



## 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® S600F20 BK851 is an unreinforced, lubricated, medium viscosity polybutylene terephthalate resin for injection moulding.

Product information		
Resin Identification F	PBT ISO 1043	3
Part Marking Code >Pt	>PBT< ISO 11469	
Rheological properties		
Melt volume-flow rate	14 cm <sup>3</sup> /10min ISO 1133	}
Temperature	250 °C	
Load	2.16 kg	
Melt mass-flow rate	16 g/10min ISO 1133	}
Melt mass-flow rate, Temperature	250 °C	
Melt mass-flow rate, Load	2.16 kg	
Intrinsic viscosity	1.08 ISO 307, 1628	3
Moulding shrinkage, parallel	1.7 % ISO 294-4, 2577	,
Moulding shrinkage, normal	1.6 % ISO 294-4, 2577	,
Typical mechanical properties		
Tensile modulus 2	2500 MPa ISO 527-1/-2	<u>)</u>
Tensile stress at yield, 50mm/min	58 MPa ISO 527-1/-2	)
Tensile strain at yield, 50mm/min	4 % ISO 527-1/-2	<u>)</u>
Nominal strain at break	40 % ISO 527-1/-2	<u>)</u>
Tensile strain at break, 50mm/min	>50 % ISO 527-1/-2	)
Charpy notched impact strength, 23°C	5 kJ/m <sup>2</sup> ISO 179/1eA	ı
Izod notched impact strength, 23°C	4 kJ/m <sup>2</sup> ISO 180/1A	ı.

### Thermal properties

Poisson's ratio

Melting temperature, 10°C/min	224 °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,	60 °C	ISO 75-1/-2
annealed		
Temperature of deflection under load, 0.45 MPa	135 °C	ISO 75-1/-2

0.38

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Temperature of deflection under load, 0.45 MPa,	180	°C	ISO 75-1/-2
annealed	120	۰.	LII 746D
RTI, electrical, 0.75mm	130 130		UL 746B
RTI, electrical, 1.5mm			UL 746B UL 746B
RTI, electrical, 3.0mm	130 130		
RTI, electrical, 6mm	115		UL 746B UL 746B
RTI, impact, 0.75mm	115		UL 746B UL 746B
RTI, impact, 1.5mm	115		UL 746B UL 746B
RTI, impact, 3.0mm RTI, impact, 6mm	115		UL 746B UL 746B
RTI, strength, 0.75mm	120		UL 746B UL 746B
RTI, strength, 1.5mm	120		UL 746B
RTI, strength, 3.0mm	120		UL 746B
RTI, strength, 6mm	120		UL 746B
-	120	Ü	027105
Flammability			
Burning Behav. at 1.5mm nom. thickn.		class	IEC 60695-11-10
Thickness tested		mm	IEC 60695-11-10
UL recognition	yes		UL 94
Burning Behav. at thickness h		class	IEC 60695-11-10
Thickness tested		mm	IEC 60695-11-10
UL recognition	yes		UL 94
Glow Wire Flammability Index, 3.0mm	750		IEC 60695-2-12
Glow Wire Ignition Temperature, 3.0mm	725	°C	IEC 60695-2-13
FMVSS Class	В	, .	ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	24	mm/min	ISO 3795 (FMVSS 302)
Electrical properties			
Relative permittivity, 100Hz	3.5		IEC 62631-2-1
Relative permittivity, 1MHz	3.3		IEC 62631-2-1
Dissipation factor, 100Hz		E-4	IEC 62631-2-1
Dissipation factor, 1MHz	182	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	40	kV/mm	IEC 60243-1
Comparative tracking index	250		IEC 60112
Comparative tracking index, 100 drops	225		IEC 60112
Physical/Other properties			
Density	1310	kg/m³	ISO 1183
Density of melt		kg/m³	
VDA Properties			
Thermal desorption analysis of organic emissions	1	μg/g	VDA 278
Odour	3 <sup>[DS]</sup>	class	VDA 270
Fogging, G-value (condensate)	0 <sup>[DS]</sup>	mg	ISO 6452
[DS]: Derived from similar grade		J	
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# THERMOPLASTIC POLYESTER RESIN

## 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	130	°C
Hold pressure range	≥60	MPa
Hold pressure time	4	s/mm
Back pressure	As low as	MPa
	possible	
Ejection temperature	170	°C

