

Overview of materials for Thermoplastic Polyurethane, Elastomer, Polyester Grade

Category : Polymer , Thermoplastic , Elastomer, TPE , Polyurethane, TP , Thermoplastic Polyurethane, Elastomer, Polyester Grade

Material Notes:

This property data is a summary of similar materials in the MatWeb database for the category "Thermoplastic Polyurethane, Elastomer, Polyester Grade". 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.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Overview-of-materials-for-Thermoplastic-Polyurethane-Elastomer-Polyester-Grade.php

Physical Properties	Metric	English	Comments
Density	0.992 - 1.44 g/cc	0.0358 - 0.0520 lb/in³	Average value: 1.21 g/cc Grade Count:211
Viscosity	30.0 - 5500 cP	30.0 - 5500 cP	Average value: 915 cP Grade Count:21
	28000 - 130000 cP	28000 - 130000 cP	Average value: 83800 cP Grade Count:4
	@Temperature 204 - 204 °C	@Temperature 399 - 399 °F	
Maximum Moisture Content	0.0200 - 0.0500	0.0200 - 0.0500	Average value: 0.0329 Grade Count:35
Linear Mold Shrinkage	0.00200 - 0.0250 cm/cm	0.00200 - 0.0250 in/in	Average value: 0.00748 cm/cm Grade Count:72
Linear Mold Shrinkage, Transverse	-0.00200 - 0.00900 cm/cm	-0.00200 - 0.00900 in/in	Average value: 0.00513 cm/cm Grade Count:12
Melt Flow	4.00 - 90.0 g/10 min	4.00 - 90.0 g/10 min	Average value: 31.9 g/10 min Grade Count:51

Mechanical Properties	Metric	English	Comments
Hardness, Shore A	40.0 - 98.0	40.0 - 98.0	Average value: 85.3 Grade Count:159
Hardness, Shore D	12.0 - 79.0	12.0 - 79.0	Average value: 49.5 Grade Count:122
Tensile Strength, Ultimate	1.35 - 72.1 MPa	196 - 10400 psi	Average value: 38.8 MPa Grade Count:205
	28.91 - 49.0 MPa	4193 - 7110 psi	Average value: 43.3 MPa Grade Count:1
	@Temperature 70.0 - 100 °C	@Temperature 158 - 212 °F	
	28.91 - 49.0 MPa	4193 - 7110 psi	Average value: 43.3 MPa Grade Count:1
	@Time 0.000 - 3.63e+6 sec	@Time 0.000 - 1010 hour	

Mechanical Properties Tensile Strength, Yield	Metric 1.10 - 66.4 MPa	English 160 - 9630 psi	Comments Average value: 14.1 MPa Grade Count:181
Elongation at Break	10.0 - 1580 %	10.0 - 1580 %	Average value: 550 % Grade Count:211
Modulus of Elasticity	0.00300 - 0.870 GPa	0.435 - 126 ksi	Average value: 0.136 GPa Grade Count:32
Flexural Yield Strength	2.61 - 62.7 MPa	379 - 9100 psi	Average value: 24.2 MPa Grade Count:6
Flexural Modulus	0.0276 - 1.21 GPa	4.00 - 175 ksi	Average value: 0.223 GPa Grade Count:28
Resilience	30.0 - 60.0	30.0 - 60.0	Average value: 42.3 Grade Count:22
Rebound	25.0 - 57.0 %	25.0 - 57.0 %	Average value: 38.1 % Grade Count:45
Shear Modulus	0.0120 - 0.250 GPa	1.74 - 36.3 ksi	Average value: 0.102 GPa Grade Count:3
Izod Impact, Notched	0.849 - 5340 J/cm	1.59 - 10000 ft-lb/in	Average value: 3.88 J/cm Grade Count:6
	0.26695 - 2.93645 J/cm @Temperature -40.0 - - 40.0 °C	0.50011 - 5.50117 ft- lb/in @Temperature -40.0 - - 40.0 °F	Average value: 1.60 J/cm Grade Count:2
Izod Impact, Unnotched	0.961 - 5340 J/cm	1.80 - 10000 ft-lb/in	Average value: 0.969 J/cm Grade Count:3
Tear Strength	17.5 - 285 kN/m	100 - 1630 pli	Average value: 113 kN/m Grade Count:187
Peel Strength	0.0400 - 7.20 kN/m	0.228 - 41.1 pli	Average value: 1.93 kN/m Grade Count:6
Graves Tear Strength	52.6 - 210 kN/m	300 - 1200 pli	Average value: 124 kN/m Grade Count:18
Taber Abrasion, mg/1000 Cycles	0.700 - 127	0.700 - 127	Average value: 34.3 Grade Count:85
Compression Set	12.0 - 90.0 %	12.0 - 90.0 %	Average value: 33.0 % Grade Count:92
	25.0 - 40.0 % @Temperature 70.0 - 70.0 °C	25.0 - 40.0 % @Temperature 158 - 158 °F	Average value: 42.7 % Grade Count:8
	23.0 - 80.0 % @Temperature 70.0 - 100 °C	23.0 - 80.0 % @Temperature 158 - 212 °F	Average value: 42.7 % Grade Count:39
	23.0 - 80.0 % @Time 79200 - 252000 sec	23.0 - 80.0 % @Time 22.0 - 70.0 hour	Average value: 42.7 % Grade Count:39

