

## Overview of materials for Nylon 6, Unreinforced

Category : Polymer , Thermoplastic , Nylon , Nylon 6 , Nylon 6, Unreinforced

### Material Notes:

This property data is a summary of similar materials in the MatWeb database for the category "Nylon 6, Unreinforced". 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-Nylon-6-Unreinforced.php](http://www.lookpolymers.com/polymer_Overview-of-materials-for-Nylon-6-Unreinforced.php)

Physical Properties	Metric	English	Comments
Density	0.970 - 4.50 g/cc	0.0350 - 0.163 lb/in <sup>3</sup>	Average value: 1.13 g/cc Grade Count:526
	0.980 - 0.980 g/cc @Temperature 285 - 285 °C	0.0354 - 0.0354 lb/in <sup>3</sup> @Temperature 545 - 545 °F	Average value: 0.980 g/cc Grade Count:1
Apparent Bulk Density	0.425 - 0.800 g/cc	0.0154 - 0.0289 lb/in <sup>3</sup>	Average value: 0.650 g/cc Grade Count:12
Water Absorption	0.300 - 11.0 %	0.300 - 11.0 %	Average value: 4.91 % Grade Count:285
Moisture Absorption at Equilibrium	0.0400 - 9.50 %	0.0400 - 9.50 %	Average value: 2.79 % Grade Count:221
Water Absorption at Saturation	6.50 - 10.0 %	6.50 - 10.0 %	Average value: 9.00 % Grade Count:49
Oxygen Transmission Rate	40.3 cc/m <sup>2</sup> /day	2.60 cc/100 in <sup>2</sup> /day	Average value: 40.3 cc/m <sup>2</sup> /day Grade Count:10
Nitrogen Transmission	14.0 cc-mm/m <sup>2</sup> -24hr-atm	35.6 cc-mil/100 in <sup>2</sup> -24hr-atm	Average value: 14.0 cc-mm/m <sup>2</sup> -24hr-atm Grade Count:10
Carbon Dioxide Transmission	72.8 cc-mm/m <sup>2</sup> -24hr-atm	185 cc-mil/100 in <sup>2</sup> -24hr-atm	Average value: 72.8 cc-mm/m <sup>2</sup> -24hr-atm Grade Count:10
Viscosity	2.60 - 50.0 cP	2.60 - 50.0 cP	Average value: 8.83 cP Grade Count:17
	150000 - 350000 cP @Temperature 230 - 290 °C	150000 - 350000 cP @Temperature 446 - 554 °F	Average value: 213000 cP Grade Count:1
	150000 - 350000 cP @Shear Rate 0.100 - 1000 1/s	150000 - 350000 cP @Shear Rate 0.100 - 1000 1/s	Average value: 213000 cP Grade Count:1
Viscosity Test	118 - 450 cm <sup>3</sup> /g	118 - 450 cm <sup>3</sup> /g	Average value: 190 cm <sup>3</sup> /g Grade Count:44

Maximum Moisture Content Physical Properties	0.100 Metric	0.100 English	Average value: 0.100 Grade Count:22 Comments
Linear Mold Shrinkage	0.00130 - 0.0508 cm/cm	0.00130 - 0.0508 in/in	Average value: 0.0137 cm/cm Grade Count:296
Linear Mold Shrinkage, Transverse	0.00110 - 0.0300 cm/cm	0.00110 - 0.0300 in/in	Average value: 0.0132 cm/cm Grade Count:94
Melt Flow	1.00 - 198 g/10 min	1.00 - 198 g/10 min	Average value: 59.2 g/10 min Grade Count:59
Spiral Flow	55.0 - 65.0 cm	21.7 - 25.6 in	Average value: 60.7 cm Grade Count:6

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell M	82.0 - 88.0	82.0 - 88.0	Average value: 85.0 Grade Count:5
Hardness, Rockwell R	78.0 - 120	78.0 - 120	Average value: 113 Grade Count:92
Hardness, Shore D	61.0 - 85.0	61.0 - 85.0	Average value: 69.7 Grade Count:22
Ball Indentation Hardness	50.0 - 190 MPa	7250 - 27600 psi	Average value: 119 MPa Grade Count:32
Tensile Strength, Ultimate	20.0 - 110 MPa	2900 - 16000 psi	Average value: 67.7 MPa Grade Count:184
	29.0 - 80.0 MPa	4210 - 11600 psi	Average value: 45.0 MPa Grade Count:4
	@Temperature -40.0 - 120 °C	@Temperature -40.0 - 248 °F	
	10.0 - 100 MPa	1450 - 14500 psi	Average value: 45.0 MPa Grade Count:2
	@Temperature -20.0 - 100 °C	@Temperature -4.00 - 212 °F	
	10.0 - 100 MPa	1450 - 14500 psi	Average value: 45.0 MPa Grade Count:2
	@Strain 1.00 - 8.00 %	@Strain 1.00 - 8.00 %	
Tensile Strength, Yield	3.45 - 100 MPa	500 - 14500 psi	Average value: 63.2 MPa Grade Count:310
	20.0 - 142 MPa	2900 - 20600 psi	Average value: 74.0 MPa Grade Count:16
	@Temperature -40.0 - 121 °C	@Temperature -40.0 - 250 °F	
Elongation at Break	0.400 - 500 %	0.400 - 500 %	Average value: 76.9 % Grade Count:405
	2.50 - 2.50 %	2.50 - 2.50 %	Average value: 2.50 % Grade Count:1
	@Temperature -40.0 - - 40.0 °C	@Temperature -40.0 - - 40.0 °F	
Elongation at Yield	3.00 - 140 %	3.00 - 140 %	Average value: 13.9 % Grade Count:178

