



Zytel® 70G43HSLA BK099

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, DuPont recommends, 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® 70G43HSLA BK099 is a 43% glass fiber reinforced, heat stabilized, black polyamide 66 resin for injection moulding.

Product information

Resin Identification	PA66-GF43	ISO 1043
Part Marking Code	>PA66-GF43<	ISO 11469
ISO designation	ISO 16396-PA66,GF43,M1CGHR,S10-140	

Rheological properties

	dry/cond.		
Viscosity number	110/* ^[1]	cm ³ /g	ISO 307, 1157, 1628
Moulding shrinkage, parallel	0.3/-	%	ISO 294-4, 2577
Moulding shrinkage, normal	0.9/-	%	ISO 294-4, 2577
[1]: 90% formic acid			

Typical mechanical properties

	dry/cond.		
Tensile Modulus	14000/11000	MPa	ISO 527-1/-2
Stress at break	230/180	MPa	ISO 527-1/-2
Strain at break	2.5/3.5	%	ISO 527-1/-2
Flexural Modulus	13000/10000	MPa	ISO 178
Flexural Strength	340/260	MPa	ISO 178
Charpy impact strength, 23°C	90/95	kJ/m ²	ISO 179/1eU
Charpy impact strength, -30°C	85/90	kJ/m ²	ISO 179/1eU
Charpy notched impact strength, 23°C	16/18	kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -30°C	16/14	kJ/m ²	ISO 179/1eA
Puncture energy, 23°C	4.4/-	J	ISO 6603-2
Izod notched impact strength, 23°C	14/16	kJ/m ²	ISO 180/1A
Ball indentation hardness, H 961/30	290/-	MPa	ISO 2039-1
Poisson's ratio	0.33/0.34	-	



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Multiaxial Impact, Total Energy, 4.5m/s, 2mm 4.4/- J ISO 6603-2

Thermal properties

dry/cond.
Melting temperature, 10°C/min 262/* °C ISO 11357-1/-3
Glass transition temperature, 10°C/min 80/- °C ISO 11357-1/-2
Temp. of deflection under load, 1.8 MPa 255/* °C ISO 75-1/-2
Temp. of deflection under load, 0.45 MPa 258/* °C ISO 75-1/-2
Thermal conductivity of melt 0.25 W/(m K)

Flammability

dry/cond.
Oxygen index 24/* % ISO 4589-1/-2
FMVSS Class B - ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm 27 mm/min ISO 3795 (FMVSS 302)

Electrical properties

dry/cond.
Dissipation factor, 100Hz 130/- E-4 IEC 62631-2-1
Dissipation factor, 1MHz 150/- E-4 IEC 62631-2-1
Volume resistivity >1E13/- Ohm.m IEC 62631-3-1
Electric strength 25/- kV/mm IEC 60243-1
Comparative tracking index 600/- - IEC 60112

Other properties

dry/cond.
Humidity absorption, 2mm 1.5/* % Sim. to ISO 62
Water absorption, 2mm 4.7/* % Sim. to ISO 62
Density 1490/- kg/m³ ISO 1183
Water Absorption, Immersion 24h 0.9/*^[2] % Sim. to ISO 62
[2]: wall thickness 2mm

Injection

Drying Recommended yes
Drying Temperature 80 °C
Drying Time, Dehumidified Dryer 2 - 4 h
Processing Moisture Content ≤0.2 %
Melt Temperature Optimum 295 °C
Min. melt temperature 285 °C
Max. melt temperature 300 °C
Max. screw tangential speed 0.2 m/s
Mold Temperature Optimum 100 °C
Min. mould temperature 70 °C
Max. mould temperature 120 °C
Hold pressure range 50 - 100 MPa
Hold pressure time 3 s/mm
Ejection temperature 210 °C