### Characteristics

Processing Injection Moulding
Additives Release agent

#### **Automotive**

OEM STANDARD ADDITIONAL INFORMATION

Ford WSK-M4D636-A Hyundai MS941-03 Type F-1

Stellantis MS.50103 / PBT.2200F.5I CPN4479 BLACK

Stellantis - Chrysler MS.50103 / CPN-4479 Black

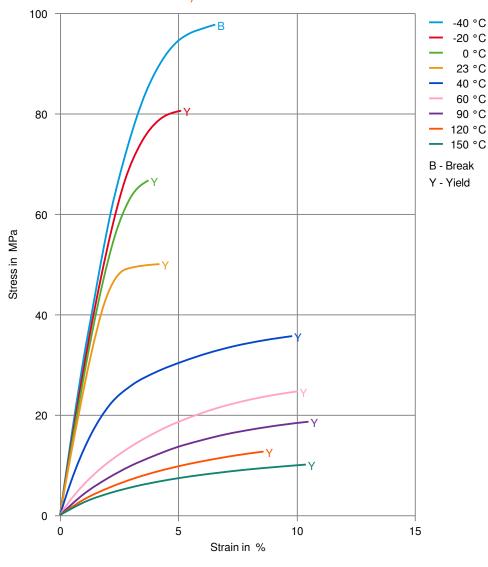
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# THERMOPLASTIC POLYESTER RESIN

Stress-strain (measured on Crastin® S600F20 NC010)



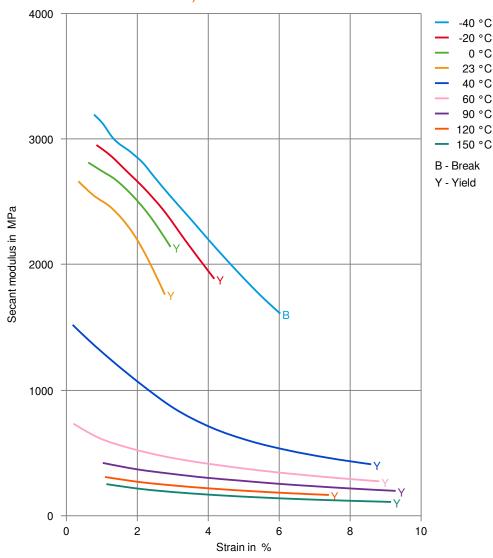
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# THERMOPLASTIC POLYESTER RESIN

Secant modulus-strain (measured on Crastin® S600F20 NC010)



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# Crastin® S600F20 BK851

## THERMOPLASTIC POLYESTER RESIN

### 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
- X SAE 10W40 multigrade motor oil, 130°C
- X SAE 80/90 hypoid-gear oil, 130°C
- ✓ Insulating Oil, 23°C

#### Standard Fuels

- X ISO 1817 Liquid 1 E5, 60°C
- ★ ISO 1817 Liquid 2 M15E4, 60°C
- X ISO 1817 Liquid 3 M3E7, 60°C
- X 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
- X 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
- 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).

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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NOTICE TO USERS: Values shown are based on testing of laboratory test specimens and represent data that fall within the standard range of properties for natural material. These values alone do not represent a sufficient basis for any part design and are not intended for use in establishing maximum, minimum, or ranges of values for specification purposes. Colourants or other additives may processing conditions and environmental exposure. Other than those products expressly identified as medical grade (including by MT® product designation or otherwise), Celanese's products are not intended for use in medical or dental implants. Regardless of any such product designation, any determination of the suitability of a particular material and part design for any use contemplated by the users and the manner of such use is the sole responsibility of the users, who must assure themselves that the material as subsequently processed meets the needs of their particular product or use. To the best of our knowledge, the information contained in this publication is accurate; however, we do not assume any liability whatsoever for the accuracy and completeness of such information. The information contained in this publication should not be construed as a promise or guarantee of specific properties of our products. It is the sole responsibility of the users to investigate whether any existing patents are infringed by the use of the materials mentioned in this publication. Moreover, there is a need to reduce human exposure to many materials to the lowest practical limits in view of possible adverse effects. To the extent that any hazards may have been mentioned in this publication, we neither suggest nor guarantee that such hazards are the only ones that exist. We recommend that persons intending to rely on any recommendation or to use any equipment, processing technique or material mentioned in this publication should satisfy themselves that they can meet all applicable safety and health standards. We strongly recommend that users

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