Aegis® BarrierPro$_2$™ Barrier Resin

Description

Aegis® BarrierPro$_2$™ is an oxygen scavenging polyamide resin formulated specifically for use in Hot-Fill and other high performance packaging applications where high oxygen barrier is required. This product is useful in injection and extrusion molding applications particularly in the PET co-injection stretch blow molding processes. Aegis® BarrierPro$_2$™ offers high oxygen barrier, even at high humidity, outstanding delamination resistance and whitening resistance, clarity and easy processing.

Typical Properties

PROPERTIES	TYPICAL VALUES		Test Method
	English	*Metric*	
Physical Properties			
Density	72.4 lb/ft^3	1.16 g/cm^3	ASTM D1505
Bulk Density	45.6 lb/ft^3	0.73 g/cm^3	ISO 60
Moisture	<1200ppm (0.12% by weight)		
Thermal Properties			
Melt Index @ 280°C / 2.16 kg		30 g/10 minutes	ISO 1133
Melt Index @ 260°C / 2.16 kg		13 g/10 minutes	ISO 1133
T_m	428°F	219°C	(ISO11357) DSC
T_g	156°F	68°C	(ISO11357) DSC

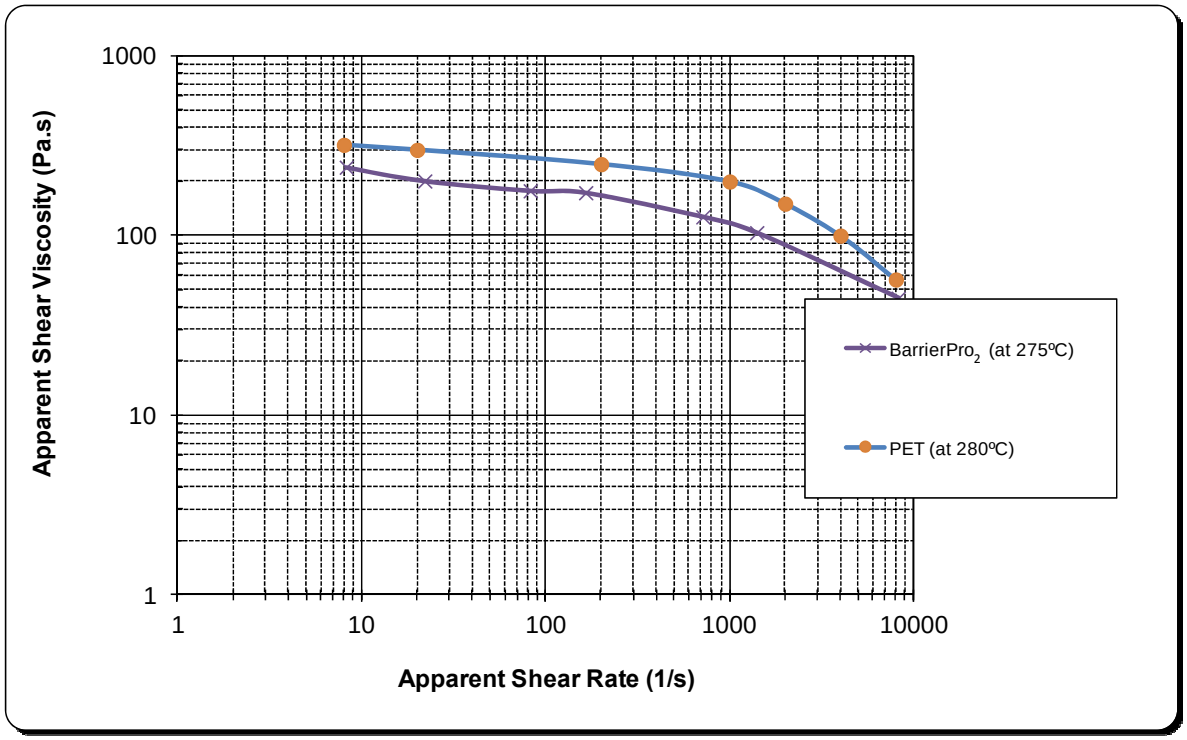
Aegis® BarrierPro$_2$™ Barrier Resin

Gas Barrier Performance (Cast Film)		
*Oxygen Transmission Rate	Initiation (Flat Film Sample) in 20-30hrs	
	English	***Metric***
@23°C 80%RH	< 0.002 cc- mil/100 in^2.atm day	< 0.001 cc- mm/m^2.atm day
Oxygen Absorbing Capacity (based on Aegis® BarrierPro$_2$™ mass used)	>40 cc/g	Measured at 80% RH

*During scavenging period. After scavenger is consumed, OTR is approximately 2 cc mil/100 in^2.atm day.

