

DuPont™ Zytel® FG70G50HSLA BK309

NYLON RESIN

Product Information

Zytel® FG70G50HSLA BK309 is a 50% glass fiber reinforced, heat stabilized polyamide 66 resin for injection molding. It has excellent flow characteristics and has been developed for consideration into applications such as parts for the food industry.

FOOD CONTACT

This product is manufactured according to Good Manufacturing Practice (GMP) principles and generally accepted in food contact applications in Europe and the USA when meeting applicable use conditions. For details, individual compliance statements are available from your DuPont representative

| General information | Value | Unit | Test Standard |
|---|---------------|-------------------|-----------------|
| Resin Identification | PA66-GF50 | - | ISO 1043 |
| Part Marking Code | PA66-GF50 | - | ISO 11469 |
| Rheological properties | dry / cond | Unit | Test Standard |
| Molding shrinkage, parallel | 0.3 / - | % | ISO 294-4, 2577 |
| Molding shrinkage, normal | 0.8 / - | % | ISO 294-4, 2577 |
| Mechanical properties | dry / cond | Unit | Test Standard |
| Tensile Modulus | 17000 / 13000 | MPa | ISO 527-1/-2 |
| Stress at break | 250 / 190 | MPa | ISO 527-1/-2 |
| Strain at break | 2.3 / 3.2 | % | ISO 527-1/-2 |
| Tensile creep modulus | | | ISO 899-1 |
| 1h | * / 10000 | MPa | |
| 1000h | * / 8000 | MPa | |
| Charpy impact strength | | | ISO 179/1eU |
| 73°F | 100 / 110 | kJ/m ² | |
| -22°F | 90 / 90 | kJ/m ² | |
| Charpy notched impact strength | | | ISO 179/1eA |
| 73°F | 18 / 20 | kJ/m ² | |
| -22°F | 15 / 14 | kJ/m ² | |
| Thermal properties | dry / cond | Unit | Test Standard |
| Melting temperature, 18°F/min | 262 / * | °C | ISO 11357-1/-3 |
| Glass transition temperature, 18°F/min | 80 / - | °C | ISO 11357-1/-2 |
| Temp. of deflection under load | | | ISO 75-1/-2 |
| 260 psi | 260 / * | °C | |
| 65 psi | 262 / * | °C | |
| Vicat softening temperature, 90°F/h, 11 lbf | 255 / * | °C | ISO 306 |
| Coeff. of linear therm. expansion, parallel | 15 / * | E-6/K | ISO 11359-1/-2 |
| Coeff. of linear therm. expansion, normal | 75 / * | E-6/K | ISO 11359-1/-2 |
| Thermal conductivity solid | 0.46 | W/(m K) | - |
| Thermal conductivity of melt | 0.31 | W/(m K) | - |
| Spec. heat capacity of melt | 1870 | J/(kg K) | - |
| RTI, electrical | | | UL 746B |
| 30mil | 120 / * | °C | |
| 60mil | 120 / * | °C | |
| 120mil | 120 | °C | |
| RTI, impact | | | UL 746B |
| 30mil | 115 | °C | |
| 60mil | 125 / * | °C | |
| 120mil | 130 | °C | |
| RTI, strength | | | UL 746B |
| 30mil | 115 | °C | |
| 60mil | 125 / * | °C | |
| 120mil | 130 | °C | |

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North America

Asia Pacific

Europe/Middle East/Africa

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| Flammability | dry / cond | Unit | Test Standard |
|--------------------------------------|-------------------------------------|---|--------------------------------|
| Burning Behav. at 60mil 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 | 0.83 / * | mm | IEC 60695-11-10 |
| UL recognition | yes / * | - | UL 94 |
| Oxygen index | 24 / * | % | ISO 4589-1/-2 |
| FMVSS Class | SE | - | ISO 3795 (FMVSS 302) |
| Electrical properties | dry / cond | Unit | Test Standard |
| Volume resistivity | 1E13 / - | Ohm*m | IEC 62631-3-1 |
| Surface resistivity | * / 4E14 | Ohm | IEC 62631-3-2 |
| Other properties | dry / cond | Unit | Test Standard |
| Humidity absorption, 80mil | 1.2 / * | % | Sim. to ISO 62 |
| Water absorption, 80mil | 4.2 / * | % | Sim. to ISO 62 |
| Density | 1570 / - | kg/m ³ | ISO 1183 |
| Density of melt | 1400 | kg/m ³ | - |
| VDA Properties | dry / cond | Unit | Test Standard |
| Emission of organic compounds | 6.5 | µgC/g | VDA 277 |
| Odor test | 3 | class | VDA 270 |
| Fogging, G-value (condensate) | 0.4 / * | mg | ISO 6452 |
| Injection | dry / cond | Unit | Test Standard |
| 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 | - |
| Max. screw tangential speed | 0.2 / * | m/s | - |
| Mold Temperature Optimum | 100 | °C | - |
| Min. mold temperature | 50 | °C | - |
| Max. mold temperature | 90 | °C | - |
| Hold pressure range | 50 - 100 | MPa | - |
| Hold pressure time | 3 | s/mm | - |
| Ejection temperature | 210 | °C | - |
| Characteristics | | | |
| Processing | • Injection Molding | | |
| Delivery form | • Pellets | | |
| Additives | • Lubricants • Release agent | | |
| Special characteristics | • Heat stabilized or stable to heat | | |
| Regional Availability | • North America • Europe | • Asia Pacific • South and Central America | • Near East/Africa • Global |

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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)



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- ✓ 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).

Contact DuPont for Material Safety Data Sheet, general guides and/or additional information about ventilation, handling, purging, drying, etc. ISO Mechanical properties measured at 160 mil (Hytrel® measured at 80 mil), IEC Electrical properties measured at 80 mil, all ASTM properties measured at 120 mil, and test temperatures are 73°F unless otherwise stated.

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