

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

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

Material Notes:

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

Physical Properties	Metric	English	Comments
Density	0.650 - 1.44 g/cc	0.0235 - 0.0520 lb/in³	Average value: 1.20 g/cc Grade Count:332
Water Absorption	0.960 - 1.22 %	0.960 - 1.22 %	Average value: 1.09 % Grade Count:3
Moisture Absorption at Equilibrium	0.150 - 0.200 %	0.150 - 0.200 %	Average value: 0.183 % Grade Count:3
Water Absorption at Saturation	0.960 - 1.22 %	0.960 - 1.22 %	Average value: 1.09 % Grade Count:3
Viscosity	200 - 3500 cP	200 - 3500 cP	Average value: 1830 cP Grade Count:12
	223000 - 223000 cP @Temperature 204 - 204 °C	223000 - 223000 cP @Temperature 399 - 399 °F	Average value: 223000 cP Grade Count:1
Maximum Moisture Content	0.0200 - 0.100	0.0200 - 0.100	Average value: 0.0450 Grade Count:12
Linear Mold Shrinkage	0.000700 - 0.0300 cm/cm	0.000700 - 0.0300 in/in	Average value: 0.00908 cm/cm Grade Count:37
Melt Flow	6.00 - 112 g/10 min	6.00 - 112 g/10 min	Average value: 34.0 g/10 min Grade Count:55

Mechanical Properties	Metric	English	Comments
Hardness, Shore A	30.0 - 101	30.0 - 101	Average value: 83.5 Grade Count:301
	74.0 - 75.0 @Temperature 70.0 - 100 °C	74.0 - 75.0 @Temperature 158 - 212 °F	Average value: 74.5 Grade Count:1
Hardness, Shore D	15.0 - 78.0	15.0 - 78.0	Average value: 50.7 Grade Count:149
Tensile Strength, Ultimate	0.800 - 80.0 MPa	116 - 11600 psi	Average value: 29.0 MPa Grade Count:318
	4.05 - 26.63 MPa	587 - 3862 psi	

Mechanical Properties	Metric	English	Comments
	@ Temperature 70.0 - 100 °C	@ Temperature 158 - 212 °F	Average value: 53.1 MPa Grade Count:1
	45.0 - 45.0 MPa	6530 - 6530 psi	Average value: 53.1 MPa Grade Count:1
	@Temperature 136 - 136 °C	@Temperature 277 - 277 °F	
	45.0 - 45.0 MPa	6530 - 6530 psi	Average value: 53.1 MPa Grade Count:1
	@Time 605000 - 605000 sec	@Time 168 - 168 hour	
	24.0 - 102 MPa	3480 - 14800 psi	Average value: 53.1 MPa Grade Count:3
	@Strain 2.00 - 30.0 %	@Strain 2.00 - 30.0 %	
	24.0 - 102 MPa	3480 - 14800 psi	Average value: 53.1 MPa Grade Count:3
	@Temperature 0.000 - 60.0 °C	@Temperature 32.0 - 140 °F	
Tensile Strength, Yield	0.552 - 900 MPa	80.0 - 131000 psi	Average value: 16.1 MPa Grade Count:244
	2.60 - 4.00 MPa	377 - 580 psi	Average value: 3.43 MPa Grade Count:1
	@Temperature 70.0 - 100 °C	@Temperature 158 - 212 °F	
Elongation at Break	10.0 - 1000 %	10.0 - 1000 %	Average value: 548 % Grade Count:322
	690 - 1080 %	690 - 1080 %	Average value: 758 % Grade Count:1
	@Temperature 70.0 - 100 °C	@Temperature 158 - 212 °F	
	630 - 630 %	630 - 630 %	Average value: 758 % Grade Count:1
	@Temperature 136 - 136 °C	@Temperature 277 - 277 °F	
	630 - 630 %	630 - 630 %	Average value: 758 % Grade Count:1
	@Time 605000 - 605000 sec	@Time 168 - 168 hour	
Elongation at Yield	320 - 850 %	320 - 850 %	Average value: 537 % Grade Count:36
Modulus of Elasticity	0.00260 - 1.90 GPa	0.377 - 276 ksi	Average value: 0.818 GPa Grade Count:8
	0.00310 - 0.0917 GPa	0.450 - 13.3 ksi	Average value: 0.0264 GPa Grade Count:1
	@Temperature -50.0 - - 20.0 °C	@Temperature -58.0 - - 4.00 °F	
Flexural Modulus	0.00383 - 0.830 GPa	0.555 - 120 ksi	Average value: 0.124 GPa Grade Count:19
Resilience	20.0 - 55.0	20.0 - 55.0	Average value: 35.8 Grade Count:28

