

Generic Nylon 66

Polyamide 66

Generic

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Technical Data

Product Description

This data represents typical values that have been calculated from all products classified as: Generic Nylon 66

This information is provided for comparative purposes only.

General

Material Status	• Commercial: Active		
Availability	• Africa & Middle East • Asia Pacific	• Europe • Latin America	• North America

Physical	Nominal Value (English)	Nominal Value (SI)	Test Method
Density / Specific Gravity			
--	1.07 to 1.19	1.07 to 1.18 g/cm ³	ASTM D792
--	1.08 to 1.14 g/cm ³	1.08 to 1.14 g/cm ³	ISO 1183
--	1.13 to 1.15 g/cm ³	1.13 to 1.15 g/cm ³	ASTM D1505
Apparent (Bulk) Density	0.70 g/cm ³	0.70 g/cm ³	ISO 60
Melt Mass-Flow Rate (MFR)			
270°C/5.0 kg	4.8 to 84 g/10 min	4.8 to 84 g/10 min	ASTM D1238
275°C/0.325 kg	1.0 to 4.7 g/10 min	1.0 to 4.7 g/10 min	ISO 1133
Melt Volume-Flow Rate (MVR) (275°C/5.0 kg)	1.0 to 140 cm ³ /10min	1.0 to 140 cm ³ /10min	ISO 1133
Molding Shrinkage			
Flow	1.9E-3 to 0.021 in/in	0.19 to 2.1 %	ASTM D955
Across Flow	0.013 to 0.025 in/in	1.3 to 2.5 %	ASTM D955
--	0.96 to 2.0 %	0.96 to 2.0 %	ISO 294-4
Water Absorption			
24 hr	0.57 to 1.3 %	0.57 to 1.3 %	ASTM D570
24 hr, 73°F (23°C)	0.64 to 1.5 %	0.64 to 1.5 %	ISO 62
Saturation	1.9 to 8.5 %	1.9 to 8.5 %	ASTM D570
Saturation, 73°F (23°C)	6.9 to 9.0 %	6.9 to 9.0 %	ISO 62
Equilibrium	0.10 to 3.0 %	0.10 to 3.0 %	ASTM D570
Equilibrium, 73°F (23°C), 50% RH	1.2 to 3.0 %	1.2 to 3.0 %	ISO 62
Viscosity Number (Reduced Viscosity)	144.0 to 150.0 ml/g	144.0 to 150.0 ml/g	ISO 1628
Viscosity Number	137 to 155 cm ³ /g	137 to 155 cm ³ /g	ISO 307
Relative Viscosity	2.33 to 56.0	2.33 to 56.0	
Mechanical	Nominal Value (English)	Nominal Value (SI)	Test Method
Tensile Modulus			
--	6530 to 686000 psi	45.0 to 4730 MPa	ASTM D638
--	196000 to 588000 psi	1350 to 4050 MPa	ISO 527-1
Tensile Strength			
Yield	6310 to 13600 psi	43.5 to 93.4 MPa	ASTM D638
Yield	7180 to 13300 psi	49.5 to 91.8 MPa	ISO 527-2
Break	5000 to 13100 psi	34.5 to 90.5 MPa	ASTM D638
Break	6310 to 13100 psi	43.5 to 90.5 MPa	ISO 527-2
--	5000 to 18700 psi	34.5 to 129 MPa	ASTM D638
--	6350 to 13400 psi	43.8 to 92.4 MPa	ISO 527-2



