



**Technical Data Sheet:**

**North Wood Plastics Wood-Filled High Impact Polystyrene**

North Wood Plastics wood-filled, high impact polystyrene (HIPS) and crystal polystyrene are available in both Molding and Extrusion grades.

The construction industry chooses wood-filled HIPS for many extruded and coextruded profiles. Their excellent stiffness, low thermal expansion, durability, excellent machining characteristics, paintability and stainability make them the material of choice for performance and cost in many applications.

Housewares markets value our wood-filled crystal polystyrene for its excellent moldability and unique appearance.

PROPERTY	UNITS	ASTM TEST	UNFILLED RESIN <sup>a</sup>	20% FIBER	40% FIBER
Density	g/cc	D792	1.04	1.074	1.156
Melt Flow Index	g/10 min	D1238	7.5	1.6 <sup>b</sup>	0.5 <sup>b</sup>
Mold Shrinkage	%	D955	0.50	0.26	0.08
Tensile Strength @ Yield	psi (MPa)	D638	4000 (27.5)	3270 (22.5)	4190 (28.9)
Tensile Strength @ Fail	psi (MPa)	D638	n/a	2890 (19.9)	4170 (28.7)
Tensile Modulus	psi (GPa)	D638	n/a	582,000 (4.0)	840,000 (5.8)
Elongation	%	D638	60	5.8	1.5
Flexural Modulus	psi (GPa)	D790	300,000 (2.1)	462,000 (3.2)	760,000 (3.2)
Flexural Strength	psi (MPa)	D790	5200 (35.8)	7010 (48.3)	8170 (56.3)
Notched Izod Impact	ft-lbf/in (J/m)	D256	3.2 (171)	0.8 (40.5)	0.4 (20.3)
Un-notched Izod Impact	ft-lbf/in (J/m)	D256	n/a	1.5 (80)	1.0 (50)
Heat Deflection Temperature (@ 264 psi)	°F (°C)	D648	175 (79)	167 (75)	179 (81)

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

<sup>b</sup> Melt Flow index of wood-filled formulations is taken at 190°C to prevent fiber degradation. Processing characteristics of wood filled PS are often much better than the Melt Flow Rate suggests.

This information is, to the best of our knowledge, true and accurate. However, we assume no liability for the accuracy or completeness of this information. Final determination of the suitability of this information or material for any use in any manner, and whether there is any infringement of patents, is the sole responsibility of the user.



## 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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