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Ultra High Molecular Weight Polyethylene Properties

UHMW MECHANICAL PROPERTIES

PROPERTY	ASTM TEST	UNITS METRIC (U.S)	.030"	.060"	.125"
Density	D792	gm/cc	0.93	0.93	0.93
Tensile Strength @ Yield	D638	MPa(psi)	23(3300)	20(2964)	22(3227)
Tensile Strength @ Break	D638	MPa(psi)	53(7740)	49(7056)	44(6373)
Elongation @ Break	D638	%	460	463	466
Youngs "E" Modulus	D638	MPa (psi x 105)	725(1.05)	731(1.06)	672(0.97)
Izod Impact Strength (23°C)	D256 (1)	J/m(ft-lb/in notch)			
Izod Impact Strength (-40°C)	D256 (1)	J/m(ft-lb/in notch)			
Hardness Shore "D"	D2240	-	65	65	65
Abrasion Resistance					
Water Absorbtion	D570	%	Nil	Nil	Nil
Relative Solution Viscosity	D4020	dl/gm	2.3 - 3.5	2.3 - 3.5	2.3 - 3.5
COEFFICIENT OF FRICTION					
Static			0.16	0.16	0.16
Dynamic			0.14	0.13	0.14

(1) Izod Impact Strength: Samples have two(15° +/- 1/2°) notches on opposite sides to a depth of 5mm.

COMPARISON OF DYNAMIC COEFFICIENT OF FRICTION ON POLISHED STEEL

MATERIAL	DRY	WATER	OIL
UHMW-PE	.10 - .22	.05 - .10	.05 - .08
NYLON 6	.15 - .40	.14 - .19	.02 - .11
NYLON 6/6	.15 - .40	.14 - .19	.02 - .11
NYLON/MoS2	.12 - .20	.10 - .12	.08 - .10
PTFE	.04 - .25	.04 - .08	.04 - .05
ACETAL COPOLYMER	.15 - .35	.10 - .20	.05 - .10

THERMAL PROPERTIES

PROPERTY	ASTM TEST	UNITS METRIC (U.S)	.030"	.060"	.125"
Crystalline Melting Range	Polarizing	°C(°F)	136(276)	134(273)	134(273)
Crystallinity	D3417-96	%	48	47	50
COEFFICIENT OF LINEAR EXPANSION					

20 - 100 °C	D696	TBD	TBD	TBD	TBD
-20 to -100 °C	D696	TBD	TBD	TBD	TBD

ELECTRICAL PROPERTIES

PROPERTY	ASTM TEST	UNITS METRIC (U.S)	.030"	.060"	.125"
Volume Resistivity	D357	Ohms/cm	5.9544x10 ⁷	1.4516x10 ⁷	> 2.000x10 ¹³
Dielectric Strength	D150	KV/cm (V/mil)	*	*	142
Dielectric Constant	D150		2.481	2.454	2.542
Surface Resistivity 1% Carbon Black	D257	Ohms	10 ³	10 ³	10 ³
Static Decay 1% Carbon Black		Seconds	< .01	< .01	< .01
DISSIPATION FACTOR					
At 50Hz	D150		0.0594	0.0213	0.0082
At 10KHz	D150		0.1085	0.0690	0.0022
At 5MHz	D150		0.1035	0.2340	0.0034

* No reading could be taken due to material thickness.

Authorized Distributor:

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