

# Zytel® FG70G30HSR3 BK309

## NYLON RESIN

Zytel® FG70G30HSR3 BK309 is a 30% Glass Reinforced, Heat Stabilized, Polyamide 66

### Product information

Resin Identification	PA-GF30	ISO 1043
Part Marking Code	>PA-GF30<	ISO 11469
ISO designation	ISO 16396-PA66,GF30,M1CGHRW,S14-100	

### Rheological properties

	dry/cond.		
Moulding shrinkage, parallel	0.2/-	%	ISO 294-4, 2577
Moulding shrinkage, normal	1.0/-	%	ISO 294-4, 2577

### Typical mechanical properties

	dry/cond.		
Tensile modulus	10000/7000	MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	200/130	MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	3.1/5	%	ISO 527-1/-2
Flexural modulus	9500/7000	MPa	ISO 178
Flexural strength	290/200	MPa	ISO 178
Charpy impact strength, 23°C	60/70	kJ/m <sup>2</sup>	ISO 179/1eU
Charpy impact strength, -30°C	50/-	kJ/m <sup>2</sup>	ISO 179/1eU
Charpy notched impact strength, 23°C	11/14	kJ/m <sup>2</sup>	ISO 179/1eA
Charpy notched impact strength, -40°C	10/-	kJ/m <sup>2</sup>	ISO 179/1eA
Hardness, Rockwell, M-scale	104/88		ISO 2039-2
Hardness, Rockwell, R-scale	124/117		ISO 2039-2
Ball indentation hardness, H 961/30	270/187	MPa	ISO 2039-1
Poisson's ratio	0.34/0.35		
Multiaxial Impact, Total Energy, 4.5m/s, 2mm	5/-	J	ISO 6603-2

### Thermal properties

	dry/cond.		
Melting temperature, 10°C/min	263/*	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	75/20	°C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	250/*	°C	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	260/*	°C	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	209/*	°C	ISO 306
Coefficient of linear thermal expansion (CLTE), parallel	28/*	E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	95/*	E-6/K	ISO 11359-1/-2
Thermal conductivity of melt	0.22	W/(m K)	ISO 22007-2
Effective thermal diffusivity, flow	6.85E-8	m <sup>2</sup> /s	ISO 22007-4
Specific heat capacity of melt	2220	J/(kg K)	ISO 22007-4
RTI, electrical, 0.75mm	125	°C	UL 746B
RTI, electrical, 1.5mm	125	°C	UL 746B
RTI, electrical, 3.0mm	125	°C	UL 746B
RTI, impact, 0.75mm	120	°C	UL 746B
RTI, impact, 1.5mm	120	°C	UL 746B

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RTI, impact, 3.0mm	120	°C	UL 746B
RTI, strength, 0.75mm	125	°C	UL 746B
RTI, strength, 1.5mm	125/*	°C	UL 746B
RTI, strength, 3.0mm	125	°C	UL 746B

### Flammability

	dry/cond.		
Burning Behav. at 1.5mm nom. thickn.	HB/*	class	IEC 60695-11-10
Thickness tested	1.5/*	mm	IEC 60695-11-10
UL recognition	yes/*		UL 94
Burning Behav. at thickness h	HB/*	class	IEC 60695-11-10
Thickness tested	0.75/*	mm	IEC 60695-11-10
UL recognition	yes/*		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/-	°C	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	B		ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	<80	mm/min	ISO 3795 (FMVSS 302)

### Electrical properties

	dry/cond.		
Surface resistivity	*/1E13	Ohm	IEC 62631-3-2

### Physical/Other properties

	dry/cond.		
Water absorption, Immersion 24h	1.3/*	%	Sim. to ISO 62
Density	1370/-	kg/m <sup>3</sup>	ISO 1183
Density of melt	1200	kg/m <sup>3</sup>	

### 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	305 °C
Screw tangential speed	≤0.2 m/s
Mold Temperature Optimum	100 °C
Min. mould temperature	50 °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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### Characteristics

Processing	Injection Moulding
Delivery form	Pellets
Additives	Release agent
Special characteristics	Heat stabilised or stable to heat, Hydrolysis resistant

### Automotive

OEM	STANDARD
Bosch	N28 BN02-GF122

### 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

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### 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).