

## Overview of materials for Polystyrene, Extrusion Grade

Category : Polymer , Thermoplastic , Polystyrene (PS) , Polystyrene, Extrusion Grade

### Material Notes:

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

Physical Properties	Metric	English	Comments
Density	0.0280 - 1.10 g/cc	0.00101 - 0.0397 lb/in <sup>3</sup>	Average value: 0.876 g/cc Grade Count:36
Water Absorption	0.0300 - 5.00 %	0.0300 - 5.00 %	Average value: 1.26 % Grade Count:11
Moisture Absorption at Equilibrium	0.100 %	0.100 %	Average value: 0.100 % Grade Count:4
Water Vapor Transmission	50.0 - 200 g/m <sup>2</sup> /day	3.22 - 12.9 g/100 in <sup>2</sup> /day	Average value: 126 g/m <sup>2</sup> /day Grade Count:6
Linear Mold Shrinkage	0.00300 - 0.00700 cm/cm	0.00300 - 0.00700 in/in	Average value: 0.00518 cm/cm Grade Count:20
Melt Flow	1.60 - 23.0 g/10 min	1.60 - 23.0 g/10 min	Average value: 5.26 g/10 min Grade Count:27

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell L	63.0 - 93.0	63.0 - 93.0	Average value: 82.7 Grade Count:3
Hardness, Rockwell M	40.0 - 78.0	40.0 - 78.0	Average value: 68.3 Grade Count:14
Ball Indentation Hardness	76.0 - 150 MPa	11000 - 21800 psi	Average value: 125 MPa Grade Count:3
Tensile Strength, Ultimate	0.150 - 51.0 MPa	21.8 - 7400 psi	Average value: 27.7 MPa Grade Count:22
Tensile Strength, Yield	20.0 - 52.4 MPa	2900 - 7600 psi	Average value: 37.8 MPa Grade Count:22
Elongation at Break	1.00 - 70.0 %	1.00 - 70.0 %	Average value: 20.0 % Grade Count:26
Elongation at Yield	2.00 - 50.0 %	2.00 - 50.0 %	Average value: 18.1 % Grade Count:3
Creep Strength	0.0600 - 0.300 MPa	8.70 - 43.5 psi	Average value: 0.156 MPa Grade Count:6
Modulus of Elasticity	0.00650 - 3.40 GPa	0.943 - 493 ksi	Average value: 1.65 GPa Grade Count:22

Flexural Yield Strength Mechanical Properties	0.500 - 107 MPa Metric	72.9 - 15500 psi English	Average value: 60.6 MPa Grade Count:29
Flexural Modulus	1.40 - 3.63 GPa	203 - 526 ksi	Average value: 2.67 GPa Grade Count:29
Compressive Yield Strength	0.130 - 0.700 MPa	18.9 - 102 psi	Average value: 0.294 MPa Grade Count:6
Compressive Modulus	0.00500 - 0.0400 GPa	0.725 - 5.80 ksi	Average value: 0.0177 GPa Grade Count:6
Shear Strength	0.200 - 0.300 MPa	29.0 - 43.5 psi	Average value: 0.290 MPa Grade Count:5
Adhesive Bond Strength	0.100 - 0.400 MPa	14.5 - 58.0 psi	Average value: 0.165 MPa Grade Count:5
Izod Impact, Notched	0.160 - 1.40 J/cm	0.300 - 2.62 ft-lb/in	Average value: 0.644 J/cm Grade Count:24
	0.42712 - 0.800 J/cm @Temperature -17.8 - 0.000 °C	0.80017 - 1.50 ft-lb/in @Temperature 0.000 - 32.0 °F	Average value: 0.614 J/cm Grade Count:2
Charpy Impact Unnotched	0.600 J/cm <sup>2</sup> - NB	2.86 ft-lb/in <sup>2</sup> - NB	Average value: 1.30 J/cm <sup>2</sup> Grade Count:4

Thermal Properties	Metric	English	Comments
CTE, linear	8.00 - 81.0 µm/m-°C	4.44 - 45.0 µin/in-°F	Average value: 52.4 µm/m-°C Grade Count:18
CTE, linear, Transverse to Flow	6.00 µm/m-°C	3.33 µin/in-°F	Average value: 6.00 µm/m-°C Grade Count:6
Thermal Conductivity	0.0300 - 0.180 W/m-K	0.208 - 1.25 BTU-in/hr- ft <sup>2</sup> -°F	Average value: 0.0389 W/m-K Grade Count:9
	0.0240 - 0.0370 W/m-K @Temperature -80.0 - 50.0 °C	0.167 - 0.257 BTU- in/hr-ft <sup>2</sup> -°F @Temperature -112 - 122 °F	Average value: 0.0312 W/m-K Grade Count:5
	0.0240 - 0.0370 W/m-K @Temperature -80.0 - 50.0 °C	0.167 - 0.257 BTU- in/hr-ft <sup>2</sup> -°F @Temperature -112 - 122 °F	Average value: 0.0312 W/m-K Grade Count:1
	0.0240 - 0.0370 W/m-K @Thickness 50.0 - 50.0 mm	0.167 - 0.257 BTU- in/hr-ft <sup>2</sup> -°F @Thickness 1.97 - 1.97 in	Average value: 0.0312 W/m-K Grade Count:1
Maximum Service Temperature, Air	70.0 - 80.0 °C	158 - 176 °F	Average value: 75.6 °C Grade Count:8
Deflection Temperature at 0.46 MPa (66 psi)	84.0 - 100 °C	183 - 212 °F	Average value: 94.7 °C Grade Count:3

Thermal Properties	Metric	English	Comments
Deflection Temperature at 1.8 MPa (204 psi)	85.0 °C	13 °F	Average value: 82.1 °C Grade Count:19
Vicat Softening Point	76.0 - 109 °C	169 - 228 °F	Average value: 99.0 °C Grade Count:28
Flammability, UL94	HB	HB	Grade Count:22

Optical Properties	Metric	English	Comments
Refractive Index	1.59 - 1.59	1.59 - 1.59	Average value: 1.59 Grade Count:10
Transmission, Visible	85.0 - 90.0 %	85.0 - 90.0 %	Average value: 88.4 % Grade Count:11

Electrical Properties	Metric	English	Comments
Electrical Resistivity	1.00e+14 - 1.00e+18 ohm-cm	1.00e+14 - 1.00e+18 ohm-cm	Average value: 1.33e+17 ohm-cm Grade Count:8
Surface Resistance	1e+05 - 1.00e+14 ohm	1e+05 - 1.00e+14 ohm	Average value: 2.10e+13 ohm Grade Count:6
Dielectric Constant	2.50	2.50	Average value: 2.50 Grade Count:9
Dielectric Strength	17.7 - 60.0 kV/mm	450 - 1520 kV/in	Average value: 22.6 kV/mm Grade Count:13

Processing Properties	Metric	English	Comments
Melt Temperature	180 - 280 °C	356 - 536 °F	Average value: 231 °C Grade Count:5
Mold Temperature	10.0 - 60.0 °C	50.0 - 140 °F	Average value: 36.3 °C Grade Count:4

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