

## Polyethylene terephthalate Key Properties

Chemical Resistance			
Acids - Concentrated		Good	
Acids - Dilute		Good	
Alcohols		Good	
Alkalis		Poor	
Aromatic Hydrocarbons		Fair	
Greases and oils		Good	
Halogens		Good	
Ketones		Good	
Electrical Properties			
Dielectric Constant @ 1 MHz		3	
Dielectric Strength (kV.mm <sup>-1</sup> )		17	
Dissipation Factor @ 1 kHz		0.002	
Surface Resistivity (Ohm / sq)		10 <sup>13</sup>	
Volume Resistivity (Ohm.cm)		> 10 <sup>14</sup>	
Mechanical Properties			
Coefficient of Friction		0.2 - 0.4	
Hardness - Rockwell		M94-101	
Izod Impact Strength (J.m <sup>-1</sup> )		13 - 35	
Poisson's Ratio		0.37 - 0.44 (oriented)	
Young's Modulus of Elasticity (10 <sup>9</sup> N.m <sup>2</sup> )		2 - 2.7	
Tensile Modulus (GPa)		2 - 4	
Tensile Strength (MPa)		80, for biax film 190 - 260	
Physical Properties			
Density (g.cm <sup>-3</sup> )		1.3 - 1.4	
Flammability		Self Extinguishing	
Limiting Oxygen Index (%)		21	
Refractive Index		1.58 - 1.64	
Resistance to Ultra-Violet		Good	
Water Absorption - Equilibrium (%)		< 0.7	
Water Absorption - over 24 hours (%)		0.1	
Thermal Properties			
Coefficient of Thermal Expansion (x10 <sup>-6</sup> K <sup>-1</sup> )		20 - 80	
Heat-Deflection Temperature - 0.45MPa (°C)		115	
Heat-Deflection Temperature - 1.8MPa (°C)		80	
Lower Working Temperature (°C)		-40 to -60	
Specific Heat (J.K <sup>-1</sup> .kg <sup>-1</sup> )		1200 - 1350	
Thermal Conductivity (W.m <sup>-1</sup> .K <sup>-1</sup> )		0.15 - 0.4 @ 23°C	
Upper Working Temperature (°C)		115 - 170	
Properties PET Film			
Dielectric Strength @ 25 μm thick	KV.mm <sup>-1</sup>	300	
Dissipation Factor @ 1 kHz		0.016	
Elongation at Break	%	60 - 165	
Initial Tear Strength	g.μm <sup>-1</sup>	18 - 54	
Permeability to CO <sub>2</sub> @ 25°C	x10 <sup>-13</sup> cm <sup>3</sup> .cm.cm <sup>-2</sup> .s <sup>-1</sup> .Pa <sup>-1</sup>	0.07 - 0.11	
Permeability to Hydrogen @ 25°C	x10 <sup>-13</sup> cm <sup>3</sup> .cm.cm <sup>-2</sup> .s <sup>-1</sup> .Pa <sup>-1</sup>	0.45	
Permeability to Nitrogen @ 25°C	x10 <sup>-13</sup> cm <sup>3</sup> .cm.cm <sup>-2</sup> .s <sup>-1</sup> .Pa <sup>-1</sup>	0.0034 - 0.0038	
Permeability to Oxygen @ 25°C	x10 <sup>-13</sup> cm <sup>3</sup> .cm.cm <sup>-2</sup> .s <sup>-1</sup> .Pa <sup>-1</sup>	0.015 - 0.04	
Permeability to Water @ 25°C	x10 <sup>-13</sup> cm <sup>3</sup> .cm.cm <sup>-2</sup> .s <sup>-1</sup> .Pa <sup>-1</sup>	100 - 115	
Specific Heat	KJ.kg <sup>-1</sup> .K <sup>-1</sup>	1.3	
Thermal Conductivity @ 23°C	W.m <sup>-1</sup> .K <sup>-1</sup>	0.13 - 0.15	
Properties PET Fiber			
	<i>Material</i>	<i>Medium</i>	<i>High Tenacity</i>
Specific Modulus	cN/tex		700 - 800
Specific Tenacity	cN/tex	36	70 - 80
Density (g.cm <sup>-3</sup> )	g.cm <sup>-3</sup>	1.39	1.39
Extension to Break	%	36	13 - 16
Modulus	GPa		9 - 11
Shrinkage @ 100° C	%	4	1.5 - 6
Tenacity	GPa	0.5	0.9 - 1.1

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