

Typical Properties of HDPE

	ASTM Test Method	English Units	Metric Units
Physical Properties			
Density	D1505	59.6 lbs/ft ³	0.955 g/cc
Melt Index, Condition 190° C/2.16 kg	D1238	---	0.25 g/10 min
Polyethylene Classification	D4976	Group 2, Class 3, Grade 5	Group 2, Class 3, Grade 5
Mechanical Properties			
Tensile strength @ Yield	D638	4000 psi	27.6 Mpa
Ultimate Elongation	D638	> 600%	> 600%
Tensile Impact Strength	D1822	70 ft-lbf/in ²	147 KJ/m ²
Notched Izod Impact Strength	D256	2.99 ft-lbf/in	159 J/m
Compressive Stress @ Yield	D695	1,500 psi	10.3 Mpa
ESCR, Condition A (10% Igepal), F ₅₀	D1693	45 hours	45 hours
ESCR, Condition B (100% Igepal), F50	D1693	35 hours	35 hours
Durometer Hardness	D2240	64 Shore D	64 Shore D
Flexural Modulus	D790	200,000 psi	1379 MPa
Coefficient of Friction, Static	D1894	0.31	0.31
Coefficient of Friction, Kinetic	D1894	0.22	0.22
Thermal Properties			
Coefficient of Linear Thermal Expansion	E831	7 x 10 ⁻⁵ in/in/°F	1.26 x 10 ⁻⁴ cm/cm/°C
Decomposition Temperature	Union Carbide	~650°F	~345°C
Vicat Softening Temperature	D1525	257°F	125°C
Heat Deflection Temperature @ 66 psi	D648	171°F	77°C
Brittleness Temperature	D746	<-120°F	< -84°C
Glass Transition Temperature	Union Carbide	-193°F	-125°C
Continuous Use Temperature	---	-100°F to 180°F	-73°C to 82°C
Thermal Conductivity	Private Test	2.5 Btu-in/h-ft ² -°F	.35 W/m-°K
Burn Rate	D635	1 in/min	25.4 mm/min
Ignition Temperature, Flash Conditions	D1929	645°F	341°C
Ignition Temperature, Self Ignition Conditions	D1929	660°F	349°C
Flame Spread	E84 Tunnel Test	98	98
Smoke Developed	E84 Tunnel Test	350	350
Fire Rating	Underwriters Labs	UL94HB	UL94HB
Electrical Properties			
Dielectric Strength	D149	510 V/mil	20.1 KV/mm
Dielectric Constant	D150	2.35	2.35
Volume Resistivity	D257	> 2.3 x 10 ¹⁵ ohm-in	> 6 x 10 ¹⁵ ohm-cm
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