Aegis® BarrierPro$_2$™ Barrier

Resin Melt Rheology



Aegis® BarrierPro$_2$™ Barrier Resin

Product Testing Guidelines

Aegis® BarrierPro$_2$™ resin is specifically formulated for use as the barrier layer in multilayer co-injection stretch blow molded bottles. We recommend a loading of 3% to 8% **Aegis® BarrierPro$_2$™** resin for most applications.

Package Testing
Oxygen Transmission/Ingress Testing

We recommend oxygen transmission testing of multilayer bottles containing Aegis® resin at conditions of 100% RH air outside of bottle and 50% RH nitrogen inside bottle. Bottle testing should be done in accordance with the guidelines set forth by the test equipment manufacturer. A 100% RH air environment can be achieved with a plastic liner filled with moistened sponge material. For oxygen ingress testing for total package oxygen, we recommend testing of multilayer bottles containing Aegis® resin at conditions of 100% RH air inside of bottle (fill bottles with de-oxygenated water) and ambient (or higher/lower) RH outside bottle.

Product Processing Guidelines

Aegis® BarrierPro$_2$™ resin is specifically formulated to process in injection or co-injection systems, even systems that utilize a ram or plunger process to deliver the melt.

Screw Design

A general purpose screw with feed, transition and metering sections, a 20:1 L/D (flight length of screw/outside diameter of screw) and a compression ratio of 3:1- 4:1 (depth of feed section/depth of metering section) is recommended.

Material Handling

All Aegis® resins are pre-dried and shipped in foil-lined containers. We recommend discarding any material that is: (1) in damaged/broken packages or (2) stored unsealed in ambient conditions for an extended period of time. All Aegis® resins are pre-dried and shipped in foil-lined containers. We recommend discarding any material that is: (1) in damaged/broken packages, (2) stored unsealed in ambient conditions for an extended period of time, or (3) more than six months older than the manufacturing date (which is printed on the lot number label found on the liner inside the box).

Aegis® BarrierPro$_2$™ Barrier Resin

Material Drying

We recommend loading **Aegis® BarrierPro$_2$™** resin into a desiccant hopper dryer to eliminate moisture pickup during processing. A hopper dryer temperature of 70 °C (158 °F) - 80 °C (176 °F) should be used. Hopper dryer temperatures should not exceed 85°C (185 °F). Temperatures above 85 °C (185 °F) may cause material to soften or may cause yellowing of resin. If material is stored in the hopper dryer overnight or for long periods of time, we suggest a hopper dryer temperature of 50 °C (122 °F).

It is recommended to check the moisture level of **Aegis® BarrierPro$_2$™** resin prior to processing. Moisture levels can be measured by titration or thermal (weight loss) analysis. For thermal analysis, we recommend a 25 g sample, a test temperature of 160 °C (320 °F) and a test time of 7 minutes.

Processing Conditions for Aegis® BarrierPro$_2$™

A typical processing temperature profile for **Aegis® BarrierPro$_2$™** is given in Table 1.

Table 1: Processing Temperature Profile

Location	Temperature Setting /°C
Feed	35
Zone 1	245
Zone 2	250
Zone 3	265
Zone 4	265-275
Zone 5	265-275
Nozzle	265-275
Manifold	280-290 (depends on PET)

During startup, allow the barrels, nozzle and manifold to reach recommended temperatures before processing. If purging is required, PET can be used for the barrel and manifold.

Contact AdvanSix
To learn more about the benefits of Aegis® Nylon Resins, visit
Advan6.com/NylonSolutions
or call:
1-844-890-8949 (toll free, U.S./Can.)
+1-973-526-1800 (international)

AdvanSix
300 Kimball Drive, Suite 101
Parsippany, NJ 07054