



**Technical Data Sheet:**

**North Wood Plastics Wood-Filled Extrusion Grade Polypropylene**

North Wood Plastics wood-filled polypropylene can be used in both profile and sheet extrusion applications. Profiles can range from small tubes used in writing instruments to large cross sections used in construction. The key benefits these materials offer are excellent stiffness, low cost, and ease of processing.

Sheet products made from wood filled polypropylene are often used in automotive applications where they can be thermoformed with tool assist. Like our molding grades of wood filled PP, extrusion grades are also available with impact modification.

PROPERTY	UNITS	ASTM TEST	UNFILLED RESIN <sup>A</sup>	20% FIBER	40% FIBER	60% FIBER
Density	g/cc	D792	.90	.951	1.020	1.142
Melt Flow Index	g/10 min	D1238	4.0	<0.5 <sup>c</sup>	<0.5 <sup>c</sup>	<0.5 <sup>c</sup>
Vicat Softening Temperature	°F (°C)	D1525	n/a	308 (153)	313 (156)	317 (158)
Tensile Strength @ Yield	Psi (MPa)	D638	4800 (33.2)	4690 (32.3)	4490 (30.9)	n/a
Tensile Strength @ Break	Psi (MPa)	D638	n/a	n/a	3860 (26.6)	3050 (21.0)
Tensile Modulus	Psi (Gpa)	D638	200,000 (1.38)	396,000 (2.73)	569,000 (3.92)	872,000 (6.01)
Elongation	%	D638	10	n/a	6.2	1.2
Flexural Modulus	Psi (Gpa)	D790	170,000 (1.17)	360,000 (2.48)	551,000 (3.86)	709,000 (4.88)
Flexural Strength	Psi (MPa)	D790	n/a	8180 (56.4)	7890 (54.4)	6020 (41.5)
Notched Izod Impact	ft-lbf/in (J/m)	D256	0.5 (26.7)	0.9 (46.4)	0.5 (25.1)	0.3 (23.3)
Un-notched Izod Impact	ft-lbf/in (J/m)	D256	15 (800)	3.7 (196)	1.8 (97)	0.9 (49)
Heat Deflection Temperature (@ 264 psi)	°F (°C)	D648	130 (55)	159 (71)	201 (94)	201 (94)

<sup>a</sup> Unfilled resin data from published sources.

<sup>b</sup> Melt Flow Index of wood filled formulations is taken from 190°C to prevent fiber degradation. Processing characteristics of wood filled PP are often much better than the Melt Flow Index suggests.

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## Processing Guidelines: Profile & Sheet Extrusion

The optimum performance of North Wood Plastics wood-filled plastics can be tailored by polymer choice, wood filler type and amount, and additive selection.

Some extruders choose to add our heavily-loaded, wood-filled plastic compounds as "concentrates", blending them into their standard house resins. Others prefer our custom compounds made with the exact fiber content needed for the application. Regardless of form, the following processing guidelines apply:

### SUGGESTED PROCESSING CONDITIONS

ITEM	CONDITIONS	COMMENTS
Dryer Inlet Temperatures		
HDPE, LDPE, PP	220° F	Wood-filled compounds do require drying. Typical desiccant dryers are satisfactory.
Styrenics	190° F	
Dew Point	-20° F	Dry to -20° F or until Inlet Dryer Temp - Outlet Dryer Temp = 10° F.
Drying Time	2-4 hours	Varies depending on initial moisture content, dryer efficiency and relative humidity.
Temperature Settings		
Zone 1	< 300-340° F	Excessively high barrel heats can cause scorching.
Zone 2	< 320-370° F	
Zone 3	< 340-380° F	
Zone 4	< 360-380° F	
Adapter	< 360-400° F	
Die	< 360-400° F	
Residence Time	< 15 minutes	Avoid excessively long residence times. Purge if necessary.
Blowing Agents		Low temperature blowing agents can be used effectively.
Screen Packs	< 20 mesh	One 10 or 20 mesh screen pack with breaker plate, if needed to regulate melt pressure and improve extrudate quality.
Draw Down	0-5%	Higher loadings reduce draw downs.
Screw Type	Conventional	Suggested.

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