

## Overview of materials for Polystyrene, Molded, Unreinforced

Category : Polymer , Thermoplastic , Polystyrene (PS) , Polystyrene, Molded, Unreinforced

### Material Notes:

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

Physical Properties	Metric	English	Comments
Density	0.0130 - 1.18 g/cc	0.000470 - 0.0426 lb/in <sup>3</sup>	Average value: 0.974 g/cc Grade Count:117
Water Absorption	0.000 - 0.150 %	0.000 - 0.150 %	Average value: 0.0912 % Grade Count:33
Moisture Absorption at Equilibrium	0.100 %	0.100 %	Average value: 0.100 % Grade Count:18
Particle Size	2000 - 4000 µm	2000 - 4000 µm	Average value: 3000 µm Grade Count:4
Linear Mold Shrinkage	0.00200 - 0.00800 cm/cm	0.00200 - 0.00800 in/in	Average value: 0.00503 cm/cm Grade Count:58
Melt Flow	1.20 - 100 g/10 min	1.20 - 100 g/10 min	Average value: 9.36 g/10 min Grade Count:116

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell L	48.0 - 82.0	48.0 - 82.0	Average value: 66.5 Grade Count:12
Hardness, Rockwell M	35.0 - 80.0	35.0 - 80.0	Average value: 72.7 Grade Count:19
Hardness, Rockwell R	71.0 - 120	71.0 - 120	Average value: 109 Grade Count:11
Ball Indentation Hardness	66.0 - 150 MPa	9570 - 21800 psi	Average value: 138 MPa Grade Count:13
Tensile Strength, Ultimate	17.9 - 60.7 MPa	2600 - 8800 psi	Average value: 40.2 MPa Grade Count:86
Tensile Strength, Yield	14.5 - 59.0 MPa	2100 - 8560 psi	Average value: 33.1 MPa Grade Count:48
Elongation at Break	1.00 - 70.0 %	1.00 - 70.0 %	Average value: 13.7 % Grade Count:104
Modulus of Elasticity	0.303 - 3.35 GPa	43.9 - 486 ksi	Average value: 2.76 GPa Grade Count:60
	28.0 - 106 MPa	4060 - 15400 psi	Average value: 72.3 MPa Grade

Flexural Yield Strength Mechanical Properties	Metric	English	Count:72 Comments
Flexural Modulus	0.894 - 3.54 GPa	130 - 513 ksi	Average value: 2.61 GPa Grade Count:69
Poissons Ratio	0.220	0.220	Average value: 0.220 Grade Count:3
Shear Modulus	0.750 - 1.45 GPa	109 - 210 ksi	Average value: 1.27 GPa Grade Count:9
Izod Impact, Notched	0.107 - 2.14 J/cm	0.200 - 4.00 ft-lb/in	Average value: 0.498 J/cm Grade Count:65
	0.350 - 0.800 J/cm @Temperature -40.0 - 0.000 °C	0.656 - 1.50 ft-lb/in @Temperature -40.0 - 32.0 °F	Average value: 0.531 J/cm Grade Count:6
Izod Impact, Notched (ISO)	1.70 - 10.0 kJ/m <sup>2</sup>	0.809 - 4.76 ft-lb/in <sup>2</sup>	Average value: 3.22 kJ/m <sup>2</sup> Grade Count:13
	2.00 - 2.00 kJ/m <sup>2</sup> @Temperature -30.0 - -30.0 °C	0.952 - 0.952 ft-lb/in <sup>2</sup> @Temperature -22.0 - -22.0 °F	Average value: 2.58 kJ/m <sup>2</sup> Grade Count:1
	1.50 - 8.00 kJ/m <sup>2</sup> @Temperature -30.0 - -30.0 °C	0.714 - 3.81 ft-lb/in <sup>2</sup> @Temperature -22.0 - -22.0 °F	Average value: 2.58 kJ/m <sup>2</sup> Grade Count:6
	1.50 - 8.00 kJ/m <sup>2</sup> @Thickness 4.00 - 4.00 mm	0.714 - 3.81 ft-lb/in <sup>2</sup> @Thickness 0.157 - 0.157 in	Average value: 2.58 kJ/m <sup>2</sup> Grade Count:6
Izod Impact, Unnotched (ISO)	5.00 - 10.0 kJ/m <sup>2</sup>	2.38 - 4.76 ft-lb/in <sup>2</sup>	Average value: 7.57 kJ/m <sup>2</sup> Grade Count:10
Charpy Impact Unnotched	0.700 - 1000 J/cm <sup>2</sup>	3.33 - 4760 ft-lb/in <sup>2</sup>	Average value: 2.38 J/cm <sup>2</sup> Grade Count:25
	<= 16.0 J/cm <sup>2</sup> @Temperature -30.0 - -30.0 °C	<= 76.1 ft-lb/in <sup>2</sup> @Temperature -22.0 - -22.0 °F	Average value: 14.0 J/cm <sup>2</sup> Grade Count:2
Charpy Impact, Notched	0.200 - 1.60 J/cm <sup>2</sup>	0.952 - 7.61 ft-lb/in <sup>2</sup>	Average value: 0.396 J/cm <sup>2</sup> Grade Count:23
Tensile Creep Modulus, 1 hour	3100 - 3300 MPa	450000 - 479000 psi	Average value: 3230 MPa Grade Count:6
Tensile Creep Modulus, 1000 hours	2200 - 2600 MPa	319000 - 377000 psi	Average value: 2450 MPa Grade Count:8

