

Crastin® BM6450XD BK560

THERMOPLASTIC POLYESTER RESIN

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® BM6450XD BK560 is an unreinforced supertough polybutylene terephthalate resin with very high viscosity for extrusion and blow moulding applications.

Product information

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

Rheological properties

Moulding shrinkage, parallel	1.5 %	ISO 294-4, 2577
Moulding shrinkage, normal	1.7 %	ISO 294-4, 2577
Postmoulding shrinkage, normal, 48h at 80 °C	0.15 %	ISO 294-4
Postmoulding shrinkage, parallel, 48h at 80 °C	0.1 %	ISO 294-4

Typical mechanical properties

Tensile modulus	1600 MPa	ISO 527-1/-2
Tensile stress at yield, 50mm/min	34 MPa	ISO 527-1/-2
Tensile strain at yield, 50mm/min	9 %	ISO 527-1/-2
Tensile stress at break, 50mm/min	30 MPa	ISO 527-1/-2
Nominal strain at break	>50 %	ISO 527-1/-2
Tensile strain at break, 50mm/min	30 %	ISO 527-1/-2
Flexural modulus	1600 MPa	ISO 178
Flexural strength	50 MPa	ISO 178
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	120 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	8 kJ/m ²	ISO 179/1eA
Izod notched impact strength, 23 °C	90 kJ/m ²	ISO 180/1A
Izod notched impact strength, -40 °C	10.0 kJ/m ²	ISO 180/1A
Poisson's ratio	0.42	

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Thermal properties

Melting temperature, 10 °C/min	220 °C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	50 °C	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	80 °C	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa, annealed	130 °C	ISO 75-1/-2
Thermal conductivity of melt	0.15 W/(m K)	ISO 22007-2
Specific heat capacity of melt	2210 J/(kg K)	ISO 22007-4

Flammability

FMVSS Class	B	ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	40 mm/min	ISO 3795 (FMVSS 302)

Electrical properties

Dissipation factor, 100Hz	70 E-4	IEC 62631-2-1
Dissipation factor, 1MHz	200 E-4	IEC 62631-2-1
Volume resistivity	>1E13 Ohm.m	IEC 62631-3-1
Surface resistivity	>1E15 Ohm	IEC 62631-3-2
Electric strength	31 kV/mm	IEC 60243-1

Physical/Other properties

Density	1210 kg/m ³	ISO 1183
Density of melt	1030 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	60 °C
Max. mould temperature	100 °C
Back pressure	As low as possible MPa
Ejection temperature	156 °C

Extrusion

Drying Temperature	110 - 130 °C
Drying Time, Dehumidified Dryer	2 - 4 h
Processing Moisture Content	≤0.04 %
Melt Temperature Range	235 - 260 °C

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Blow Molding

Drying Recommended	yes
Drying Temperature	110 - 130 °C
Drying Time, Dehumidified Dryer	4 - 6 h
Processing Moisture Content	≤0.03 %
Melt Temperature Optimum	250 °C
Melt Temperature Range	240 - 260 °C
Swell ratio	1.9
Mold Temperature Optimum	80 °C

Characteristics

Processing	Film Extrusion, Extrusion, Sheet Extrusion, Other Extrusion, Coatable, Blow Moulding, Casting
Delivery form	Pellets
Additives	Release agent

