Zytel® T70 ECO-R 311 BLK1

NYLON RESIN

Zytel® T70 ECO-R 311 BLK1 incorporates 30% of post-industrial recycled content by weight in the finished product. It is a general purpose PA66 grade with improved flexibility.

Product information

Resin Identification	PA66-I (REC30)	ISO 1043
Part Marking Code	>PA66-I (REC30)<	ISO 11469

Rheological properties

Molding shrinkage range, parallel	1.3 - 1.8	%	ISO 294-4, 2577
Molding shrinkage range, normal	1.3 - 1.8	%	ISO 294-4, 2577

Typical mechanical properties

	dry/cond.		
Tensile modulus	421000 / -	psi	ISO 527-1/-2
Tensile stress at yield, 50mm/min	10000 / -	psi	ISO 527-1/-2
Tensile strain at yield, 50mm/min	5 / -	%	ISO 527-1/-2
Tensile stress at break, 50mm/min	8700 / -	psi	ISO 527-1/-2
Tensile strain at break, 50mm/min	25 / -	%	ISO 527-1/-2
Flexural modulus	377000 / -	psi	ISO 178
Flexural strength	14500 / -	psi	ISO 178
Charpy impact strength, 23 °C	85.6 / -	ftlb/in²	ISO 179/1eU
Charpy notched impact strength, 23 °C	3.57 / -	ftlb/in²	ISO 179/1eA
Charpy notched impact strength, -30 °C	2.38 / -	ftlb/in²	ISO 179/1eA

Thermal properties

	dry/cond.		
Melting temperature, 10 °C/min	509 / *	°F	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	149 / *	°F	ISO 75-1/-2

Physical/Other properties

	dry/cond.		
Humidity absorption, 2mm	2.2 / *	%	Sim. to ISO 62
Water absorption, 2mm	7.9 / *	%	Sim. to ISO 62
Density	0.0404 / -	lb/in³	ISO 1183

Injection

Drying Recommended	yes	
Drying Temperature	176	°F
Drying Time, Dehumidified Dryer	2 - 4	h
Processing Moisture Content	≤0.15	%
Melt Temperature Optimum	554	°F
Min. melt temperature	536	°F
Max. melt temperature	572	°F
Max. screw tangential speed	≤0.3	m/s
Mold Temperature Optimum	176	°F
Min. mold temperature	122	°F
Max. mold temperature	212	°F

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Characteristics

Processing	Injection Molding
Additives	Nucleated
Special characteristics	High impact or impact modified, Heat stabilized or stable to heat
Sustainability	Recycled Content

Additional information

Injection molding

Preprocessing

PA materials, stocked in a moisture-proof packaging, can be processed without drying; however, it is always recommended drying the product that comes from a large package (e.g. Octabin). The moisture content suggested for the injection molding process should be lower than 0.15%, according to the grade and to the molded part characteristics. The materials containing flame retardants should have moisture content below 0.10%. Red phosphorous containing grades must always be dried below 0.08%. The drying time depends on the moisture content and the drying conditions. Typically, 4-8 hours at 80-90°C using dehumidified air (dew point of -20°C) are suitable conditions for a starting moisture content of 0.20%-0.40%.

Processing

The following conditions apply to a standard injection molding process. Machine temperatures: barrel 265-290°C (PA66), 235-270°C (PA6), nozzle and hot runners up to 300°C (up to 290°C products with flame retardants). Mold temperatures: 60-80°C, (80-100°C highly reinforced grades). Back pressure: typically, 5-10 bar (hydraulic pressure). Temperatures exceeding 300°C and long residence time could lead to additives degradation and brittleness of the material. In case of gas generation in the melt, please verify moisture content and processing temperatures. Usage of regrind is possible depending on the molded part characteristics. For further details, please refer to the document 'Instructions for injection molding' or contact our technical support team.

Postprocessing

PA materials reach their final performance with a water content of about 1.5 to 3.5% by weight, depending on the type. This percentage corresponds to the point of equilibrium between the rates of absorption and desorption of moisture. After molding, in favorable environmental conditions, a part can quickly absorbs moisture up to 0.5-1.0%, while the equilibrium will be reached during its life. A conditioning treatment can accelerate further the initial water absorption of the molded parts. Conditioning is usually carried out in hot and humid environment (for example 50°C, 100% RH), inside climatic chambers. Slight dimensional variations (increase in volume due to the water absorbed) must be considered, especially in unfilled grades. Post-treatments of parts may also include the annealing (60-80°C in oven, up to four hours). This procedure can be useful to

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relax any internal stresses.

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