

# Celanese Zytel<sup>®</sup> 70G35HSL

Categories: Polymer; Thermoplastic; Nylon (Polyamide PA); Nylon 66 (PA66); Nylon 66, 40% Glass Fiber Filled  
 Material Notes: 35% Glass Reinforced, Heat Stabilized, Polyamide 66  
 Former DuPont product acquired by Celanese in 2022.

Physical Properties	Metric	English	Comments
Density	1.41 g/cc	0.0509 lb/in <sup>3</sup>	DAM; ISO 1183
Melt Density	1.24 g/cc @Temperature 295 °C	0.0448 lb/in <sup>3</sup> @Temperature 563 °F	
Water Absorption	1.1 % @Time 86400 sec	1.1 % @Time 24.0 hour	Immersion; DAM; Sim. to ISO 62
	5.5 % @Thickness 2.00 mm	5.5 % @Thickness 0.0787 in	DAM; Sim. to ISO 62
Moisture Absorption	1.70 % @Thickness 2.00 mm	1.70 % @Thickness 0.0787 in	DAM; Sim. to ISO 62
Viscosity Number	145 cm <sup>3</sup> /g	1.45 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	0.011 cm/cm	0.011 in/in	DAM; ISO 294-4, 2577

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell M	89	89	50% RH; ISO 2039-2
	105	105	DAM; ISO 2039-2
Hardness, Rockwell R	117	117	50% RH; ISO 2039-2
	125	125	DAM; ISO 2039-2
Ball Indentation Hardness	285 MPa	41300 psi	H 961/30; DAM; ISO 2039-1
Tensile Strength at Break	140 MPa	20300 psi	50% RH; ISO 527-1/-2
	210 MPa	30500 psi	DAM; ISO 527-1/-2
Elongation at Break	3.2 %	3.2 %	DAM; ISO 527-1/-2
	4.6 %	4.6 %	50% RH; ISO 527-1/-2
Tensile Modulus	8.50 GPa	1230 ksi	50% RH; ISO 527-1/-2
	11.0 GPa	1600 ksi	DAM; ISO 527-1/-2
Flexural Strength	230 MPa	33400 psi	50% RH; ISO 178
	300 MPa	43500 psi	DAM; ISO 178
Flexural Modulus	7.50 GPa	1090 ksi	50% RH; ISO 178
	9.50 GPa	1380 ksi	DAM; ISO 178
Poissons Ratio	0.34	0.34	50% RH
	0.34	0.34	DAM
Izod Impact, Notched (ISO)	10.0 kJ/m <sup>2</sup> @Temperature -40.0 °C	4.76 ft-lb/in <sup>2</sup> @Temperature -40.0 °F	DAM; ISO 180/1A

	10.0 kJ/m <sup>2</sup> @Temperature -30.0 °C	4.76 ft-lb/in <sup>2</sup> @Temperature -22.0 °F	50% RH; ISO 180/1A
	10.0 kJ/m <sup>2</sup> @Temperature -30.0 °C	4.76 ft-lb/in <sup>2</sup> @Temperature -22.0 °F	DAM; ISO 180/1A
	12.0 kJ/m <sup>2</sup> @Temperature 23.0 °C	5.71 ft-lb/in <sup>2</sup> @Temperature 73.4 °F	DAM; ISO 180/1A
	15.0 kJ/m <sup>2</sup> @Temperature 23.0 °C	7.14 ft-lb/in <sup>2</sup> @Temperature 73.4 °F	50% RH; ISO 180/1A
Izod Impact, Unnotched (ISO)	60.0 kJ/m <sup>2</sup> @Temperature -30.0 °C	28.6 ft-lb/in <sup>2</sup> @Temperature -22.0 °F	DAM; ISO 180/1U
	60.0 kJ/m <sup>2</sup> @Temperature 23.0 °C	28.6 ft-lb/in <sup>2</sup> @Temperature 73.4 °F	DAM; ISO 180/1U
Charpy Impact Unnotched	8.00 J/cm <sup>2</sup> @Temperature -30.0 °C	38.1 ft-lb/in <sup>2</sup> @Temperature -22.0 °F	50% RH; ISO 179/1eU
	8.00 J/cm <sup>2</sup> @Temperature -30.0 °C	38.1 ft-lb/in <sup>2</sup> @Temperature -22.0 °F	DAM; ISO 179/1eU
	9.00 J/cm <sup>2</sup> @Temperature 23.0 °C	42.8 ft-lb/in <sup>2</sup> @Temperature 73.4 °F	DAM; ISO 179/1eU
	10.0 J/cm <sup>2</sup> @Temperature 23.0 °C	47.6 ft-lb/in <sup>2</sup> @Temperature 73.4 °F	50% RH; ISO 179/1eU
Charpy Impact, Notched	1.00 J/cm <sup>2</sup> @Temperature -30.0 °C	4.76 ft-lb/in <sup>2</sup> @Temperature -22.0 °F	50% RH; ISO 179/1eA
	1.00 J/cm <sup>2</sup> @Temperature -30.0 °C	4.76 ft-lb/in <sup>2</sup> @Temperature -22.0 °F	DAM; ISO 179/1eA
	1.50 J/cm <sup>2</sup> @Temperature 23.0 °C	7.14 ft-lb/in <sup>2</sup> @Temperature 73.4 °F	DAM; ISO 179/1eA
	1.80 J/cm <sup>2</sup> @Temperature 23.0 °C	8.57 ft-lb/in <sup>2</sup> @Temperature 73.4 °F	50% RH; ISO 179/1eA
Puncture Energy	6.00 J @Temperature 23.0 °C	4.43 ft-lb @Temperature 73.4 °F	DAM; ISO 6603-2
Tensile Creep Modulus, 1 hour	8400 MPa	1.22e+6 psi	1h; 50% RH; ISO 899-1
Tensile Creep Modulus, 1000 hours	6000 MPa	870000 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+13 ohm	1.00e+13 ohm	50% RH; IEC 62631-3-2
Dielectric Strength	31.0 kV/mm	787 kV/in	50% RH; IEC 60243-1
	36.0 kV/mm	914 kV/in	DAM; IEC 60243-1
Comparative Tracking Index	400 V	400 V	DAM; IEC 60112

