Zytel® 74G50ARX ECO-R 311 BLK1

NYLON RESIN

Zytel® 74G50ARX ECO-R 311 BLK1 incorporates 30% of post-industrial recycled content by weight in the finished product. It is a 50% Glass Reinforced, Heat Stabilized, Polyamide 66 designed for Automotive industry.

Product information

Resin Identification	(PA66+PA6)-GF50 (REC30)	ISO 1043
Part Marking Code	>(PA66+PA6)-GF50 (REC30)<	ISO 11469
Continuous Service Temperature	266 °F	IEC 60216-1

Rheological properties

Molding shrinkage range, parallel	0.1 - 0.5 %	ISO 294-4, 2577
Molding shrinkage range, normal	0.5 - 0.9 %	ISO 294-4, 2577

Typical mechanical properties

	dry/cond.		
Tensile modulus	2.36E6 / 1.74E6	psi	ISO 527-1/-2
Tensile stress at break, 5mm/min	29000 / 20300	psi	ISO 527-1/-2
Tensile strain at break, 5mm/min	2.3 / 3.3	%	ISO 527-1/-2
Flexural modulus	2.1E6 / -	psi	ISO 178
Flexural strength	43500 / -	psi	ISO 178
Charpy impact strength, 23 °C	35.7 / 38.1	ftlb/in²	ISO 179/1eU
Charpy impact strength, -30 °C	21.4 / -	ftlb/in²	ISO 179/1eU
Charpy notched impact strength, 23 °C	6.66 / 7.61	ftlb/in²	ISO 179/1eA
Charpy notched impact strength, -30 °C	4.04 / -	ftlb/in²	ISO 179/1eA
Ball indentation hardness, H 961/30	33400 / -	psi	ISO 2039-1

Thermal properties

	dry/cond.		
Melting temperature, 10 °C/min	500 / *	°F	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	455 / *	°F	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	482 / *	°F	ISO 75-1/-2
Coefficient of linear thermal expansion (CLTE), parallel	0.11 / *	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	0.444 / *	E-4/°F	ISO 11359-1/-2

Physical/Other properties

	dry/cond.		
Humidity absorption, 2mm	1.2 / *	%	Sim. to ISO 62
Water absorption, 2mm	4.1 / *	%	Sim. to ISO 62
Density	0.0563 / -	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	545	°F
Min. melt temperature	527	°F
Max. melt temperature	563	°F

Zytel® 74G50ARX ECO-R 311 BLK1

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Max. screw tangential speed	≤0.2	m/s
Mold Temperature Optimum	212	°F
Min. mold temperature	158	°F
Max. mold temperature	248	°F

Characteristics

Processing	Injection Molding
Special characteristics	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,