Thermal Properties	Metric	English	Comments
CTE, linear	50.0 - 90.0 µm/m-°C	27.8 - 50.0 µin/in-°F	Average value: 76.0 µm/m-°C Grade Count:25
	0.170 W/m-K	1.18 BTU-in/hr-ft <sup>2</sup> -°F	Average value: 0.170 W/m-K Grade

Thermal Properties	Metric	English	Count:10 Comments
Deflection Temperature at 0.46 MPa (66 psi)	70.0 - 108 °C	158 - 226 °F	Average value: 87.8 °C Grade Count:31
Deflection Temperature at 1.8 MPa (264 psi)	62.0 - 98.0 °C	144 - 208 °F	Average value: 81.4 °C Grade Count:93
Vicat Softening Point	75.0 - 108 °C	167 - 226 °F	Average value: 95.5 °C Grade Count:98
	88.0 - 88.0 °C	190 - 190 °F	
	@Temperature 50.0 - 50.0 °C	@Temperature 122 - 122 °F	Average value: 88.0 °C Grade Count:1
Glass Transition Temp, Tg	83.0 - 100 °C	181 - 212 °F	Average value: 90.5 °C Grade Count:6
Flammability, UL94	HB - V-0	HB - V-0	Grade Count:77
Flame Spread	26.0 - 35.0 mm/min	1.02 - 1.38 in/min	Average value: 27.9 mm/min Grade Count:8
Oxygen Index	18.0 - 25.0 %	18.0 - 25.0 %	Average value: 19.6 % Grade Count:8
Glow Wire Test	650 - 850 °C	1200 - 1560 °F	Average value: 683 °C Grade Count:9

Optical Properties	Metric	English	Comments
Refractive Index	1.56 - 1.59	1.56 - 1.59	Average value: 1.59 Grade Count:8
Haze	0.270 - 88.0 %	0.270 - 88.0 %	Average value: 22.6 % Grade Count:4
Transmission, Visible	1.00 - 91.4 %	1.00 - 91.4 %	Average value: 84.7 % Grade Count:20

Electrical Properties	Metric	English	Comments
Electrical Resistivity	1e+05 - 1.00e+18 ohm-cm	1e+05 - 1.00e+18 ohm-cm	Average value: 3.51e+16 ohm-cm Grade Count:37
Surface Resistance	10000 - 1.00e+16 ohm	10000 - 1.00e+16 ohm	Average value: 5.36e+14 ohm Grade Count:41
Static Decay	0.0100 - 2.00 sec	0.0100 - 2.00 sec	Average value: 0.543 sec Grade Count:5
Dielectric Constant	2.00 - 2.70	2.00 - 2.70	Average value: 2.48 Grade Count:33
Dielectric Strength	19.7 - 160 kV/mm	500 - 4060 kV/in	Average value: 79.1 kV/mm Grade Count:31
Dissipation Factor	0.0000500 - 0.00200	0.0000500 - 0.00200	Average value: 0.000219 Grade Count:18
Arc Resistance	120 - 180 sec	120 - 180 sec	Average value: 150 sec Grade Count:3
Comparative Tracking Index	250 - 600 V	250 - 600 V	Average value: 422 V Grade Count:23

Hot Wire Ignition, HWI Electrical Properties	15.0 - 30.0 sec Metric	15.0 - 30.0 sec English	Average value: 22.5 sec Grade Count:4
High Amp Arc Ignition, HAI	120 arcs	120 arcs	Average value: 120 arcs Grade Count:4
High Voltage Arc-Tracking Rate, HVTR	10.0 - 25.4 mm/min	0.394 - 1.00 in/min	Average value: 15.8 mm/min Grade Count:4

Processing Properties	Metric	English	Comments
Processing Temperature	190 - 240 °C	374 - 464 °F	Average value: 218 °C Grade Count:4

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