Thermal Properties	Metric	English	Comments
CTE, linear, Parallel to Flow	17.0 µm/m-°C	9.44 µin/in-°F	DAM; ISO 11359-1/-2

CTE, linear, Transverse to Flow	85.0 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$	47.2 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$	DAM; ISO 11359-1/-2
Specific Heat Capacity	2.13 $\text{J}/\text{g}\cdot^\circ\text{C}$ @Temperature 295 $^\circ\text{C}$	0.509 $\text{BTU}/\text{lb}\cdot^\circ\text{F}$ @Temperature 563 $^\circ\text{F}$	Melt
Thermal Conductivity	0.240 $\text{W}/\text{m}\cdot\text{K}$ @Temperature 295 $^\circ\text{C}$	1.67 $\text{BTU}\cdot\text{in}/\text{hr}\cdot\text{ft}^2\cdot^\circ\text{F}$ @Temperature 563 $^\circ\text{F}$	Melt
Melting Point	262 $^\circ\text{C}$	504 $^\circ\text{F}$	10 $^\circ\text{C}/\text{min}$ ; DAM; ISO 11357-1/-3
Deflection Temperature at 0.46 MPa (66 psi)	261 $^\circ\text{C}$	502 $^\circ\text{F}$	DAM; ISO 75-1/-2
Deflection Temperature at 1.8 MPa (264 psi)	252 $^\circ\text{C}$	486 $^\circ\text{F}$	DAM; ISO 75-1/-2
Vicat Softening Point	255 $^\circ\text{C}$	491 $^\circ\text{F}$	50 $^\circ\text{C}/\text{h}$ , 50N; DAM; ISO 306
Glass Transition Temp, Tg	20.0 $^\circ\text{C}$	68.0 $^\circ\text{F}$	10 $^\circ\text{C}/\text{min}$ ; 50% RH; ISO 11357-1/-2
	70.0 $^\circ\text{C}$	158 $^\circ\text{F}$	10 $^\circ\text{C}/\text{min}$ ; DAM; ISO 11357-1/-2
Flammability, UL94	HB @Thickness 0.710 mm	HB @Thickness 0.0280 in	DAM; IEC 60695-11-10
	HB @Thickness 1.50 mm	HB @Thickness 0.0591 in	DAM; IEC 60695-11-10
Flame Spread	26.0 mm/min @Thickness 1.00 mm	1.02 in/min @Thickness 0.0394 in	ISO 3795 (FMVSS 302)
Oxygen Index	24 %	24 %	DAM; ISO 4589-1/-2

Processing Properties	Metric	English	Comments
Melt Temperature	295 $^\circ\text{C}$	563 $^\circ\text{F}$	Optimum, Injection
	285 - 305 $^\circ\text{C}$	545 - 581 $^\circ\text{F}$	Range, Injection
Mold Temperature	70.0 - 120 $^\circ\text{C}$	158 - 248 $^\circ\text{F}$	Injection
	100 $^\circ\text{C}$	212 $^\circ\text{F}$	Optimum, Injection
Ejection Temperature	210 $^\circ\text{C}$	410 $^\circ\text{F}$	Injection
Drying Temperature	80.0 $^\circ\text{C}$	176 $^\circ\text{F}$	Injection
Dry Time	2.00 - 4.00 hour	2.00 - 4.00 hour	Injection, Dehumidified Dryer
Moisture Content	$\leq 0.20$ %	$\leq 0.20$ %	Injection
Hold Pressure	50.0 - 100 MPa	7250 - 14500 psi	Range, Injection