

Celanese Zytel® 80G33HS1L

Categories: Polymer; Thermoplastic; Nylon (Polyamide PA); Nylon 66 (PA66); Nylon 66, 30% Glass Fiber Filled

Material Notes: 33% Glass Reinforced, Toughened, Heat Stabilized, Polyamide 66

Former DuPont product acquired by Celanese in 2022.

Physical Properties	Metric	English	Comments
Density	1.33 g/cc	0.0480 lb/in ³	DAM; ISO 1183
Melt Density	1.12 g/cc @Temperature 295 °C	0.0405 lb/in ³ @Temperature 563 °F	
Water Absorption	0.85 % @Time 86400 sec	0.85 % @Time 24.0 hour	Immersion; DAM; Sim. to ISO 62
	4.5 % @Thickness 2.00 mm	4.5 % @Thickness 0.0787 in	DAM; Sim. to ISO 62
Moisture Absorption	1.50 % @Thickness 2.00 mm	1.50 % @Thickness 0.0787 in	DAM; Sim. to ISO 62
Viscosity Number	144 cm ³ /g	1.44 dl/g	sulfuric acid 96%; ISO 307, 1157, 1628
Linear Mold Shrinkage, Flow	0.0030 cm/cm	0.0030 in/in	DAM; ISO 294-4, 2577
Linear Mold Shrinkage, Transverse	0.0070 cm/cm	0.0070 in/in	DAM; ISO 294-4, 2577

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell M	70	70	DAM; ISO 2039-2
Hardness, Rockwell R	110	110	DAM; ISO 2039-2
Ball Indentation Hardness	220 MPa	31900 psi	H 961/30; DAM; ISO 2039-1
Tensile Strength at Break	108 MPa	15700 psi	50% RH; ISO 527-1/-2
	146 MPa	21200 psi	DAM; ISO 527-1/-2
Elongation at Break	3.7 %	3.7 %	DAM; ISO 527-1/-2
	7.0 %	7.0 %	50% RH; ISO 527-1/-2
Tensile Modulus	6.20 GPa	899 ksi	50% RH; ISO 527-1/-2
	8.90 GPa	1290 ksi	DAM; ISO 527-1/-2
Flexural Strength	205 MPa	29700 psi	DAM; ISO 178
Flexural Modulus	6.20 GPa	899 ksi	50% RH; ISO 178
	7.50 GPa	1090 ksi	DAM; ISO 178
Poissons Ratio	0.34	0.34	DAM
	0.35	0.35	50% RH
Izod Impact, Notched (ISO)	15.0 kJ/m ² @Temperature -40.0 °C	7.14 ft-lb/in ² @Temperature -40.0 °F	50% RH; ISO 180/1A
	15.0 kJ/m ² @Temperature -40.0 °C	7.14 ft-lb/in ² @Temperature -40.0 °F	DAM; ISO 180/1A
	16.0 kJ/m ² @Temperature -30.0 °C	7.61 ft-lb/in ² @Temperature -22.0 °F	50% RH; ISO 180/1A
	17.0 kJ/m ² @Temperature -30.0 °C	8.09 ft-lb/in ² @Temperature -22.0 °F	DAM; ISO 180/1A
	21.0 kJ/m ² @Temperature 23.0 °C	9.99 ft-lb/in ² @Temperature 73.4 °F	DAM; ISO 180/1A
	26.0 kJ/m ² @Temperature 23.0 °C	12.4 ft-lb/in ² @Temperature 73.4 °F	50% RH; ISO 180/1A
Izod Impact, Unnotched (ISO)	75.0 kJ/m ² @Temperature -30.0 °C	35.7 ft-lb/in ² @Temperature -22.0 °F	50% RH; ISO 180/1U
	80.0 kJ/m ² @Temperature -30.0 °C	38.1 ft-lb/in ² @Temperature -22.0 °F	DAM; ISO 180/1U

