

Overview of materials for Polyethylene Terephthalate (PET), Unreinforced

Categories: [Polymer](#); [Thermoplastic](#); [Polyester, TP](#); [Polyethylene Terephthalate \(PET\)](#); [Polyethylene Terephthalate \(PET\), Unreinforced](#)

Material This property data is a summary of similar materials in the MatWeb database for the category "Polyethylene Terephthalate (PET), Unreinforced".

Notes: Each property range of values reported is minimum and maximum values of appropriate MatWeb entries. The comments report the average value, and number of data points used to calculate the average. The values are not necessarily typical of any specific grade, especially less common values and those that can be most affected by additives or processing methods.

Vendors: [Click here](#) to view all available suppliers for this material.

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Physical Properties	Metric	English	Comments
Density	0.0700 - 2.50 g/cc	0.00253 - 0.0903 lb/in ³	Average value: 1.36 g/cc Grade Count:136
	1.10 - 1.20 g/cc	0.0397 - 0.0434 lb/in ³	Average value: 1.19 g/cc Grade Count:27
	@Temperature 285 - 285 °C	@Temperature 545 - 545 °F	
Water Absorption	0.0200 - 0.800 %	0.0200 - 0.800 %	Average value: 0.220 % Grade Count:37
Moisture Absorption at Equilibrium	0.0400 - 0.600 %	0.0400 - 0.600 %	Average value: 0.292 % Grade Count:25
Water Absorption at Saturation	0.400 - 0.900 %	0.400 - 0.900 %	Average value: 0.546 % Grade Count:17
Particle Size	2500 - 3500 µm	2500 - 3500 µm	Average value: 2800 µm Grade Count:47
Water Vapor Transmission	0.490 - 6.00 g/m ² /day	0.0316 - 0.386 g/100 in ² /day	Average value: 3.08 g/m ² /day Grade Count:6
Oxygen Transmission	5.10 - 23.0 cc-mm/m ² -24hr-atm	13.0 - 58.4 cc-mil/100 in ² -24hr-atm	Average value: 11.1 cc-mm/m ² -24hr-atm Grade Count:3
Oxygen Transmission Rate	2.00 - 20.0 cc/m ² /day	0.129 - 1.29 cc/100 in ² /day	Average value: 14.0 cc/m ² /day Grade Count:3
Viscosity Test	62.0 - 86.0 cm ³ /g	0.620 - 0.860 dl/g	Average value: 79.6 cm ³ /g Grade Count:51
Viscosity Number	0.800 - 85.0 cm ³ /g	0.00800 - 0.850 dl/g	Average value: 54.4 cm ³ /g Grade Count:3
Maximum Moisture Content	0.0100 - 0.400	0.0100 - 0.400	Average value: 0.302 Grade Count:6
Thickness	100 - 1200 microns	3.94 - 47.2 mil	Average value: 367 microns Grade Count:12
Linear Mold Shrinkage	0.00100 - 0.0200 cm/cm	0.00100 - 0.0200 in/in	Average value: 0.00667 cm/cm Grade Count:40
Linear Mold Shrinkage, Transverse	0.00100 - 0.0110 cm/cm	0.00100 - 0.0110 in/in	Average value: 0.00508 cm/cm Grade Count:18
Melt Flow	3.50 - 70.0 g/10 min	3.50 - 70.0 g/10 min	Average value: 43.0 g/10 min Grade Count:13
Chemical Properties	Metric	English	Comments
Acetaldehyde	0.100 - 3.00 ppm	0.100 - 3.00 ppm	Average value: 1.12 ppm Grade Count:26
Mechanical Properties	Metric	English	Comments
Hardness, Rockwell M	80.0 - 96.0	80.0 - 96.0	Average value: 92.8 Grade Count:16
Hardness, Rockwell R	105 - 125	105 - 125	Average value: 114 Grade Count:24
Hardness, Shore D	71.4 - 87.0	71.4 - 87.0	Average value: 80.8 Grade Count:13
Ball Indentation Hardness	117 - 194 MPa	17000 - 28100 psi	Average value: 160 MPa Grade Count:11
Tensile Strength, Ultimate	22.0 - 830 MPa	3190 - 120000 psi	Average value: 63.1 MPa Grade Count:42
Film Tensile Strength at Yield, MD	55.0 - 260 MPa	7980 - 37700 psi	Average value: 176 MPa Grade Count:17
Film Tensile Strength at Yield, TD	53.0 - 265 MPa	7690 - 38400 psi	Average value: 204 MPa Grade Count:17
Tensile Strength, Yield	5.52 - 147 MPa	800 - 21300 psi	Average value: 73.6 MPa Grade Count:49
Film Elongation at Break, MD	40.0 - 600 %	40.0 - 600 %	Average value: 175 % Grade Count:22
Film Elongation at Break, TD	30.0 - 600 %	30.0 - 600 %	Average value: 137 % Grade Count:21
Film Elongation at Yield, MD	4.00 - 6.00 %	4.00 - 6.00 %	Average value: 4.67 % Grade Count:3
Film Elongation at Yield, TD	4.00 - 6.00 %	4.00 - 6.00 %	Average value: 4.67 % Grade Count:3
Elongation at Break	1.10 - 600 %	1.10 - 600 %	Average value: 67.3 % Grade Count:65
Elongation at Yield	3.50 - 5.83 %	3.50 - 5.83 %	Average value: 4.13 % Grade Count:25
Modulus of Elasticity	1.57 - 5.20 GPa	228 - 754 ksi	Average value: 3.25 GPa Grade Count:57
Flexural Yield Strength	55.3 - 210 MPa	8020 - 30500 psi	Average value: 104 MPa Grade Count:47
Flexural Modulus	0.138 - 12.8 GPa	20.0 - 1850 ksi	Average value: 3.66 GPa Grade Count:41
Compressive Yield Strength	20.0 - 107 MPa	2900 - 15500 psi	Average value: 60.7 MPa Grade Count:14
Compressive Modulus	2.38 - 2.80 GPa	345 - 406 ksi	Average value: 2.68 GPa Grade Count:5
Shear Strength	55.0 - 59.0 MPa	7980 - 8560 psi	Average value: 56.6 MPa Grade Count:5
Secant Modulus	0.00100 - 2.10 GPa	0.145 - 305 ksi	Average value: 0.361 GPa Grade Count:3
Izod Impact, Notched	0.139 - 100 J/cm	0.260 - 187 ft-lb/in	Average value: 1.03 J/cm Grade Count:33
	0.270 - 1.28 J/cm	0.506 - 2.40 ft-lb/in	Average value: 0.468 J/cm Grade Count:12
	@Temperature -40.0 - -40.0 °	@Temperature -40.0 - -40.0 °F	

