

## Overview of materials for Polyimide, Thermoset Film

Category : Polymer , Thermoset , Polyimide, TS , Polyimide, Thermoset Film

### Material Notes:

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

Physical Properties	Metric	English	Comments
Density	1.40 - 2.08 g/cc	0.0506 - 0.0751 lb/in <sup>3</sup>	Average value: 1.47 g/cc Grade Count:43
Water Absorption	0.200 - 3.00 %	0.200 - 3.00 %	Average value: 2.53 % Grade Count:35
Moisture Absorption at Equilibrium	0.400 - 1.80 %	0.400 - 1.80 %	Average value: 1.52 % Grade Count:14
Water Absorption at Saturation	1.20 - 2.50 %	1.20 - 2.50 %	Average value: 1.80 % Grade Count:3
Water Vapor Transmission	1.70 - 17.5 g/m <sup>2</sup> /day	0.109 - 1.13 g/100 in <sup>2</sup> /day	Average value: 5.41 g/m <sup>2</sup> /day Grade Count:9
Oxygen Transmission	9.90 cc-mm/m <sup>2</sup> -24hr-atm	25.1 cc-mil/100 in <sup>2</sup> -24hr-atm	Average value: 9.90 cc-mm/m <sup>2</sup> -24hr-atm Grade Count:5
Thickness	22.0 - 187 microns	0.866 - 7.36 mil	Average value: 71.1 microns Grade Count:21

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	19.0 - 281 MPa	2760 - 40800 psi	Average value: 106 MPa Grade Count:13
Film Tensile Strength at Yield, MD	49.0 - 255 MPa	7110 - 37000 psi	Average value: 123 MPa Grade Count:27
	36.0 - 43.0 MPa @Temperature 200 - 200 °C	5220 - 6240 psi @Temperature 392 - 392 °F	Average value: 40.3 MPa Grade Count:3
Film Tensile Strength at Yield, TD	100 - 160 MPa	14500 - 23200 psi	Average value: 130 MPa Grade Count:17
Tensile Strength, Yield	73.3 - 160 MPa	10600 - 23200 psi	Average value: 128 MPa Grade Count:4
Film Elongation at Break, MD	10.0 - 85.0 %	10.0 - 85.0 %	Average value: 67.3 % Grade Count:38
Film Elongation at Yield, MD	40.0 - 50.0 %	40.0 - 50.0 %	Average value: 45.4 % Grade Count:14

Film Elongation at Yield, TD Mechanical Properties	45.0 - 55.0 % Metric	45.0 - 55.0 % English	Average value: 47.9 % Grade Count:14 Comments
Elongation at Break	1.50 - 120 %	1.50 - 120 %	Average value: 33.2 % Grade Count:13
Elongation at Yield	10.0 - 110 %	10.0 - 110 %	Average value: 53.4 % Grade Count:9
Modulus of Elasticity	0.0410 - 10.8 GPa	5.95 - 1570 ksi	Average value: 3.93 GPa Grade Count:13
Poissons Ratio	0.340	0.340	Average value: 0.340 Grade Count:31
Shear Strength	4.30922 - 24.4764 MPa	625.001 - 3550.01 psi	Average value: 11.9 MPa Grade Count:1
	@Temperature -55.0 - 391 °C	@Temperature -67.0 - 736 °F	
	4.48159 - 16.4095 MPa	650.001 - 2380.00 psi	Average value: 11.9 MPa Grade Count:1
	@Temperature 260 - 371 °C	@Temperature 500 - 700 °F	
	4.48159 - 16.4095 MPa	650.001 - 2380.00 psi	Average value: 11.9 MPa Grade Count:1
	@Time 270000 - 7.20e+6 sec	@Time 75.0 - 2000 hour	
Adhesive Bond Strength	6.90 - 6.90 MPa	1000 - 1000 psi	Average value: 6.90 MPa Grade Count:1
	@Temperature 121 - 121 °C	@Temperature 250 - 250 °F	Average value: 6.90 MPa Grade Count:1
Secant Modulus	2.28 - 5.20 GPa	331 - 754 ksi	Average value: 3.04 GPa Grade Count:34
	1.14 - 1.62 GPa	165 - 235 ksi	Average value: 1.38 GPa Grade Count:3
	@Temperature 200 - 200 °C	@Temperature 392 - 392 °F	
Secant Modulus, MD	1.76 - 9.12 GPa	256 - 1320 ksi	Average value: 5.34 GPa Grade Count:3
Coefficient of Friction	0.400 - 0.480	0.400 - 0.480	Average value: 0.475 Grade Count:33
Coefficient of Friction, Static	0.630	0.630	Average value: 0.630 Grade Count:31
Tear Strength Test	7.20 - 430	7.20 - 430	Average value: 108 Grade Count:6
Peel Strength	0.240 kN/m	1.37 pli	Average value: 0.240 kN/m Grade Count:3
Elmendorf Tear Strength MD	8.20 - 270 g	8.20 - 270 g	Average value: 96.1 g Grade Count:4
Film Tensile Strength at Break, MD	98.1 - 736 MPa	14200 - 107000 psi	Average value: 252 MPa Grade Count:38

