

Overview of materials for Thermoplastic Polyurethane (TPUR), Polyether Grade

Category : Polymer , Thermoplastic , Polyurethane, TP , Thermoplastic Polyurethane (TPUR), Polyether Grade

Material Notes:

This property data is a summary of similar materials in the MatWeb database for the category "Thermoplastic Polyurethane (TPUR), Polyether 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-TPUR-Polyether-Grade.php

Physical Properties	Metric	English	Comments
Density	1.04 - 1.27 g/cc	0.0376 - 0.0459 lb/in ³	Average value: 1.14 g/cc Grade Count:122
Water Absorption	1.08 - 1.50 %	1.08 - 1.50 %	Average value: 1.36 % Grade Count:3
Water Vapor Transmission	420 - 9000 g/m ² /day	27.0 - 580 g/100 in ² /day	Average value: 3770 g/m ² /day Grade Count:7
	6000 - 9500 g/m ² /day @Temperature 38.0 - 38.0 °C	386 - 612 g/100 in ² /day @Temperature 100 - 100 °F	Average value: 7750 g/m ² /day Grade Count:1
Maximum Moisture Content	0.0200 - 0.0500	0.0200 - 0.0500	Average value: 0.0260 Grade Count:10
Linear Mold Shrinkage	0.00500 - 0.0450 cm/cm	0.00500 - 0.0450 in/in	Average value: 0.0123 cm/cm Grade Count:15
Linear Mold Shrinkage, Transverse	0.000 - 0.0200 cm/cm	0.000 - 0.0200 in/in	Average value: 0.00800 cm/cm Grade Count:7
Melt Flow	10.0 - 54.0 g/10 min	10.0 - 54.0 g/10 min	Average value: 15.5 g/10 min Grade Count:16

Mechanical Properties	Metric	English	Comments
Hardness, Shore A	25.0 - 101	25.0 - 101	Average value: 83.1 Grade Count:119
Hardness, Shore D	22.0 - 83.0	22.0 - 83.0	Average value: 54.5 Grade Count:33
Tensile Strength, Ultimate	0.800 - 68.9 MPa	116 - 10000 psi	Average value: 26.1 MPa Grade Count:120
	10.3421 - 13.7895 MPa @Temperature 100 - 121 °C	1500.00 - 2000.00 psi @Temperature 212 - 250 °F	Average value: 12.0 MPa Grade Count:1
	10.3421 - 13.7895 MPa	1500.00 - 2000.00 psi	Average value: 12.0 MPa Grade

Mechanical Properties	@Time 605000 - Metric 605000 sec	@Time 168 - 168 hour English	Count:1 Comments
Tensile Strength, Yield	1.80 - 70.0 MPa	261 - 10200 psi	Average value: 14.2 MPa Grade Count:104
Elongation at Break	77.0 - 1000 %	77.0 - 1000 %	Average value: 573 % Grade Count:126
	270 - 324 %	270 - 324 %	Average value: 294 % Grade Count:1
	@Temperature 100 - 121 °C	@Temperature 212 - 250 °F	
	270 - 324 %	270 - 324 %	Average value: 294 % Grade Count:1
	@Time 605000 - 605000 sec	@Time 168 - 168 hour	
Elongation at Yield	320 - 850 %	320 - 850 %	Average value: 528 % Grade Count:18
Modulus of Elasticity	0.00670 - 0.129 GPa	0.972 - 18.7 ksi	Average value: 0.0324 GPa Grade Count:6
Flexural Yield Strength	1.55 - 75.2 MPa	225 - 10900 psi	Average value: 27.6 MPa Grade Count:3
Flexural Modulus	0.0162 - 1.99 GPa	2.35 - 289 ksi	Average value: 0.289 GPa Grade Count:16
Resilience	30.0 - 65.0	30.0 - 65.0	Average value: 46.9 Grade Count:18
Rebound	1.00 - 72.0 %	1.00 - 72.0 %	Average value: 41.2 % Grade Count:6
Izod Impact, Notched (ISO)	7.50 - 10.5 kJ/m ²	3.57 - 5.00 ft-lb/in ²	Average value: 8.82 kJ/m ² Grade Count:4
	@Temperature -20.0 - - 20.0 °C	@Temperature -4.00 - - 4.00 °F	
Charpy Impact, Notched	5.00 - 1000 J/cm ²	23.8 - 4760 ft-lb/in ²	Average value: 7.00 J/cm ² Grade Count:13
	0.300 - 999.9 J/cm ²	1.43 - 4759 ft-lb/in ²	Average value: 7.95 J/cm ² Grade Count:13
	@Temperature -30.0 - - 30.0 °C	@Temperature -22.0 - - 22.0 °F	
Coefficient of Friction	0.0110 - 7.40	0.0110 - 7.40	Average value: 2.96 Grade Count:5
Tear Strength	7.01 - 1050 kN/m	40.0 - 5990 pli	Average value: 147 kN/m Grade Count:115
Graves Tear Strength	47.3 - 245 kN/m	270 - 1400 pli	Average value: 104 kN/m Grade Count:9
K Factor (Wear Factor)	40.0 - 100	40.0 - 100	Average value: 63.1 Grade Count:18
Taber Abrasion, mg/1000 Cycles	5.00 - 340	5.00 - 340	Average value: 51.1 Grade Count:45
Compression Set	1.00 - 70.0 %	1.00 - 70.0 %	Average value: 24.1 % Grade Count:60
	23.0 - 100 %	23.0 - 100 %	