Izod Impact, Unnotched 	C		
	2.67 J/cm - NB	5.00 ft-lb/in - NB	Average value: 3.83 J/cm Grade Count:15
Izod Impact, Notched (ISO) 	NB - NB	NB - NB	Grade Count:11
	@Temperature -40.0 - -30.0 °C	@Temperature -40.0 - -22.0 °F	
Izod Impact, Unnotched (ISO) 	C		
	2.00 - 8.10 kJ/m ²	0.952 - 3.85 ft-lb/in ²	Average value: 4.36 kJ/m ² Grade Count:14
Charpy Impact Unnotched 	3.10 - 4.20 kJ/m ²	1.48 - 2.00 ft-lb/in ²	Average value: 3.73 kJ/m ² Grade Count:6
	@Temperature -40.0 - -40.0 °C	@Temperature -40.0 - -40.0 °F	
Charpy Impact, Notched 	NB	NB	Grade Count:3
	160 - 181 kJ/m ²	76.1 - 86.1 ft-lb/in ²	Average value: 170 kJ/m ² Grade Count:3
Puncture Energy 	@Temperature -40.0 - -40.0 °C	@Temperature -40.0 - -40.0 °F	
	C		
Coefficient of Friction	3.00 J/cm ² - NB	14.3 ft-lb/in ² - NB	Average value: 5.80 J/cm ² Grade Count:20
	NB - NB	NB - NB	Grade Count:4
Coefficient of Friction, Static	@Temperature -30.0 - -30.0 °C	@Temperature -22.0 - -22.0 °F	
	C		
Tear Strength, Total	0.200 - 1.40 J/cm ²	0.952 - 6.66 ft-lb/in ²	Average value: 0.458 J/cm ² Grade Count:28
	0.270 - 0.500 J/cm ²	1.28 - 2.38 ft-lb/in ²	Average value: 0.347 J/cm ² Grade Count:5
Tear Strength	@Temperature -30.0 - -30.0 °C	@Temperature -22.0 - -22.0 °F	
	C		
Elmendorf Tear Strength, MD	12.0 - 41.0 J	8.85 - 30.2 ft-lb	Average value: 25.7 J Grade Count:8
	13.0 - 39.0 J	9.59 - 28.8 ft-lb	Average value: 7.77 J Grade Count:4
Elmendorf Tear Strength, TD	@Temperature -40.0 - -40.0 °C	@Temperature -40.0 - -40.0 °F	
	C		
Dart Drop	0.800 - 24.0 J	0.590 - 17.7 ft-lb	Average value: 7.77 J Grade Count:4
	@Temperature -40.0 - -40.0 °C	@Temperature -40.0 - -40.0 °F	
Film Tensile Strength at Break, MD	0.800 - 24.0 J	0.590 - 17.7 ft-lb	Average value: 7.77 J Grade Count:4
	@Thickness 2.50 - 3.20 mm	@Thickness 0.0984 - 0.126 in	
Film Tensile Strength at Break, TD	0.180 - 0.300	0.180 - 0.300	Average value: 0.230 Grade Count:12
	0.190 - 0.400	0.190 - 0.400	Average value: 0.355 Grade Count:14
Electrical Properties	15.0 - 120 N	3.37 - 27.0 lb (f)	Average value: 70.4 N Grade Count:3
	0.265 - 59.0 kN/m	1.51 - 337 pli	Average value: 32.4 kN/m Grade Count:5
Surface Resistance	3.14 - 4.00 g/micron	79.8 - 102 g/mil	Average value: 3.71 g/micron Grade Count:3
	3.24 - 5.20 g/micron	82.2 - 132 g/mil	Average value: 4.55 g/micron Grade Count:3
Dielectric Constant	1.08 - 2.00 g/micron	27.4 - 50.8 g/mil	Average value: 1.69 g/micron Grade Count:3
	1.70 - 60.0 MPa	247 - 8700 psi	Average value: 27.3 MPa Grade Count:8
Dielectric Strength	1.60 - 48.0 MPa	232 - 6960 psi	Average value: 19.6 MPa Grade Count:7
Dissipation Factor	5.00e+6 - 1.00e+18 ohm-cm	5.00e+6 - 1.00e+18 ohm-cm	Average value: 5.13e+16 ohm-cm Grade Count:43
	300 - 1.00e+16 ohm	300 - 1.00e+16 ohm	Average value: 1.89e+15 ohm Grade Count:33
Dielectric Loss Index	2.40 - 3.80	2.40 - 3.80	Average value: 3.26 Grade Count:45
	3.60 - 3.60	3.60 - 3.60	Average value: 3.60 Grade Count:9
Arc Resistance	@Temperature 150 - 150 °C	@Temperature 302 - 302 °F	
	3.60 - 3.60	3.60 - 3.60	Average value: 3.60 Grade Count:9
Comparative Tracking Index	@Frequency 50.0 - 50.0 Hz	@Frequency 50.0 - 50.0 Hz	
	15.2 - 60.0 kV/mm	385 - 1520 kV/in	Average value: 23.6 kV/mm Grade Count:38
Thermal Properties	0.00100 - 0.0250	0.00100 - 0.0250	Average value: 0.0108 Grade Count:34
	0.00480 - 0.00480	0.00480 - 0.00480	Average value: 0.00480 Grade Count:3
CTE, linear	@Temperature 150 - 150 °C	@Temperature 302 - 302 °F	
	0.00480 - 0.00480	0.00480 - 0.00480	Average value: 0.00480 Grade Count:3
CTE, linear, Transverse to Flow	@Frequency 50.0 - 50.0 Hz	@Frequency 50.0 - 50.0 Hz	
	0.00100 - 0.0150	0.00100 - 0.0150	Average value: 0.00855 Grade Count:5
Specific Heat Capacity	80.0 - 158 sec	80.0 - 158 sec	Average value: 107 sec Grade Count:14
	35.0 - 600 V	35.0 - 600 V	Average value: 472 V Grade Count:18
Metric			
English			
Comments			
CTE, linear	30.6 - 100 µm/m-°C	17.0 - 55.6 µin/in-°F	Average value: 65.3 µm/m-°C Grade Count:45
	48.0 - 80.0 µm/m-°C	26.7 - 44.4 µin/in-°F	Average value: 71.1 µm/m-°C Grade Count:9
Specific Heat Capacity	1.00 - 1.50 J/g-°C	0.240 - 0.359 BTU/lb-°F	Average value: 1.16 J/g-°C Grade Count:27
	1.21336 - 2.30 J/g-°C	0.290000 - 0.550 BTU/lb-°F	Average value: 1.69 J/g-°C Grade Count:24



