


## Overview of materials for Linear Low Density Polyethylene (LLDPE), Film Grade

Categories: [Polymer](#); [Thermoplastic](#); [Polyethylene](#); [LLDPE](#); [Linear Low Density Polyethylene \(LLDPE\)](#), [Film Grade](#)

**Material Notes:** This property data is a summary of similar materials in the MatWeb database for the category "Linear Low Density Polyethylene (LLDPE), 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.

Physical Properties	Metric	English	Comments
Density	0.900 - 0.960 g/cc	0.0325 - 0.0347 lb/in <sup>3</sup>	Average value: 0.920 g/cc Grade Count:254
Moisture Vapor Transmission	0.240 - 0.470 cc-mm/m <sup>2</sup> -24hr-atm	0.610 - 1.19 cc-mil/100 in <sup>2</sup> -24hr-atm	Average value: 0.410 cc-mm/m <sup>2</sup> -24hr-atm Grade Count:21
Water Vapor Transmission	6.00 - 8.00 g/m <sup>2</sup> /day	0.386 - 0.515 g/100 in <sup>2</sup> /day	Average value: 7.33 g/m <sup>2</sup> /day Grade Count:3
Oxygen Transmission	0.720 - 236 cc-mm/m <sup>2</sup> -24hr-atm	1.83 - 599 cc-mil/100 in <sup>2</sup> -24hr-atm	Average value: 211 cc-mm/m <sup>2</sup> -24hr-atm Grade Count:19
Oxygen Transmission Rate	3500 - 5000 cc/m <sup>2</sup> /day	225 - 322 cc/100 in <sup>2</sup> /day	Average value: 4500 cc/m <sup>2</sup> /day Grade Count:3
Viscosity 	37000 - 79000 cP @Temperature 190 - 190 °C	37000 - 79000 cP @Temperature 374 - 374 °F	Average value: 60000 cP Grade Count:1
	37000 - 79000 cP @Shear Rate 300 - 5000 1/s	37000 - 79000 cP @Shear Rate 300 - 5000 1/s	Average value: 60000 cP Grade Count:1
Environmental Stress Crack Resistance	>= 1000 hour @Temperature 50.0 - 50.0 °C	>= 1000 hour @Temperature 122 - 122 °F	Average value: 1000 hour Grade Count:5
Thickness	8.00 - 76.2 microns	0.315 - 3.00 mil	Average value: 30.7 microns Grade Count:152
Melt Flow	0.200 - 40.0 g/10 min	0.200 - 40.0 g/10 min	Average value: 2.23 g/10 min Grade Count:217
Base Resin Melt Index	0.700 - 3.50 g/10 min	0.700 - 3.50 g/10 min	Average value: 1.71 g/10 min Grade Count:16
Antiblock Level	0.000 - 9000 ppm	0.000 - 9000 ppm	Average value: 4520 ppm Grade Count:25
Slip Level	0.000 - 1700 ppm	0.000 - 1700 ppm	Average value: 865 ppm Grade Count:22
<b>Mechanical Properties</b>	<b>Metric</b>	<b>English</b>	<b>Comments</b>
Tensile Strength, Ultimate	9.80 - 26.2 MPa	1420 - 3800 psi	Average value: 21.2 MPa Grade Count:22
Film Tensile Strength at Yield, MD	5.00 - 74.0 MPa	725 - 10700 psi	Average value: 11.7 MPa Grade Count:108
Film Tensile Strength at Yield, TD	5.00 - 77.0 MPa	725 - 11200 psi	Average value: 11.9 MPa Grade Count:107
Film Elongation at Break, MD	80.0 - 1460 %	80.0 - 1460 %	Average value: 646 % Grade Count:234
Film Elongation at Break, TD	460 - 1710 %	460 - 1710 %	Average value: 836 % Grade Count:213
Film Elongation at Yield, MD	435 - 640 %	435 - 640 %	Average value: 516 % Grade Count:6
Film Elongation at Yield, TD	670 - 890 %	670 - 890 %	Average value: 763 % Grade Count:6
Tensile Strength, Yield	9.70 - 22.1 MPa	1410 - 3210 psi	Average value: 13.2 MPa Grade Count:28
Elongation at Break	8.00 - 1000 %	8.00 - 1000 %	Average value: 763 % Grade Count:26
Modulus of Elasticity	0.0110 - 0.413 GPa	1.60 - 59.9 ksi	Average value: 0.179 GPa Grade Count:28
Secant Modulus, MD	0.0103 - 0.717 GPa	1.49 - 104 ksi	Average value: 0.193 GPa Grade Count:184
Secant Modulus, TD	0.0106 - 0.869 GPa	1.54 - 126 ksi	Average value: 0.218 GPa Grade Count:184
Puncture Energy	0.452 - 5.00 J	0.333 - 3.69 ft-lb	Average value: 2.40 J Grade Count:39
Coefficient of Friction	0.100 - 2.00	0.100 - 2.00	Average value: 0.560 Grade Count:64
Coefficient of Friction, Static	0.170 - 1.00	0.170 - 1.00	Average value: 0.714 Grade Count:5
Elmendorf Tear Strength MD	25.0 - 1080 g	25.0 - 1080 g	Average value: 263 g Grade Count:103
Elmendorf Tear Strength TD	180 - 1470 g	180 - 1470 g	Average value: 548 g Grade Count:105
Elmendorf Tear Strength, MD	0.0750 - 20.9 g/micron	1.91 - 530 g/mil	Average value: 9.88 g/micron Grade Count:161
Elmendorf Tear Strength, TD	0.275 - 37.8 g/micron	6.99 - 960 g/mil	Average value: 21.2 g/micron Grade Count:161
Dart Drop	1.57 - 70.9 g/micron	40.0 - 1800 g/mil	Average value: 10.1 g/micron Grade Count:158
Dart Drop Test	30.0 - 1350 g	0.0662 - 2.98 lb	Average value: 269 g Grade Count:140
Seal Strength	1800 - 2400 g/25 mm	1800 - 2400 g/in	Average value: 2070 g/25 mm Grade Count:12
Film Tensile Strength at Break, MD	9.65 - 82.7 MPa	1400 - 12000 psi	Average value: 44.8 MPa Grade Count:244
Film Tensile Strength at Break, TD	7.24 - 59.3 MPa	1050 - 8600 psi	Average value: 33.6 MPa Grade Count:223
Izod Impact, Notched (ISO)	56.0 - 56.0 kJ/m <sup>2</sup> @Temperature -50.0 - -50.0 °C	26.6 - 26.6 ft-lb/in <sup>2</sup> @Temperature -58.0 - -58.0 °F	Average value: 56.0 kJ/m <sup>2</sup> Grade Count:1
Heat Seal Strength Initiation Temperature	72.0 - 100 °C	162 - 212 °F	Average value: 94.3 °C Grade Count:6
<b>Thermal Properties</b>	<b>Metric</b>	<b>English</b>	<b>Comments</b>
Melting Point	116 - 128 °C	241 - 262 °F	Average value: 123 °C Grade Count:49
Crystallization Temperature	104 - 115 °C	219 - 239 °F	Average value: 110 °C Grade Count:10
Vicat Softening Point	65.0 - 123 °C	149 - 253 °F	Average value: 102 °C Grade Count:47