

## Overview of materials for High Density Polyethylene (HDPE), Film Grade

Category : Polymer , Film , Thermoplastic , Polyethylene (PE) , HDPE , High Density Polyethylene (HDPE), Film Grade

### Material Notes:

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

Physical Properties	Metric	English	Comments
Density	0.917 - 0.966 g/cc	0.0331 - 0.0349 lb/in <sup>3</sup>	Average value: 0.951 g/cc Grade Count:156
Moisture Vapor Transmission	0.0300 - 0.260 cc-mm/m <sup>2</sup> -24hr-atm	0.0762 - 0.660 cc-mil/100 in <sup>2</sup> -24hr-atm	Average value: 0.163 cc-mm/m <sup>2</sup> -24hr-atm Grade Count:15
	0.00418 - 0.00418 cc-mm/m <sup>2</sup> -24hr-atm @Temperature 38.0 - 38.0 °C	0.0106 - 0.0106 cc-mil/100 in <sup>2</sup> -24hr-atm @Temperature 100 - 100 °F	Average value: 0.00418 cc-mm/m <sup>2</sup> -24hr-atm Grade Count:1
Water Vapor Transmission	0.500 - 15.5 g/m <sup>2</sup> /day	0.0322 - 0.998 g/100 in <sup>2</sup> /day	Average value: 6.87 g/m <sup>2</sup> /day Grade Count:21
	2.9488 - 10.864 g/m <sup>2</sup> /day @Temperature 37.8 - 38.0 °C	0.18990 - 0.69964 g/100 in <sup>2</sup> /day @Temperature 100 - 100 °F	Average value: 5.04 g/m <sup>2</sup> /day Grade Count:4
Oxygen Transmission	1.77 - 138 cc-mm/m <sup>2</sup> -24hr-atm	4.49 - 351 cc-mil/100 in <sup>2</sup> -24hr-atm	Average value: 59.8 cc-mm/m <sup>2</sup> -24hr-atm Grade Count:5
Oxygen Transmission Rate	1490 - 5580 cc/m <sup>2</sup> /day	95.8 - 359 cc/100 in <sup>2</sup> /day	Average value: 2400 cc/m <sup>2</sup> /day Grade Count:10
Environmental Stress Crack Resistance	2.00 - 1500 hour	2.00 - 1500 hour	Average value: 770 hour Grade Count:7
	24.0 - 24.0 hour @Temperature 50.0 - 50.0 °C	24.0 - 24.0 hour @Temperature 122 - 122 °F	Average value: 1000 hour Grade Count:5
Thickness	10.0 - 75.0 microns	0.394 - 2.95 mil	Average value: 25.4 microns Grade Count:88
Melt Flow	0.0270 - 55.0 g/10 min	0.0270 - 55.0 g/10 min	Average value: 4.97 g/10 min Grade Count:158
Base Resin Melt Index	0.0500 - 18.0 g/10 min	0.0500 - 18.0 g/10 min	Average value: 4.90 g/10 min Grade Count:4

