



ECO-315 SERIES DATA SHEET
ECO-315 NATURAL, ECO-315 BLACK
NON-HALOGENATED FLAME RETARDANT NYLON*

Product Description

Vydyne ECO-315 is a non-halogenated, non-corrosive injection molding grade nylon with flame retardant additives*. It is lubricated to facilitate machine feed and mold release. It is available in natural color, and black.

Vydyne ECO-315 is modified with flame retardant additives to help users meet Underwriters Laboratories flammability rating requirements for molded parts requiring UL94 V-0 classification at thicknesses down to 0.81 mm.

While flame retardant additives reduce toughness and ductility properties when compared to general purpose, unreinforced Nylon 6,6, ECO-315 has been formulated to minimize such loss of ductility. This product generally yields more ductile parts than other U.L. 94V-0 plastic materials in commercial applications.

Vydyne ECO-315 has a comparatively low specific gravity for a flame retardant resin. Meaningful economic comparisons of molding materials must be based on cost per cubic inch, which is reduced by lowered specific gravity.

Mold shrinkage of ECO-315 is essentially equivalent to that of general purpose Nylon 6,6 resins, which are commonly used in many electrical/electronic components and other parts requiring a U.L. 94V-2 flammability rating. Thus, existing tooling for 94V-2 nylon parts can usually be used to produce 94V-0 parts from Vydyne ECO-315, eliminating the delay and costs involved in re-tooling.

Typical Applications/End Uses

Typical applications include electrical connectors, terminal blocks, housings, circuit board standoffs, clips, clamps, fasteners, cable ties and many other industrial parts.

Vydyne ECO-315 Series Specifications and Regulations

ASTM Conforms to ASTM D-4066 PA 0111

Federal* Conforms to Federal Specification LP 410a

Military* Conforms to Military Specification MIL-M-20693B

** Superseded by ASTM D-4066.*

*The expression "with flame retardant additives" and all the UL ratings for flammability mentioned herein are not intended to reflect performance presented by these or any other materials under actual fire conditions. Each end user should determine whether potential fire hazards are associated with the finished product and whether Vydyne resin is suitable for the particular use.



Typical Properties for Vydyne® ECO-315 Series

PROPERTIES ¹	TEST METHOD ²	TEST TEMP	UNITS	DRY AS MOLDED ³ (0.2% MOISTURE)
PHYSICAL				
Specific Gravity	ISO 1183	23°C	–	1.16
Mold Shrinkage, Flow Direction	ASTM D-955	23°C	%	1.1
Water Absorption @ 24 hours Saturation	ASTM D-570	23°C	%	–
			%	1.4
MECHANICAL				
Tensile Strength @ Yield	ISO 527	23°C	MPa	80
Tensile Elongation @ Break ⁵	ISO 527	23°C	%	21
Flexural Modulus, Secant	ISO 178	23°C	MPa	3,400
Notched Izod Impact ⁵ 4.0 mm	ISO 180	23°C	kJ/m ²	6.0
THERMAL				
Deflection Temperature Under Load Unannealed @ 1.8 MPa	ISO 75		°C	60
Melting Point	ISO 3146		°C	243
ELECTRICAL				
Volume Resistivity	ASTM D-257	23°C	ohm-cm	5.5x10 ¹⁶
Dielectric Strength Short Time Step-By-Step	ASTM D-149	23°C	kV/mm	34
				24
Dielectric Constant	ASTM D-150	23°C		3.6
			10 ² Hz	3.6
			10 ⁶ Hz	3.3
Dissipation Factor	ASTM D-150	23°C		0.02
			10 ² Hz	0.02
			10 ⁶ Hz	0.03

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(2) Typical properties; not to be construed as specifications. Fabrication conditions, part design, additives, processing aids, finishing materials, and use conditions can all affect the integrity, performance, and regulatory status of finished goods.

(3) All data taken on unannealed injection molded test specimens per ISO 294.

(4) Samples sealed in moisture barrier packages immediately after molding.

(5) Toughness properties may be slightly reduced with ECO-315 Black.



Suggested Guidelines for Molding

1. Vydyne nylon resins are packaged in moisture protected containers and do **not** require drying, if the original package is unopened prior to use. If drying is necessary, a dehumidified air (desiccant bed) type dryer is recommended with a **maximum** air temperature of 71°C for 1-3 hours.
2. For best molded part quality and minimal corrosion, use the lower end of the recommended stock temperature range with minimum barrel residence time. Stock temperatures **must** be measured with a hand pyrometer with needle-type probe in an air shot and should **not** be estimated from temperature controller settings.

 The recommended **maximum** safe stock temperature is 271°C. Temperatures in excess of 271°C can result in potentially hazardous flame retardant additive decomposition and corrosion. If corrosive wear occurs despite following the recommended molding procedures, the molder may want to consider contacting the equipment manufacturers for information on metal treatments, coatings and/or alloys that may be used to minimize corrosion of molds, screws, barrels and check rings/valves.
3. Best molding results are obtained when the shot weight is 50-70% of the molding machines rated (polystyrene) capacity. A lower shot to barrel ratio results in excess residence time and polymer degradation. Above recommended shot to barrel ratio, the molding machine is often unable to deliver a uniform melt or the desirable fast mold fill.
4. Screw rotation speed should be controlled at the minimum required to maintain the desired molding cycle 60-120 rpm.
5. Regrind must be dry when molded. The preferred procedure is to grind and reuse immediately after molding. Regrind to virgin ratios of 25% or less have shown no significant property loss; however, acceptable levels for each application should be determined by actual part testing to ensure adequate molded part performance.
6. Use standard screw-type injection molding equipment only, with a general purpose injection screw.
7. Tooling should be designed to minimize and, preferably, eliminate dead pockets in which gases can be trapped while the mold is being filled. Adequate venting should be included to release trapped gases.
8. To facilitate machine start up after extended shutdown, the cylinder and any hot runner blocks or manifolds must be purged of Vydyne ECO-315 Series resin prior to shut-down with a material that flows at lower temperature. Do not shut-down a machine with Vydyne ECO-315 Series remaining in the barrel. General purpose crystal polystyrene, natural polyethylene or clear acrylic regrind are suggested.

For more information or to place an order in the US, please call our Customer Service Center at 1-888-927-2363.

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