

NatureWorks® 3D870

Ingeo 3D870 is a grade developed for manufacturing 3D printer monofilament. Engineered to deliver improved heat-resistance and high impact strength to 3D printed parts, this formulated grade achieves thermal and mechanical properties similar to ABS while offering an alternative to styrenic-based materials. Monofilaments made with Ingeo 3D870 provide excellent 3D printing characteristics such as precise detail, good adhesion to build plates, less warping or curling, and low odor.

Physical Properties	Metric	English	Comments
Specific Gravity	1.22 g/cc	1.22 g/cc	ASTM D792
Melt Flow	9.00 - 15.0 g/10 min @Load 2.16 kg, Temperature 210 °C	9.00 - 15.0 g/10 min @Load 4.76 lb, Temperature 410 °F	ASTM D1238

Mechanical Properties	Metric	English	Comments
Tensile Strength	24.00 MPa	3481 psi	ZX AXIS; ASTM D638
	32.00 MPa	4641 psi	YX AXIS; ASTM D638
	40.0 MPa	5800 psi	XY AXIS; ASTM D638
Tensile Modulus	2.45 GPa	355 ksi	YX AXIS; ASTM D638
	2.48 GPa	359 ksi	ZX AXIS; ASTM D638
	2.87 GPa	416 ksi	XY AXIS; ASTM D638
Flexural Strength	46.00 MPa	6672 psi	ZX AXIS; ASTM D790
	48.99 MPa	7106 psi	YX AXIS; ASTM D790
	73.002 MPa	10588 psi	XY AXIS; ASTM D790
Flexural Modulus	1.98 GPa	287 ksi	YX AXIS; ASTM D790
	2.35 GPa	341 ksi	ZX AXIS; ASTM D790
	2.41 GPa	350 ksi	XY AXIS; ASTM D790
Izod Impact, Notched	0.635 J/cm	1.19 ft-lb/in	ZX AXIS, crystalline; ASTM D256
	1.09 J/cm	2.04 ft-lb/in	ZX AXIS, amorphous; ASTM D256
	1.21 J/cm	2.26 ft-lb/in	YX AXIS, amorphous; ASTM D256
	1.60 J/cm	2.99 ft-lb/in	amorphous, XY AXIS; ASTM D256
	2.00 J/cm	3.74 ft-lb/in	YX AXIS, crystalline; ASTM D256
	2.33 J/cm	4.37 ft-lb/in	XY AXIS, crystalline; ASTM D256

Thermal Properties	Metric	English	Comments
Melting Point	165 - 180 °C	329 - 356 °F	Peak; ASTM D3418

Deflection Temperature at 0.46 MPa (66 psi)	75.0 - 85.0 °C	167 - 185 °F	ASTM E2092
Glass Transition Temp, Tg	55.0 - 60.0 °C	131 - 140 °F	ASTM D3418
Processing Properties	Metric	English	Comments
Processing Temperature	200 °C	392 °F	Compression Section
	210 °C	410 °F	Metering Section
Feed Temperature	45.0 °C	113 °F	Throat
	190 °C	374 °F	
Adapter Temperature	210 °C	410 °F	
Die Temperature	210 °C	410 °F	
Melt Temperature	210 °C	410 °F	
Drying Temperature	50.0 °C @Temperature 8.00 °C	122 °F @Temperature 46.4 °F	
Moisture Content	<= 0.0250 %	<= 0.0250 %	
Dew Point	-35.0 °C	-31.0 °F	
Drying Air Flow Rate	14.2 l/min	0.500 ft³/min (CFM)	
Screw Speed	20.0 - 150 rpm	20.0 - 150 rpm	
Annealing Temperature	110 - 120 °C	230 - 248 °F	
Descriptive Properties			
3D Printing Temp.	190-230°C		
Print Bed Temp	None needed. (or 50-70°C if applicable)		