	@Temperature 60.0 - 280 °C	@Temperature 140 - 536 °F	
Thermal Conductivity	0.190 - 0.290 W/m-K	1.32 - 2.01 BTU-in/hr-ft ² -°F	Average value: 0.266 W/m-K Grade Count:23
Melting Point	200 - 260 °C	392 - 500 °F	Average value: 246 °C Grade Count:127
Maximum Service Temperature, Air	60.0 - 225 °C	140 - 437 °F	Average value: 130 °C Grade Count:34
Deflection Temperature at 0.46 MPa (66 psi)	66.0 - 250 °C	151 - 482 °F	Average value: 114 °C Grade Count:34
Deflection Temperature at 1.8 MPa (264 psi)	60.0 - 230 °C	140 - 446 °F	Average value: 103 °C Grade Count:55
Vicat Softening Point	74.0 - 85.0 °C	165 - 185 °F	Average value: 79.5 °C Grade Count:10
Minimum Service Temperature, Air	-50.0 - -20.0 °C	-58.0 - -4.00 °F	Average value: -25.5 °C Grade Count:20
Glass Transition Temp, Tg	70.0 - 82.0 °C	158 - 180 °F	Average value: 75.4 °C Grade Count:12
UL RTI, Electrical	75.0 - 150 °C	167 - 302 °F	Average value: 113 °C Grade Count:7
UL RTI, Mechanical with Impact	75.0 - 150 °C	167 - 302 °F	Average value: 113 °C Grade Count:7
UL RTI, Mechanical without Impact	75.0 - 150 °C	167 - 302 °F	Average value: 113 °C Grade Count:7
Flammability, UL94	HB - 5VB	HB - 5VB	Grade Count:41
Oxygen Index	22.0 - 25.0 %	22.0 - 25.0 %	Average value: 24.0 % Grade Count:3

