

Generic HDPE

High Density Polyethylene

Generic

Message:

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This information is provided for comparative purposes only.

General Information			
Physical	Nominal Value	Unit	Test Method
Specific Gravity			
--	0.945 - 0.975	g/cm ³	ASTM D792
23°C	0.944 - 0.976	g/cm ³	ISO 1183
--	930	kg/m ³	ISO 1183 ¹
--	0.942 - 0.966	g/cm ³	ASTM D1505
--	0.945 - 0.963	g/cm ³	ASTM D4883
Apparent Density			
--	0.55 - 0.61	g/cm ³	ASTM D1895
--	0.46 - 0.55	g/cm ³	ISO 60
Melt Mass-Flow Rate (MFR)			
190°C/2.16 kg	0.020 - 1.8	g/10 min	ASTM D1238
190°C/2.16 kg	0.030 - 10	g/10 min	ISO 1133
Melt volume-flow rate	0.646	cm ³ /10min	ISO 1133 ²
Spiral Flow	18.8 - 74.5	cm	
Molding Shrinkage			
Flow: 23°C	0.018 - 3.0	%	ASTM D955
Transverse flow: 23°C	0.96 - 2.5	%	ASTM D955
23°C	1.4 - 2.0	%	ISO 294-4
Water Absorption (23°C, 24 hr)	0.010 - 0.10	%	ASTM D570
Environmental Stress-Cracking Resistance (23°C)	0.500 - 1130	hr	ASTM D1693
Viscosity Number (Reduced Viscosity) (23°C)	157.8 - 398.3	ml/g	ISO 1628
Carbon Black Content	1.9 - 2.7	%	ASTM D1603
Hardness	Nominal Value	Unit	Test Method
Rockwell Hardness (23°C)	45 - 60		ASTM D785
Durometer Hardness			
23°C	59 - 71		ASTM D2240
23°C	57 - 70		ISO 868
Ball Indentation Hardness	39.0 - 58.5	MPa	ISO 2039-1
Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus			

23°C	269 - 1280	MPa	ASTM D638
23°C	833 - 1360	MPa	ISO 527-2
--	1110	MPa	ISO 527-2 ³
Tensile Strength			
Yield, 23°C	16.9 - 31.7	MPa	ASTM D638
Yield, 23°C	20.7 - 31.6	MPa	ISO 527-2
Yield	25.1	MPa	ISO 527-2 ⁴
Fracture, 23°C	13.9 - 38.7	MPa	ASTM D638
Fracture, 23°C	14.5 - 36.1	MPa	ISO 527-2
Limit, 23°C	23.9 - 33.0	MPa	ASTM D638
23°C	10.0 - 29.0	MPa	ASTM D638
Tensile Elongation			
Yield, 23°C	1.0 - 27	%	ASTM D638
Yield, 23°C	2.5 - 17	%	ISO 527-2
Yield	11	%	ISO 527-2 ⁵
Fracture, 23°C	4.0 - 1000	%	ASTM D638
Fracture, 23°C	6.0 - 1000	%	ISO 527-2
Tensile Creep Modulus			ISO 899-1
1 hr	675	MPa	ISO 899-1
1000 hr	293	MPa	ISO 899-1
Apparent Bending Modulus (23°C)	597 - 1180	MPa	ASTM D747
Flexural Modulus			
23°C	695 - 1730	MPa	ASTM D790
23°C	777 - 1620	MPa	ISO 178
Flexural Strength			
23°C	18.5 - 42.3	MPa	ASTM D790
23°C	19.0 - 32.0	MPa	ISO 178
Yield, 23°C	26.1 - 31.9	MPa	ASTM D790
Coefficient of Friction	0.20 - 0.25		ASTM D1894
Films	Nominal Value	Unit	Test Method
Film Thickness - Tested	10 - 47	µm	
Film Puncture Resistance	2.76	J/cm ³	
secant modulus			
MD	578 - 1280	MPa	ASTM D882
TD	636 - 1490	MPa	ASTM D882
23°C	400 - 800	MPa	ISO 527-3
Tensile Strength			
MD: Yield	20.3 - 40.7	MPa	ASTM D882
TD: Yield	21.4 - 30.6	MPa	ASTM D882
Yield, 23°C	19.0 - 32.2	MPa	ISO 527-3
MD: Fracture	16.7 - 100	MPa	ASTM D882
TD: Fracture	16.8 - 62.2	MPa	ASTM D882

