

## Overview of materials for Polyethersulfone (PES)

Category : Polymer , Thermoplastic , Polyethersulfone (PES)

### Material Notes:

This property data is a summary of similar materials in the MatWeb database for the category "Polyethersulfone". 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-Polyethersulfone-PES.php](http://www.lookpolymers.com/polymer_Overview-of-materials-for-Polyethersulfone-PES.php)

Physical Properties	Metric	English	Comments
Density	1.21 - 2.17 g/cc	0.0437 - 0.0784 lb/in <sup>3</sup>	Average value: 1.50 g/cc Grade Count:256
Filler Content	5.00 - 40.0 %	5.00 - 40.0 %	Average value: 20.6 % Grade Count:62
Water Absorption	0.100 - 2.20 %	0.100 - 2.20 %	Average value: 0.539 % Grade Count:141
Moisture Absorption at Equilibrium	0.0200 - 1.00 %	0.0200 - 1.00 %	Average value: 0.529 % Grade Count:48
Additive Loading	10.0 - 40.0 %	10.0 - 40.0 %	Average value: 27.8 % Grade Count:9
Viscosity	80.0 - 1450 cP	80.0 - 1450 cP	Average value: 632 cP Grade Count:10
Viscosity Test	48.0 - 82.0 cm <sup>3</sup> /g	48.0 - 82.0 cm <sup>3</sup> /g	Average value: 60.0 cm <sup>3</sup> /g Grade Count:7
Linear Mold Shrinkage	0.000100 - 0.0100 cm/cm	0.000100 - 0.0100 in/in	Average value: 0.00414 cm/cm Grade Count:227
Linear Mold Shrinkage, Transverse	0.00250 - 0.0300 cm/cm	0.00250 - 0.0300 in/in	Average value: 0.00686 cm/cm Grade Count:60
Melt Flow	4.50 - 150 g/10 min	4.50 - 150 g/10 min	Average value: 39.0 g/10 min Grade Count:40

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell M	98.0	98.0	Average value: 98.0 Grade Count:3
Hardness, Rockwell R	98.0 - 127	98.0 - 127	Average value: 121 Grade Count:40
Ball Indentation Hardness	154 - 224 MPa	22300 - 32500 psi	Average value: 174 MPa Grade Count:12
Tensile Strength, Ultimate	25.0 - 325 MPa	3630 - 47100 psi	Average value: 114 MPa Grade Count:222
	10.0 - 135 MPa	1450 - 19600 psi	Average value: 68.8 MPa Grade

Mechanical Properties	@Temperature 60.0 - 150 °C Metric	@Temperature 140 - 302 °F English	Count:4 Comments
	31.0 - 43.0 MPa	4500 - 6240 psi	Average value: 68.8 MPa Grade Count:1
	@Temperature 180 - 180 °C	@Temperature 356 - 356 °F	
	31.0 - 43.0 MPa	4500 - 6240 psi	Average value: 68.8 MPa Grade Count:1
	@# of Cycles 100000 - 1.00e+7	@# of Cycles 100000 - 1.00e+7	
	23.0 - 80.0 MPa	3340 - 11600 psi	Average value: 68.8 MPa Grade Count:2
	@Temperature 160 - 160 °C	@Temperature 320 - 320 °F	
	23.0 - 80.0 MPa	3340 - 11600 psi	Average value: 68.8 MPa Grade Count:2
	@Strain 0.600 - 3.00 %	@Strain 0.600 - 3.00 %	
Tensile Strength, Yield	60.0 - 221 MPa	8700 - 32000 psi	Average value: 107 MPa Grade Count:55
	50.0 - 75.0 MPa	7250 - 10900 psi	Average value: 63.3 MPa Grade Count:1
	@Temperature 60.0 - 140 °C	@Temperature 140 - 284 °F	
Elongation at Break	0.450 - 100 %	0.450 - 100 %	Average value: 5.75 % Grade Count:203
	2.10 - 20.0 %	2.10 - 20.0 %	Average value: 28.3 % Grade Count:4
	@Temperature 60.0 - 150 °C	@Temperature 140 - 302 °F	
Elongation at Yield	0.189 - 8.00 %	0.189 - 8.00 %	Average value: 3.03 % Grade Count:67
	2.50 - 5.50 %	2.50 - 5.50 %	Average value: 3.85 % Grade Count:3
	@Temperature 60.0 - 150 °C	@Temperature 140 - 302 °F	
Modulus of Elasticity	2.00 - 36.6 GPa	290 - 5300 ksi	Average value: 7.77 GPa Grade Count:226
	2.25 - 10.0 GPa	326 - 1450 ksi	Average value: 5.59 GPa Grade Count:7
	@Temperature 60.0 - 160 °C	@Temperature 140 - 320 °F	
Flexural Yield Strength	2.60 - 310 MPa	377 - 45000 psi	Average value: 170 MPa Grade Count:226
Flexural Modulus	2.00 - 24.1 GPa	290 - 3500 ksi	Average value: 7.17 GPa Grade Count:230
Compressive Yield Strength	100 - 241 MPa	14500 - 35000 psi	Average value: 133 MPa Grade Count:25
	5.00 - 12.0 MPa	725 - 1740 psi	

