Zytel® ST801AW NC010

NYLON RESIN

Common features of Zytel® nylon resin include mechanical and physical properties such as high mechanical strength, excellent balance of stiffness and toughness, good high temperature performance, good electrical and flammability properties, good abrasion and chemical resistance. In addition, Zytel® nylon resins are available in different modified and reinforced grades to create a wide range of products with tailored properties for specific processes and end-uses. Zytel® nylon resin, including most flame retardant grades, offer the ability to be coloured.

The good melt stability of Zytel® nylon resin normally enables the recycling of properly handled production waste. If recycling is not possible, we recommend, as the preferred option, incineration with energy recovery (-31kJ/g of base polymer) in appropriately equipped installations. For disposal, local regulations have to be observed.

Zytel® nylon resin typically is used in demanding applications in the automotive, furniture, domestic appliances, sporting goods and construction industry.

Zytel® ST801AW NC010 is a Super Tough, high performance polyamide 66 resin. It is UV stabilised and when appropriately colored offers the best resistance to indirect sunlight in automotive interior applications.

Product information

Resin Identification	PA66-HI	ISO 1043
Part Marking Code	>PA66-HI<	ISO 11469
ISO designation	ISO 16396-PA66-I,,M1G1L1NR,S14-020	

Rheological properties

	dry/cond.		
Moulding shrinkage, parallel	1.8 / -	%	ISO 294-4, 2577
Moulding shrinkage, normal	1.4 / -	%	ISO 294-4, 2577

Typical mechanical properties

	dry/cond.		
Tensile Modulus	1900 / 780	MPa	ISO 527-1/-2
Yield stress, 50mm/min	49 / 36	MPa	ISO 527-1/-2
Yield strain, 50mm/min	5 / 26	%	ISO 527-1/-2
Stress at break, 50mm/min	45 / 48	MPa	ISO 527-1/-2
Strain at break, 50mm/min	74 / *	%	ISO 527-1/-2
Flexural Modulus	1800 / 700	MPa	ISO 178
Charpy impact strength, 23°C	N / N	kJ/m²	ISO 179/1eU
Charpy impact strength, -30°C	N / -	kJ/m²	ISO 179/1eU
Charpy impact strength, -40°C	240 / -	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23°C	80 / 120	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -30°C	23 / 22	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -40°C	21 / -	kJ/m²	ISO 179/1eA
Izod notched impact strength, 23°C	80 / -	kJ/m²	ISO 180/1A
Izod notched impact strength, -40°C	21 / -	kJ/m²	ISO 180/1A
Izod impact strength, 23°C	N / -	kJ/m²	ISO 180/1U
Izod impact strength, -30°C	N / -	kJ/m²	ISO 180/1U
Hardness, Rockwell, R-scale	110 / -		ISO 2039-2
Poisson's ratio	0.41 / 0.46		

Celanese
The chemistry inside innovation™

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Thermal properties

	dry/cond.		
Melting temperature, 10°C/min	262 / *	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	75 / 20	°C	ISO 11357-1/-3
Temp. of deflection under load, 1.8 MPa	60 / *	°C	ISO 75-1/-2
Temp. of deflection under load, 0.45 MPa	160 / *	°C	ISO 75-1/-2
Coeff. of linear therm. expansion, parallel	140 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	120 / *	E-6/K	ISO 11359-1/-2
RTI, electrical, 0.75mm	125	°C	UL 746B
RTI, electrical, 1.5mm	125	°C	UL 746B
RTI, electrical, 3mm	125	°C	UL 746B
RTI, impact, 0.75mm	75	°C	UL 746B
RTI, impact, 1.5mm	75	°C	UL 746B
RTI, impact, 3mm	75	°C	UL 746B
RTI, strength, 0.75mm	85	°C	UL 746B
RTI, strength, 1.5mm	85 / *	°C	UL 746B
RTI, strength, 3mm	85	°C	UL 746B

Flammability

	dry/cond.		
Burning Behav. at 1.5mm nom. thickn.	HB / *	class	UL 94
Thickness tested	1.5 / *	mm	UL 94
UL recognition	yes / *		UL 94
Burning Behav. at thickness h	HB / *	class	UL 94
Thickness tested	0.75 / *	mm	UL 94
UL recognition	yes / *		UL 94
FMVSS Class	B		ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	26	mm/min	ISO 3795 (FMVSS 302)

Electrical properties

	dry/cond.		
Relative permittivity, 100Hz	3.4 / 6		IEC 62631-2-1
Relative permittivity, 1MHz	3.2 / 3.5		IEC 62631-2-1
Dissipation factor, 100Hz	50 / 1760	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	110 / 380	E-4	IEC 62631-2-1
Volume resistivity	>1E13 / 2.4E10	Ohm.m	IEC 62631-3-1
Surface resistivity	* / 7.1E12	Ohm	IEC 62631-3-2
Electric strength	26 / 26	kV/mm	IEC 60243-1
Comparative tracking index	600 / -		IEC 60112
Electric Strength, Short Time, 2mm	26 / 26	kV/mm	IEC 60243-1

