Celanese
The chemistry inside innovation™

ZYTEL® T73 ECO-R 311 BLK1

NYLON RESIN

Zytel® T73 ECO-R 311 BLK1 incorporates 30% of post-industrial recycled content by weight in the finished product. It is a general purpose PA6 grade with improved impact resistance.

Product information

Resin Identification	PA6-I(R30)	ISO 1043
Part Marking Code	>PA6-I(R30)<	ISO 11469

Rheological properties

Moulding shrinkage range, parallel	1.6 - 2	%	ISO 294-4, 2577
Moulding shrinkage range, normal	1.6 - 2	%	ISO 294-4, 2577

Typical mechanical properties

	dry/cond.		
Tensile modulus	2500 / -	MPa	ISO 527-1/-2
Tensile stress at yield, 50mm/min	60 / -	MPa	ISO 527-1/-2
Tensile strain at break, 50mm/min	25 / -	%	ISO 527-1/-2
Flexural modulus	2100 / -	MPa	ISO 178
Flexural strength	80 / -	MPa	ISO 178
Charpy impact strength, 23°C	150 / -	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23°C	10.5 / -	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -30°C	8 / -	kJ/m²	ISO 179/1eA
Izod notched impact strength, 23°C	11 / -	kJ/m²	ISO 180/1A
Poisson's ratio	0.38 / -[C]		

[C]: Calculated

Thermal properties

	dry/cond.		
Melting temperature, 10°C/min	225 / *	°C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	52 / *	°C	ISO 75-1/-2

Physical/Other properties

	dry/cond.		
Humidity absorption, 2mm	2.3 / *	%	Sim. to ISO 62
Water absorption, 2mm	8.3 / *	%	Sim. to ISO 62
Density	1110 / -	kg/m³	ISO 1183

Injection

Drying Recommended	yes	
Drying Temperature	80	°C
Drying Time, Dehumidified Dryer	2 - 4	h
Processing Moisture Content	≤0.15	%
Melt Temperature Optimum	260	°C
Min. melt temperature	240	°C
Max. melt temperature	270	°C
Screw tangential speed	≤0.25	m/s
Mold Temperature Optimum	70	°C
Min. mould temperature	50	°C

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Max. mould temperature	90 °C

Characteristics

Processing	Injection Moulding
Delivery form	Granules
Additives	Nucleated
Special characteristics	High impact or impact modified, Heat stabilised 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,

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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 relax any internal stresses.

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