

NatureWorks® 3251D

Ingeo™ Biopolymer 3251D is designed for injection molding applications. This polymer grade has a higher melt flow capability than other Ingeo™ resins currently in the market place. The higher flow capability allows for easier molding of thin-walled parts. It is designed for injection molding applications, both clear and opaque, requiring high gloss, UV resistance and stiffness.

Physical Properties	Metric	English	Comments
Specific Gravity	1.24 g/cc	1.24 g/cc	ASTM D792

Viscosity Measurement	2.5	2.5	Relative Viscosity
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Linear Mold Shrinkage	0.003 - 0.005 cm/cm	0.003 - 0.005 in/in	
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Melt Flow	30 - 40 g/10 min @Load 2.16 kg, Temperature 190 °C	30 - 40 g/10 min @Load 4.76 lb, Temperature 374 °F	ASTM D1238
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	70 - 85 g/10 min @Load 2.16 kg, Temperature 210 °C	70 - 85 g/10 min @Load 4.76 lb, Temperature 410 °F	ASTM D1238
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Mechanical Properties	Metric	English	Comments
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Tensile Strength, Yield	48.0 MPa	6960 psi	ASTM D638
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Elongation at Break	2.5 %	2.5 %	ASTM D638
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Flexural Strength	83.0 MPa	12000 psi	ASTM D790
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Izod Impact, Notched	0.160 J/cm	0.300 ft-lb/in	ASTM D256
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Thermal Properties	Metric	English	Comments
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Melting Point	160 - 170 °C	320 - 338 °F	ASTM D3418
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Glass Transition Temp, Tg	55.0 - 65.0 °C	131 - 149 °F	ASTM D3417
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Optical Properties	Metric	English	Comments
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Transmission, Visible	90 %	90 %	Thickness Unknown
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Processing Properties	Metric	English	Comments
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Feed Temperature	166 - 177 °C	331 - 351 °F	
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Nozzle Temperature	188 - 205 °C	370 - 401 °F	
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Melt Temperature	188 - 210 °C	370 - 410 °F	
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Mold Temperature	25.0 °C	77.0 °F	
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Back Pressure	0.345 - 0.689 MPa	50.0 - 100 psi	
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Screw Speed	100 - 200 rpm	100 - 200 rpm	
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