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Mechanical	Nominal Value (English)	Nominal Value (SI)	Test Method
Tensile Elongation			
Yield	1.0 to 12 %	1.0 to 12 %	ASTM D638
Yield	3.9 to 5.1 %	3.9 to 5.1 %	ISO 527-2
Break	0.40 to 67 %	0.40 to 67 %	ASTM D638
Break	0.50 to 50 %	0.50 to 50 %	ISO 527-2
Nominal Tensile Strain at Break	9.7 to 51 %	9.7 to 51 %	ISO 527-2
Flexural Modulus			
--	440 to 691000 psi	3.03 to 4760 MPa	ASTM D790
--	202000 to 470000 psi	1390 to 3240 MPa	ISO 178
Flexural Strength			
--	7230 to 20400 psi	49.9 to 140 MPa	ASTM D790
--	1600 to 24700 psi	11.0 to 170 MPa	ISO 178
Yield	9220 to 18300 psi	63.5 to 126 MPa	ASTM D790
Break	12900 to 19000 psi	89.3 to 131 MPa	ASTM D790
Compressive Strength			
--	1200 to 28000 psi	8.27 to 193 MPa	ASTM D695
--	4600 to 14500 psi	31.8 to 100 MPa	ISO 604
Shear Strength	10000 to 11600 psi	68.9 to 80.0 MPa	ASTM D732
Poisson's Ratio	0.37 to 0.40	0.37 to 0.40	ASTM E132
Coefficient of Friction	0.084 to 0.60	0.084 to 0.60	ASTM D1894
Wear Factor	-1.0 to 89 ^{10^-10 in³·min/} ft·lb·hr	-2.0 to 180 ^{10^-8 mm³/N·m}	ASTM D3702
Films	Nominal Value (English)	Nominal Value (SI)	Test Method
Tensile Elongation (Yield)	4.4 to 4.5 %	4.4 to 4.5 %	ISO 527-3
Impact	Nominal Value (English)	Nominal Value (SI)	Test Method
Charpy Notched Impact Strength	0.26 to 4.9 ft·lb/in²	0.55 to 10 kJ/m²	ISO 179
Charpy Unnotched Impact Strength	-0.48 to 52 ft·lb/in²	-1.0 to 110 kJ/m²	ISO 179
Notched Izod Impact			
--	0.10 to 1.7 ft·lb/in	5.5 to 93 J/m	ASTM D256
--	1.8 to 2.9 ft·lb/in²	3.7 to 6.1 kJ/m²	ISO 180
Notched Izod Impact (Area)	1.43 to 2.46 ft·lb/in²	3.00 to 5.18 kJ/m²	ASTM D256
Unnotched Izod Impact			
--	1.0 to 31 ft·lb/in	54 to 1600 J/m	ASTM D4812
--	1.4 to 140 ft·lb/in²	3.0 to 300 kJ/m²	ISO 180
Instrumented Dart Impact			
--	8.85 to 673 in·lb	1.00 to 76.0 J	ASTM D3763
--	0.738 to 56.8 ft·lb	1.00 to 77.0 J	ISO 6603-2
Multi-Axial Instrumented Impact Peak Force	539 to 1380 lbf	2400 to 6150 N	ISO 6603-2
Hardness	Nominal Value (English)	Nominal Value (SI)	Test Method
Rockwell Hardness			
--	84 to 122	84 to 122	ASTM D785
--	110 to 122	110 to 122	ISO 2039-2
Durometer Hardness			
--	72 to 85	72 to 85	ASTM D2240
--	79 to 94	79 to 94	ISO 868
Ball Indentation Hardness	13100 to 26500 psi	90.5 to 182 MPa	ISO 2039-1



