength to Laminate (Yield)		750	psi
Compressive Strength to Laminate (Ultimate)		750	psi
Hardness, Durometer (Shore "D" scale)	D2240	68	
Hardness, Rockwell (Scale as noted)	D785		Rockwell M
Izod Impact, Notched @ 73°F	D256 Type A	No Break	ft.lbs/in. of notch
Coefficient of Friction (Dry vs Steel) Static	PTM55007	.15-.20	
Coefficient of Friction (Dry vs Steel) Dynamic	PTM55007	.10-.14	
Maximum Static Bearing Load (P)	PTM55007	750	psi
Maximum Unlubricated No Load Bearing Velocity (V)	PTM55007	15	ft/minute
Maximum Limiting PV (Unlubricated)	PTM55007	750	psi x ft/min.
Wear Factor "K" x 10-10	PTM55010		Cubic in.-min/ft.lbs.hr
Sand Wheel Wear/Abrasion Test		100	UHMW=100
Minimum Mating Surface Hardness		20	Rockwell (Brinnell)
Coefficient of Linear Thermal Expansion	E-831(TMA)	11	in/in/°F x 10-5
Coefficient of Thermal Expansion // to Laminates	E-831(TMA)	11	in/in/°F x 10-5
Coefficient of Thermal Expansion I to Laminates	E-831(TMA)	11	in/in/°F x 10-5
Softening Point		180	°F
Heat Deflection Temperature 264 psi	D648		°F
Embrittlement Temperature			°F Min.
Continuous Service Temperature in Air		180	°F Max.
Short Term Service Temperature		200	°F Max.
Tg-Glass Transition (Amorphous)	D3418		°F
Melting Point (Crystalline) Peak	D3418		°F
Thermal Conductivity	F433		BTU-in/(hr*ft ² *F)
Dielectric Strength Short Term	D149		Volts/mil
Volume Resistivity	D257		ohm/cm
Surface Resistivity	D257		ohm/cm
Dielectric Constant, 106 Hz	D150	2.3-2.35	
Dissipation Factor, 106 Hz	D150	<.5 x10-3	
Flammability @ 3.1mm(1/8 in.) UL94	UL94	HB	
Arc Resistance			seconds
Water Absorption, Immersion 24 Hours	D570 (2)	Nil	%
Water Absorption, Immersion Saturation	D570 (2)	Nil	%
Machinability Rating		3	1=easy, 10=difficult
Rod Diameter Availability (Off the Shelf)	.50	10	inches
Sheet Thickness Availability (Off the Shelf)	.125	3.5	inches
Characteristics / Attributes	Excellent Abrasion and Impact Resistance, Easily Machined, Low Cost		

Thank you for your interest in our materials. All statements, technical information and recommendations presented are in good faith, based upon tests believed to be reliable and practical field experience. Poly-Tech is not responsible for its accuracy or completeness. It is our recommendation and the customer's responsibility to determine the suitability of any material for any given application.