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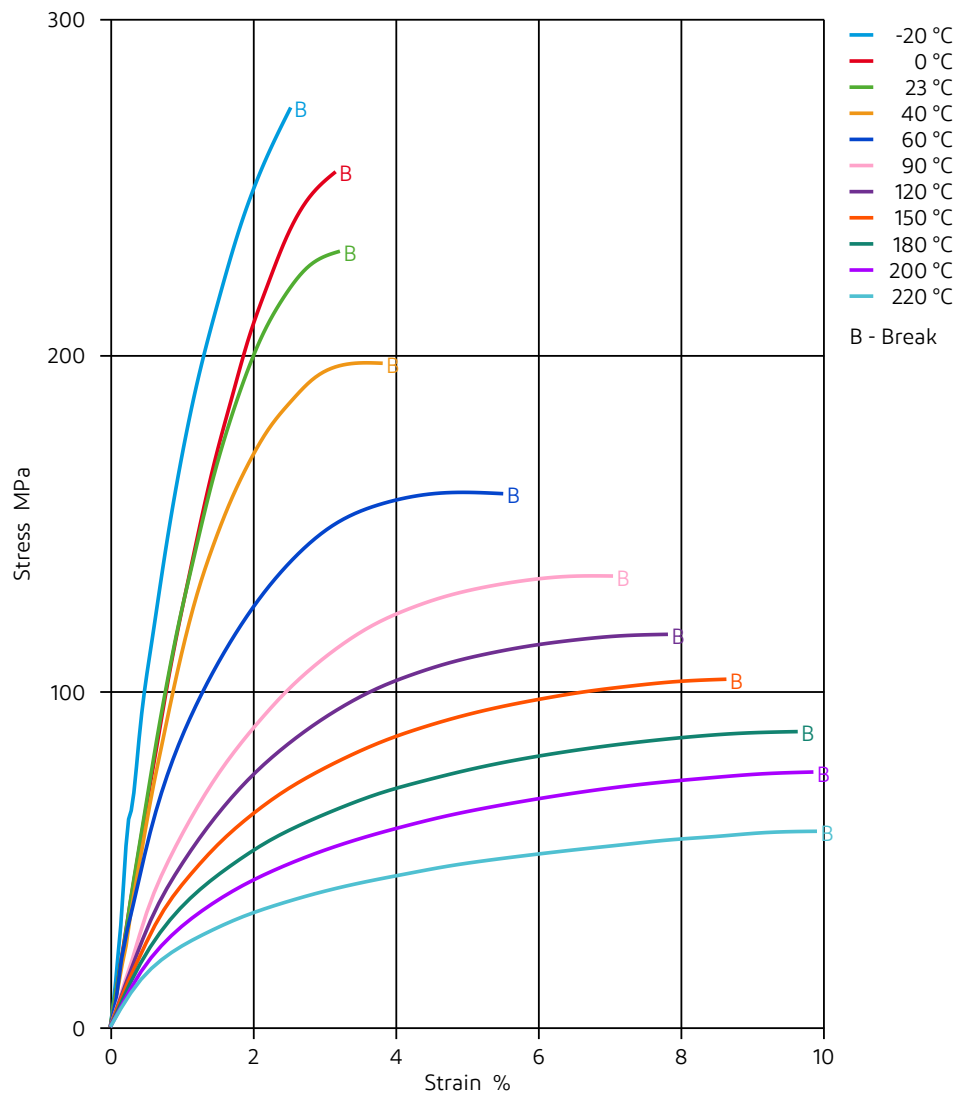
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Characteristics

Additives

Release agent

Stress-strain (dry)

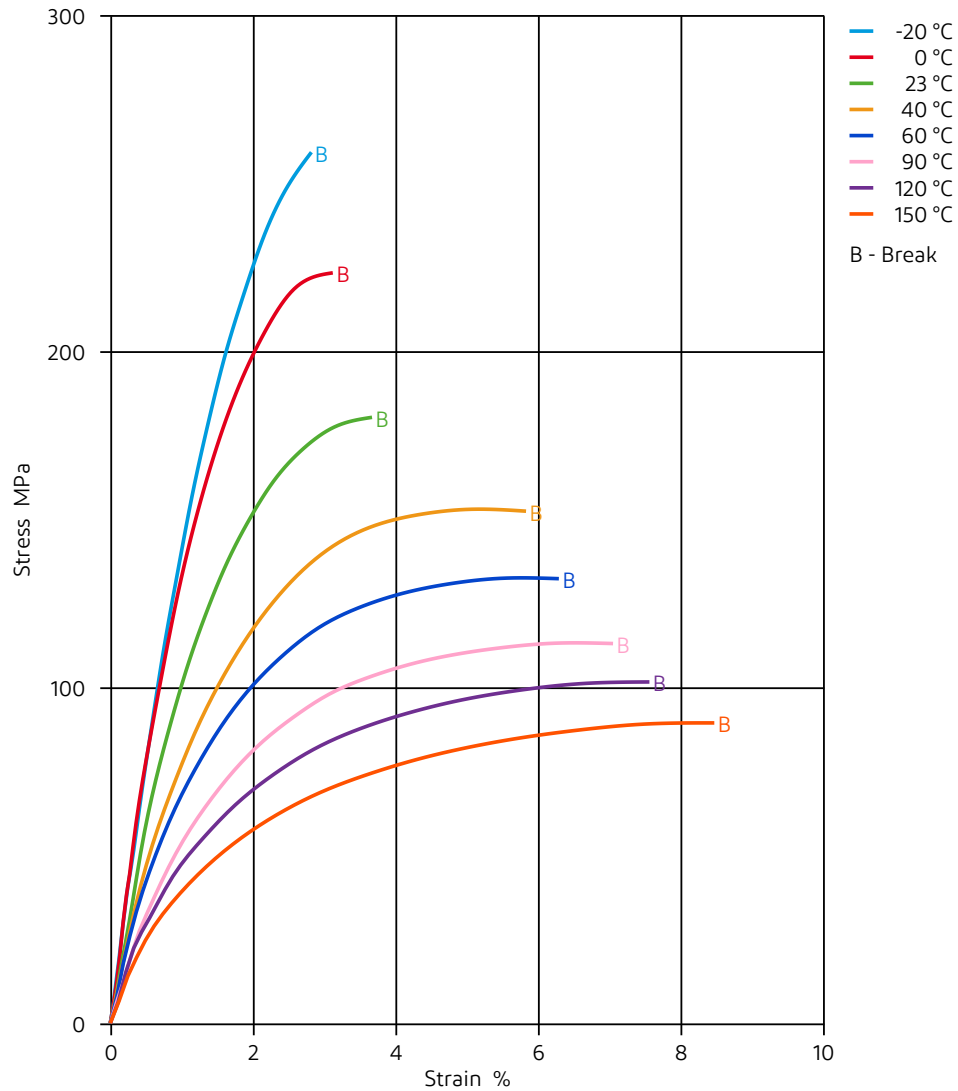




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Stress-strain (cond.)



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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).

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