Charpy Impact Unnotched	80.0 kJ/m ² @Temperature 23.0 °C	38.1 ft-lb/in ² @Temperature 73.4 °F	50% RH; ISO 180/1U
	80.0 kJ/m ² @Temperature 23.0 °C	38.1 ft-lb/in ² @Temperature 73.4 °F	DAM; ISO 180/1U
	9.70 J/cm ² @Temperature 23.0 °C	46.2 ft-lb/in ² @Temperature 73.4 °F	DAM; ISO 179/1eU
	9.80 J/cm ² @Temperature 23.0 °C	46.6 ft-lb/in ² @Temperature 73.4 °F	50% RH; ISO 179/1eU
	10.0 J/cm ² @Temperature -30.0 °C	47.6 ft-lb/in ² @Temperature -22.0 °F	50% RH; ISO 179/1eU
	10.6 J/cm ² @Temperature -30.0 °C	50.4 ft-lb/in ² @Temperature -22.0 °F	DAM; ISO 179/1eU
Charpy Impact, Notched	1.40 J/cm ² @Temperature -40.0 °C	6.66 ft-lb/in ² @Temperature -40.0 °F	DAM; ISO 179/1eA
	1.70 J/cm ² @Temperature -30.0 °C	8.09 ft-lb/in ² @Temperature -22.0 °F	50% RH; ISO 179/1eA
	1.80 J/cm ² @Temperature -30.0 °C	8.57 ft-lb/in ² @Temperature -22.0 °F	DAM; ISO 179/1eA
	1.80 J/cm ² @Temperature -40.0 °C	8.57 ft-lb/in ² @Temperature -40.0 °F	50% RH; ISO 179/1eA
	2.00 J/cm ² @Temperature 23.0 °C	9.52 ft-lb/in ² @Temperature 73.4 °F	DAM; ISO 179/1eA
	2.80 J/cm ² @Temperature 23.0 °C	13.3 ft-lb/in ² @Temperature 73.4 °F	50% RH; ISO 179/1eA
Tensile Creep Modulus, 1 hour	5300 MPa	769000 psi	1h; 50% RH; ISO 899-1
Tensile Creep Modulus, 1000 hours	4300 MPa	624000 psi	1000h; 50% RH; ISO 899-1

Electrical Properties	Metric	English	Comments
Volume Resistivity	1.00e+11 ohm-cm	1.00e+11 ohm-cm	50% RH; IEC 62631-3-1
	>= 1.00e+15 ohm-cm	>= 1.00e+15 ohm-cm	DAM; IEC 62631-3-1
Surface Resistance	1.00e+12 ohm	1.00e+12 ohm	50% RH; IEC 62631-3-2
Comparative Tracking Index	425 V	425 V	50% RH; IEC 60112

Thermal Properties	Metric	English	Comments
CTE, linear, Parallel to Flow	15.0 µm/m-°C	8.33 µin/in-°F	DAM; ISO 11359-1/-2
CTE, linear, Transverse to Flow	120 µm/m-°C	66.7 µin/in-°F	DAM; ISO 11359-1/-2
Specific Heat Capacity	2.20 J/g-°C	0.526 BTU/lb-°F	Melt
	@Temperature 295 °C	@Temperature 563 °F	
Thermal Conductivity	0.220 W/m-K	1.53 BTU-in/hr-ft ² -°F	Melt
	@Temperature 295 °C	@Temperature 563 °F	
Melting Point	262 °C	504 °F	10°C/min; DAM; ISO 11357-1/-3
Deflection Temperature at 0.46 MPa (66 psi)	261 °C	502 °F	DAM; ISO 75-1/-2
Deflection Temperature at 1.8 MPa (264 psi)	246 °C	475 °F	DAM; ISO 75-1/-2
Vicat Softening Point	245 °C	473 °F	50°C/h, 50N; DAM; ISO 306

Glass Transition Temp, Tg	20.0 °C	68.0 °F	10°C/min; 50% RH; ISO 11357-1/-2
	75.0 °C	167 °F	10°C/min; DAM; ISO 11357-1/-2
Flammability, UL94	HB @Thickness 0.750 mm	HB @Thickness 0.0295 in	DAM; IEC 60695-11-10
	HB @Thickness 1.50 mm	HB @Thickness 0.0591 in	DAM; IEC 60695-11-10
Flame Spread	23.0 mm/min @Thickness 1.00 mm	0.906 in/min @Thickness 0.0394 in	ISO 3795 (FMVSS 302)

Processing Properties	Metric	English	Comments
Melt Temperature	295 °C	563 °F	Optimum, Injection
	285 - 305 °C	545 - 581 °F	Range, Injection
Mold Temperature	50.0 - 100 °C	122 - 212 °F	Injection
	80.0 °C	176 °F	Optimum, Injection
Ejection Temperature	210 °C	410 °F	Injection
Drying Temperature	80.0 °C	176 °F	Injection
Dry Time	2.00 - 4.00 hour	2.00 - 4.00 hour	Injection, Dehumidified Dryer
Moisture Content	<= 0.20 %	<= 0.20 %	Injection
Hold Pressure	50.0 - 100 MPa	7250 - 14500 psi	Range, Injection

Descriptive Properties			
Additives	Release agent		
Drying Recommended	yes		Injection
Eff. thermal diffusivity (m²/s)	9E-08		
Emission of organic compounds (µgC/g)	25		VDA 277
FMVSS Class	SE/B		ISO 3795 (FMVSS 302)
Fogging (mg)	0.8		G-value (condensate); ISO 6452; DAM
ISO designation	ISO 16396-PA66-I,GF33,M1GHNR,S14-090		
Max. screw tangential speed (m/s)	0.2		Injection
Odor Class	3		VDA 270
Part Marking Code	>PA66-IGF33<		ISO 11469
Polymer	PA66-I-GF33		
Processing Hold Pressure Time (s/mm)	3		Injection
Resin Identification	PA66-IGF33		ISO 1043