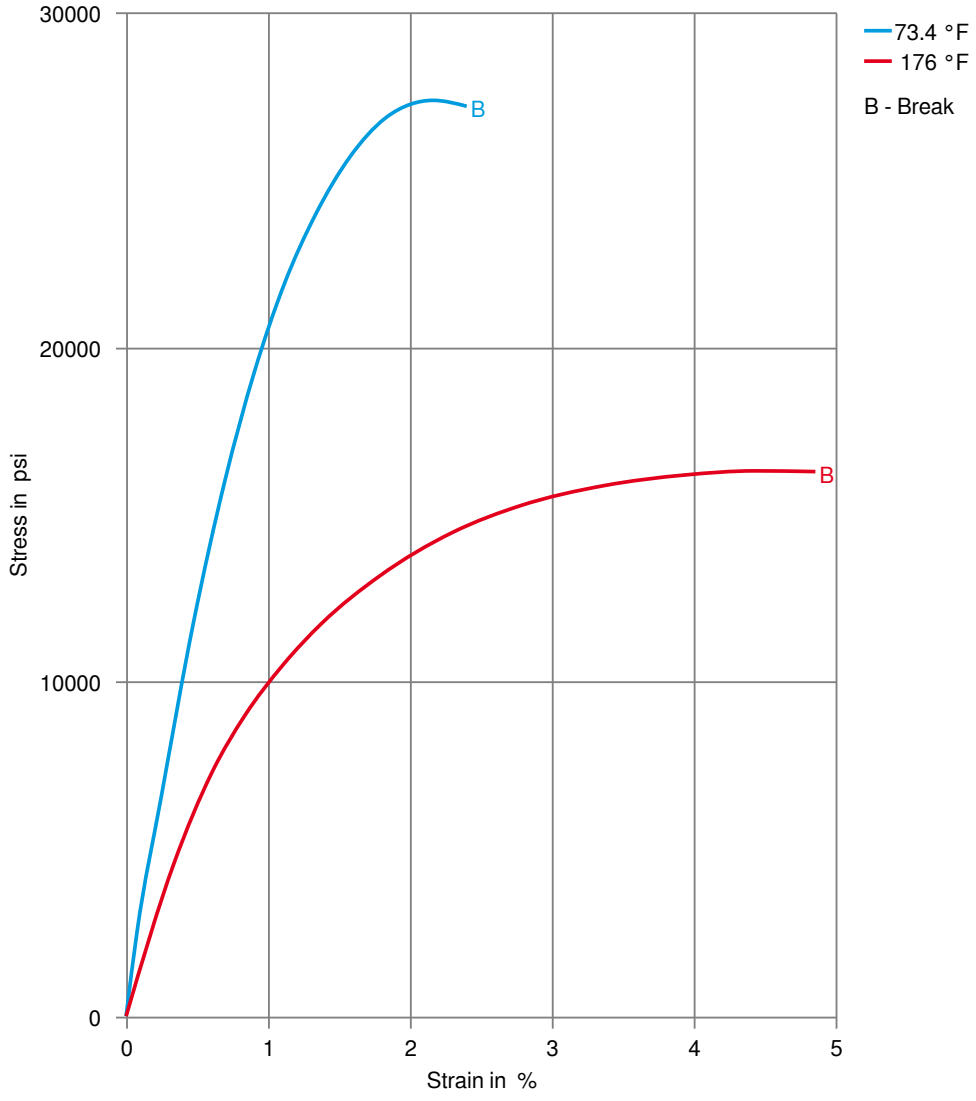
Zytel® 74G50ARX ECO-R 311 BLK1

NYLON RESIN

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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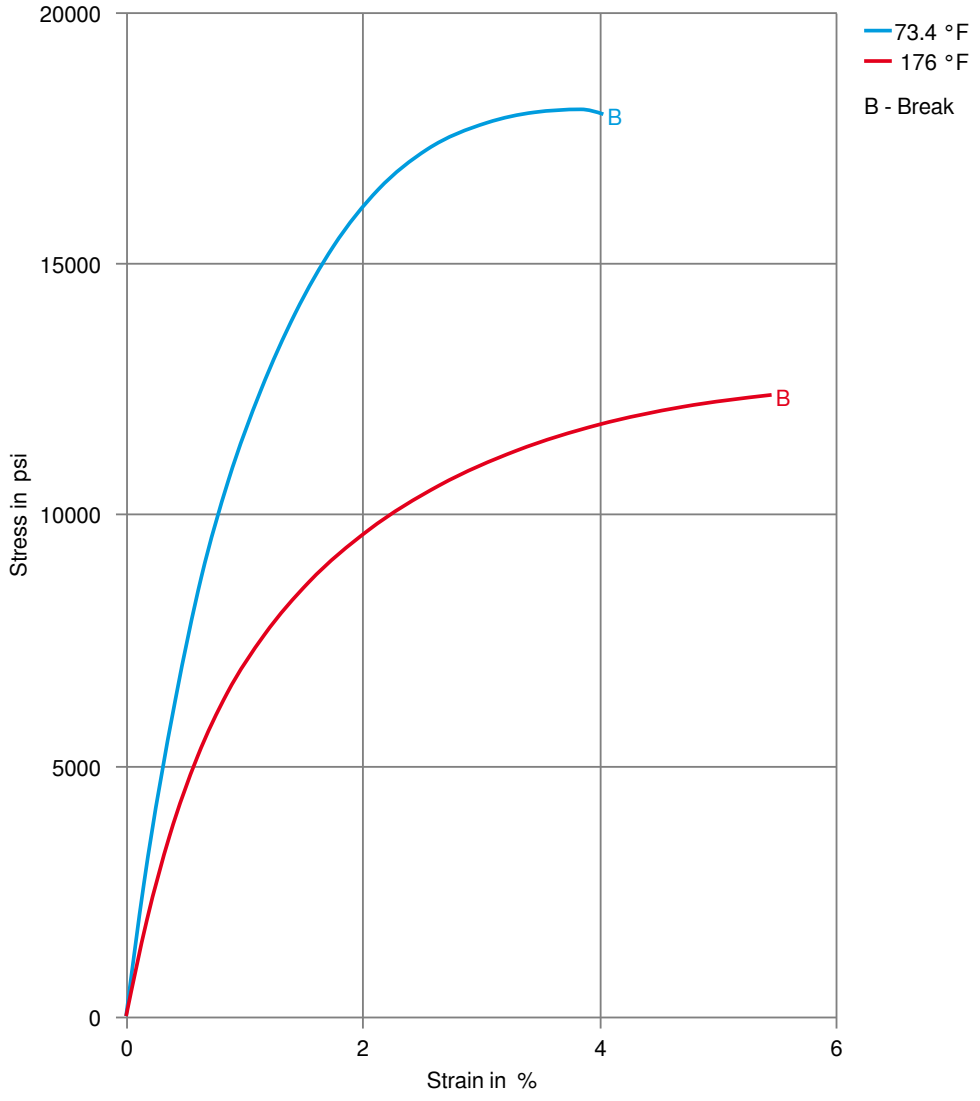
Stress-strain (dry)