Optical Properties	Metric	English	Comments
Refractive Index	1.57 - 1.59	1.57 - 1.59	Average value: 1.58 Grade Count:3
Haze	0.300 - 40.0 %	0.300 - 40.0 %	Average value: 10.0 % Grade Count:22
Gloss	108 - 166 %	108 - 166 %	Average value: 131 % Grade Count:6
Transmission, Visible	67.0 - 99.0 %	67.0 - 99.0 %	Average value: 89.3 % Grade Count:44

Processing Properties	Metric	English	Comments
Processing Temperature	90.0 - 300 °C	194 - 572 °F	Average value: 219 °C Grade Count:10
Melt Temperature	120 - 295 °C	248 - 563 °F	Average value: 254 °C Grade Count:36
Mold Temperature	10.0 - 163 °C	50.0 - 325 °F	Average value: 57.5 °C Grade Count:16
Drying Temperature	65.0 - 160 °C	149 - 320 °F	Average value: 98.9 °C Grade Count:14
Moisture Content	0.100 - 0.400 %	0.100 - 0.400 %	Average value: 0.239 % Grade Count:78

Some of the values displayed above may have been converted from their original units and/or rounded in order to display the information in a consistent format. Users requiring more precise data for scientific or engineering calculations can click on the property value to see the original value as well as raw conversions to equivalent units. We advise that you only use the original value or one of its raw conversions in your calculations to minimize rounding error. We also ask that you refer to MatWeb's [terms of use](#) regarding this information. [Click here](#) to view all the property values for this datasheet as they were originally entered into MatWeb.