Thermal Properties	Metric	English	Comments
CTE, linear	0.000 - 220 µm/m-°C	0.000 - 122 µin/in-°F	Average value: 29.3 µm/m-°C Grade Count:38

Thermal Properties	Metric 40.0 µm/m-°C	English 2.2 µin/in-°F	Comments
	@Temperature 100 - 300 °C	@Temperature 212 - 572 °F	Average value: 37.4 µm/m- °C Grade Count:27
	27.0 - 68.0 µm/m-°C @Temperature 125 - 175 °C	15.0 - 37.8 µin/in-°F @Temperature 257 - 347 °F	Average value: 37.4 µm/m-°C Grade Count:5
	27.0 - 68.0 µm/m-°C @Thickness 1.00 - 1.00 mm	15.0 - 37.8 µin/in-°F @Thickness 0.0394 - 0.0394 in	Average value: 37.4 µm/m-°C Grade Count:5
Specific Heat Capacity	1.09 - 1.13 J/g-°C	0.261 - 0.270 BTU/lb-°F	Average value: 1.09 J/g-°C Grade Count:36
Thermal Conductivity	0.120 - 0.289 W/m-K	0.833 - 2.00 BTU-in/hr-ft <sup>2</sup> -°F	Average value: 0.129 W/m-K Grade Count:36
Maximum Service Temperature, Air	180 - 400 °C	356 - 752 °F	Average value: 371 °C Grade Count:37
Minimum Service Temperature, Air	-269 °C	-452 °F	Average value: -269 °C Grade Count:31
Glass Transition Temp, Tg	26.0 - 500 °C	78.8 - 932 °F	Average value: 340 °C Grade Count:44
Flammability, UL94	V-0	V-0	Grade Count:36
Oxygen Index	37.0 - 66.0 %	37.0 - 66.0 %	Average value: 48.6 % Grade Count:7

Optical Properties	Metric	English	Comments
Refractive Index	1.45 - 1.70	1.45 - 1.70	Average value: 1.67 Grade Count:38
Transmission, Visible	0.000 - 88.0 %	0.000 - 88.0 %	Average value: 8.43 % Grade Count:8
UV Transmittance	50.0 %	50.0 %	Average value: 50.0 % Grade Count:6
Emissivity (0-1)	0.450 - 0.770	0.450 - 0.770	Average value: 0.620 Grade Count:3
Reflection Coefficient, Visible (0-1)	0.0500 - 0.740	0.0500 - 0.740	Average value: 0.251 Grade Count:8

Electrical Properties	Metric	English	Comments
Electrical Resistivity	1.00e+9 - 2.30e+17 ohm-cm	1.00e+9 - 2.30e+17 ohm-cm	Average value: 4.72e+16 ohm-cm Grade Count:59
	1.00e+15 - 1.00e+16 ohm-cm @Temperature 200 - 200 °C	1.00e+15 - 1.00e+16 ohm-cm @Temperature 392 - 392 °F	Average value: 4.00e+15 ohm-cm Grade Count:3
Surface Resistance	10000 - 1.00e+17 ohm	10000 - 1.00e+17 ohm	Average value: 4.62e+15 ohm Grade Count:27

Electrical Properties	Metric $1.5 - 1.00e+15$ ohm	English $1.5 - 1.00e+15$ ohm	Comments
	@Temperature 200 - 200 °C	@Temperature 392 - 392 °F	Average value: 1.00e+15 ohm Grade Count:2
Dielectric Constant	2.40 - 4.00	2.40 - 4.00	Average value: 3.48 Grade Count:39
	3.20 - 3.30	3.20 - 3.30	
	@Temperature 200 - 200 °C	@Temperature 392 - 392 °F	Average value: 3.25 Grade Count:2
	3.20 - 3.30	3.20 - 3.30	
	@Frequency 1000 - 1000 Hz	@Frequency 1000 - 1000 Hz	Average value: 3.25 Grade Count:2
Dielectric Strength	60.0 - 339 kV/mm	1520 - 8610 kV/in	Average value: 206 kV/mm Grade Count:56
	48.0 - 272 kV/mm	1220 - 6910 kV/in	
	@Temperature 200 - 200 °C	@Temperature 392 - 392 °F	Average value: 157 kV/mm Grade Count:3
Dissipation Factor	0.00130 - 0.0100	0.00130 - 0.0100	Average value: 0.00312 Grade Count:37
	0.00560 - 0.00780	0.00560 - 0.00780	
	@Temperature 200 - 200 °C	@Temperature 392 - 392 °F	Average value: 0.00670 Grade Count:2
	0.00560 - 0.00780	0.00560 - 0.00780	
	@Frequency 1000 - 1000 Hz	@Frequency 1000 - 1000 Hz	Average value: 0.00670 Grade Count:2

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