Tensile Set Mechanical Properties	4.00 - 155 % Metric	4.00 - 155 % English	Average value: 52.7 % Grade Count:46 Comments
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Thermal Properties	Metric	English	Comments
CTE, linear	117 - 171 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$	65.0 - 95.0 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$	Average value: 150 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$ Grade Count:15
Melting Point	100 - 230 $^\circ\text{C}$	212 - 446 $^\circ\text{F}$	Average value: 170 $^\circ\text{C}$ Grade Count:43
Vicat Softening Point	35.0 - 165 $^\circ\text{C}$	95.0 - 329 $^\circ\text{F}$	Average value: 103 $^\circ\text{C}$ Grade Count:94
Brittleness Temperature	-70.0 - -50.0 $^\circ\text{C}$	-94.0 - -58.0 $^\circ\text{F}$	Average value: -68.4 $^\circ\text{C}$ Grade Count:16
Glass Transition Temp, Tg	-47.0 - 120 $^\circ\text{C}$	-52.6 - 248 $^\circ\text{F}$	Average value: -22.9 $^\circ\text{C}$ Grade Count:39
Transformation Temperature	-27.8 - -17.2 $^\circ\text{C}$	-18.0 - 1.00 $^\circ\text{F}$	Average value: -22.0 $^\circ\text{C}$ Grade Count:3
Clash Berg Stiffness Temperature	-40.0 - -5.00 $^\circ\text{C}$	-40.0 - 23.0 $^\circ\text{F}$	Average value: -26.4 $^\circ\text{C}$ Grade Count:6
Flammability, UL94	HB	HB	Grade Count:3
Ring & Ball Softening Point	161 - 179 $^\circ\text{C}$	322 - 354 $^\circ\text{F}$	Average value: 170 $^\circ\text{C}$ Grade Count:3

Optical Properties	Metric	English	Comments
Transmission, Visible	90.0 %	90.0 %	Average value: 90.0 % Grade Count:12

Electrical Properties	Metric	English	Comments
Electrical Resistivity	1.00e+10 - 1.00e+13 ohm-cm	1.00e+10 - 1.00e+13 ohm-cm	Average value: 3.37e+12 ohm-cm Grade Count:3
Surface Resistance	5.00e+8 - 1.00e+12 ohm	5.00e+8 - 1.00e+12 ohm	Average value: 2.78e+11 ohm Grade Count:4
Dielectric Constant	4.10 - 7.10	4.10 - 7.10	Average value: 5.73 Grade Count:3
Dielectric Strength	31.0 - 49.0 kV/mm	787 - 1240 kV/in	Average value: 42.7 kV/mm Grade Count:3
Dissipation Factor	0.0240 - 0.200	0.0240 - 0.200	Average value: 0.0557 Grade Count:3
Comparative Tracking Index	600 V	600 V	Average value: 600 V Grade Count:6

Processing Properties	Metric	English	Comments
Processing Temperature	155 - 216 $^\circ\text{C}$	311 - 421 $^\circ\text{F}$	Average value: 195 $^\circ\text{C}$ Grade Count:24
Nozzle Temperature	160 - 299 $^\circ\text{C}$	320 - 570 $^\circ\text{F}$	Average value: 199 $^\circ\text{C}$ Grade Count:75
Adapter Temperature	175 - 215 $^\circ\text{C}$	347 - 419 $^\circ\text{F}$	Average value: 193 $^\circ\text{C}$ Grade Count:43

Processing Properties	Metric	English	Comments
Melt Temperature	120 - 238 °C	248 - 460 °F	Average value: 192 °C Grade Count:108
Head Temperature	170 - 210 °C	338 - 410 °F	Average value: 195 °C Grade Count:10
Mold Temperature	16.0 - 70.0 °C	60.8 - 158 °F	Average value: 36.2 °C Grade Count:51
Drying Temperature	54.0 - 110 °C	129 - 230 °F	Average value: 95.6 °C Grade Count:58
Moisture Content	0.0100 - 0.100 %	0.0100 - 0.100 %	Average value: 0.0425 % Grade Count:20

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