Other properties

	dry/cond.		
Humidity absorption, 2mm	1.9 / *	%	Sim. to ISO 62
Water absorption, 2mm	6.5 / *	%	Sim. to ISO 62
Water absorption, Immersion 24h	1.17[1] / *	%	Sim. to ISO 62
Density	1080 / -	kg/m³	ISO 1183

[1]: wall thickness 3mm

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Film Properties

	dry/cond.		
Strain at yield, parallel	9.49 / *	%	ISO 527-3

Injection

Drying Recommended	yes		
Drying Temperature	80	°C	
Drying Time, Dehumidified Dryer	2 - 4	h	
Processing Moisture Content	≤0.2	%	
Melt Temperature Optimum	290	°C	Internal
Min. melt temperature	280	°C	
Max. melt temperature	300	°C	
Screw tangential speed	≤0.3	m/s	
Mold Temperature Optimum	80	°C	
Min. mould temperature	50	°C	
Max. mould temperature	100	°C	
Hold pressure range	50 - 100	MPa	
Hold pressure time	4	s/mm	
Ejection temperature	190	°C	Internal

Extrusion

Drying Temperature	≤80	°C
Drying Time, Dehumidified Dryer	3 - 4	h
Processing Moisture Content	≤0.06	%
Melt Temperature Optimum	280	°C
Melt Temperature Range	275 - 290	°C

Characteristics

Additives	Release agent

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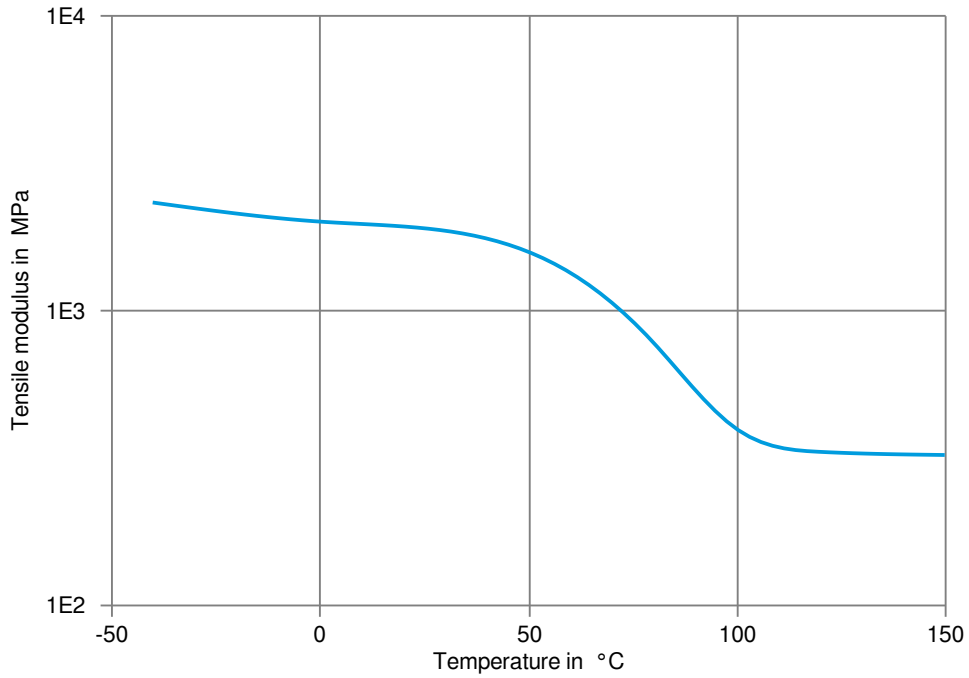
Tensile modulus-temperature (dry)