Zytel® 74G50ARX ECO-R 311 BLK1

NYLON RESIN

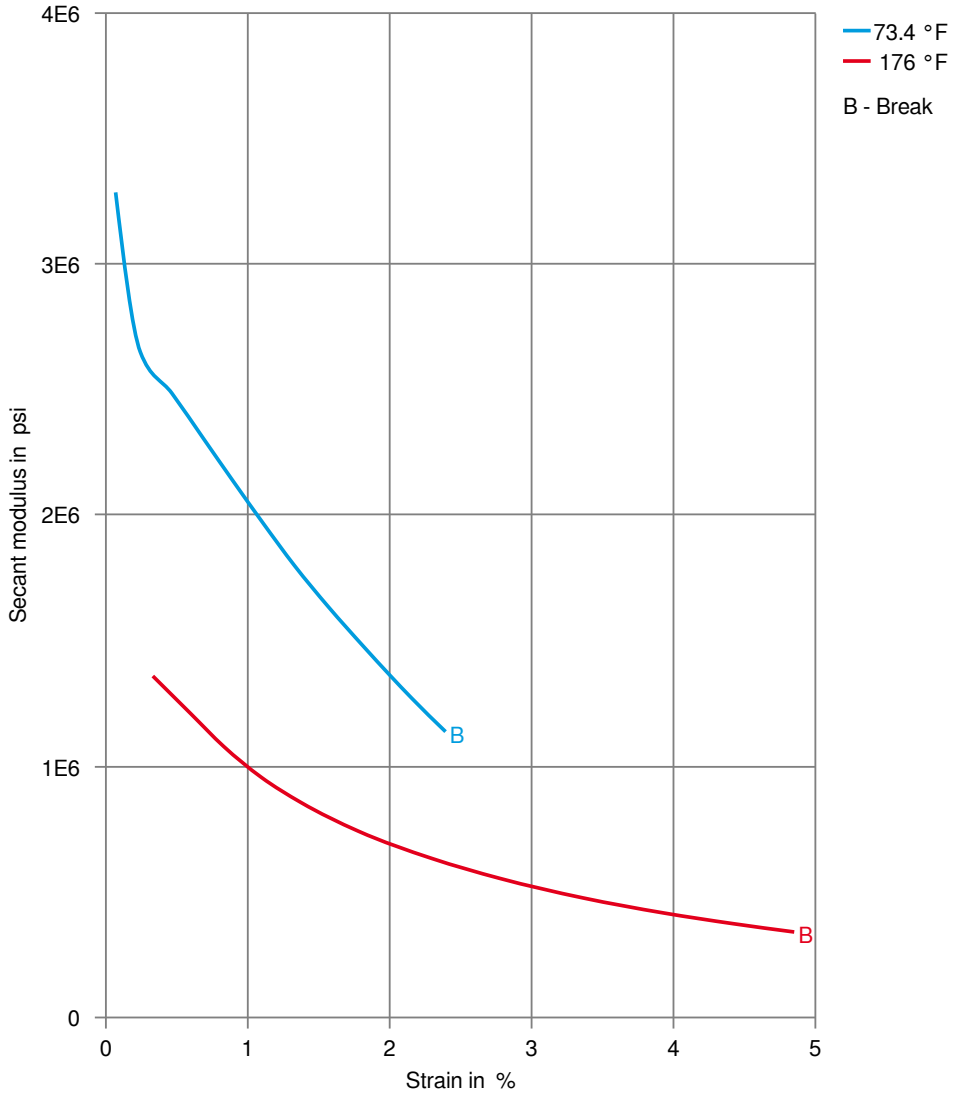
Stress-strain (cond.)