Mechanical Properties	Metric @# of Cycles 10000 - 1.00e+7	English @# of Cycles 10000 - 1.00e+7	Comments Average value: 8.25 MPa Grade Count:1
	5.00 - 12.0 MPa	725 - 1740 psi	Average value: 8.25 MPa Grade Count:1
	@Temperature 180 - 180 °C	@Temperature 356 - 356 °F	
Shear Modulus	0.200 - 1.00 GPa	29.0 - 145 ksi	Average value: 0.762 GPa Grade Count:7
	@Temperature 50.0 - 225 °C	@Temperature 122 - 437 °F	
Izod Impact, Notched	0.214 - 2.14 J/cm	0.400 - 4.00 ft-lb/in	Average value: 0.673 J/cm Grade Count:190
Izod Impact, Unnotched	1.87 - 5340 J/cm	3.50 - 10000 ft-lb/in	Average value: 6.03 J/cm Grade Count:136
Izod Impact, Notched (ISO)	4.00 - 15.7 kJ/m <sup>2</sup>	1.90 - 7.49 ft-lb/in <sup>2</sup>	Average value: 6.94 kJ/m <sup>2</sup> Grade Count:67
	5.00 - 14.7 kJ/m <sup>2</sup>	2.38 - 6.99 ft-lb/in <sup>2</sup>	Average value: 8.02 kJ/m <sup>2</sup> Grade Count:8
	@Temperature -30.0 - 120 °C	@Temperature -22.0 - 248 °F	
Izod Impact, Unnotched (ISO)	6.50 kJ/m <sup>2</sup> - NB	3.09 ft-lb/in <sup>2</sup> - NB	Average value: 38.8 kJ/m <sup>2</sup> Grade Count:57
	42.0 - 59.0 kJ/m <sup>2</sup>	20.0 - 28.1 ft-lb/in <sup>2</sup>	Average value: 52.7 kJ/m <sup>2</sup> Grade Count:1
	@Temperature -25.0 - 120 °C	@Temperature -13.0 - 248 °F	
Charpy Impact Unnotched	1.90 J/cm <sup>2</sup> - NB	9.04 ft-lb/in <sup>2</sup> - NB	Average value: 4.44 J/cm <sup>2</sup> Grade Count:32
	4.50 J/cm <sup>2</sup> - NB	21.4 ft-lb/in <sup>2</sup> - NB	Average value: 4.50 J/cm <sup>2</sup> Grade Count:10
	@Temperature -30.0 - - 20.0 °C	@Temperature -22.0 - - 4.00 °F	
Charpy Impact, Notched	0.350 - 1.00 J/cm <sup>2</sup>	1.67 - 4.76 ft-lb/in <sup>2</sup>	Average value: 0.676 J/cm <sup>2</sup> Grade Count:31
	0.250 - 0.800 J/cm <sup>2</sup>	1.19 - 3.81 ft-lb/in <sup>2</sup>	Average value: 0.636 J/cm <sup>2</sup> Grade Count:11
	@Temperature -30.0 - - 20.0 °C	@Temperature -22.0 - - 4.00 °F	
Dart Drop, Total Energy	4.00 - 19.0 J	2.95 - 14.0 ft-lb	Average value: 11.8 J Grade Count:26
Falling Dart Impact	4.20 - 12.8 J	3.10 - 9.44 ft-lb	Average value: 9.27 J Grade Count:4
Coefficient of Friction	0.200 - 0.520	0.200 - 0.520	Average value: 0.363 Grade Count:19
Coefficient of Friction, Static	0.120 - 0.630	0.120 - 0.630	Average value: 0.329 Grade Count:19
Tensile Creep Modulus, 1000 hours	2700 - 8300 MPa	392000 - 1.20e+6 psi	Average value: 3760 MPa Grade Count:8

Mechanical Properties	Metric	English	Comments
Wear Factor	$6.65 - 342 \times 10^{-8}$ mm <sup>3</sup> /N-m	$4.02 - 170 \times 10^{-10}$ mm <sup>3</sup> /ft-lb-hr	Average value: $105 \times 10^{-8}$ mm <sup>3</sup> /N-m Grade Count:13

Electrical Properties	Metric	English	Comments
Electrical Resistivity	6.60 - 1.00e+17 ohm-cm	6.60 - 1.00e+17 ohm-cm	Average value: 9.88e+15 ohm-cm Grade Count:124
Surface Resistance	2.00 - 1.00e+15 ohm	2.00 - 1.00e+15 ohm	Average value: 5.79e+13 ohm Grade Count:39
Insulation Resistance	100000 - 1.00e+12 ohm	100000 - 1.00e+12 ohm	Average value: 6.88e+11 ohm Grade Count:16
Static Decay	1.00 - 2.00 sec	1.00 - 2.00 sec	Average value: 1.80 sec Grade Count:10
Dielectric Constant	3.10 - 4.30	3.10 - 4.30	Average value: 3.76 Grade Count:55

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