Mechanical Properties	Metric	English	Comments
	@Temperature 70.0 - 70.0 °C	@Temperature 158 - 158 °F	Average value: 42.8 % Grade Count:43
	22.9 - 95.0 %	22.9 - 95.0 %	Average value: 42.8 % Grade Count:28
	@Temperature 70.0 - 70.0 °C	@Temperature 158 - 158 °F	
	22.9 - 95.0 %	22.9 - 95.0 %	Average value: 42.8 % Grade Count:28
	@Time 79200 - 86400 sec	@Time 22.0 - 24.0 hour	
Tensile Set	5.60 - 53.0 %	5.60 - 53.0 %	Average value: 15.4 % Grade Count:7
Torsional Stiffness	22.0 - 472 MPa	3190 - 68500 psi	Average value: 181 MPa Grade Count:5

Thermal Properties	Metric	English	Comments
CTE, linear	86.4 - 179 $\mu\text{m}/\text{m}\cdot^{\circ}\text{C}$	48.0 - 99.6 $\mu\text{in}/\text{in}\cdot^{\circ}\text{F}$	Average value: 139 $\mu\text{m}/\text{m}\cdot^{\circ}\text{C}$ Grade Count:3
Melting Point	118 - 218 °C	244 - 424 °F	Average value: 156 °C Grade Count:23
Vicat Softening Point	46.0 - 152 °C	115 - 306 °F	Average value: 96.0 °C Grade Count:35
Softening Point	110 - 166 °C	230 - 330 °F	Average value: 134 °C Grade Count:3
Brittleness Temperature	-70.0 - -68.0 °C	-94.0 - -90.4 °F	Average value: -68.5 °C Grade Count:4
Glass Transition Temp, Tg	-76.0 - -10.0 °C	-105 - 14.0 °F	Average value: -42.9 °C Grade Count:43
Flammability, UL94	V-2 - V-0	V-2 - V-0	Grade Count:14
Oxygen Index	21.0 - 38.0 %	21.0 - 38.0 %	Average value: 31.8 % Grade Count:4

Optical Properties	Metric	English	Comments
Refractive Index	1.49 - 1.50	1.49 - 1.50	Average value: 1.49 Grade Count:4
Haze	0.000 - 0.300 %	0.000 - 0.300 %	Average value: 0.225 % Grade Count:4
Yellow Index	1.00 %	1.00 %	Average value: 1.00 % Grade Count:4
Transmission, Visible	85.0 - 95.0 %	85.0 - 95.0 %	Average value: 90.0 % Grade Count:4

Electrical Properties	Metric	English	Comments
Dielectric Constant	3.70 - 6.70	3.70 - 6.70	Average value: 5.16 Grade Count:4
Dielectric Strength	14.3 - 15.4 kV/mm	363 - 392 kV/in	Average value: 15.0 kV/mm Grade Count:3

Processing Properties	Metric	English	Comments
Processing Temperature	160 - 240 °C	320 - 464 °F	Average value: 197 °C Grade Count:27
Nozzle Temperature	175 - 220 °C	347 - 428 °F	Average value: 205 °C Grade Count:6
Adapter Temperature	180 - 216 °C	356 - 421 °F	Average value: 193 °C Grade Count:24
Die Temperature	170 - 365 °C	338 - 689 °F	Average value: 194 °C Grade Count:33
Melt Temperature	149 - 240 °C	300 - 464 °F	Average value: 184 °C Grade Count:40
Mold Temperature	10.0 - 70.0 °C	50.0 - 158 °F	Average value: 38.9 °C Grade Count:18
Drying Temperature	70.0 - 180 °C	158 - 356 °F	Average value: 98.7 °C Grade Count:14
Moisture Content	0.100 %	0.100 %	Average value: 0.100 % Grade Count:6
Dew Point	-40.0 - -5.00 °C	-40.0 - 23.0 °F	Average value: -35.9 °C Grade Count:11
Injection Pressure	8.27 - 138 MPa	1200 - 20000 psi	Average value: 34.8 MPa Grade Count:4

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