Fracture, 23°C	25.4 - 67.0	MPa	ISO 527-3
23°C	19.9 - 75.1	MPa	ISO 527-3
Tensile Elongation			
MD: Fracture	240 - 660	%	ASTM D882
TD: Fracture	2.0 - 950	%	ASTM D882
Fracture, 23°C	240 - 800	%	ISO 527-3
Dart Drop Impact			
23°C	7.0 - 350	g	ASTM D1709
23°C	40 - 350	g	ISO 7765-1
Elmendorf Tear Strength			
MD	0.40 - 40	g	ASTM D1922
TD	3.0 - 360	g	ASTM D1922
--	0.065 - 0.84	N	ISO 6383-2
Water Vapor Transmission Rate	1.9 - 14	g/m ² /24 hr	ASTM F1249
Impact	Nominal Value	Unit	Test Method
Charpy Notched Impact Strength			
23°C	2.2 - 26	kJ/m ²	ISO 179
23°C	28.6	kJ/m ²	ISO 179/1eA ⁶
Charpy Unnotched Impact Strength (23°C)	2.0 - 24	kJ/m ²	ISO 179
Notched Izod Impact			
23°C	1.0 - 510	J/m	ASTM D256
23°C	1.9 - 31	kJ/m ²	ISO 180
Unnotched Izod Impact (23°C)	7.0 - 1100	J/m	ASTM D256
Tensile Impact Strength			
23°C	40.4 - 345	kJ/m ²	ASTM D1822
23°C	58.9	kJ/m ²	ISO 8256
Thermal	Nominal Value	Unit	Test Method
Deflection Temperature Under Load			
0.45 MPa, not annealed	63.5 - 81.9	°C	ASTM D648
0.45 MPa, not annealed	65.0 - 95.0	°C	ISO 75-2/B
1.8 MPa, not annealed	36.7 - 81.1	°C	ASTM D648
1.8 MPa, not annealed	41.0 - 48.5	°C	ISO 75-2/A
1.8 MPa	61.5	°C	ISO 75-2 ⁷
Brittleness Temperature			
--	-82.2 - -59.8	°C	ASTM D746
--	-70.5 - -60.0	°C	ISO 974
Vicat Softening Temperature			
--	121 - 130	°C	ASTM D1525
--	69.3 - 130	°C	ISO 306
50°C/h, B (50N)	66.6	°C	ISO 306 ⁸
Melting Temperature			
--	127 - 137	°C	

--	128 - 135	°C	DSC, ASTM D3418, ISO 3146
--	130 - 136	°C	ISO 11357-3
-- ⁹	146	°C	ISO 11357-3 ¹⁰
Peak Crystallization Temperature (DSC)			
--	113 - 132	°C	ASTM D3418
--	131 - 132	°C	ISO 3146
CLTE - Flow	7.1E-5 - 2.0E-4	cm/cm/°C	ASTM D696
Specific Heat (23°C)	1840 - 2300	J/kg/°C	ASTM C351
Thermal Conductivity (23°C)	0.48	W/m/K	ASTM C177
Electrical	Nominal Value	Unit	Test Method
Surface Resistivity			
--	40 - 2.5E+13	ohms	ASTM D257
--	1.6E+2 - 2.5E+12	ohms	IEC 60093
Volume Resistivity			
23°C	10 - 2.5E+18	ohms·cm	ASTM D257
23°C	10 - 1.3E+16	ohms·cm	IEC 60093
Dielectric Strength			
23°C	20 - 30	kV/mm	ASTM D149
23°C	20 - 150	kV/mm	IEC 60243-1
Dielectric Constant			
23°C	2.24 - 2.60		ASTM D150
23°C	2.32 - 2.56		ASTM D1531
23°C	2.32 - 2.35		IEC 60250
1 MHz	2.30		IEC 60250 ¹¹
Dissipation Factor			
23°C	2.0E-5 - 2.7E-4		ASTM D150
23°C	5.7E-5 - 3.0E-4		ASTM D1531
23°C	5.0E-5 - 4.1E-4		IEC 60250
1 MHz	3.0E-4		IEC 60250 ¹²
Optical	Nominal Value	Unit	Test Method
Gloss	5 - 120		ASTM D2457
Haze	3.0 - 82	%	ASTM D1003
Yellowness Index	0.0 - 4.0	YI	ASTM D1925
Injection	Nominal Value	Unit	
Drying Temperature	78.8 - 85.0	°C	
Drying Time	1.9 - 3.1	hr	
Suggested Max Moisture	0.030 - 0.21	%	
Rear Temperature	185 - 234	°C	
Middle Temperature	184 - 248	°C	
Front Temperature	224 - 248	°C	
Nozzle Temperature	234 - 246	°C	

Processing (Melt) Temp	180 - 251	°C
Mold Temperature	18.5 - 46.9	°C
Injection Pressure	76.8 - 86.5	MPa
Back Pressure	0.138 - 7.75	MPa
Screw Speed	53 - 56	rpm

Injection instructions

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Extrusion	Nominal Value	Unit
Drying Temperature	80.0 - 91.3	°C
Drying Time	1.9 - 3.1	hr
Cylinder Zone 1 Temp.	149 - 221	°C
Cylinder Zone 2 Temp.	168 - 203	°C
Cylinder Zone 3 Temp.	163 - 221	°C
Cylinder Zone 4 Temp.	174 - 233	°C
Cylinder Zone 5 Temp.	178 - 233	°C
Adapter Temperature	150 - 253	°C
Melt Temperature	190 - 218	°C
Die Temperature	181 - 233	°C

Extrusion instructions

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NOTE

1.	?????,?? ISO 10350 ??? 23°C/50%r.h. ???
2.	?????,?? ISO 10350 ??? 23°C/50%r.h. ???
3.	?????,?? ISO 10350 ??? 23°C/50%r.h. ???
4.	?????,?? ISO 10350 ??? 23°C/50%r.h. ???
5.	?????,?? ISO 10350 ??? 23°C/50%r.h. ???
6.	?????,?? ISO 10350 ??? 23°C/50%r.h. ???
7.	?????,?? ISO 10350 ??? 23°C/50%r.h. ???
8.	?????,?? ISO 10350 ??? 23°C/50%r.h. ???
9.	10 °C/min
10.	?????,?? ISO 10350 ??? 23°C/50%r.h. ???
11.	?????,?? ISO 10350 ??? 23°C/50%r.h. ???
12.	?????,?? ISO 10350 ??? 23°C/50%r.h. ???

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