

Crastin® FGS600F10 NC010

THERMOPLASTIC POLYESTER RESIN

Crastin® FGS600F10 NC010 is an unreinforced lubricated, high viscosity polybutylene terephthalate resin for extrusion and injection moulding. It 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 our representative.

Product information

| | | |
|----------------------|-------|-----------|
| Resin Identification | PBT | ISO 1043 |
| Part Marking Code | >PBT< | ISO 11469 |

Rheological properties

| | | |
|----------------------------------|------------|-----------------|
| Melt mass-flow rate | 10 g/10min | ISO 1133 |
| Melt mass-flow rate, Temperature | 250 °C | |
| Melt mass-flow rate, Load | 2.16 kg | |
| Moulding shrinkage, parallel | 1.7 % | ISO 294-4, 2577 |
| Moulding shrinkage, normal | 1.7 % | ISO 294-4, 2577 |

Typical mechanical properties

| | | |
|---------------------------------------|-----------------------|--------------|
| Tensile modulus | 2600 MPa | ISO 527-1/-2 |
| Tensile stress at yield, 50mm/min | 57 MPa | ISO 527-1/-2 |
| Tensile strain at yield, 50mm/min | 4 % | ISO 527-1/-2 |
| Nominal strain at break | >50 % | ISO 527-1/-2 |
| Tensile strain at break, 50mm/min | >50 % | ISO 527-1/-2 |
| Flexural modulus | 2400 MPa | ISO 178 |
| Flexural strength | 85 MPa | ISO 178 |
| Tensile creep modulus, 1h | 2600 MPa | ISO 899-1 |
| Tensile creep modulus, 1000h | 1800 MPa | ISO 899-1 |
| Charpy impact strength, 23°C | N kJ/m ² | ISO 179/1eU |
| Charpy impact strength, -30°C | N kJ/m ² | ISO 179/1eU |
| Charpy notched impact strength, 23°C | 5 kJ/m ² | ISO 179/1eA |
| Charpy notched impact strength, -30°C | 4 kJ/m ² | ISO 179/1eA |
| Izod notched impact strength, 23°C | 5 kJ/m ² | ISO 180/1A |
| Izod notched impact strength, -30°C | 5.0 kJ/m ² | ISO 180/1A |
| Izod impact strength, 23°C | N kJ/m ² | ISO 180/1U |
| Izod impact strength, -30°C | 130 kJ/m ² | ISO 180/1U |
| Ball indentation hardness, H 961/30 | 139 MPa | ISO 2039-1 |
| Poisson's ratio | 0.38 | |

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Thermal properties

| | | |
|----------------------------------------------------------|---------------|----------------|
| Melting temperature, 10 °C/min | 223 °C | ISO 11357-1/-3 |
| Glass transition temperature, 10 °C/min | 55 °C | ISO 11357-1/-3 |
| Temperature of deflection under load, 1.8 MPa | 50 °C | ISO 75-1/-2 |
| Temperature of deflection under load, 1.8 MPa, annealed | 60 °C | ISO 75-1/-2 |
| Temperature of deflection under load, 0.45 MPa | 115 °C | ISO 75-1/-2 |
| Temperature of deflection under load, 0.45 MPa, annealed | 180 °C | ISO 75-1/-2 |
| Vicat softening temperature, 50 °C/h 50N | 175 °C | ISO 306 |
| Ball pressure test | 190 °C | IEC 60695-10-2 |
| Coefficient of linear thermal expansion (CLTE), parallel | 110 E-6/K | ISO 11359-1/-2 |
| Coefficient of linear thermal expansion (CLTE), normal | 120 E-6/K | ISO 11359-1/-2 |
| Thermal conductivity of melt | 0.21 W/(m K) | ISO 22007-2 |
| Specific heat capacity of melt | 2100 J/(kg K) | ISO 22007-4 |

Flammability

| | | |
|-------------------------------------------------|------------------|----------------------------------------|
| Glow Wire Flammability Index, 3.0mm FMVSS Class | 750 °C SE/NBR | IEC 60695-2-12 ISO 3795 (FMVSS 302) |
|-------------------------------------------------|------------------|----------------------------------------|

Physical/Other properties

| | | |
|--------------------------|------------------------|----------------|
| Humidity absorption, 2mm | 0.2 % | Sim. to ISO 62 |
| Water absorption, 2mm | 0.5 % | Sim. to ISO 62 |
| Density | 1300 kg/m ³ | ISO 1183 |
| Density of melt | 1110 kg/m ³ | |

VDA Properties

| | | |
|-------|---------|---------|
| Odour | 3 class | VDA 270 |
|-------|---------|---------|

Injection

| | |
|---------------------------------|--------------------|
| Drying Recommended | yes |
| Drying Temperature | 120 °C |
| Drying Time, Dehumidified Dryer | 2 - 4 h |
| Processing Moisture Content | ≤0.04 % |
| Melt Temperature Optimum | 250 °C |
| Min. melt temperature | 240 °C |
| Max. melt temperature | 260 °C |
| Mold Temperature Optimum | 80 °C |
| Min. mould temperature | 30 °C |
| Max. mould temperature | 130 °C |
| Hold pressure range | ≥60 MPa |
| Hold pressure time | 4 s/mm |
| Back pressure | As low as possible |
| Ejection temperature | 161 °C |

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Extrusion

| | |
|---------------------------------|--------------|
| Drying Temperature | 110 - 130 °C |
| Drying Time, Dehumidified Dryer | 2 - 4 h |
| Processing Moisture Content | ≤0.04 % |
| Melt Temperature Range | 240 - 260 °C |

Characteristics

| | |
|-----------|---------------|
| Additives | Release agent |
|-----------|---------------|

Additional information

Profile extrusion

PREPROCESSING

Drying recommended = Yes
Drying temperature = 110-130°C
Drying time, dehumidified dryer = 2-4 h
Processing moisture content = <0.04 %

PROCESSING

Melt temperature optimum = 250°C
Melt temperature range = 240-260°C

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

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- ✓ 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

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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