

# Aegis® H135ZP Nylon 6 Extrusion Grade Homopolymer

## Description

**Aegis® H135ZP** 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® H135ZP 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		135
RV @ 96% Sulfuric Acid			3.75
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	1.2
<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	Test Method	Unit	Value
<b>Gas Barrier @ 23°C (73°F)/0% RH</b>			
Oxygen Permeability	D-3958	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		cc.25µm/m <sup>2</sup> /day (cc.mil/100 in <sup>2</sup> /day)	14.0 (0.9)
Carbon Dioxide Permeability		cc.25µm/m <sup>2</sup> /day (cc.mil/100 in <sup>2</sup> /day)	72.8 (4.6)

Film properties continued on page 2.

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

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Film Properties (continued)	Test Method	Unit	Value (MD)*	Value (TD)*
<b>Mechanical</b>				
Tensile Modulus, 23°C (73°F)	ASTM D-882	MPa	660	640
Tensile Yield, 23°C (73°F)	ASTM D-882	MPa	30	30
Tensile Strength, 23°C (73°F)	ASTM D-882	MPa	90	90
Elongation, 23°C (73°F)	ASTM D-882	%	330	330
Graves Tear, 23°C (73°F)	ASTM D-1004	N	2,170	2,380
Elmendorf Tear Strength, 23°C (73°F)	ASTM D-1922	N	860	990
Puncture Strength, 23°C (73°F)	ASTM D-5478	grams	1,050	-
Puncture Index, 23°C (73°F)	ASTM D-5478	gm/mil	470	-

\*Note: MD = Machine Direction and TD = Traverse Direction. Test samples obtained from 2-mil thick unoriented cast film.

Molded Properties	Test Method	Unit	Value (MD)*
<b>Mechanical</b>			
Tensile Modulus, 23°C (73°F)	ASTM D-882	MPa	2,630
Tensile Strength, 23°C (73°F)	ASTM D-882	MPa	80
Yield Elongation, 23°C (73°F)	ASTM D-882	%	4.1
Flexural Modulus, 23°C (73°F)	ASTM D-790	MPa	2,610
Flexural Strength, 23°C (73°F)	ASTM D-790	MPa	100
Notched Izod, 23°C (73°F)	ASTM D-256	J/m	60
Heat Deflection Temperature, 23°C (73°F)	ASTM D-648	°C (°F)	55 (131)

Processing conditions for test specimens: melt temperature = 240°C (464°F); mold temperature = 80°C (176°F).

## Processing Guidelines

### Material Handling

Aegis® H135ZP homopolymer is supplied in sealed containers and drying prior to processing is not required. However, high moisture is the primary cause of processing problems. If drying becomes necessary, a dehumidifying or desiccant dryer operating at 80°C (176°F) is recommended. Drying time is dependent on moisture level. Further information concerning safe handling procedures can be obtained from the Safety Data Sheet. Alternatively, please contact your AdvanSix representative.

## 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.

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## 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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### Contact AdvanSix

To learn more about the benefits of  
of Aegis® Nylon Resins, visit

[AdvanSix.com/NylonSolutions](https://www.advan-six.com/NylonSolutions) or call:

**1-844-890-8949** (toll free, U.S./Can.)

**+1-973-526-1800** (international)

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