

# Aegis® PIR-H120ZP Nylon 6 Extrusion Grade Homopolymer



## Description

**Aegis® PIR-H120ZP** resin from AdvanSix contains 100% post-industrial recycled (PIR) raw materials<sup>1</sup> while providing the same top performance and processability as Aegis® H120ZP, its standard, non-recycled counterpart. Aegis® PIR-H120ZP is a high viscosity, nylon 6 extrusion grade homopolymer for cast or blown film applications. It conforms to FDA requirements of 21 CFR 177.1500 as well as EU Directive 2011/10/EC. Aegis® PIR-H120ZP homopolymer possesses the combination of strength, toughness and thermoforming properties associated with nylon 6 as well as excellent heat, chemical and abrasion resistance.

Typical Properties	Test Method	Unit	Value
<b>Parameter</b>			
Viscosity, FAV	ASTM D-789		120
RV @ 96% Sulfuric Acid			3.6
Extractable Content	SOP-702-307	%	Max. 0.8
Density	ASTM D-792	g/cm <sup>3</sup>	1.13
Melt Flow Rate, 235°C/1.0 kg (455°F/1.0 kg)	ASTM D-1238	g/10 min	1.9
<b>Moisture</b>			
Moisture Content	ASTM D-6869	%	Max. 0.08
Moisture (24 Hour)	ASTM D-570	%	1.6
Moisture (50% RH)	ASTM D-570	%	2.7
Moisture (Saturation)	ASTM D-570	%	9.5
<b>Thermal</b>			
Melting Point	ASTM D-3418	°C (°F)	220°C (428°F)

Film Properties (Gas Barrier)	Test Method	Unit	Value
Oxygen Permeability @ 23°C (73°F)/0% RH	ASTM D-1434	cc.25µm/m <sup>2</sup> /day (cc.mil/100 in <sup>2</sup> /day)	40.3 (2.6)
Water Vapor Permeability @ 38°C (100°F)/100% RH	F-1249	gm.25µm/m <sup>2</sup> /day (gm.mil/100 in <sup>2</sup> /day)	992 (64)
Nitrogen Permeability @ 23°C (73°F)/80% RH	ASTM D-1434	cc.25µm/m <sup>2</sup> /day (cc.mil/100 in <sup>2</sup> /day)	14.0 (0.9)
Carbon Dioxide Permeability @ 23°C (73°F)/100% RH	ASTM D-1434	cc.25µm/m <sup>2</sup> /day (cc.mil/100 in <sup>2</sup> /day)	72.8 (4.7)

## Processing Guidelines

### Material Handling

Aegis® PIR-H120ZP is supplied in sealed containers and drying prior to processing is not required. However, higher moisture is the primary cause of processing issues. If drying becomes necessary, a dehumidifying or desiccant dryer operating at 80°C (176°F) is recommended. Drying time is dependent on moisture level. More information about safe handling procedures can be obtained by requesting the Safety Data Sheet on [AdvanSix.com](http://AdvanSix.com).

<sup>1</sup>Using an industry-accepted mass balance method, AdvanSix allocates recycled material into 100% PIR Aegis® resins. PIR grades are certified by an independent third-party organization (SCS Global Services) for recycled content, with annual audits.

The values presented in this data sheet are typical values and are not to be interpreted as product specifications.

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## Extrusion Guidelines

### Melt Viscosity vs. Temperature

Melt Temperature: 220°C (428°F)

Melt Temperature Range: 232°C (450°F) to 271°C (520°F).

Two key factors affect the melt viscosity (stiffness or fluidity of the melt):

1. The molecular weight (Mw) of the resin: Higher Mw resins will have a higher melt viscosity than lower Mw resins.
2. Temperature of the melt for any given Mw resin: Higher process temperatures will provide a more fluid melt viscosity than lower process temperatures.

### Typical Barrel Profile for Cast Films

Barrel: 230-260°C (446-500°F)

Adapter: 260-266°C (500-510°F)

Die: 260°C (500°F)

Process Melt Temperature: 260-270°C (500-518°F)

### Typical Barrel Profile for Tubular (Blown) Films

Barrel: 246-254°C (474-490°F)

Adapter: 260°C (500°F)

Die: 254°C (490°F)

Process Melt Temperature: 254-260°C (490-500°F)

### Screw Parameters

Metering Section: 40%

Transition Section: 3 to 4 flights

Feed Section: Balance of screw length

Compression Ratio: 3.5:1 to 4.0:1

L/D Ratio: 24:1

### Metering Section Flight Depth

Screw Diameter	Recommended Depth
1"	0.055"
1.5"	0.060"
2"	0.070"
2.5"	0.080"
3.5"	0.100"
4.5"	0.115"
6"	0.135"

Note: The values in this data sheet are for natural color resins only. Colorants or other additives may alter some or all of these properties. The data listed here fall within the normal range of product properties, but should not be used to establish specification limits nor used alone as the basis of design.

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To learn more about the benefits of Aegis® Nylon Resins, visit [AdvanSix.com/NylonSolutions](https://www.advansix.com/NylonSolutions) or call: **1-844-890-8949** (toll free, U.S./Can.) **+1-973-526-1800** (international)

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