

Ingeo™ 2500HP

Polylactic Acid

NatureWorks® LLC

Message:

Ingeo 2500HP is a high viscosity product from NatureWorks LLC, designed for extrusion applications. It is designed to crystallize during processing, leading to higher heat deflection temperatures in opaque applications.

The variety of products made with 2500HP is widely varied and growing. Applications include crystalline sheet for cards, graphic arts and signage.

General Information			
Features	Updatable resources		
	Compliance of Food Exposure		
	Viscosity, High		
Uses	General		
	Stationery		
	Decorative parts		
Agency Ratings	EEC 94/62/EC Article 11		
	FDA Food Exposure, Not Rated		
	Europe 10/1/2011 12:00:00 AM		
Processing Method	Extrusion		
Physical	Nominal Value	Unit	Test Method
Specific Gravity	1.24	g/cm ³	ASTM D792
Melt Mass-Flow Rate (MFR) (210°C/2.16 kg)	8.0	g/10 min	ASTM D1238
Molding Shrinkage - Flow			
-- ¹	1.7 - 1.8	%	
-- ²	0.30 - 0.40	%	
Relative Viscosity ³	4.0		ASTM D5225
Mechanical	Nominal Value	Unit	Test Method
Tensile Strength			ASTM D638
Yield ⁴	65.5	MPa	ASTM D638
Yield ⁵	64.1	MPa	ASTM D638
Tensile Elongation			ASTM D638
Fracture ⁶	4.3	%	ASTM D638
Fracture ⁷	3.6	%	ASTM D638
Flexural Modulus			ASTM D790
-- ⁸	4450	MPa	ASTM D790
-- ⁹	3640	MPa	ASTM D790
Flexural Strength			ASTM D790

-- 10	126	MPa	ASTM D790
-- 11	113	MPa	ASTM D790
Impact	Nominal Value	Unit	Test Method
Notched Izod Impact			ASTM D256
-- 12	40	J/m	ASTM D256
-- 13	19	J/m	ASTM D256
Thermal	Nominal Value	Unit	Test Method
Deflection Temperature Under Load			ASTM E2092
0.45 MPa, not annealed ¹⁴	144	°C	ASTM E2092
0.45 MPa, not annealed ¹⁵	54.0	°C	ASTM E2092
Peak Crystallization Temperature (DSC) ¹⁶	180	°C	
Optical	Nominal Value		
Clarity			
-- 17	Opaque		
-- 18	Transparent		
Extrusion	Nominal Value	Unit	
Suggested Max Moisture	< 0.025	%	
Hopper Temperature	45.0	°C	
Cylinder Zone 1 Temp.	191	°C	
Cylinder Zone 2 Temp.	199	°C	
Cylinder Zone 3 Temp.	210	°C	
Adapter Temperature	210	°C	
Melt Temperature	210	°C	
Die Temperature	210	°C	
Extrusion instructions			
Screw Speed 20-150 rpmL/D ratios from 24:1 to 32:1Compression ratio of 2.5:1 to 3:1Note: Amorphous polymer must be dried below 120°F (50°C).			
NOTE			
1.	Molded crystalline with 120°C mold temperature where formula included 1wt% nucleating agent (LAK-301 from Takemoto Oil & Fat)		
2.	Molded amorphous with 26°C mold temperature		
3.	Measured at 1.0 g/dL in chloroform at 30°C		
4.	Molded crystalline with 120°C mold temperature where formula included 1wt% nucleating agent (LAK-301 from Takemoto Oil & Fat)		
5.	Molded amorphous with 26°C mold temperature		
6.	Molded crystalline with 120°C mold temperature where formula included 1wt% nucleating agent (LAK-301 from Takemoto Oil & Fat)		

7.	Molded amorphous with 26°C mold temperature
8.	Molded crystalline with 120°C mold temperature where formula included 1wt% nucleating agent (LAK-301 from Takemoto Oil & Fat)
9.	Molded amorphous with 26°C mold temperature
10.	Molded crystalline with 120°C mold temperature where formula included 1wt% nucleating agent (LAK-301 from Takemoto Oil & Fat)
11.	Molded amorphous with 26°C mold temperature
12.	Molded crystalline with 120°C mold temperature where formula included 1wt% nucleating agent (LAK-301 from Takemoto Oil & Fat)
13.	Molded amorphous with 26°C mold temperature
14.	Molded crystalline with 120°C mold temperature where formula included 1wt% nucleating agent (LAK-301 from Takemoto Oil & Fat)
15.	Molded amorphous with 26°C mold temperature
16.	Molded crystalline with 120°C mold temperature where formula included 1wt% nucleating agent (LAK-301 from Takemoto Oil & Fat)
17.	Molded crystalline with 120°C mold temperature where formula included 1wt% nucleating agent (LAK-301 from Takemoto Oil & Fat)
18.	Molded amorphous with 26°C mold temperature

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