Physical Properties	Metric 0.0380 - 0.0600 %	English 0.0380 - 0.0600 %	Comments Average value: 0.0544 % Grade Count:6
Mechanical Properties	Metric	English	Comments
Hardness, Shore D	28.0 - 69.0	28.0 - 69.0	Average value: 60.5 Grade Count:21
Tensile Strength, Ultimate	29.0 - 40.0 MPa	4210 - 5800 psi	Average value: 34.4 MPa Grade Count:16
Film Tensile Strength at Yield, MD	11.6 - 51.7 MPa	1680 - 7500 psi	Average value: 30.7 MPa Grade Count:68
Film Tensile Strength at Yield, TD	12.1 - 228 MPa	1750 - 33000 psi	Average value: 31.5 MPa Grade Count:71
Tensile Strength, Yield	8.80 - 35.0 MPa	1280 - 5080 psi	Average value: 19.4 MPa Grade Count:34
Film Elongation at Break, MD	160 - 1350 %	160 - 1350 %	Average value: 513 % Grade Count:116
Film Elongation at Break, TD	3.00 - 1010 %	3.00 - 1010 %	Average value: 566 % Grade Count:115
Elongation at Break	400 - 1700 %	400 - 1700 %	Average value: 694 % Grade Count:34
Elongation at Yield	8.00 - 10.0 %	8.00 - 10.0 %	Average value: 8.70 % Grade Count:3
Modulus of Elasticity	0.0200 - 1.10 GPa	2.90 - 160 ksi	Average value: 0.678 GPa Grade Count:9
Flexural Modulus	0.660 - 1.47 GPa	95.7 - 213 ksi	Average value: 1.02 GPa Grade Count:10
Secant Modulus, MD	0.0300 - 1.40 GPa	4.35 - 203 ksi	Average value: 0.841 GPa Grade Count:85
Secant Modulus, TD	0.0500 - 1.70 GPa	7.25 - 247 ksi	Average value: 1.00 GPa Grade Count:85
Dart Drop, Total Energy	2.44 - 2.71 J	1.80 - 2.00 ft-lb	Average value: 2.53 J Grade Count:3
Puncture Energy	0.722 - 2.14 J	0.533 - 1.58 ft-lb	Average value: 1.36 J Grade Count:7
Coefficient of Friction	0.240 - 0.400	0.240 - 0.400	Average value: 0.286 Grade Count:9
Coefficient of Friction, Static	0.100 - 0.250	0.100 - 0.250	Average value: 0.175 Grade Count:6
Tear Strength Test	9.80 - 27.4	9.80 - 27.4	Average value: 15.2 Grade Count:15
Elmendorf Tear Strength MD	1.40 - 70.0 g	1.40 - 70.0 g	Average value: 21.8 g Grade Count:66
Elmendorf Tear Strength TD	10.0 - 1800 g	10.0 - 1800 g	Average value: 279 g Grade Count:65
Elmendorf Tear Strength, MD	0.250 - 70.0 g/micron	6.35 - 1780 g/mil	Average value: 1.82 g/micron Grade Count:67
Elmendorf Tear Strength, TD	0.800 - 150 g/micron	20.3 - 3810 g/mil	Average value: 12.1 g/micron Grade Count:68

Mechanical Properties	Metric	English	Comments
Dart Drop	0.890 - 30.0 g/micron	22.0 - 762 g/mil	Average value: 7.88 g/micron Grade Count:33
Dart Drop Test	20.0 - 1000 g	0.0441 - 2.20 lb	Average value: 220 g Grade Count:67
Film Tensile Strength at Break, MD	24.1 - 141 MPa	3500 - 20500 psi	Average value: 55.9 MPa Grade Count:113
Film Tensile Strength at Break, TD	17.9 - 251 MPa	2600 - 36400 psi	Average value: 49.4 MPa Grade Count:113
Heat Seal Strength Initiation Temperature	125 °C	257 °F	Average value: 125 °C Grade Count:6

Thermal Properties	Metric	English	Comments
Melting Point	72.0 - 135 °C	162 - 275 °F	Average value: 127 °C Grade Count:49
Deflection Temperature at 0.46 MPa (66 psi)	59.0 - 64.0 °C	138 - 147 °F	Average value: 62.3 °C Grade Count:3
Vicat Softening Point	41.0 - 133 °C	106 - 271 °F	Average value: 117 °C Grade Count:51
Softening Point	73.0 - 75.0 °C	163 - 167 °F	Average value: 74.2 °C Grade Count:5
Brittleness Temperature	-80.0 - -59.0 °C	-112 - -74.2 °F	Average value: -70.8 °C Grade Count:21

Optical Properties	Metric	English	Comments
Haze	4.00 - 81.0 %	4.00 - 81.0 %	Average value: 29.3 % Grade Count:27
Gloss	5.00 - 127 %	5.00 - 127 %	Average value: 62.0 % Grade Count:26

Electrical Properties	Metric	English	Comments
Dielectric Constant	2.33	2.33	Average value: 2.33 Grade Count:3
Dielectric Strength	20.0 kV/mm	508 kV/in	Average value: 20.0 kV/mm Grade Count:3
Dissipation Factor	0.000100	0.000100	Average value: 0.000100 Grade Count:3

Processing Properties	Metric	English	Comments
Processing Temperature	20.0 - 232 °C	68.0 - 450 °F	Average value: 180 °C Grade Count:11
Melt Temperature	124 - 280 °C	255 - 536 °F	Average value: 207 °C Grade Count:57
Die Opening	0.0760 - 0.280 cm	0.0299 - 0.110 in	Average value: 0.164 cm Grade Count:8

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