# Polyethylene terephthalate Key Properties

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| **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$^{-1}$) | | 17 |
| | Dissipation Factor @ 1 kHz | | 0.002 |
| | Surface Resistivity (Ohm / sq) | | $10^{13}$ |
| | Volume Resistivity (Ohm.cm) | | $> 10^{14}$ |
| **Mechanical Properties** | | | |
| | Coefficient of Friction | | 0.2 - 0.4 |
| | Hardess - Rockwell | | M94-101 |
| | Izod Impact Strength (J.m$^{-1}$) | | 13 - 35 |
| | Poisson's Ratio | | 0.37 - 0.44 (oriented) |
| | Young's Modulus of Elasticity ($10^9$ N.m$^2$) | | 2 - 2.7 |
| | Tensile Modulus (GPa) | | 2 - 4 |
| | Tensile Strength (MPa) | | 80, for biax film 190 - 260 |
| **Physical Properties** | | | |
| | Density (g.cm$^{-3}$) | | 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$^{-6}$K$^{-1}$) | | 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$^{-1}$.kg$^{-1}$) | | 1200 - 1350 |
| | Thermal Conductivity (W.m$^{-1}$.K$^{-1}$) | | 0.15 - 0.4 @ 23°C |
| | Upper Working Temperature (°C) | | 115 - 170 |
| **Properties PET Film** | | | |
| | Dielectric Strength @ 25 $\mu$m thick | KV.mm$^{-1}$ | 300 |
| | Dissipation Factor @ 1 kHz | | 0.016 |
| | Elongation at Break | % | 60 - 165 |
| | Initial Tear Strength | g.$\mu$m$^{-1}$ | 18 - 54 |
| | Permeability to $CO_2$ @ 25°C | x10$^{-13}$cm$^3$.cm.cm$^{-2}$.s$^{-1}$.Pa$^{-1}$ | 0.07 - 0.11 |
| | Permeability to Hydrogen @ 25°C | x10$^{-13}$cm$^3$.cm.cm$^{-2}$.s$^{-1}$.Pa$^{-1}$ | 0.45 |
| | Permeability to Nitrogen @ 25°C | x10$^{-13}$cm$^3$.cm.cm$^{-2}$.s$^{-1}$.Pa$^{-1}$ | 0.0034 - 0.0038 |
| | Permeability to Oxygen @ 25°C | x10$^{-13}$cm$^3$.cm.cm$^{-2}$.s$^{-1}$.Pa$^{-1}$ | 0.015 - 0.04 |
| | Permeability to Water @ 25°C | x10$^{-13}$cm$^3$.cm.cm$^{-2}$.s$^{-1}$.Pa$^{-1}$ | 100 - 115 |
| | Specific Heat | KJ.kg$^{-1}$.K$^{-1}$ | 1.3 |
| | Thermal Conductivity @ 23°C | W.m$^{-1}$.K$^{-1}$ | 0.13 - 0.15 |
| **Properties PET Fiber** | | | |
| | *Material* | *Medium* | *High Tenacity* |
| | Specific Modulus | cN/tex | 700 - 800 |
| | Specific Tenacity | cN/tex 36 | 70 - 80 |
| | Density (g.cm$^{-3}$) | g.cm$^{-3}$ 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 |

**Phoenix Technologies International LLC**