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Thermal	Nominal Value (English)	Nominal Value (SI)	Test Method
Deflection Temperature Under Load			
66 psi (0.45 MPa), Unannealed	364 to 505 °F	184 to 263 °C	ASTM D648
66 psi (0.45 MPa), Unannealed	354 to 451 °F	179 to 233 °C	ISO 75-2/B
66 psi (0.45 MPa), Annealed	364 to 482 °F	184 to 250 °C	ISO 75-2/B
264 psi (1.8 MPa), Unannealed	137 to 201 °F	58.1 to 93.8 °C	ASTM D648
264 psi (1.8 MPa), Unannealed	140 to 187 °F	59.8 to 86.2 °C	ISO 75-2/A
264 psi (1.8 MPa), Annealed	146 to 162 °F	63.1 to 72.2 °C	ISO 75-2/A
1160 psi (8.0 MPa), Unannealed	121 to 140 °F	49.7 to 60.1 °C	ISO 75-2/C
Continuous Use Temperature	184 to 268 °F	84.4 to 131 °C	ASTM D794
Glass Transition Temperature	41.0 to 176 °F	5.00 to 80.0 °C	ISO 11357-2
Vicat Softening Temperature			
--	409 to 500 °F	210 to 260 °C	ASTM D1525
--	392 to 484 °F	200 to 251 °C	ISO 306
Melting Temperature			
--	488 to 505 °F	253 to 263 °C	DSC ISO 11357-3 ASTM D3418 ISO 3146
--	500 to 509 °F	260 to 265 °C	
--	499 to 509 °F	259 to 265 °C	
--	488 to 501 °F	253 to 260 °C	
--	500 °F	260 °C	
Peak Crystallization Temperature (DSC)	417 to 430 °F	214 to 221 °C	ASTM D3418
CLTE			
Flow	1.3E-5 to 4.7E-5 in/in/°F	2.4E-5 to 8.4E-5 cm/cm/°C	ASTM D696
Flow	3.6E-5 to 6.8E-5 in/in/°F	6.5E-5 to 1.2E-4 cm/cm/°C	ASTM E831
Flow	1.7E-6 to 1.7E-4 in/in/°F	3.0E-6 to 3.1E-4 cm/cm/°C	ISO 11359-2
Transverse	5.1E-5 to 6.2E-5 in/in/°F	9.1E-5 to 1.1E-4 cm/cm/°C	ASTM E831
Transverse	3.3E-5 to 2.3E-4 in/in/°F	6.0E-5 to 4.1E-4 cm/cm/°C	ISO 11359-2
Specific Heat	0.394 to 0.502 Btu/lb/°F	1650 to 2100 J/kg/°C	ASTM C351
Thermal Conductivity			
--	1.4 to 12 Btu·in/hr/ft²/°F	0.20 to 1.8 W/m/K	ASTM C177
--	1.4 to 4.8 Btu·in/hr/ft²/°F	0.20 to 0.70 W/m/K	ISO 8302
RTI Elec	149 to 268 °F	65.0 to 131 °C	UL 746B
RTI Imp	149 to 223 °F	65.0 to 106 °C	UL 746B
RTI Str	149 to 267 °F	65.0 to 131 °C	UL 746B
Electrical	Nominal Value (English)	Nominal Value (SI)	Test Method
Surface Resistivity			
--	55 to 2.5E+15 ohms	55 to 2.5E+15 ohms	ASTM D257
--	1.0E+3 to 2.5E+16 ohms	1.0E+3 to 2.5E+16 ohms	IEC 60093
--	1.0E+12 to 1.0E ₊₁₅ ohms	1.0E+12 to 1.0E ₊₁₅ ohms	IEC 62631-3-2
Volume Resistivity			
--	5.0 to 2.5E+16 ohms·cm	5.0 to 2.5E+16 ohms·cm	ASTM D257
--	1.0 to 2.5E+17 ohms·cm	1.0 to 2.5E+17 ohms·cm	IEC 60093
--	1.0E+10 to 2.5E ₊₁₄ ohms·m	1.0E+10 to 2.5E ₊₁₄ ohms·m	IEC 62631-3-1



