

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® LW9020FR BK851 is a 20% glass fiber reinforced, flame retardant polybutylene terephthalate blend for injection moulding. It has improved surface aesthetics, excellent dimensional stability and low warpage characteristics.

Product information

1 Toddot imormation			
Resin Identification Part Marking Code	PBT+ASA-GF20FR(17) >PBT+ASA-GF20FR(17)<		ISO 1043 ISO 11469
Rheological properties			
Melt mass-flow rate Melt mass-flow rate, Temperature Melt mass-flow rate, Load	250	g/10min °C kg	ISO 1133
Moulding shrinkage, parallel Moulding shrinkage, normal [DS]: Derived from similar grade	0.4 ^[DS] 0.8 ^[DS]	%	ISO 294-4, 2577 ISO 294-4, 2577
Typical mechanical properties			
Tensile modulus	7800	MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	100	MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	2	%	ISO 527-1/-2
Flexural strength		MPa	ISO 178
Charpy impact strength, 23°C		kJ/m²	ISO 179/1eU
Charpy impact strength, -30°C		kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23°C		kJ/m²	ISO 179/1eA
Charpy notched impact strength, -30 °C		kJ/m²	ISO 179/1eA
Izod notched impact strength, 23°C		kJ/m²	ISO 180/1A
Poisson's ratio [DS]: Derived from similar grade	0.34		
Thermal properties			
Melting temperature, 10°C/min	225	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	120	°C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	170	°C	ISO 75-1/-2
RTI, electrical, 0.75mm	140	°C	UL 746B
RTI, electrical, 1.5mm	140	°C	UL 746B

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RTI, electrical, 3.0mm RTI, impact, 0.75mm RTI, impact, 1.5mm RTI, impact, 3.0mm RTI, strength, 0.75mm RTI, strength, 1.5mm RTI, strength, 3.0mm	140 °0 115 °0 115 °0 120 °0 130 °0 130 °0	C C C C	UL 746B UL 746B UL 746B UL 746B UL 746B UL 746B UL 746B
Flammability Burning Behav. at 1.5mm nom. thickn.	V-0 cl	lass	IEC 60695-11-10
Thickness tested	1.5 m		IEC 60695-11-10
UL recognition	yes		UL 94
Burning Behav. at thickness h	V-0 cl	lass	IEC 60695-11-10
Thickness tested	3 m	nm	IEC 60695-11-10
UL recognition	yes		UL 94
Oxygen index	27 %		ISO 4589-1/-2
Glow Wire Flammability Index, 3.0mm	960 °C	С	IEC 60695-2-12
FMVSS Class	DNI		ISO 3795 (FMVSS 302)
Electrical properties			
Relative permittivity, 100Hz	4.3		IEC 62631-2-1
Relative permittivity, 1MHz	4		IEC 62631-2-1
Dissipation factor, 100Hz	54 E-		IEC 62631-2-1
Dissipation factor, 1MHz	196 E-		IEC 62631-2-1
Volume resistivity	>1E13 O		IEC 62631-3-1
Surface resistivity	1E14 O		IEC 62631-3-2
Electric strength	31 k\	V/mm	IEC 60243-1
Comparative tracking index	250		IEC 60112
Physical/Other properties			
Humidity absorption, 2mm	0.23 ^[DS] %		Sim. to ISO 62
Water absorption, 2mm	0.78 ^[DS] %	, 0	Sim. to ISO 62
Density	1500 kg	g/m³	ISO 1183
Density of melt	1360 kg	g/m³	
[DS]: Derived from similar grade			

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

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Hold pressure time Back pressure

3 s/mm As low as MPa possible 170 °C

Ejection temperature

Characteristics

Additives

Flame retardant

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
- X Hydrochloric Acid (36% by mass), 23°C
- X Nitric Acid (40% by mass), 23°C
- X Sulfuric Acid (38% by mass), 23°C
- X Sulfuric Acid (5% by mass), 23°C
- X Chromic Acid solution (40% by mass), 23°C

Bases

- X 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

- X ISO 1817 Liquid 1 E5, 60°C
- X ISO 1817 Liquid 2 M15E4, 60°C
- X ISO 1817 Liquid 3 M3E7, 60°C
- X ISO 1817 Liquid 4 M15, 60°C

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- ✓ 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
- X Hydrogen peroxide, 23°C
- X 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
- X 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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