Zytel® 74G50ARX ECO-R 311 BLK1

NYLON RESIN

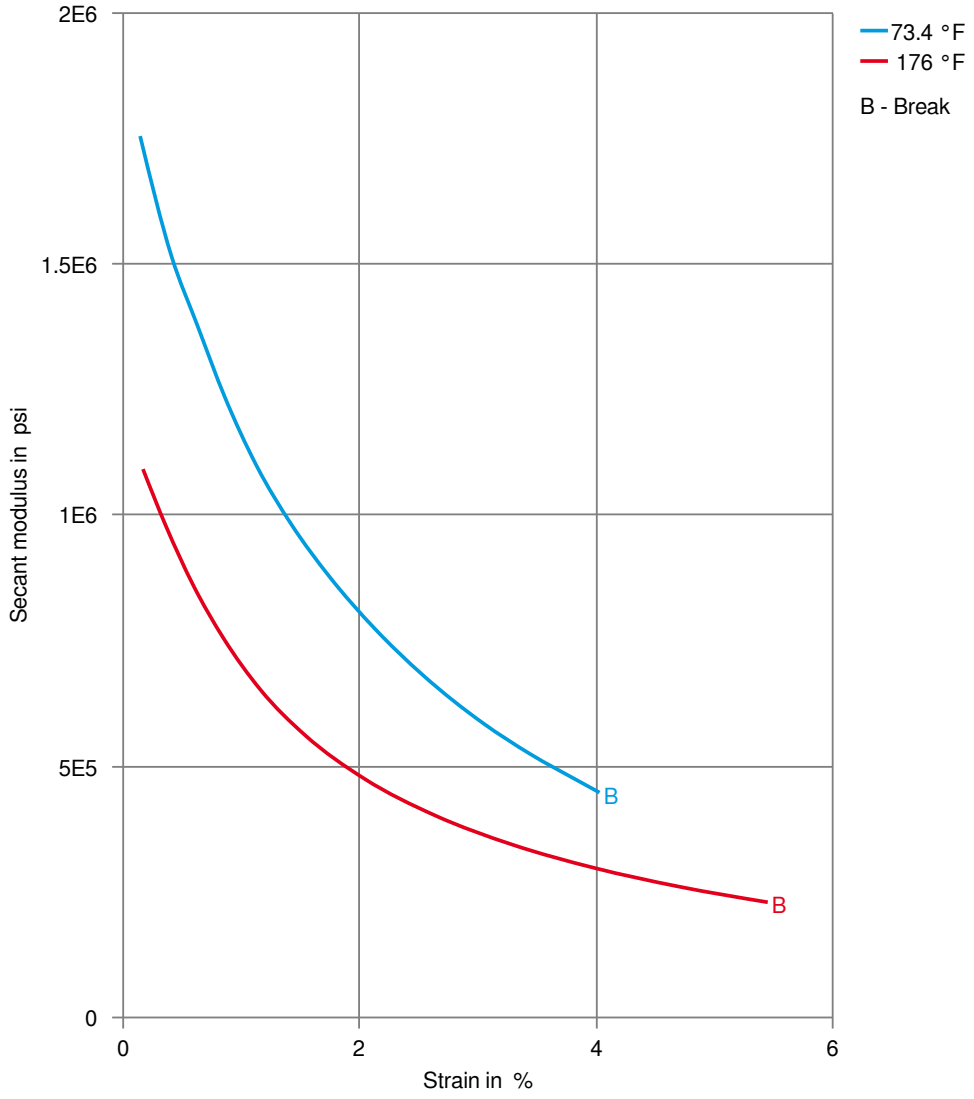
Secant modulus-strain (dry)



Zytel® 74G50ARX ECO-R 311 BLK1

NYLON RESIN

Secant modulus-strain (cond.)



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