

TYPICAL PROPERTIES OF POLYETHYLENE (PE)

ASTM Test	Property	Low-Density	Medium-Density	High-Density	Ultra-High-Molecular-Weight
PHYSICAL					
D792	Specific gravity	0.910-0.925	0.926-0.940	0.941-0.965	0.928-0.941
D792	Specific volume (in ³ /lb)	30.4-29.9	29.9-29.4	29.4-28.7	29.4
D570	Water absorption , 24 h, 1/8-in thk (%)	<0.01	<0.01	<0.01	<0.01
MECHANICAL					
D638	Tensile strength (psi)	600-2,300	1,200-3,500	3,100-5,500	4,000-6,000
D638	Elongation (%)	90-800	50-600	20-1,000	200-500
D638	Tensile modulus (10 ⁵ psi)	0.14-0.38	0.25-0.55	0.6-1.8	0.20-1.10
D790	Flexural modulus (10 ⁵ psi)	0.08-0.60	0.60-1.15	1.0-2.0	1.0-1.7
D256	Impact strength , Izod (ft-lb/in of notch)	No break	0.5-16	0.5-20	No break
D785	Hardness , Rockwell R	10	15	65	67
THERMAL					
C177	Thermal conductivity (10 ⁻⁴ cal-cm/sec-cm ² -°C)	8.0	8.0-10.0	11.0-12.4	11.0
D696	Coefficient of thermal expansion (10 ⁻⁵ in/in-°F)	5.6-12.2	7.8-8.9	6.1-7.2	7.8
D648	Deflection temperature (°F)				
	At 264 psi	90-105	105-120	110-130	118
	At 66 psi	100-121	120-165	140-190	170
ELECTRICAL					
D149	Dielectric strength (V/mil)				
	Short time, 1/8-in thk	460-700	460-650	450-500	900*
D150	Dielectric constant				
	At 1 kHz	2.25-2.35	2.25-2.35	2.30-2.35	2.30-2.35
D150	Dissipation factor				
	At 1 kHz	0.0002	0.0002	0.0003	0.0002
D257	Volume resistivity (ohm-cm)				
	At 73°F, 50% RH	10 ¹⁵	10 ¹⁵	10 ¹⁵	10 ¹⁸
D495	Arc resistance (s)	135-160	200-235	—	—
OPTICAL					
D542	Refractive index	1.51	1.52	1.54	—
D1003	Transmittance (%)	4-50	4-50	10-50	—

*kV/cm.

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