

## Zytel<sup>®</sup> 70G30HSLR ECO-R BK099

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® 70G30HSLR ECO-R BK099 is a 30% glass fibre reinforced, heat stabilised, hydrolysis resistant polyamide 66 resin for injection molding. It has same performance and processing properties as Zytel® 70G30HSLR BK099.

Zytel® 70G30HSLR ECO-R BK099 belongs to the Zytel® ECO-R family. The products of this family contain polyamide derived from certified\* post-industrial recyclate streams. This results in reduced lifecycle greenhouse gas emissions and lower fossil resource use.

\*certified circular according to ISCC PLUS mass balance approach.

Rheological properties	dry/cond.		
Viscosity number	150 <sup>[1]</sup> /*	cm³/g	ISO 307, 1157, 1628
Moulding shrinkage, parallel	0.3/-	%	ISO 294-4, 2577
Moulding shrinkage, normal	1.0/-	%	ISO 294-4, 2577
Melt viscosity, @ 1000 sec-1, 280°C	190/*	Pa.s	ISO 11443
[1]: acid sulphuric 96%			
Typical mechanical properties	dry/cond.		
Tensile Modulus	10000/7000	MPa	ISO 527-1/-2
Stress at break, 5mm/min	200/130	MPa	ISO 527-1/-2
Strain at break, 5mm/min	3/5	%	ISO 527-1/-2
Flexural Modulus	9000/6500 <sup>[DS</sup>	<sup>3]</sup> MPa	ISO 178
Flexural Strength	280/200 <sup>[DS]</sup>	MPa	ISO 178
Flexural Stress at 3.5%	270/170	MPa	ISO 178
Charpy impact strength, 23°C	70/80	kJ/m²	ISO 179/1eU
Charpy impact strength, -30°C	70/70 <sup>[DS]</sup>	kJ/m²	ISO 179/1eU

Printed: 2023-11-20



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Charpy impact strength, -40°C Charpy notched impact strength, 23°C Charpy notched impact strength, -30°C Charpy notched impact strength, -40°C Izod notched impact strength, 23°C Izod notched impact strength, -30°C Izod notched impact strength, -40°C Hardness, Rockwell, M-scale Hardness, Rockwell, M-scale Ball indentation hardness, H 961/30 Poisson's ratio Multiaxial Impact, Total Energy, 4.5m/s, 2mm [DS]: Derived from similar grade	65/- 12/15 9/9 <sup>[DS]</sup> 9/9 10/12 10/- 10/- 104/88 124/117 270/185 0.34/0.35 5/-	kJ/m <sup>2</sup> kJ/m <sup>2</sup> kJ/m <sup>2</sup> kJ/m <sup>2</sup> kJ/m <sup>2</sup> MPa	ISO 179/1eU ISO 179/1eA ISO 179/1eA ISO 179/1eA ISO 180/1A ISO 180/1A ISO 180/1A ISO 2039-2 ISO 2039-2 ISO 2039-1
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	250/*	°C	ISO 75-1/-2
Temp. of deflection under load, 0.45 MPa	260/*	°C	ISO 75-1/-2
Coeff. of linear therm. expansion, parallel, -40-23°C	26/*	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, parallel	22/*	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, parallel, 55-160°C	13/*	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, -40-23°C	70/*	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	80/*	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, 55-160°C	130/*	E-6/K	ISO 11359-1/-2
Thermal conductivity, flow	0.36	W/(m K)	ISO 22007-2
Thermal conductivity of melt	0.21	W/(m K)	Internal
Spec. heat capacity of melt	2290	J/(kg K)	Internal
Flammability	dry/cond.		
Burning Behav. at 1.5mm nom. thickn.	HB/*	class	UL 94
Thickness tested	1.5/*	mm	UL 94
Burning Behav. at thickness h	HB/*	class	UL 94
Thickness tested	0.75/*	mm	UL 94
Oxygen index	24/*	%	ISO 4589-1/-2
Glow Wire Flammability Index, 1.0mm	700/-	°C	IEC 60695-2-12
Glow Wire Flammability Index, 2.0mm	750/-	°C	IEC 60695-2-12
Glow Wire Flammability Index, 3.0mm	800/-	°Č	IEC 60695-2-12
Glow Wire Ignition Temperature, 1.0mm	725/-	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 2.0mm	725/-	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 3.0mm	775/-	°C	IEC 60695-2-13
Glow Wire Temperature, No Flame, 3mm	750/-	°C	IEC 60335-1
FMVSS Class	В		ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	37[2]	mm/min	ISO 3795 (FMVSS 302)
[2]: Based on Zytel® 70G30HSLR BK099			



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Electrical properties Volume resistivity Surface resistivity Electric strength Comparative tracking index [DS]: Derived from similar grade	dry/cond. >1E13/1E9 <sup>[DS]</sup> */1E12 <sup>[DS]</sup> 38/32 400/-		IEC 62631-3-1 IEC 62631-3-2 IEC 60243-1 IEC 60112
Physical/Other properties	dry/cond.		
Humidity absorption, 2mm Water absorption, 2mm Water absorption, Immersion 24h Density	1.9/* 6/* 1.3/* 1370/-	% % % kg/m <sup>3</sup>	Sim. to ISO 62 Sim. to ISO 62 Sim. to ISO 62 ISO 1183
VDA Properties			
Odour [2]: Based on Zytel® 70G30HSLR BK099	5 <sup>[2]</sup>	class	VDA 270
Injection			
Drying Recommended Drying Temperature Drying Time, Dehumidified Dryer Processing Moisture Content Melt Temperature Optimum Min. melt temperature Max. melt temperature Screw tangential speed Mold Temperature Optimum Min. mould temperature Max. mould temperature Hold pressure range Hold pressure time	2 - 4 ≤0.2 295 285 305 ≤0.2 100 70 120 50 - 100	% °C °C °C m/s °C °C °C	Internal
Ejection temperature	210		Internal

### Characteristics

Additives

Release agent

### 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



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- ✗ Hydrochloric Acid (36% by mass), 23°C
- X Nitric Acid (40% by mass), 23°C
- X Sulfuric Acid (38% by mass), 23°C
- X 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
- ✓ Motor oil OS206 304 Ref.Eng.Oil, ISP, 135°C
- ✓ Automatic hypoid-gear oil Shell Donax TX, 135°C
- ✓ Hydraulic oil Pentosin CHF 202, 125°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

Printed: 2023-11-20



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- Sodium Carbonate solution (20% by mass), 23°C
- Sodium Carbonate solution (2% by mass), 23°C
- X Zinc Chloride solution (50% by mass), 23°C

#### Other

- Ethyl Acetate, 23°C
- ✗ Hydrogen peroxide, 23°C
- ✓ DOT No. 4 Brake fluid, 130°C
- DOT No. 4 Brake fluid, 120°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
- ✓ Coolant Glysantin G48, 1:1 in water, 125°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).

Printed: 2023-11-20

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Revised: 2023-07-26 Source: Celanese Materials Database

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