Mechanical Properties	3.00 - 42.0 %	3.00 - 42.0 %	Comments Average value: 34.3 % Grade Count:5
	Metric	English	
	@Temperature -40.0 - 121 °C	@Temperature -40.0 - 250 °F	
Modulus of Elasticity	0.350 - 13.0 GPa	50.8 - 1890 ksi	Average value: 2.29 GPa Grade Count:251
	0.360 - 3.75 GPa	52.2 - 544 ksi	Average value: 1.69 GPa Grade Count:4
	@Temperature -40.0 - 120 °C	@Temperature -40.0 - 248 °F	
Flexural Yield Strength	16.0 - 200 MPa	2320 - 29000 psi	Average value: 82.1 MPa Grade Count:285
	8.00 - 183 MPa	1160 - 26500 psi	Average value: 86.7 MPa Grade Count:16
	@Temperature -40.0 - 250 °C	@Temperature -40.0 - 482 °F	
Flexural Modulus	0.100 - 9.50 GPa	14.5 - 1380 ksi	Average value: 2.15 GPa Grade Count:327
	0.260 - 3.90 GPa	37.7 - 566 ksi	Average value: 1.29 GPa Grade Count:14
	@Temperature -40.0 - 121 °C	@Temperature -40.0 - 250 °F	
Compressive Yield Strength	6.00 - 96.5 MPa	870 - 14000 psi	Average value: 48.0 MPa Grade Count:7
Poissons Ratio	0.350 - 0.450	0.350 - 0.450	Average value: 0.372 Grade Count:5
Izod Impact, Notched	0.370 J/cm - NB	0.693 ft-lb/in - NB	Average value: 1.42 J/cm Grade Count:206
	0.210 - 2.10 J/cm	0.393 - 3.93 ft-lb/in	Average value: 0.784 J/cm Grade Count:19
	@Temperature -40.0 - - 20.0 °C	@Temperature -40.0 - - 4.00 °F	
	0.534 - 2.54973 J/cm	1.00 - 4.77669 ft-lb/in	Average value: 0.784 J/cm Grade Count:4
	@Temperature -40.0 - - 30.0 °C	@Temperature -40.0 - - 22.0 °F	
	0.534 - 2.54973 J/cm	1.00 - 4.77669 ft-lb/in	Average value: 0.784 J/cm Grade Count:4
	@Thickness 1.57 - 6.40 mm	@Thickness 0.0618 - 0.252 in	
Izod Impact, Unnotched	0.587 J/cm - NB	1.10 ft-lb/in - NB	Average value: 7.66 J/cm Grade Count:8
Izod Impact, Notched (ISO)	3.50 kJ/m <sup>2</sup> - NB	1.67 ft-lb/in <sup>2</sup> - NB	Average value: 30.8 kJ/m <sup>2</sup> Grade Count:73
	3.00 kJ/m <sup>2</sup> - NB	1.43 ft-lb/in <sup>2</sup> - NB	Average value: 12.4 kJ/m <sup>2</sup> Grade Count:20
	@Temperature -40.0 - - 20.0 °C	@Temperature -40.0 - - 4.00 °F	

<b>Izod Impact Unnotched (ISO) Mechanical Properties</b>	<b>35.0 kJ/m<sup>2</sup> - NB Metric</b>	<b>16.7 ft-lb/in<sup>2</sup> - NB English</b>	<b>Average value: 61.8 kJ/m<sup>2</sup> Grade Count:5</b>
	200 kJ/m <sup>2</sup> - NB  @Temperature -30.0 - - 30.0 °C	95.2 ft-lb/in <sup>2</sup> - NB  @Temperature -22.0 - - 22.0 °F	Average value: 250 kJ/m <sup>2</sup> Grade Count:5
<b>Charpy Impact Unnotched</b>	<b>0.800 J/cm<sup>2</sup> - NB</b>	<b>3.81 ft-lb/in<sup>2</sup> - NB</b>	<b>Average value: 10.6 J/cm<sup>2</sup> Grade Count:198</b>
	1.60 J/cm <sup>2</sup> - NB  @Temperature -40.0 - - 20.0 °C	7.61 ft-lb/in <sup>2</sup> - NB  @Temperature -40.0 - - 4.00 °F	Average value: 11.0 J/cm <sup>2</sup> Grade Count:102
<b>Charpy Impact, Notched</b>	<b>0.110 J/cm<sup>2</sup> - NB</b>	<b>0.524 ft-lb/in<sup>2</sup> - NB</b>	<b>Average value: 2.47 J/cm<sup>2</sup> Grade Count:211</b>
	0.150 J/cm <sup>2</sup> - NB  @Temperature -40.0 - - 20.0 °C	0.714 ft-lb/in <sup>2</sup> - NB  @Temperature -40.0 - - 4.00 °F	Average value: 0.997 J/cm <sup>2</sup> Grade Count:99
<b>Gardner Impact</b>	<b>36.2 J</b>	<b>26.7 ft-lb</b>	<b>Average value: 36.2 J Grade Count:5</b>
<b>Dart Drop, Total Energy</b>	<b>67.8 - 285 J</b>	<b>50.0 - 210 ft-lb</b>	<b>Average value: 204 J Grade Count:4</b>

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