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Celanese Zytel® 70G35HSLRA4

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

Physical Properties	Metric	English	Comments
Density	1.41 g/cc	0.0509 lb/in³	DAM; ISO 1183
Melt Density	1.27 g/cc @Temperature 295 °C	0.0459 lb/in³ @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	110 cm³/g	1.10 dl/g	formic acid 90%; ISO 307, 1157, 1628
	125 cm³/g	1.25 dl/g	sulfuric acid 96%; ISO 307, 1157, 1628
Linear Mold Shrinkage, Flow	0.0040 cm/cm	0.0040 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	110	110	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	135 MPa	19600 psi	50% RH; ISO 527-1/-2
	210 MPa	30500 psi	DAM; ISO 527-1/-2
Elongation at Break	3.0 %	3.0 %	DAM; ISO 527-1/-2
	5.0 %	5.0 %	50% RH; ISO 527-1/-2
Tensile Modulus	8.00 GPa	1160 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
	10.0 GPa	1450 ksi	DAM; ISO 178
Poissons Ratio	0.34	0.34	50% RH
	0.34	0.34	DAM
Izod Impact, Notched (ISO)	10.0 kJ/m² @Temperature -40.0 °C	4.76 ft-lb/in² @Temperature -40.0 °F	DAM; ISO 180/1A
	14.0 kJ/m² @Temperature 23.0 °C	6.66 ft-lb/in² @Temperature 73.4 °F	DAM; ISO 180/1A
	16.0 kJ/m² @Temperature 23.0 °C	7.61 ft-lb/in² @Temperature 73.4 °F	50% RH; ISO 180/1A
Izod Impact, Unnotched (ISO)	60.0 kJ/m² @Temperature -30.0 °C	28.6 ft-lb/in² @Temperature -22.0 °F	DAM; ISO 180/1U

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	60.0 kJ/m² @Temperature 23.0 °C	28.6 ft-lb/in² @Temperature 73.4 °F	DAM; ISO 180/1U
Charpy Impact Unnotched	8.00 J/cm² @Temperature -30.0 °C	38.1 ft-lb/in² @Temperature -22.0 °F	50% RH; ISO 179/1eU
	8.00 J/cm² @Temperature -30.0 °C	38.1 ft-lb/in² @Temperature -22.0 °F	DAM; ISO 179/1eU
	8.00 J/cm² @Temperature 23.0 °C	38.1 ft-lb/in² @Temperature 73.4 °F	DAM; ISO 179/1eU
	10.0 J/cm² @Temperature 23.0 °C	47.6 ft-lb/in² @Temperature 73.4 °F	50% RH; ISO 179/1eU
Charpy Impact, Notched	1.00 J/cm² @Temperature -40.0 °C	4.76 ft-lb/in² @Temperature -40.0 °F	50% RH; ISO 179/1eA
	1.00 J/cm² @Temperature -40.0 °C	4.76 ft-lb/in² @Temperature -40.0 °F	DAM; ISO 179/1eA
	1.00 J/cm² @Temperature -30.0 °C	4.76 ft-lb/in² @Temperature -22.0 °F	50% RH; ISO 179/1eA
	1.00 J/cm² @Temperature -30.0 °C	4.76 ft-lb/in² @Temperature -22.0 °F	DAM; ISO 179/1eA
	1.30 J/cm² @Temperature 23.0 °C	6.19 ft-lb/in² @Temperature 73.4 °F	DAM; ISO 179/1eA
	1.60 J/cm² @Temperature 23.0 °C	7.61 ft-lb/in² @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	7500 MPa	1.09e+6 psi	1h; 50% RH; ISO 899-1
Tensile Creep Modulus, 1000 hours	5000 MPa	725000 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	24.0 kV/mm	610 kV/in	50% RH; IEC 60243-1
	37.0 kV/mm	940 kV/in	DAM; IEC 60243-1
Comparative Tracking Index	450 V	450 V	DAM; IEC 60112

Thermal Properties	Metric	English	Comments
CTE, linear, Parallel to Flow	22.0 µm/m-°C	12.2 µin/in-°F	DAM; ISO 11359-1/-2
	14.0 µm/m-°C @Temperature 55.0 - 160 °C	7.78 µin/in-°F @Temperature 131 - 320 °F	DAM; ISO 11359-1/-2
	23.0 µm/m-°C @Temperature -40.0 - 23.0 °C	12.8 µin/in-°F @Temperature -40.0 - 73.4 °F	DAM; ISO 11359-1/-2
CTE, linear, Transverse to Flow	69.0 µm/m-°C	38.3 µin/in-°F	DAM; ISO 11359-1/-2

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	62.0 µm/m-°C @Temperature -40.0 - 23.0 °C	34.4 µin/in-°F @Temperature -40.0 - 73.4 °F	DAM; ISO 11359-1/-2
	140 µm/m-°C @Temperature 55.0 - 160 °C	77.8 µin/in-°F @Temperature 131 - 320 °F	DAM; ISO 11359-1/-2
Specific Heat Capacity	2.30 J/g-°C @Temperature 295 °C	0.550 BTU/lb-°F @Temperature 563 °F	Melt
Thermal Conductivity	0.220 W/m-K @Temperature 295 °C	1.53 BTU-in/hr-ft²-°F @Temperature 563 °F	Melt
Melting Point	260 °C	500 °F	10°C/min; DAM; ISO 11357-1/-3
Deflection Temperature at 0.46 MPa (66 psi)	255 °C	491 °F	DAM; ISO 75-1/-2
Deflection Temperature at 1.8 MPa (264 psi)	250 °C	482 °F	DAM; ISO 75-1/-2
Vicat Softening Point	255 °C	491 °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
	65.0 °C	149 °F	10°C/min; DAM; ISO 11357-1/-2
Flammability, UL94	HB @Thickness 0.700 mm	HB @Thickness 0.0276 in	DAM; IEC 60695-11-10
	HB @Thickness 1.50 mm	HB @Thickness 0.0591 in	DAM; IEC 60695-11-10
Flame Spread	51.0 mm/min @Thickness 1.00 mm	2.01 in/min @Thickness 0.0394 in	ISO 3795 (FMVSS 302)
Oxygen Index	21 %	21 %	DAM; ISO 4589-1/-2

Processing Properties	Metric	English	Comments
Melt Temperature	295 °C	563 °F	Optimum, Injection
	285 - 305 °C	545 - 581 °F	Range, Injection
Mold Temperature	70.0 - 120 °C	158 - 248 °F	Injection
	100 °C	212 °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