Generic Nylon 6

Polyamide 6

Generic

Message:

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This information is provided for comparative purposes only.

General Information			
Physical	**Nominal Value**	**Unit**	**Test Method**
Specific Gravity			
--	0.902 - 1.42	g/cm³	ASTM D792
23°C	1.09 - 1.18	g/cm³	ISO 1183
--	1100	kg/m³	ISO 1183 [1]
--	1.09 - 1.26	g/cm³	ASTM D1505
Apparent Density	0.70	g/cm³	ISO 60
Melt Mass-Flow Rate (MFR)			
235°C/1.0 kg	0.90 - 5.0	g/10 min	ASTM D1238
230°C/2.16 kg	2.7 - 16	g/10 min	ISO 1133
Melt Volume-Flow Rate (MVR) (275°C/5.0 kg)	3.00 - 176	cm³/10min	ISO 1133
Molding Shrinkage			
Flow: 23°C	0.79 - 1.8	%	ASTM D955
Transverse flow: 23°C	1.1 - 2.0	%	ASTM D955
23°C	0.84 - 2.0	%	ISO 294-4
Water Absorption			
23°C, 24 hr	0.53 - 2.0	%	ASTM D570
23°C, 24 hr	0.64 - 2.6	%	ISO 62
Saturated, 23°C	0.10 - 9.6	%	ASTM D570
Saturated, 23°C	6.8 - 10	%	ISO 62
Saturation	9.2	%	ISO 62 [2]
Equilibrium, 23°C	0.38 - 3.1	%	ASTM D570
Equilibrium, 23°C, 50% RH	2.4 - 3.1	%	ISO 62
Balance	2.7	%	ISO 62 [3]
K-Value (23°C)	75.9 - 80.0		ISO 1628-2
Viscosity Number	115 - 249	cm³/g	ISO 307
Relative Viscosity	2.4 - 4.2		
Hardness	**Nominal Value**	**Unit**	**Test Method**
Rockwell Hardness			
23°C	104 - 121		ASTM D785
23°C	89 - 121		ISO 2039-2
Durometer Hardness			

23°C	64 - 81		ASTM D2240
23°C	59 - 82		ISO 868
Ball Indentation Hardness	36.0 - 162	MPa	ISO 2039-1
Mechanical	**Nominal Value**	**Unit**	**Test Method**
Tensile Modulus			
23°C	739 - 3810	MPa	ASTM D638
23°C	100 - 6710	MPa	ISO 527-2
--	4310	MPa	ISO 527-2 [4]
Tensile Strength			
Yield, 23°C	32.7 - 93.0	MPa	ASTM D638
Yield, 23°C	25.0 - 90.0	MPa	ISO 527-2
Yield	64.5	MPa	ISO 527-2 [5]
Fracture, 23°C	39.2 - 112	MPa	ASTM D638
Fracture, 23°C	30.2 - 153	MPa	ISO 527-2
Fracture	95.0	MPa	ISO 527-2 [6]
Limit, 23°C	47.5 - 81.3	MPa	ASTM D638
23°C	43.4 - 88.8	MPa	ASTM D638
23°C	38.8 - 151	MPa	ISO 527-2
Tensile Elongation			
Yield, 23°C	0.55 - 11	%	ASTM D638
Yield, 23°C	0.87 - 26	%	ISO 527-2
Yield	12	%	ISO 527-2 [7]
Fracture, 23°C	0.40 - 110	%	ASTM D638
Fracture, 23°C	0.40 - 50	%	ISO 527-2
Fracture	4.9 - 6.4	%	ISO 527-2 [8]
Nominal Tensile Strain at Break (23°C)	2.8 - 55	%	ISO 527-2
Tensile Creep Modulus			ISO 899-1
1 hr	5050	MPa	ISO 899-1
1000 hr	3330	MPa	ISO 899-1
Flexural Modulus			
23°C	562 - 3390	MPa	ASTM D790
23°C	502 - 6000	MPa	ISO 178
Flexural Strength			
23°C	33.7 - 125	MPa	ASTM D790
23°C	18.3 - 211	MPa	ISO 178
Yield, 23°C	34.5 - 122	MPa	ASTM D790
Fracture, 23°C	37.2 - 194	MPa	ASTM D790
Compressive Modulus	2150 - 2510	MPa	ASTM D695
Compressive Strength			
23°C	9.80 - 111	MPa	ASTM D695
23°C	21.0 - 122	MPa	ISO 604
Shear Strength (23°C)	57.2 - 76.5	MPa	ASTM D732

