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Polyethylene (PE)

Polyethylene is well known in the polymer family and is often referred to as PE. It has an extremely low coefficient of friction, good chemical and corrosion resistance with excellent impact strength making it an extremely adaptive thermoplastic. Polyethylene is available in various grades, offering different properties.

PROPERTY	TEST METHOD	NOTES	METRIC UNITS		IMPERIAL UNITS	
GENERAL						
Colour				White / Black/Blue		White/Black/Blue
Density	ISO1183:1987	Test Method A	g/cm³	0.95	lb/inch³	0.052
Moisture Absorption (Equilibrium)	ISO 62:1999	50% RH, 23C	%	0.1	%	0.1
Water Absorption (24 Hours)	ISO 62:1999(Modified)	Immersion, 23C	%	0.01	%	0.01
Water Absorption (Saturation)	ISO 62:1999	Immersion, 23C	%	0.01	%	0.01
MECHANICAL						
Tensile Strength	ISO 527-1/2:1993	Sample Type I B, 50mm min^{-1}	MPa	36	psi	14058
E-modulus	ISO 527-1/2:1993	Sample Type I B, 50mm min^{-1}	MPa	2700	psi	391603
Elongation at break	ISO 527-1/2:1993	Sample Type I B, 50mm min^{-1}	%	1000	%	1000
Compressive Strength	ISO 604:2002	Sample Type I B, 50mm min^{-1}	MPa	110	psi	15954
Compressive Modulus	ISO 604:2002	Sample Type A, 1mm min^{-1}	MPa	2600	psi	377099
Flexural Strength*	ISO 178:2001	1.5mm min^{-1}	MPa	36	psi	14058
Flexural Modulus	ISO 178:2001	1.5mm min^{-1}	MPa	1400	psi	5221
Izod Impact Strength	ISO 180:2000	Sample Type A (Notched)	KJ/m²	7.20	ft.lb/in²	3.43
Charpy Notched Impact Strength	ISO 180:2000	Notched (23°C)	KJ/m²	12	ft.lb/in²	5.88
Hardness (Shore D)	ISO 868:2003		-	65	-	65
Coefficient of Friction (Dynamic)		3.14m/min, 1.75MPa	-	0.18	-	0.18
Limiting PV			MPa/m.min	6	psi.ft/min	2712
Wear Rate		3.14m/min, 1.75MPa	mg/km	-	-	-
K-Factor		3.14m/min, 1.75MPa	mm³/Nm	-	in³.min/ft.lb.hr	-
THERMAL						
Melting Temperature	-		°C	133	°F	271
Glass Transition Temperature (Tg)	ISO 11359-2:1999		°C	-60	°F	158
Heat Deflection Temperature HDT/A	ISO 75	1.80MPa	°C	110	°F	185
Heat Deflection Temperature HDT/B	ISO 75/B	0.45MPa	°C	74	°F	125
Maximum Intermittent Service Temp	-		°C	140	°F	338
Maximum Continuous Service Temp	-	5000Hours	°C	68	°F	154
Minimum Intermittent Service Temp	-		°C	-	°F	-
Minimum Continuous Service Temp	-		°C	-	°F	-
Coefficient of Linear Thermal Expansion(TMA)	ISO 11359-2:1999	23°C-55°C	$°C^{-1}$	20 $x10^{-5}$	$°F^{-1}$	11.1 $x10^{-5}$
Thermal Conductivity	ISO 8301:1991	Mean T=20°C	W/m.°C	0.31	BTU in/ft.hr.°F	0.18
Flammability	IEC 60695-11-10:2003-08		-	HB	-	HB
ELECTRICAL						
Dielectric Constant	IEC 60250:1969-01	1MHz	-	2.18	-	2.18
Dielectric Constant (Low Frequency)		100Hz	-	-	-	-
Dissipation Factor	IEC 60250:1969-01	100Hz	Hz	0.005	Hz	0.005
Dielectric Strength	IEC 60243-1:1998-01-01		kV/mm	16.5	kV/in	419.1
Volume Resistivity	IEC 60093:1980-01		ohm.m	$1x10^{13}$	ohm.in	$3.93x10^{14}$
Surface Resistivity ROA	IEC 60093:1980-01		ohm	$1x10^{13}$	ohm	$1x10^{13}$
Comparative Tracking Index	IEC 60112:2003-01		CTI	600	CTI	600

AVAILABILITY

ROD: 16mm – 400mm DIA

PLATE: 6mm – 100mm THICK

TUBE: 20mm – 250mm

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