Mechanical Properties	Metric	English	Comments
Rebound	1.21 - 60.0 %	1.21 - 60.0 %	Average value: 38.6 % Grade Count:23
Izod Impact, Notched	0.640 - 0.850 J/cm @Temperature -40.0 - - 40.0 °C	1.20 - 1.59 ft-lb/in @Temperature -40.0 - - 40.0 °F	Average value: 0.745 J/cm Grade Count:2
Charpy Impact Unnotched	10.0 - 1000 J/cm²	47.6 - 4760 ft-lb/in²	Average value: 13.4 J/cm² Grade Count:9
	7.00 - 16.0 J/cm² @Temperature -30.0 - - 30.0 °C	33.3 - 76.1 ft-lb/in² @Temperature -22.0 - - 22.0 °F	Average value: 10.2 J/cm² Grade Count:9
Charpy Impact, Notched	3.00 - 1000 J/cm²	14.3 - 4760 ft-lb/in²	Average value: 6.73 J/cm² Grade Count:48
	0.300 - 999.9 J/cm² @Temperature -30.0 - - 30.0 °C	1.43 - 4759 ft-lb/in² @Temperature -22.0 - - 22.0 °F	Average value: 3.59 J/cm² Grade Count:48
Tensile Creep Modulus, 1 hour	28.0 - 455 MPa	4060 - 66000 psi	Average value: 220 MPa Grade Count:3
Tensile Creep Modulus, 1000 hours	22.0 - 158 MPa	3190 - 22900 psi	Average value: 95.0 MPa Grade Count:3
Tear Strength	5.43 - 255 kN/m	31.0 - 1450 pli	Average value: 102 kN/m Grade Count:305
Graves Tear Strength	29.8 - 154 kN/m	170 - 880 pli	Average value: 78.2 kN/m Grade Count:5
K Factor (Wear Factor)	30.0 - 80.0	30.0 - 80.0	Average value: 51.8 Grade Count:36
Taber Abrasion, mg/1000 Cycles	5.00 - 146	5.00 - 146	Average value: 31.5 Grade Count:67
Compression Set	10.0 - 58.0 %	10.0 - 58.0 %	Average value: 24.8 % Grade Count:168
	23.0 - 65.0 % @Temperature 70.0 - 70.0 °C	23.0 - 65.0 % @Temperature 158 - 158 °F	Average value: 46.2 % Grade Count:89
	19.0 - 102 % @Temperature 70.0 - 100 °C	19.0 - 102 % @Temperature 158 - 212 °F	Average value: 46.2 % Grade Count:87
	19.0 - 102 % @Time 79200 - 252000 sec	19.0 - 102 % @Time 22.0 - 70.0 hour	Average value: 46.2 % Grade Count:87
Tensile Set	4.00 - 19.0 %	4.00 - 19.0 %	Average value: 12.1 % Grade Count:5

Thermal Properties	Metric	English	Comments
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Thermal Properties	Metric $224 \mu\text{m/m-}^{\circ}\text{C}$	English $24 \mu\text{in/in-}^{\circ}\text{F}$	Comments
			Average value: $106 \mu\text{m/m-}^{\circ}\text{C}$ Grade Count:20
Melting Point	71.0 - 225 $^{\circ}\text{C}$	160 - 437 $^{\circ}\text{F}$	Average value: 155 $^{\circ}\text{C}$ Grade Count:57
Deflection Temperature at 0.46 MPa (66 psi)	51.0 - 170 $^{\circ}\text{C}$	124 - 338 $^{\circ}\text{F}$	Average value: 119 $^{\circ}\text{C}$ Grade Count:13
Deflection Temperature at 1.8 MPa (264 psi)	39.0 - 130 $^{\circ}\text{C}$	102 - 266 $^{\circ}\text{F}$	Average value: 92.7 $^{\circ}\text{C}$ Grade Count:13
Vicat Softening Point	38.0 - 163 $^{\circ}\text{C}$	100 - 325 $^{\circ}\text{F}$	Average value: 94.5 $^{\circ}\text{C}$ Grade Count:63
Glass Transition Temp, Tg	-53.9 - -13.9 $^{\circ}\text{C}$	-65.0 - 7.00 $^{\circ}\text{F}$	Average value: -35.3 $^{\circ}\text{C}$ Grade Count:39
Flammability, UL94	HB - V-2	HB - V-2	Grade Count:6

Optical Properties	Metric	English	Comments
Transmission, Visible	85.0 - 90.0 %	85.0 - 90.0 %	Average value: 89.6 % Grade Count:12

Electrical Properties	Metric	English	Comments
Electrical Resistivity	$4.90\text{e}+10$ - $5.00\text{e}+14$ ohm-cm	$4.90\text{e}+10$ - $5.00\text{e}+14$ ohm-cm	Average value: $6.77\text{e}+13$ ohm-cm Grade Count:8
Surface Resistance	$1.00\text{e}+8$ - $9.00\text{e}+14$ ohm	$1.00\text{e}+8$ - $9.00\text{e}+14$ ohm	Average value: $8.27\text{e}+13$ ohm Grade Count:11
Dielectric Constant	3.90 - 6.70	3.90 - 6.70	Average value: 5.39 Grade Count:8
Dielectric Strength	14.1 - 23.7 kV/mm	358 - 602 kV/in	Average value: 18.6 kV/mm Grade Count:8
Dissipation Factor	0.0111 - 0.0840	0.0111 - 0.0840	Average value: 0.0413 Grade Count:8

Contact Songhan Plastic Technology Co.,Ltd.

Website : www.lookpolymers.com

Email : sales@lookpolymers.com

Tel : +86 021-51131842

Mobile : +86 13061808058

Skype : lookpolymers

Address : United North Road 215,Fengxian District, Shanghai City,China