Coefficient of Friction	0.040 - 1.4		ASTM D1894
Taber Abrasion Resistance (23°C)	3.50 - 10.1	mg	ASTM D1044
Deformation Under Load (23°C)	0.510 - 1.52	%	ASTM D621
Wear Factor	22 - 210	10^-8 $mm^3/N \cdot m$	ASTM D3702
Films	**Nominal Value**	**Unit**	**Test Method**
Film Thickness - Tested	25 - 51	µm	
secant modulus			
MD	615 - 3100	MPa	ASTM D882
TD	648 - 2800	MPa	ASTM D882
23°C	450 - 490	MPa	ISO 527-3
Tensile Strength			
MD: Yield	26.5 - 98.1	MPa	ASTM D882
Yield, 23°C	30.0 - 40.0	MPa	ISO 527-3
MD: Fracture	58.6 - 276	MPa	ASTM D882
TD: Fracture	252 - 345	MPa	ASTM D882
Fracture, 23°C	83.0 - 100	MPa	ISO 527-3
23°C	80.0 - 96.0	MPa	ISO 527-3
Tensile Elongation			
Yield, 23°C	7.0 - 15	%	ISO 527-3
MD: Fracture	56 - 100	%	ASTM D882
TD: Fracture	70 - 92	%	ASTM D882
Fracture, 23°C	340 - 700	%	ISO 527-3
Elmendorf Tear Strength			
MD	19 - 130	g	ASTM D1922
--	10 - 15	N	ISO 6383-2
Trouser Tear Resistance	23.0 - 50.0	N/mm	ISO 6383-1
Oxygen Permeability (23°C)	0.028 - 2.0	$cm^3 \cdot mm/m^2/atm/24\ hr$	ASTM D3985
Oxygen Transmission Rate (23°C)	15 - 40	$cm^3/m^2/24\ hr$	ASTM D3985
Water Vapor Transmission Rate	14 - 35	$g/m^2/24\ hr$	ASTM F1249
Impact	**Nominal Value**	**Unit**	**Test Method**
Charpy Notched Impact Strength			
23°C	39.2 - 53.0	J/m	ASTM D256
23°C	1.5 - 31	kJ/m^2	ISO 179
-30°C	4.69	kJ/m^2	ISO 179/1eA [9]
23°C	42.0	kJ/m^2	ISO 179/1eA [10]
Charpy Unnotched Impact Strength			
23°C	48 - 120	kJ/m^2	ISO 179
23°C	82.3	kJ/m^2	ISO 179/1eU [11]
Notched Izod Impact			
23°C	42 - 150	J/m	ASTM D256
23°C	2.5 - 25	kJ/m^2	ISO 180
Unnotched Izod Impact			

23°C	32 - 1600	J/m	ASTM D256
23°C	41 - 100	kJ/m²	ISO 180
Multi-Axial Instrumented Impact Energy (23°C)	2.00 - 67.2	J	ISO 6603-2
Multi-Axial Instrumented Impact Peak Force (23°C)	1230 - 5140	N	ISO 6603-2
Dart Drop Impact (23°C)	35.3 - 36.2	J	ASTM D3029
Thermal	**Nominal Value**	**Unit**	**Test Method**
Deflection Temperature Under Load			
0.45 MPa, not annealed	146 - 219	°C	ASTM D648
0.45 MPa, not annealed	50.9 - 216	°C	ISO 75-2/B
0.45 MPa	185	°C	ISO 75-2 [12]
1.8 MPa, not annealed	45.8 - 83.4	°C	ASTM D648
1.8 MPa, not annealed	49.5 - 82.8	°C	ISO 75-2/A
1.8 MPa	62.4	°C	ISO 75-2 [13]
8.0 MPa, not annealed	40.0 - 45.0	°C	ISO 75-2/C
Continuous Use Temperature	69.8 - 180	°C	ASTM D794
Vicat Softening Temperature			
--	170 - 225	°C	ASTM D1525
--	196 - 209	°C	ISO 306
Ball Indentation Temperature	169 - 170	°C	IEC 60598-1
Melting Temperature			
--	211 - 220	°C	
--	217 - 226	°C	DSC
--	217 - 222	°C	ISO 11357-3
--	215 - 221	°C	ASTM D3418
--	220 - 223	°C	ISO 3146
Peak Crystallization Temperature (DSC)	216 - 220	°C	ASTM D3418
Linear thermal expansion coefficient			
Flow	2.8E-5 - 1.1E-4	cm/cm/°C	ASTM D696
Flow	3.9E-5 - 1.0E-4	cm/cm/°C	ASTM E831
Flow	5.5E-5 - 1.2E-4	cm/cm/°C	ISO 11359-2
Lateral	6.6E-5 - 1.5E-4	cm/cm/°C	ISO 11359-2
Specific Heat (23°C)	1670 - 1680	J/kg/°C	ASTM C351
Thermal Conductivity (23°C)	0.23 - 0.30	W/m/K	ASTM C177, ISO 8302
RTI Elec	65.0 - 130	°C	UL 746
RTI Imp	65.0 - 106	°C	UL 746
RTI	65.0 - 121	°C	UL 746
Electrical	**Nominal Value**	**Unit**	**Test Method**
Surface Resistivity	1.0E+2 - 1.5E+15	ohms	ASTM D257, IEC 60093
Volume Resistivity			
23°C	10 - 2.5E+16	ohms·cm	ASTM D257
23°C	1.0 - 2.5E+16	ohms·cm	IEC 60093