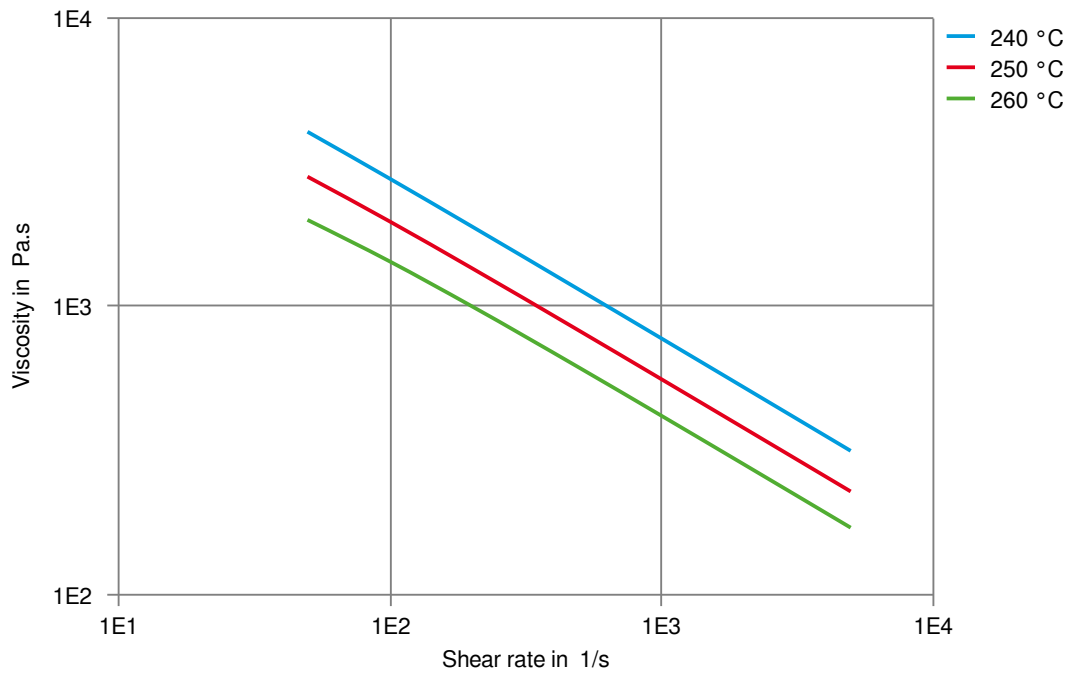
Automotive

OEM	STANDARD
Ford	WSK-M4D639-A
Hyundai	MS216-03 Type C

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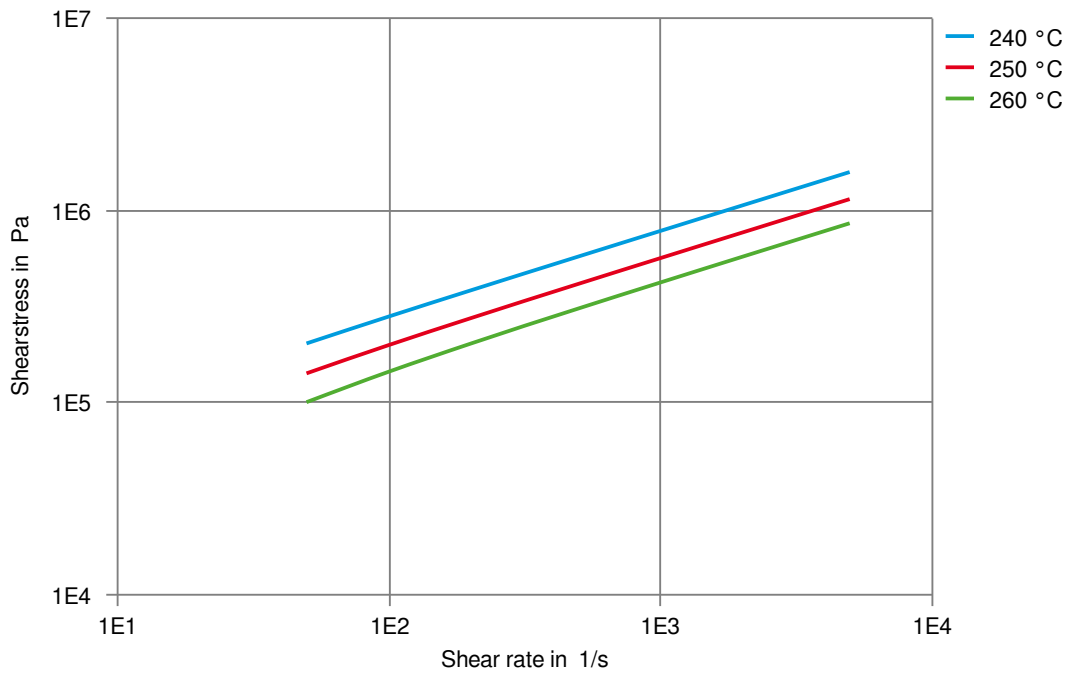
Viscosity-shear rate



