

Polylactic Acid (PLA) Typical Properties

[Polylactic Acid \(PLA\) - Manufacturers - Materials - Classification](#)

Product Description

This data represents typical values that have been calculated from all products classified as: Generic PLA

This information is provided for comparative purposes only.

General

Material Status , Commercial: Active

Availability , Africa & Middle East Asia Pacific , Europe Latin America

Physical	Nominal Value	Unit	Test Method
Specific Gravity	--	1.24	ASTM D792
	73°F	1.24 to 1.26g/cm ³	ISO 1183
Melt Mass-Flow Rate (MFR)			
	210°C/2.16 kg	6.0 to 78g/10 min	ASTM D1238
	190°C/2.16 kg	1.5 to 36g/10 min	ISO 1133
Molding Shrinkage			
	Flow : 73°F	3.7E-3 to 4.1E-3in/in	ASTM D955
	73°F	0.30 to 1.1%	ISO 294-4
Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus			
	73°F	293000 to 514000psi	ASTM D638
	73°F	45000 to 815000psi	ISO 527-2
Tensile Strength			
	Yield, 73°F	8840 to 9500psi	ASTM D638
	Yield, 73°F	2250 to 10400psi	ISO 527-2
	Break, 73°F	7080 to 8150psi	ASTM D638
	Break, 73°F	2000 to 10200psi	ISO 527-2
	73°F	6930 to 10000psi	ASTM D638
Tensile Elongation			
	Yield, 73°F	9.8 to 10%	ASTM D638
	Yield, 73°F	1.0 to 8.5%	ISO 527-2
	Break, 73°F	0.50 to 9.2%	ASTM D638
	Break, 73°F	1.0 to 12%	ISO 527-2

Flexural Modulus		
73°F	347000 to 715000psi	ASTM D790
73°F	44200 to 1.38E+6psi	ISO 178
Flexural Strength		
73°F	6950 to 16000psi	ASTM D790
73°F	1310 to 16100psi	ISO 178
Impact	Nominal ValueUnit	Test Method
Charpy Notched Impact Strength (73°F)	0.67 to 2.6ft·lb/in ²	ISO 179
Charpy Unnotched Impact Strength (73°F)	4.0 to 11ft·lb/in ²	ISO 179
Notched Izod Impact		
73°F	0.30 to 0.88ft·lb/in	ASTM D256
73°F	1.6 to 3.0ft·lb/in ²	ISO 180
Thermal	Nominal ValueUnit	Test Method
Deflection Temperature Under Load		
66 psi, Unannealed	121 to 126°F	ASTM D648
66 psi, Unannealed	122 to 248°F	ISO 75-2/B
264 psi, Unannealed	118 to 122°F	ISO 75-2/A
Glass Transition Temperature		
--	134 to 136°F	ASTM E1356
--	111 to 145°F	DSC
Vicat Softening Temperature	130 to 146°F	ISO 306
Melting Temperature	315 to 338°F	
Peak Crystallization Temperature (DSC)	266 to 327°F	ASTM D3418
Injection	Nominal ValueUnit	
Drying Temperature	113 to 172°F	
Drying Time	2.9 to 6.0hr	
Suggested Max Moisture	0.010 to 0.30%	
Rear Temperature	302 to 365°F	
Middle Temperature	338 to 410°F	
Front Temperature	374 to 393°F	
Nozzle Temperature	375 to 402°F	

Processing (Melt) Temp	353 to 464°F
Mold Temperature	60.8 to 224°F
Injection Pressure	11400 to 11500psi
Back Pressure	72.5 to 160psi
Screw Speed	75 to 153rpm

Injection Notes

This data represents typical values that have been calculated from all products classified as: Generic PLA

This information is provided for comparative purposes only.

Extrusion	Nominal Value	Unit
Drying Temperature	120 to 195	°F
Drying Time	2.8 to 10	hr
Suggested Max Moisture	5.0E-3 to 0.30	%
Cylinder Zone 1 Temp.	327 to 374	°F
Cylinder Zone 2 Temp.	331 to 377	°F
Cylinder Zone 3 Temp.	335 to 402	°F
Adapter Temperature	338 to 390	°F
Melt Temperature	373 to 446	°F
Die Temperature	329 to 392	°F

Extrusion Notes

This data represents typical values that have been calculated from all products classified as: Generic PLA

<http://plastics.ulprospector.com/generics/34/c/t/polylactic-acid-pla-properties-processing>