

Crastin® ST830FRUV NC010

THERMOPLASTIC POLYESTER RESIN

ISO 1043: PBT-HIFR(17)

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, we recommend, 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® ST830FRUV NC010 is an unreinforced, Super Tough, flame retardant polybutylene terephthalate resin for injection moulding. It contains a UV light stabilizer and is recognized as UL94V-0 at 0.85mm (0.033in).

Product information

Resin Identification	PBT-HIFR(17)	ISO 1043
Part Marking Code	>PBT-HIFR(17)<	ISO 11469

Rheological properties

Melt mass-flow rate	3 g/10min	ISO 1133
Melt mass-flow rate, Temperature	250 °C	
Melt mass-flow rate, Load	5 kg	
Moulding shrinkage, parallel	2.0 %	ISO 294-4, 2577
Moulding shrinkage, normal	1.6 %	ISO 294-4, 2577

Typical mechanical properties

Tensile modulus	2200 MPa	ISO 527-1/-2
Tensile stress at yield, 50mm/min	41 MPa	ISO 527-1/-2
Tensile strain at yield, 50mm/min	9 %	ISO 527-1/-2
Nominal strain at break	45 %	ISO 527-1/-2
Flexural modulus	2100 MPa	ISO 178
Charpy impact strength, 23°C	N kJ/m ²	ISO 179/1eU
Charpy impact strength, -30°C	350 kJ/m ²	ISO 179/1eU
Charpy impact strength, -40°C	350 kJ/m ²	ISO 179/1eU
Charpy notched impact strength, 23°C	30 kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -30°C	10 kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -40°C	10 kJ/m ²	ISO 179/1eA
Izod notched impact strength, 23°C	35 kJ/m ²	ISO 180/1A
Izod notched impact strength, -30°C	10.0 kJ/m ²	ISO 180/1A
Izod notched impact strength, -40°C	10.0 kJ/m ²	ISO 180/1A
Izod impact strength, 23°C	N kJ/m ²	ISO 180/1U
Izod impact strength, -30°C	220 kJ/m ²	ISO 180/1U
Izod impact strength, -40°C	200 kJ/m ²	ISO 180/1U
Poisson's ratio	0.39	

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Thermal properties

Melting temperature, 10 °C/min	225 °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	55 °C	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	125 °C	ISO 75-1/-2
Coefficient of linear thermal expansion (CLTE), parallel	190 E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	190 E-6/K	ISO 11359-1/-2
RTI, electrical, 0.75mm	130 °C	UL 746B
RTI, electrical, 1.5mm	130 °C	UL 746B
RTI, electrical, 3.0mm	130 °C	UL 746B
RTI, impact, 0.75mm	130 °C	UL 746B
RTI, impact, 1.5mm	130 °C	UL 746B
RTI, impact, 3.0mm	130 °C	UL 746B
RTI, strength, 0.75mm	130 °C	UL 746B
RTI, strength, 1.5mm	130 °C	UL 746B
RTI, strength, 3.0mm	130 °C	UL 746B

Flammability

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	yes	UL 94
Burning Behav. at thickness h	V-0 class	IEC 60695-11-10
Thickness tested	0.85 mm	IEC 60695-11-10
UL recognition	yes	UL 94
Oxygen index	27 %	ISO 4589-1/-2
Glow Wire Flammability Index, 0.4mm	960 °C	IEC 60695-2-12
Glow Wire Flammability Index, 0.75mm	960 °C	IEC 60695-2-12
Glow Wire Flammability Index, 1.5mm	960 ^[PV] °C	IEC 60695-2-12
Glow Wire Flammability Index, 3.0mm	960 ^[PV] °C	IEC 60695-2-12
Glow Wire Ignition Temperature, 0.75mm	775 °C	IEC 60695-2-13
Glow Wire Ignition Temperature, 0.4mm	875 °C	IEC 60695-2-12
Glow Wire Ignition Temperature, 1.5mm	700 ^[PV] °C	IEC 60695-2-13
Glow Wire Ignition Temperature, 3.0mm	650 °C	IEC 60695-2-13
FMVSS Class	DNI	ISO 3795 (FMVSS 302)

[PV]: Preliminary Value

Electrical properties

Relative permittivity, 100Hz	3.5	IEC 62631-2-1
Relative permittivity, 1MHz	3.4	IEC 62631-2-1
Dissipation factor, 100Hz	10.9 E-4	IEC 62631-2-1
Dissipation factor, 1MHz	240 E-4	IEC 62631-2-1
Volume resistivity	>1E13 Ohm.m	IEC 62631-3-1
Surface resistivity	1E14 Ohm	IEC 62631-3-2
Electric strength	36 kV/mm	IEC 60243-1
Comparative tracking index	600	IEC 60112