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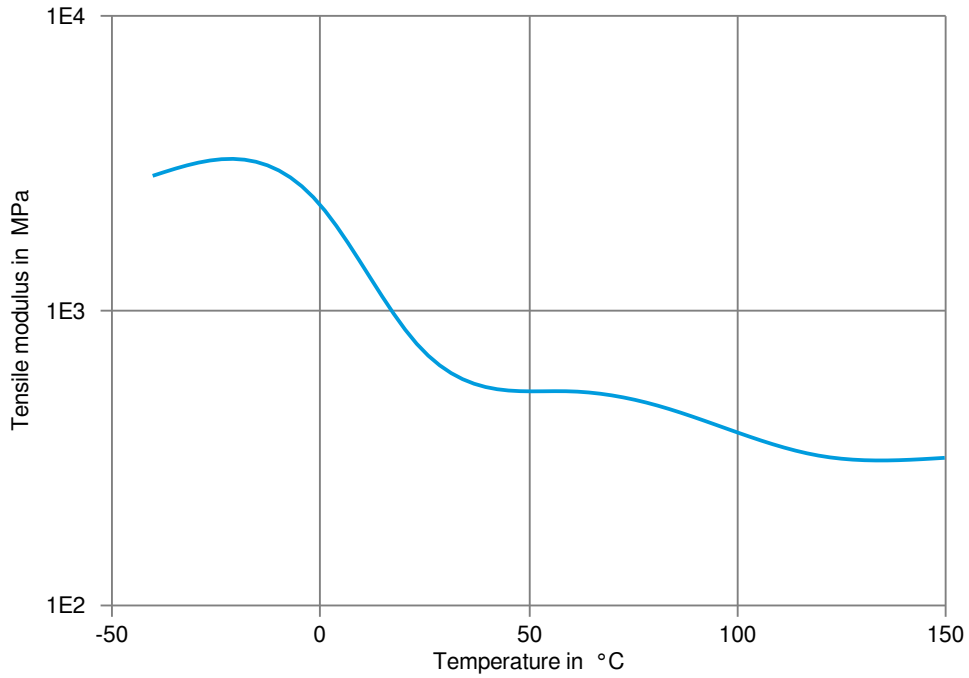
Tensile modulus-temperature (cond.)



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Chemical Media Resistance

Acids

- ✔ Acetic Acid (5% by mass), 23°C
- ✔ Citric Acid solution (10% by mass), 23°C
- ✔ Lactic Acid (10% by mass), 23°C
- ✘ Hydrochloric Acid (36% by mass), 23°C
- ✘ Nitric Acid (40% by mass), 23°C
- ✘ Sulfuric Acid (38% by mass), 23°C
- ✘ Sulfuric Acid (5% by mass), 23°C
- ✘ Chromic Acid solution (40% by mass), 23°C

Bases

- ✘ Sodium Hydroxide solution (35% by mass), 23°C
- ✔ Sodium Hydroxide solution (1% by mass), 23°C
- ✔ Ammonium Hydroxide solution (10% by mass), 23°C

Alcohols

- ✔ Isopropyl alcohol, 23°C
- ✔ Methanol, 23°C
- ✔ Ethanol, 23°C

Hydrocarbons

- ✔ n-Hexane, 23°C
- ✔ Toluene, 23°C
- ✔ iso-Octane, 23°C

Ketones

- ✔ Acetone, 23°C

Ethers

- ✔ Diethyl ether, 23°C

Mineral oils

- ✔ SAE 10W40 multigrade motor oil, 23°C
- ✘ SAE 10W40 multigrade motor oil, 130°C
- ✘ SAE 80/90 hypoid-gear oil, 130°C
- ✔ Insulating Oil, 23°C

Standard Fuels

- ✔ ISO 1817 Liquid 1 - E5, 60°C
- ✔ ISO 1817 Liquid 2 - M15E4, 60°C
- ✔ ISO 1817 Liquid 3 - M3E7, 60°C
- ✔ ISO 1817 Liquid 4 - M15, 60°C
- ✔ Standard fuel without alcohol (pref. ISO 1817 Liquid C), 23°C
- ✔ Standard fuel with alcohol (pref. ISO 1817 Liquid 4), 23°C
- ✔ Diesel fuel (pref. ISO 1817 Liquid F), 23°C
- ✘ Diesel fuel (pref. ISO 1817 Liquid F), 90°C
- ✘ Diesel fuel (pref. ISO 1817 Liquid F), >90°C

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Salt solutions

- ✔ Sodium Chloride solution (10% by mass), 23°C
- ✘ Sodium Hypochlorite solution (10% by mass), 23°C
- ✔ Sodium Carbonate solution (20% by mass), 23°C
- ✔ Sodium Carbonate solution (2% by mass), 23°C
- ✘ Zinc Chloride solution (50% by mass), 23°C

Other

- ✔ Ethyl Acetate, 23°C
- ✘ Hydrogen peroxide, 23°C
- ✘ DOT No. 4 Brake fluid, 130°C
- ✘ Ethylene Glycol (50% by mass) in water, 108°C
- ✔ 1% nonylphenoxy-polyethyleneoxy ethanol in water, 23°C
- ✔ 50% Oleic acid + 50% Olive Oil, 23°C
- ✔ Water, 23°C
- ✔ Water, 90°C
- ✘ Phenol solution (5% by mass), 23°C

Symbols used:

✔ possibly resistant
Defined as: Supplier has sufficient indication that contact with chemical can be potentially accepted under the intended use conditions and expected service life. Criteria for assessment have to be indicated (e.g. surface aspect, volume change, property change).

✘ not recommended - see explanation
Defined as: Not recommended for general use. However, short-term exposure under certain restricted conditions could be acceptable (e.g. fast cleaning with thorough rinsing, spills, wiping, vapor exposure).