INEOS ABS

TRIAX® 1120

ABS/Nylon Alloy

Injection Molding Grade

Description

Triax 1120 resin is an ABS (Acrylonitrile Butadiene Styrene)/Nylon 6 alloy for injection molding. It is a semicrystalline thermoplastic with excellent processibility, good chemical resistance, good fatigue performance, and excellent abrasion characteristics. Triax 1120 resin exhibits a good balance of impact strength and flow properties.

Applications

Typical applications include housings, shrouds and handles for components of lawn and garden equipment, power tools, appliances, and sporting goods. Automotive applications include fasteners and interior functional components, housings, and shrouds. As with any product, use of Triax 1120 resin in a given application must be tested (including but not limited to field testing) in advance by the user to determine suitability.

Drying

Triax ABS/Nylon alloy resins absorb moisture and must be dried prior to processing. The moisture level of the dried resin should be between 0.15 and 0.35%. A desiccant dehumidifying hopper dryer with a maximum inlet air dew point of -20°F (-29°C) is recommended. Typical drying conditions are 2 to 4 hours at 190°F (88°C) and should not exceed 200°F (93°C).

Processing

A reciprocating screw injection molding machine is recommended for Triax 1120 resin. A general-purpose screw with a 2.5:1 compression ratio is suggested. A minimum L/D ratio of 20:1 will ensure melt homogeneity.

For best part quality, use the lower range of the recommended melt temperature with minimum barrel residence time. To avoid excessive residence time in the barrel, volume and weight of the shot should be balanced against barrel capacity and injection stroke. A shot weight-to-machine capacity ratio of 0.5 to 0.7 is recommended; ratios below 0.3 should definitely be avoided.

Typical processing parameters are noted below. Actual processing conditions will depend on machine size, mold design, material residence time, shot size, etc.

Typical Injection Molding Conditions

Barrel Temperatures:	
Rear	450° – 510°F (232° – 266°C)
Middle	450° – 510°F (232° – 266°C)
Front	450° – 510°F (232° – 266°C)
Nozzle	480° – 500°F (249° – 260°C)
Melt Temperature	460° – 520°F (238° – 271°C)
Mold Temperature	100° – 150°F (38° – 66°C)
Injection Pressure	6,000 – 12,000 psi
Hold Pressure	30 – 50% of Injection Pressure
Back Pressure	50 – 100 psi
Screw Speed	Moderate
Injection Speed	Fast
Cushion	1/8 in max
Clamp	3 – 5 ton/in^2

Additional information on processing may be obtained by contacting an INEOS ABS technical service representative.

Typical Properties* for Natural Resin	ASTM Test Method (Other)	Triax® 1120 Resin Dry as Molded	Triax® 1120 Resin Conditioned
General			
Specific Gravity	D 792	1.06	
Density	D 792	0.038 lb/in^3	
Specific Volume	D 792	26.1 in^3/lb	
Mold Shrinkage:	D 955		
Cross to Flow		0.010 in/in	
Melt Flow Rate at 250°C/5-kg Load	D 1238	6.5 g/10 min	
Water Absorption:	D 570		
73°F, immersion to saturation		4.3%	
73°F, immersion for 24 hours		1.1%	
Gloss:	D 523		
20° Angle		78%	
60° Angle		91%	
Mechanical			
Tensile Stress at Yield	D 638	6,300 lb/in^2	5,800 lb/in^2
Tensile Elongation at Break	D 638	140%	290%
Tensile Modulus	D 638	295,000 lb/in^2	
Flexural Stress at Yield	D 790	10,900 lb/in^2	8,250 lb/in^2
Flexural Modulus	D 790	300,000 lb/in^2	170,000 lb/in^2
Impact Strength, Notched Izod:	D 256		
0.125-in Thickness			
73°F		15 ft·lb/in	15 ft·lb/in
-40°F		1.5 ft·lb/in	1.5 ft·lb/in
0.250-in Thickness			
73°F		14 ft·lb/in	14 ft·lb/in
-40°F		1.3 ft·lb/in	1.4 ft·lb/in
Instrumented Impact, Total Energy:	D 3763		
73°F; 0.100-in; 0.5-in dart; 1.6-in clamp; 7.6 mph		31 ft-lb	36 ft-lb
-40°F; 0.100-in; 0.5-in dart; 1.6-in clamp; 7.6 mph		35 ft-lb	44 ft-lb
Rockwell Hardness, R Scale	D 785	105	90
Thermal			
Deflection Temperature Under Load:	D 648		
0.125-in Thickness, Unannealed			
264 psi		149°F	144°F
66 psi		194°F	190°F
0.250-in Thickness, Unannealed			
264 psi		165°F	162°F
66 psi		207°F	205°F
Coefficient of Linear Therma Expansion:	D 696		
-40 to 71°F		5.5 E-05 in/in/°F	6.3 E-05 in/in/°F
71 to 181°F		8.2 E-05 in/in/°F	7.8 E-05 in/in/°F
Relative Temperature Index:	(UL746B)		
1.5-mm Thickness			
Electrical		230°F	
Mechanical with Impact		149°F	
Mechanical without Impact		221°F	
Vicat Softening Temperature	D 1525		
Rate B; 1-kg; 120°C/h		387°F	338°F
Flammability **			
UL94 Flame Class:	(UL94)		
1.5-mm Thickness		HB Rating	
3.0-mm Thickness		HB Rating	
Electrical			
Volume Resistivity, Tinfoil Electrodes	D 257	9.7 E+15 Ohm-cm	9.0 E+12 Ohm-cm
Surface Resistivity	D 257	8.3 E+15 Ohm	3.2 E+13 Ohm
Dielectric Constant, Tinfoil Electrodes (1MHz)	D 150	3.5	3.5
Dissipation Factor, Tinfoil Electrodes (1 MHz)	D 150	0.024	0.039
Dielectric Strength	D 149		
Short time under oil at 73°F; 0.062-in thickness		425 V/mil	380 V/mil

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