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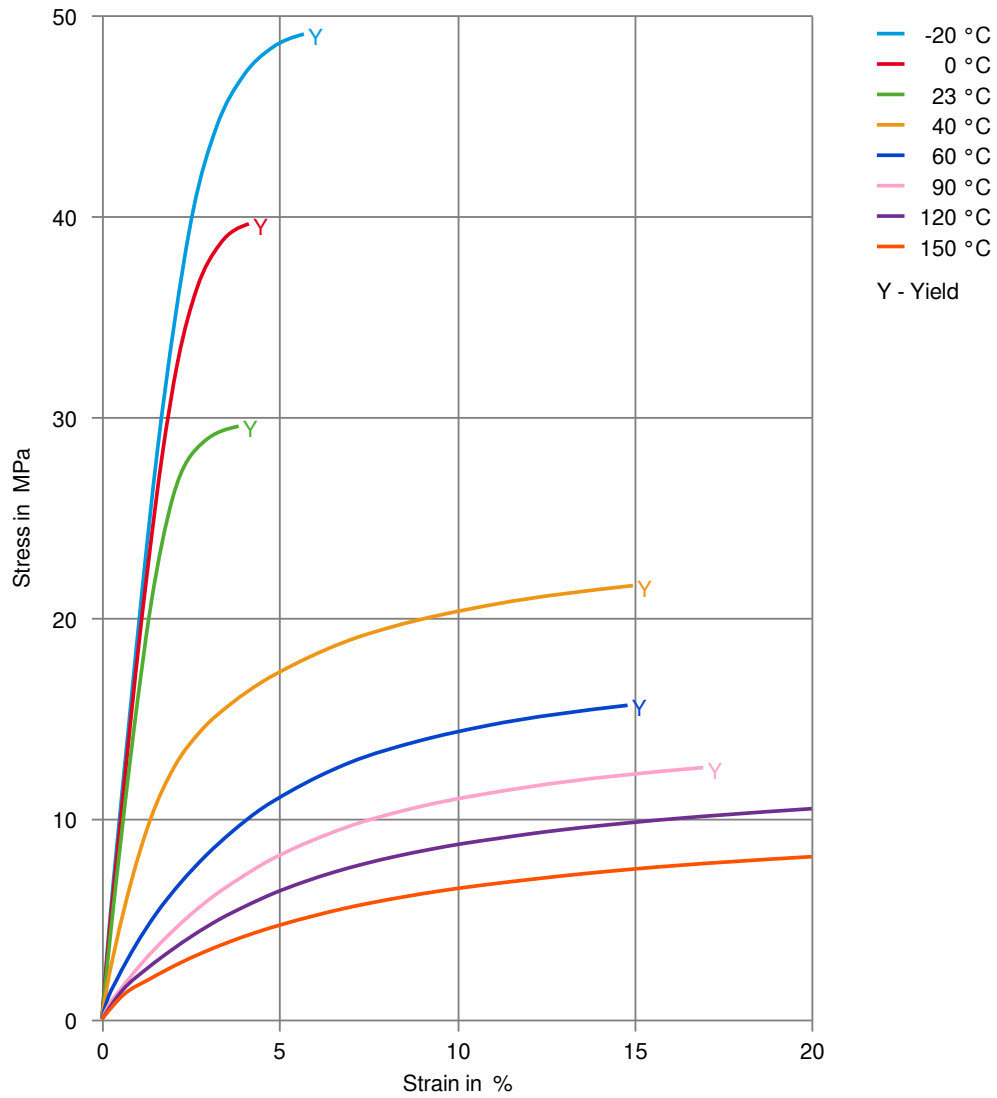
Shearstress-shear rate