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Physical/Other properties

Density	1370 kg/m ³	ISO 1183
Density of melt	1170 kg/m ³	

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	3 s/mm
Back pressure	As low as possible MPa
Ejection temperature	170 °C

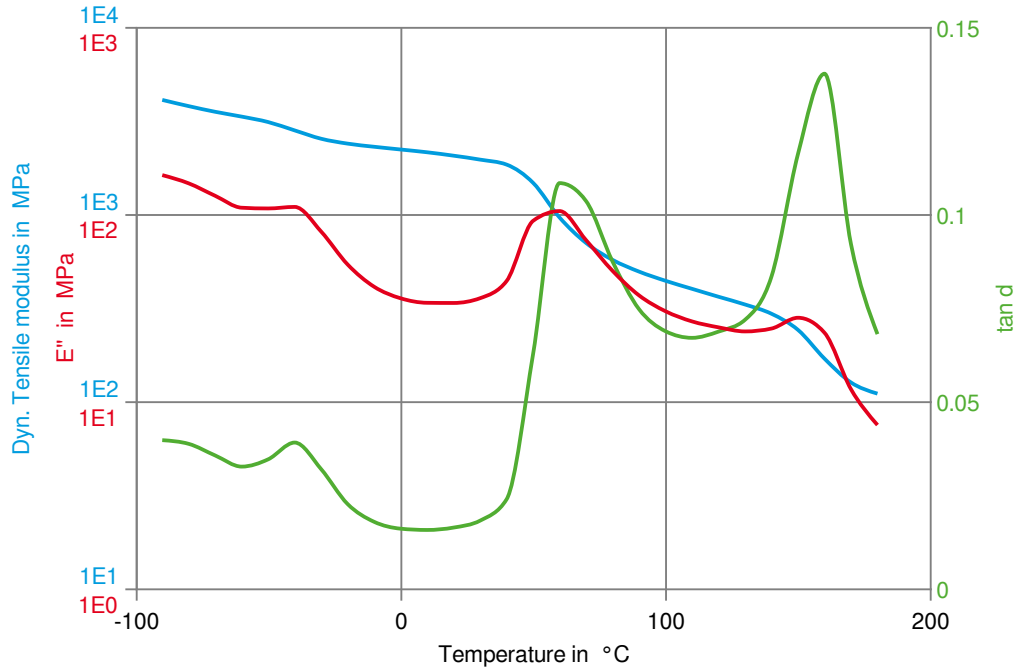
Characteristics

Additives	Flame retardant
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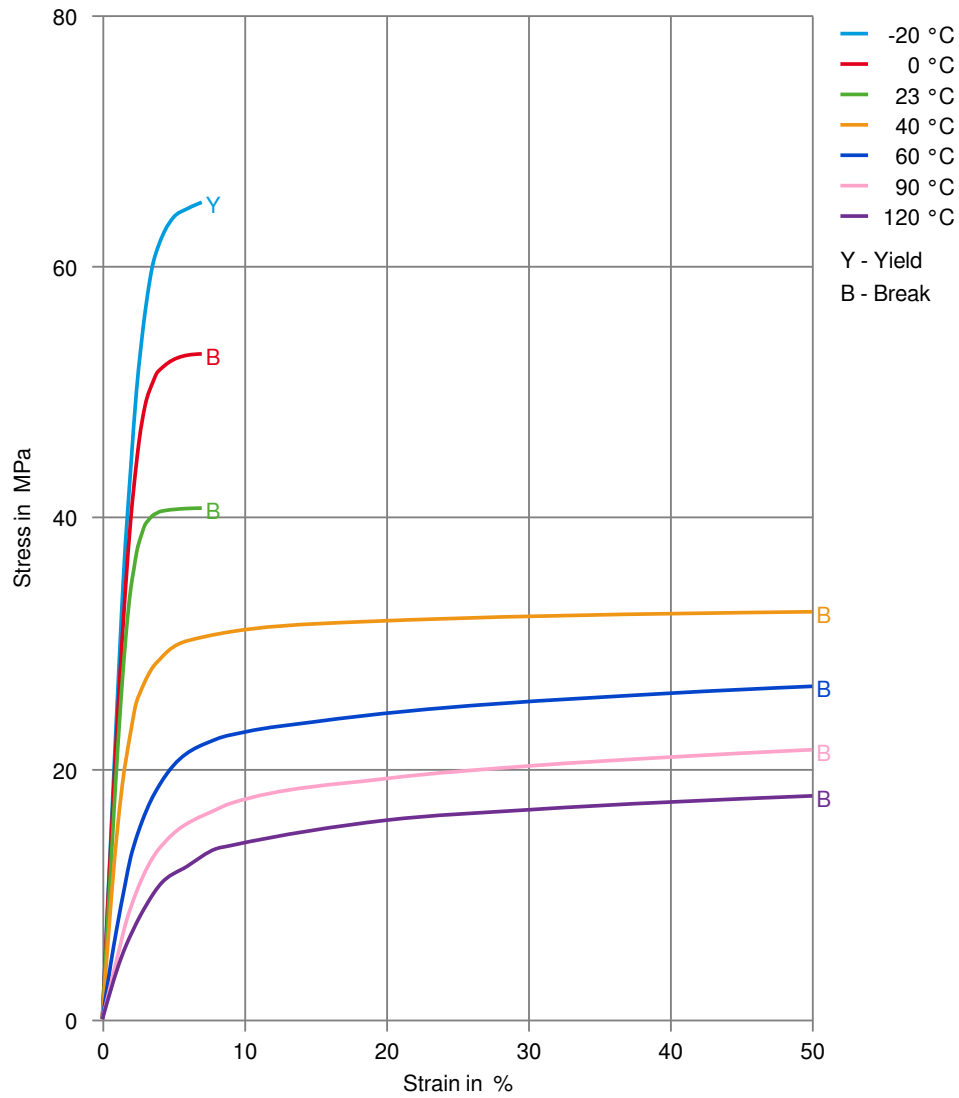
Dynamic Tensile modulus-temperature