--	1.0E+10 - 1.0E+13	ohms·m	IEC 60093 [14]
Dielectric Strength			
23°C	12 - 39	kV/mm	ASTM D149
23°C	18 - 37	kV/mm	IEC 60243-1
Dielectric Constant			
23°C	2.80 - 3.75		ASTM D150
23°C	3.33 - 7.18		IEC 60250
23°C	4.87		IEC 60250
Dissipation Factor			
23°C	0.020 - 0.30		ASTM D150
23°C	1.0E-3 - 0.35		IEC 60250
1 MHz	0.13		IEC 60250 [15]
Arc Resistance	114 - 195	sec	ASTM D495
Comparative Tracking Index (CTI)	495 - 600	V	UL 746
Comparative Tracking Index			
--	586 - 600	V	IEC 60112
--	594 - 600	V	ASTM D3638
Insulation Resistance (23°C)	1.0E+10 - 1.0E+12	ohms	IEC 60167
Flammability	**Nominal Value**	**Unit**	**Test Method**
Burning Rate	0.0 - 100	mm/min	ISO 3795
Glow Wire Flammability Index	650 - 960	°C	IEC 60695-2-12
Glow Wire Ignition Temperature	650 - 960	°C	IEC 60695-2-13
Oxygen Index			
--	30	%	ASTM D2863
--	21 - 32	%	ISO 4589-2
Optical	**Nominal Value**	**Unit**	**Test Method**
Gloss	113 - 170		ASTM D2457
Transmittance	82.9 - 85.0	%	ASTM D1003
Haze	0.50 - 5.0	%	ASTM D1003
Fill Analysis	**Nominal Value**	**Unit**	**Test Method**
Melt Viscosity	380 - 2740	Pa·s	ASTM D3835
Injection	**Nominal Value**	**Unit**	
Drying Temperature	80.0 - 82.5	°C	
Drying Time	2.0 - 5.3	hr	
Drying Time, Maximum	6.0	hr	
Suggested Max Moisture	0.095 - 0.20	%	
Suggested Shot Size	50 - 55	%	
Suggested Max Regrind	30	%	
Hopper Temperature	60.0 - 240	°C	
Rear Temperature	223 - 276	°C	
Middle Temperature	232 - 283	°C	
Front Temperature	245 - 290	°C	

Nozzle Temperature	149 - 277	°C
Processing (Melt) Temp	239 - 290	°C
Mold Temperature	59.0 - 90.1	°C
Injection Pressure	6.89 - 97.4	MPa
Holding Pressure	32.5 - 75.0	MPa
Back Pressure	0.172 - 1.27	MPa
Screw Speed	45 - 125	rpm
Clamp Tonnage	4.0 - 7.0	kN/cm^2
Cushion	3.97 - 4.80	mm

Injection instructions

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Extrusion	Nominal Value	Unit
Drying Temperature	65.0 - 82.5	°C
Drying Time	2.9 - 9.2	hr
Suggested Max Moisture	0.056 - 0.20	%
Cylinder Zone 1 Temp.	216 - 257	°C
Cylinder Zone 2 Temp.	244 - 248	°C
Cylinder Zone 3 Temp.	229 - 260	°C
Cylinder Zone 4 Temp.	245 - 247	°C
Cylinder Zone 5 Temp.	241 - 247	°C
Adapter Temperature	263 - 264	°C
Melt Temperature	234 - 266	°C
Die Temperature	232 - 260	°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.	??????,?? ISO 10350 ??? 23°C/50%r.h. ???

10.	??????,?? ISO 10350 ??? 23°C/50%r.h. ???
11.	??????,?? ISO 10350 ??? 23°C/50%r.h. ???
12.	??????,?? ISO 10350 ??? 23°C/50%r.h. ???
13.	??????,?? ISO 10350 ??? 23°C/50%r.h. ???
14.	??????,?? ISO 10350 ??? 23°C/50%r.h. ???
15.	??????,?? ISO 10350 ??? 23°C/50%r.h. ???

Recommended distributors for this material

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