Zytel® ST7301A NC010

NYLON RESIN

ISO 1043: PA6-HI

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® ST7301A NC010 is a Super Tough, polyamide 6 resin for injection molding and extrusion. It offers outstanding impact resistance over a wide temperature and humidity range

Product information

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

Rheological properties

	dry/cond.		
Molding shrinkage, parallel	1.0 / 1.1	%	ISO 294-4, 2577
Molding shrinkage, normal	1.1 / 1.2	%	ISO 294-4, 2577
Melt viscosity, @ 1000 sec-1, 250 °C	2800 / *	P	ISO 11443

Typical mechanical properties

	dry/cond.		
Tensile modulus	242000 / -	psi	ISO 527-1/-2
Tensile stress at yield, 50mm/min	6400 / -	psi	ISO 527-1/-2
Tensile strain at yield, 50mm/min	4.1 / -	%	ISO 527-1/-2
Tensile stress at break, 50mm/min	7830 / -	psi	ISO 527-1/-2
Tensile strain at break, 50mm/min	260 / -	%	ISO 527-1/-2
Flexural modulus	218000 / -	psi	ISO 178
Flexural strength	7690 / -	psi	ISO 178
Flexural strain at failure	5.8 / -	%	ISO 178
Charpy impact strength, 23 °C	N / -	ftlb/in²	ISO 179/1eU
Charpy notched impact strength, 23 °C	52.3 / -	ftlb/in²	ISO 179/1eA
Charpy notched impact strength, -30 °C	42.8 / -	ftlb/in²	ISO 179/1eA
Charpy notched impact strength, -40 °C	33.3 / -	ftlb/in²	ISO 179/1eA
Charpy notched impact strength, -50 °C	9.51 / *	ftlb/in²	ISO 179/1eA

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Thermal properties

	dry/cond.		
Melting temperature, 10°C/min	426 / *	°F	ISO 11357-1/-3
Freezing temperature, 10°C/min	338 / *	°F	ISO 11357-1/-2
Temperature of deflection under load, 1.8 MPa	120 / *	°F	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	234 / *	°F	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	255 / *	°F	ISO 306
Vicat softening temperature, 50°C/h 10N	410	°F	ISO 306
Coefficient of linear thermal expansion (CLTE), parallel, -40-23°C	0.539 / *	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal, -40-23°C	0.561 / *	E-4/°F	ISO 11359-1/-2

Physical/Other properties

	dry/cond.		
Density	0.0379 / -	lb/in³	ISO 1183

Characteristics

Processing	Injection Molding, Extrusion, Sheet Extrusion
Additives	Release agent
Special characteristics	High impact or impact modified

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

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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

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).

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The chemistry inside innovation™

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