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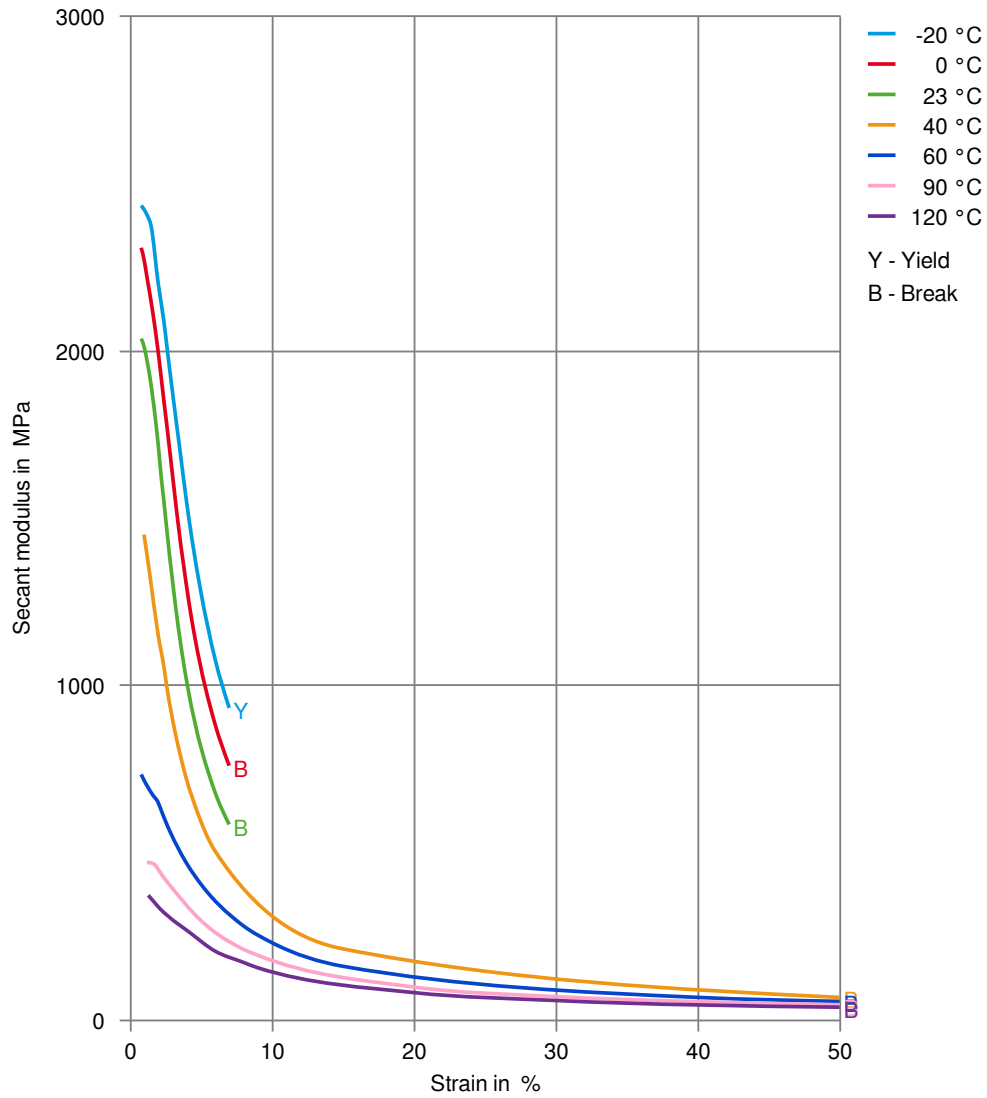
Stress-strain



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Secant modulus-strain



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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
- ✓ 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

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- ✓ 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).