

## Product Specification

**Product** Aegis® H135ZP

**Product 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 2002/72/EC. It possesses the combination of strength, toughness and thermoforming properties associated with nylon 6 as well as excellent heat, chemical, and abrasion resistance.

## General Properties

Parameter	Test Method	Units	Value
Viscosity, FAV	ASTM D-789		135
RV @ 96% Sulfuric Acid			3.75
Extractable Content	SOP-702-307	%	Max. 0.8
Specific Gravity	ASTM D-792	sp gr 23/23°C	1.13
Melt Flow Rate (235°C/1.0 Kg)	ASTM D-1238	g/10 min	1.2
Moisture	Test Method	Units	Value
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
Thermal	Test Method	Units	Value
Melting Point	ASTM D-3418	°C	220

## Film Properties

Gas Barrier @ 23°C (73 °F)/0% RH	Test Method	Units	Value
Oxygen Permeability	D-3958	cc/m <sup>2</sup> /day	40.3
Water Vapor Permeability @ 38°C (100°F)/100% RH	F-1249	gm-mil/m <sup>2</sup> /day	992
Nitrogen Permeability		cc/m <sup>2</sup> /day	14.0
Carbon Dioxide Permeability		cc/m <sup>2</sup> /day	72.8

Mechanical	Test Method	Units	Value (MD)	Value (TD)
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	2170	2380
Elmendorf Tear Strength , 23°C (73°F)	ASTM D-1922	N	860	990
Puncture Strength , 23°C (73°F)	ASTM D-1306	grams	1050	-----
Puncture Index , 23°C (73°F)	ASTM D-1306	gm/mil	470	-----

Note: MD = Machine Direction & TD = Traverse Direction (Test samples = 2 mil thick unoriented cast film)

## Molded Properties

Mechanical	Test Method	Units	Value
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 D790	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 D648	°C	55

Processing conditions for test specimens: melt temperature = 240 °C, mold temperature = 80 °C

## Processing Guidelines

### Material Handling

This product 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 Material Safety Data Sheet. Alternatively, please contact your AdvanSix Inc. representative.

## Extrusion Guidelines

### Melt Viscosity vs Temperature

Melt Temperature 220 °C (428 °F)

The melt temperature range is 232 °C (450 °F) to 271 °C (520 °F).

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

1. Mw of the resin. Higher Mw resin will have a higher melt viscosity than lower Mw resin.
2. Temperature of the melt. For any given Mw resin, higher process temperature 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"

These values 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 Aegis® Nylon Resins, visit [Advan6.com](http://Advan6.com) or call: **1-844-890-8949** (toll free, U.S./Can.) **+1-973-455-3000** (international)

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