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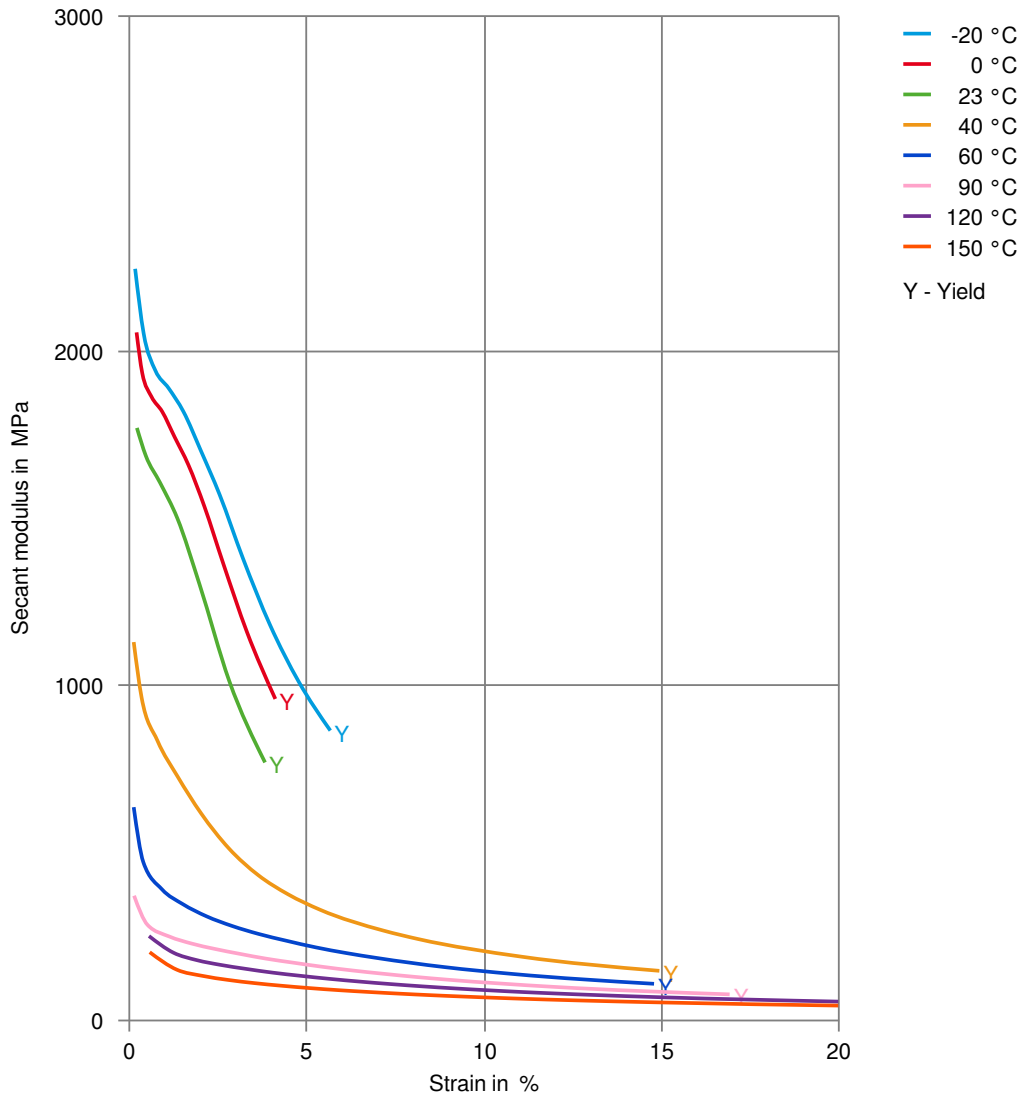
Stress-strain



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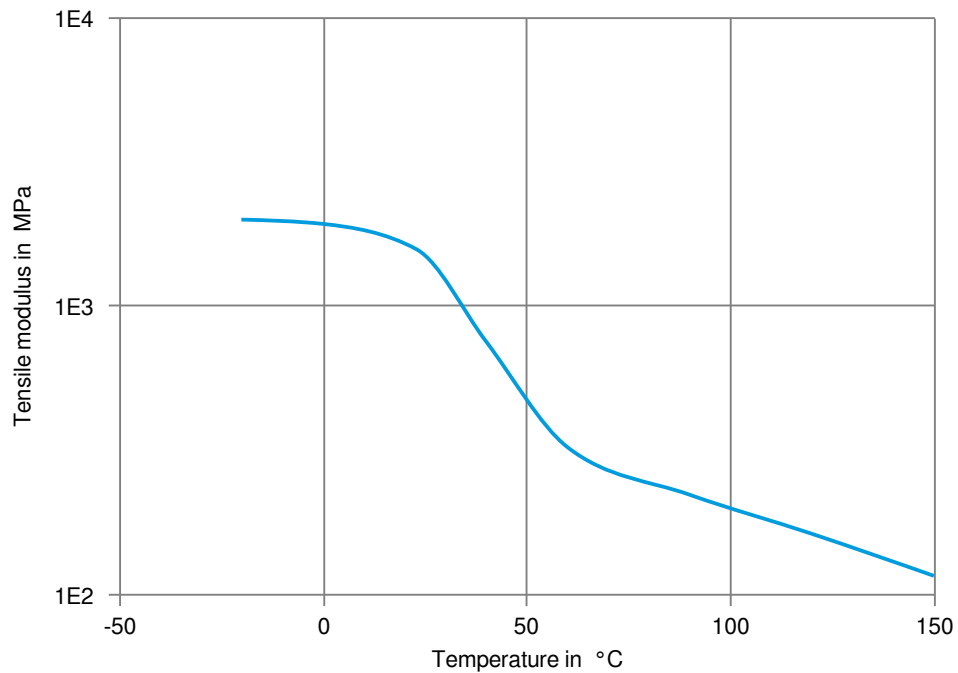
Secant modulus-strain



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Tensile modulus-temperature



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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).