

DuPont™ Crastin® S650FR NC010

THERMOPLASTIC POLYESTER RESIN

Product Information

Common features of Crastin® thermoplastic polyester resin include mechanical and physical properties such as stiffness and toughness, heat resistance, friction and wear resistance, excellent surface finishes and good colourability. Crastin® thermoplastic polyester resin has excellent electrical insulation characteristics and high arc-resistant grades are available. Many flame retardant grades have UL recognition (class V-0). Crastin® thermoplastic polyester resin typically has high chemical and heat ageing resistance.

The good melt stability of Crastin® thermoplastic polyester resin normally enables the recycling of properly handled production waste.

If recycling is not possible, DuPont recommends, as the preferred option, incineration with energy recovery (-24 kJ/g of base polymer) in appropriately equipped installations. For disposal, local regulations have to be observed.

Crastin® thermoplastic polyester resin typically is used in demanding applications in the electronics, electrical, automotive, mechanical engineering, chemical, domestic appliances and sporting goods industry.

Crastin® S650FR is an unreinforced, flame retardant polybutylene terephthalate for injection moulding.

General information	Value	Unit	Test Standard
Resin Identification	PBT-FR(17)	-	-
Part Marking Code	>PBT-FR(17)<	-	ISO 11469
Rheological properties	Value	Unit	Test Standard
Moulding shrinkage, parallel	1.8	%	ISO 294-4, 2577
Moulding shrinkage, normal	1.6	%	ISO 294-4, 2577
Moulding shrinkage, parallel, annealed	2.2	%	ISO 294-4
Moulding shrinkage, normal, annealed	2.15	%	ISO 294-4
Mechanical properties	Value	Unit	Test Standard
Tensile Modulus	3000	MPa	ISO 527-1/-2
Yield stress	65	MPa	ISO 527-1/-2
Yield strain	4.6	%	ISO 527-1/-2
Nominal strain at break	7.2	%	ISO 527-1/-2
Flexural Strength	100	MPa	ISO 178
Tensile creep modulus			ISO 899-1
1h	2500	MPa	
1000h	1800	MPa	
Charpy impact strength			ISO 179/1eU
23°C	70	kJ/m ²	
-30°C	67	kJ/m ²	
Charpy notched impact strength			ISO 179/1eA
23°C	3.8	kJ/m ²	
-30°C	3.3	kJ/m ²	
Izod notched impact strength			ISO 180/1A
23°C	4	kJ/m ²	
-30°C	4	kJ/m ²	
Izod impact strength			ISO 180/1U
23°C	45	kJ/m ²	
-30°C	42	kJ/m ²	
Thermal properties	Value	Unit	Test Standard
Melting temperature, 10°C/min	225	°C	ISO 11357-1/-3
Temp. of deflection under load			ISO 75-1/-2
1.8 MPa	65	°C	
0.45 MPa	160	°C	
Vicat softening temperature, 50°C/h, 50N	175	°C	ISO 306
Coeff. of linear therm. expansion, parallel	120	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	120	E-6/K	ISO 11359-1/-2

To find out more, visit [DuPont Performance Polymers](#) or contact nearest DuPont location.

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RTI, electrical			UL 746B
0.8mm	130	°C	
1.5mm	130	°C	
3mm	130	°C	
6mm	130	°C	
RTI, impact			UL 746B
0.8mm	130	°C	
1.5mm	130	°C	
3mm	130	°C	
6mm	130	°C	
RTI, strength			UL 746B
0.8mm	130	°C	
1.5mm	130	°C	
3mm	130	°C	
6mm	130	°C	
Flammability	Value	Unit	Test Standard
Burning Behav. at 1.5mm nom. thickn.	V-0	class	IEC 60695-11-10
Thickness tested	1.5	mm	IEC 60695-11-10
UL recognition	UL	-	-
Burning Behav. at thickness h	V-0	class	IEC 60695-11-10
Thickness tested	0.8	mm	IEC 60695-11-10
Oxygen index	30	%	ISO 4589-1/-2
Glow Wire Flammability Index, 3mm	960	°C	IEC 60695-2-1/2
Flammability			IEC 60695-11-10
3.0mm	V-0	-	
6.0mm	V-0	-	
Electrical properties	Value	Unit	Test Standard
Relative permittivity			IEC 60250
100Hz	3.5	-	
1MHz	3.5	-	
Dissipation factor			IEC 60250
100Hz	17	E-4	
1MHz	180	E-4	
Volume resistivity	>1E13	Ohm*m	IEC 60093
Surface resistivity	1E15	Ohm	IEC 60093
Electric strength	25	kV/mm	IEC 60243-1
Comparative tracking index	225	-	IEC 60112
Electric Strength, 20s, 2mm	15	kV/mm	IEC 60243-1
Other properties	Value	Unit	Test Standard
Humidity absorption, 2mm	0.15	%	Sim. to ISO 62
Water absorption, 2mm	0.39	%	Sim. to ISO 62
Density	1460	kg/m ³	ISO 1183

Characteristics

Processing	• Injection Moulding
Delivery form	• Pellets
Regional Availability	• North America • Europe • Asia Pacific • South and Central America • Near East/Africa • Global

Processing Texts

Injection molding

PREPROCESSING

Drying recommended = Yes

Drying temperature = 110-130 °C

Drying time, dehumidified dryer = 2-4 h

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Processing moisture content = <0.04 %

PROCESSING

Melt temperature optimum = 250 °C
Melt temperature range = 240-260 °C
Mould temperature optimum = 80 °C
Mould temperature range = 30-130 °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)
- ✓ 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)

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- X** Automatic hypoid-gear oil Shell Donax TX (135°C)
- X** Hydraulic oil Pentosin CHF 202 (125°C)

Standard Fuels

- X** ISO 1817 Liquid 1 (60°C)
- X** ISO 1817 Liquid 2 (60°C)
- X** ISO 1817 Liquid 3 (60°C)
- X** ISO 1817 Liquid 4 (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)
- X** Diesel fuel (pref. ISO 1817 Liquid F) (>90°C)
- ✓ Diesel EN 590 (100°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)
- X** Hydrogen peroxide (23°C)
- X** DOT No. 4 Brake fluid (130°C)
- X** DOT No. 4 Brake fluid (120°C)
- X** 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)
- X** Water (90°C)
- ✓ Phenol solution (5% by mass) (23°C)
- X** 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).

- X** 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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Contact DuPont for Material Safety Data Sheet, general guides and/or additional information about ventilation, handling, purging, drying, etc. ISO Mechanical properties measured at 4.0mm (Hytrel® measured at 2 mm), IEC Electrical properties measured at 2.0mm, all ASTM properties measured at 3.2mm, and test temperatures are 23°C unless otherwise stated.

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