

# Ingeo™ 3052D

Polylactic Acid  
NatureWorks® LLC

Message:

Ingeo biopolymer 3052D, a NatureWorks LLC product, is designed for injection molding applications where the requirements are clarity with heat deflection temperatures lower than 120°F (49°C). See table at right for typical properties. The variety of products made with Ingeo 3052D continues to grow rapidly. Applications include cutlery, cups, plates and saucers, and outdoor novelties, and this is just the beginning.

General Information			
Features	Biodegradable		
	Compostable		
	Crystalline		
	Food Contact Acceptable		
	High Clarity		
	High Gloss		
	Renewable Resource Content		
Uses	Disposable Tableware		
	Outdoor Applications		
Agency Ratings	ASTM D 6400		
	EN 13432		
	EU 10/2011		
	FDA Food Contact, Unspecified Rating		
Appearance	Clear/Transparent		
Forms	Pellets		
Processing Method	Injection Molding		
Physical	Nominal Value	Unit	Test Method
Specific Gravity	1.24	g/cm <sup>3</sup>	ASTM D792
Melt Mass-Flow Rate (MFR) (210°C/2.16 kg)	14	g/10 min	ASTM D1238
Molding Shrinkage - Flow	0.30 to 0.50	%	
Relative Viscosity	3.30		
Clarity	Transparent		
Mechanical	Nominal Value	Unit	Test Method
Tensile Strength (Yield)	62.1	MPa	ASTM D638
Tensile Elongation (Break)	3.5	%	ASTM D638
Flexural Modulus	3550	MPa	ASTM D790
Flexural Strength	108	MPa	ASTM D790

Impact	Nominal Value	Unit	Test Method
Notched Izod Impact	16	J/m	ASTM D256
Thermal	Nominal Value	Unit	Test Method
Glass Transition Temperature	55.0 to 60.0	°C	ASTM D3418
Peak Crystallization Temperature (DSC)	145 to 160	°C	ASTM D3418
Injection	Nominal Value	Unit	
Suggested Max Moisture	0.025	%	
Hopper Temperature	21.1	°C	
Rear Temperature	166	°C	
Middle Temperature	193	°C	
Front Temperature	204	°C	
Nozzle Temperature	204	°C	
Processing (Melt) Temp	199	°C	
Mold Temperature	23.9	°C	
Back Pressure	0.345 to 0.689	MPa	
Screw Speed	100 to 175	rpm	

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