

Celanese Zytel® 103HSL

Categories: Polymer; Thermoplastic; Nylon (Polyamide PA); Nylon 66 (PA66)
 Material Notes: Unreinforced, Heat Stabilized, Polyamide 66
 Former DuPont product acquired by Celanese in 2022.

Physical Properties	Metric	English	Comments
Density	1.14 g/cc	0.0412 lb/in ³	DAM; ISO 1183
Melt Density	0.980 g/cc @Temperature 290 °C	0.0354 lb/in ³ @Temperature 554 °F	
Water Absorption	8.5 % @Thickness 2.00 mm	8.5 % @Thickness 0.0787 in	DAM; Sim. to ISO 62
	1.2 % @Thickness 3.00 mm, Time 86400 sec	1.2 % @Thickness 0.118 in, Time 24.0 hour	Immersion; DAM; Sim. to ISO 62
Moisture Absorption	2.60 % @Thickness 2.00 mm	2.60 % @Thickness 0.0787 in	DAM; Sim. to ISO 62
Viscosity Number	150 cm ³ /g	1.50 dl/g	Sulfuric acid 96%; ISO 307, 1157, 1628
Linear Mold Shrinkage, Flow	0.013 cm/cm	0.013 in/in	DAM; ISO 294-4, 2577
Linear Mold Shrinkage, Transverse	0.013 cm/cm	0.013 in/in	DAM; ISO 294-4, 2577

Mechanical Properties	Metric	English	Comments
Ball Indentation Hardness	85.0 MPa	12300 psi	H 358/30; 50% RH; ISO 2039-1
	160 MPa	23200 psi	H 961/30; DAM; ISO 2039-1
	180 MPa	26100 psi	H 358/30; DAM; ISO 2039-1
Tensile Strength, Yield	55.0 MPa	7980 psi	50% RH; ISO 527-1/-2
	85.0 MPa	12300 psi	DAM; ISO 527-1/-2
Elongation at Break	4.5 %	4.5 %	parallel; DAM; ISO 527-3
	20 %	20 %	Nominal; DAM; ISO 527-1/-2
	>= 50 %	>= 50 %	Nominal; 50% RH; ISO 527-1/-2
Elongation at Yield	4.3 %	4.3 %	DAM; ISO 527-1/-2
	25 %	25 %	50% RH; ISO 527-1/-2
Tensile Modulus	1.40 GPa	203 ksi	50% RH; ISO 527-1/-2
	3.10 GPa	450 ksi	DAM; ISO 527-1/-2
Flexural Strength	65.0 MPa @Strain 3.5 %	9430 psi @Strain 3.5 %	50% RH; ISO 178
	95.0 MPa @Strain 3.5 %	13800 psi @Strain 3.5 %	DAM; ISO 178
Flexural Modulus	1.30 GPa	189 ksi	DS; 50% RH; ISO 178
	2.80 GPa	406 ksi	DS; DAM; ISO 178
Poissons Ratio	0.37	0.37	DAM
	0.43	0.43	50% RH

Izod Impact, Notched (ISO)	3.50 kJ/m ²	1.67 ft-lb/in ²	DS; 50% RH; ISO 180/1A
	@Temperature -40.0 °C	@Temperature -40.0 °F	
	4.00 kJ/m ²	1.90 ft-lb/in ²	DS; DAM; ISO 180/1A
	@Temperature -40.0 °C	@Temperature -40.0 °F	
	4.00 kJ/m ²	1.90 ft-lb/in ²	50% RH; ISO 180/1A
	@Temperature -30.0 °C	@Temperature -22.0 °F	
	4.00 kJ/m ²	1.90 ft-lb/in ²	DAM; ISO 180/1A
	@Temperature -30.0 °C	@Temperature -22.0 °F	
Izod Impact, Unnotched (ISO)	5.00 kJ/m ²	2.38 ft-lb/in ²	DAM; ISO 180/1A
	@Temperature 23.0 °C	@Temperature 73.4 °F	
	10.0 kJ/m ²	4.76 ft-lb/in ²	50% RH; ISO 180/1A
	@Temperature 23.0 °C	@Temperature 73.4 °F	
	300 kJ/m ²	143 ft-lb/in ²	DAM; ISO 180/1U
	@Temperature -30.0 °C	@Temperature -22.0 °F	
	NB	NB	50% RH; ISO 180/1U
	@Temperature -30.0 °C	@Temperature -22.0 °F	
Charpy Impact Unnotched	NB	NB	50% RH; ISO 180/1U
	@Temperature 23.0 °C	@Temperature 73.4 °F	
	NB	NB	DAM; ISO 180/1U
	@Temperature 23.0 °C	@Temperature 73.4 °F	
	40.0 J/cm ²	190 ft-lb/in ²	DAM; ISO 179/1eU
	@Temperature -30.0 °C	@Temperature -22.0 °F	
	NB	NB	50% RH; ISO 179/1eU
	@Temperature -30.0 °C	@Temperature -22.0 °F	
Charpy Impact, Notched	NB	NB	50% RH; ISO 179/1eU
	@Temperature 23.0 °C	@Temperature 73.4 °F	
	NB	NB	50% RH; ISO 179/1eA
	@Temperature -40.0 °C	@Temperature -40.0 °F	
	0.250 J/cm ²	1.19 ft-lb/in ²	DAM; ISO 179/1eA
	@Temperature -40.0 °C	@Temperature -40.0 °F	
	0.350 J/cm ²	1.67 ft-lb/in ²	50% RH; ISO 179/1eA
	@Temperature -30.0 °C	@Temperature -22.0 °F	
Tensile Creep Modulus, 1 hour	0.450 J/cm ²	2.14 ft-lb/in ²	DAM; ISO 179/1eA
	@Temperature -30.0 °C	@Temperature -22.0 °F	
	0.550 J/cm ²	2.62 ft-lb/in ²	DAM; ISO 179/1eA
	@Temperature 23.0 °C	@Temperature 73.4 °F	
	1.20 J/cm ²	5.71 ft-lb/in ²	50% RH; ISO 179/1eA
	@Temperature 23.0 °C	@Temperature 73.4 °F	
	1200 MPa	174000 psi	1h; 50% RH; ISO 899-1
Tensile Creep Modulus, 1000 hours	650 MPa	94300 psi	