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Electrical	Nominal Value (English)	Nominal Value (SI)	Test Method
Dielectric Strength			
--	370 to 600 V/mil	15 to 23 kV/mm	ASTM D149
--	400 to 820 V/mil	16 to 32 kV/mm	IEC 60243-1
Dielectric Constant			
--	2.88 to 4.06	2.88 to 4.06	ASTM D150
--	2.86 to 3.85	2.86 to 3.85	IEC 60250
--	3.44	3.44	IEC 60250
--	3.41	3.41	IEC 62631-2-1
Dissipation Factor			
--	0.010 to 0.030	0.010 to 0.030	ASTM D150
--	3.0E-3 to 0.033	3.0E-3 to 0.033	IEC 60250
--	5.0E-3 to 0.023	5.0E-3 to 0.023	IEC 62631-2-1
Arc Resistance	60.0 to 190 sec	60.0 to 190 sec	ASTM D495
Comparative Tracking Index (CTI)	588 to 600 V	588 to 600 V	UL 746A
Comparative Tracking Index	597 to 608 V	597 to 608 V	IEC 60112
High Amp Arc Ignition (HAI)	87.6 to 200	87.6 to 200	UL 746A
Hot-wire Ignition (HWI)	8.0 to 46 sec	8.0 to 46 sec	UL 746A
Flammability	Nominal Value (English)	Nominal Value (SI)	Test Method
Burning Rate	3.9 to 4.0 in/min	99 to 100 mm/min	ISO 3795
Glow Wire Flammability Index	1190 to 1760 °F	645 to 960 °C	IEC 60695-2-12
Glow Wire Ignition Temperature	1290 to 1760 °F	697 to 960 °C	IEC 60695-2-13
Oxygen Index			
--	21 to 33 %	21 to 33 %	ASTM D2863
--	26 to 28 %	26 to 28 %	ISO 4589-2
Optical	Nominal Value (English)	Nominal Value (SI)	Test Method
Yellowness Index	-8.1 to 4.4 YI	-8.1 to 4.4 YI	ASTM D1925
Fill Analysis	Nominal Value (English)	Nominal Value (SI)	
Melt Density	0.967 to 1.01 g/cm³	0.967 to 1.01 g/cm³	
Ejection Temperature	374 °F	190 °C	
Injection	Nominal Value (English)	Nominal Value (SI)	
Drying Temperature	175 to 178 °F	79 to 81 °C	
Drying Time	2.8 to 5.3 hr	2.8 to 5.3 hr	
Drying Time, Maximum	8.0 hr	8.0 hr	
Dew Point	-22 to 0 °F	-30 to -18 °C	
Suggested Max Moisture	0.095 to 0.24 %	0.095 to 0.24 %	
Suggested Shot Size	50 %	50 %	
Hopper Temperature	158 to 176 °F	70 to 80 °C	
Rear Temperature	505 to 536 °F	263 to 280 °C	
Middle Temperature	506 to 567 °F	263 to 297 °C	
Front Temperature	509 to 576 °F	265 to 302 °C	
Nozzle Temperature	522 to 564 °F	272 to 296 °C	
Processing (Melt) Temp	514 to 565 °F	268 to 296 °C	
Mold Temperature	139 to 189 °F	60 to 87 °C	
Injection Pressure	9980 to 14400 psi	68.8 to 99.4 MPa	



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Injection	Nominal Value (English)	Nominal Value (SI)
Holding Pressure	10800 to 10900 psi	74.3 to 75.0 MPa
Back Pressure	20.0 to 382 psi	0.138 to 2.63 MPa
Screw Speed	44 to 400 rpm	44 to 400 rpm
Cushion	0.187 to 0.197 in	4.74 to 5.00 mm
Vent Depth	7.5E-4 to 9.4E-4 in	0.019 to 0.024 mm

Injection Notes

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Extrusion	Nominal Value (English)	Nominal Value (SI)
Drying Temperature	176 °F	80 °C
Drying Time	3.0 to 5.0 hr	3.0 to 5.0 hr
Suggested Max Moisture	0.050 to 0.20 %	0.050 to 0.20 %
Cylinder Zone 1 Temp.	522 to 523 °F	272 to 273 °C
Cylinder Zone 2 Temp.	523 to 524 °F	273 °C
Cylinder Zone 3 Temp.	523 to 524 °F	273 °C
Cylinder Zone 5 Temp.	523 to 524 °F	273 °C
Melt Temperature	540 to 541 °F	282 to 283 °C
Die Temperature	533 to 543 °F	278 to 284 °C

Extrusion Notes

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Notes

¹ Typical properties: these are not to be construed as specifications.

