Zytel® 8018HS BKB085

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® 8018HS BKB085 is a 14% glass reinforced heat stabilized, toughened polyamide 66 resin.

Product information

Resin Identification	PA66-I-GF14	ISO 1043
Part Marking Code	>PA66-I-GF14<	ISO 11469
ISO designation	ISO 16396-PA66-I,GF14,M1CGHR,S14-040	

Rheological properties

	dry/cond.		
Molding shrinkage, parallel	0.4 / -	%	ISO 294-4, 2577
Molding shrinkage, normal	0.8 / -	%	ISO 294-4, 2577

Typical mechanical properties

	dry/cond.		
Tensile modulus	609000 / 334000	psi	ISO 527-1/-2
Tensile stress at break, 5mm/min	12300 / 7980	psi	ISO 527-1/-2
Tensile strain at break, 5mm/min	4 / 13	%	ISO 527-1/-2
Flexural modulus	522000 / 290000	psi	ISO 178
Flexural strength	20300 / -	psi	ISO 178
Charpy impact strength, 23 °C	38.1 / 47.6	ftlb/in²	ISO 179/1eU
Charpy notched impact strength, 23 °C	6.66 / 8.56	ftlb/in²	ISO 179/1eA
Charpy notched impact strength, -30 °C	2.85 / 2.85	ftlb/in²	ISO 179/1eA
Charpy notched impact strength, -40 °C	1.9 / 1.9	ftlb/in²	ISO 179/1eA
Izod notched impact strength, 23 °C	6.18 / 8.56	ftlb/in²	ISO 180/1A
Izod notched impact strength, -30 °C	4.76 / 2.38	ftlb/in²	ISO 180/1A
Izod notched impact strength, -40 °C	3.33 / 2.38	ftlb/in²	ISO 180/1A
Izod impact strength, 23 °C	42.8 / 47.6	ftlb/in²	ISO 180/1U
Izod impact strength, -30 °C	42.8 / 33.3	ftlb/in²	ISO 180/1U
Hardness, Rockwell, M-scale	70 / -		ISO 2039-2
Hardness, Rockwell, R-scale	110 / -		ISO 2039-2

Thermal properties

	dry/cond.		
Melting temperature, 10 °C/min	505 / *	°F	ISO 11357-1/-3
Glass transition temperature, 10 °C/min	167 / 68	°F	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	428 / *	°F	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	475 / *	°F	ISO 75-1/-2

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Coefficient of linear thermal expansion (CLTE), parallel	0.28 / *	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), parallel, -40-23°C	0.289 / *	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), parallel, 55-160°C	0.256 / *	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	0.656 / *	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal, -40-23°C	0.533 / *	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal, 55-160°C	0.683 / *	E-4/°F	ISO 11359-1/-2
RTI, electrical, 0.75mm	248	°F	UL 746B
RTI, electrical, 1.5mm	248	°F	UL 746B
RTI, electrical, 3.0mm	248	°F	UL 746B
RTI, impact, 0.75mm	149	°F	UL 746B
RTI, impact, 1.5mm	203	°F	UL 746B
RTI, impact, 3.0mm	221	°F	UL 746B
RTI, strength, 0.75mm	185	°F	UL 746B
RTI, strength, 1.5mm	221 / *	°F	UL 746B
RTI, strength, 3.0mm	221	°F	UL 746B

Flammability

	dry/cond.		
Burning Behav. at 1.5mm nom. thickn.	HB / *	class	IEC 60695-11-10
Thickness tested	0.0591 / *	in	IEC 60695-11-10
UL recognition	yes / *		UL 94
Burning Behav. at thickness h	HB / *	class	IEC 60695-11-10
Thickness tested	0.0295 / *	in	IEC 60695-11-10
UL recognition	yes / *		UL 94
FMVSS Class	B		ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	<80	in/min	ISO 3795 (FMVSS 302)

Electrical properties

	dry/cond.		
Comparative tracking index	580 / -		IEC 60112

Physical/Other properties

	dry/cond.		
Density	0.043 / -	lb/in³	ISO 1183

Injection

Drying Recommended	yes	
Drying Temperature	176	°F
Drying Time, Dehumidified Dryer	2 - 4	h
Processing Moisture Content	≤0.2	%
Melt Temperature Optimum	563	°F
Min. melt temperature	545	°F
Max. melt temperature	581	°F
Max. screw tangential speed	≤0.2	m/s
Mold Temperature Optimum	176	°F

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Min. mold temperature	122	°F
Max. mold temperature	212	°F
Hold pressure range	7250 - 14500	psi
Hold pressure time	0.0762	s/mil
Hold Pressure Time (h is the max. wall thickness of the part in mm)	h^2+2	s
Ejection temperature	410	°F

Automotive

OEM	STANDARD	ADDITIONAL INFORMATION
Ford	WSK-M4D591-A	
Hyundai	MS941-03 Type A-3 HI	
Mercedes-Benz	DBL5410.01 PA66-I	
Stellantis - Chrysler	MS.50017 / CPN-2461	Black

Characteristics

Processing	Injection Molding
Special characteristics	Heat stabilized or stable to heat

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

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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

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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