

NatureWorks® 4032D

NatureWorks® PLA (polylactide) polymer 4032D can be converted into a biaxially oriented film with use temperatures up to 300°F (150°C). This film has excellent optics, good machinability and excellent twist and deadfold. Additional properties include barrier to flavor and grease and oil resistance. These properties make 4032D film an ideal product for Laminations; Printed films with higher curing temperatures; Other packaging applications.

Physical Properties	Metric	English	Comments
Specific Gravity	1.24 g/cc	1.24 g/cc	ASTM D1505
Moisture Vapor Transmission	8.30 cc-mm/m ² -24hr-atm	21.1 cc-mil/100 in ² -24hr-atm	ASTM D1434
Oxygen Transmission	14.0 cc-mm/m ² -24hr-atm	35.6 cc-mil/100 in ² -24hr-atm	ASTM E96
Carbon Dioxide Transmission	76.0 cc-mm/m ² -24hr-atm	193 cc-mil/100 in ² -24hr-atm	ASTM D1434

Mechanical Properties	Metric	English	Comments
Film Elongation at Break, MD	180 %	180 %	ASTM D882
Film Elongation at Break, TD	100 %	100 %	ASTM D882
Flexural Strength	44.0 MPa	6380 psi	ASTM D790
Flexural Modulus	2.85 GPa	413 ksi	ASTM D790
Secant Modulus, MD	3.44 GPa	499 ksi	ASTM D882
Secant Modulus, TD	3.784 GPa	548.8 ksi	ASTM D882
Elmendorf Tear Strength, MD	0.669 g/micron	17.0 g/mil	ASTM D1922
Elmendorf Tear Strength, TD	0.551 g/micron	14.0 g/mil	ASTM D1922
Film Tensile Strength at Break, MD	103.2 MPa	14970 psi	ASTM D882
Film Tensile Strength at Break, TD	144.5 MPa	20960 psi	ASTM D882

Thermal Properties	Metric	English	Comments
Melting Point	160 °C	320 °F	

Optical Properties	Metric	English	Comments
Haze	2.1 %	2.1 %	ASTM D1003
Gloss	90 %	90 %	20°; ASTM D1003

Processing Properties	Metric	English	Comments
Feed Temperature	180 °C	356 °F	
Adapter Temperature	200 °C	392 °F	
Die Temperature	200 °C	392 °F	
Melt Temperature	202 - 218 °C	396 - 424 °F	
Screw Speed	20 - 100 rpm	20 - 100 rpm	