

## 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® S600F40 NC010 is an unreinforced, lubricated, low viscosity polybutylene terephthalate resin for injection moulding.

#### **Product information**

Resin Identification Part Marking Code	PBT >PBT<		ISO 1043 ISO 11469
Rheological properties			
Melt mass-flow rate	40	g/10min	ISO 1133
Melt mass-flow rate, Temperature	250	°C	
Melt mass-flow rate, Load	2.16	kg	
Intrinsic viscosity	0.96	0	ISO 307, 1628
Moulding shrinkage, parallel	1.8	%	ISO 294-4, 2577
Moulding shrinkage, normal	1.8	%	ISO 294-4, 2577
Typical mechanical properties			
Tensile modulus	2600	MPa	ISO 527-1/-2
Tensile stress at vield. 50mm/min	58	MPa	ISO 527-1/-2
Tensile strain at vield, 50mm/min	4	%	ISO 527-1/-2
Nominal strain at break	20	%	ISO 527-1/-2
Tensile strain at break, 50mm/min	30	%	ISO 527-1/-2
Flexural modulus	2400	MPa	ISO 178
Flexural strength	85	MPa	ISO 178
Charpy notched impact strength, 23°C	4.5	kJ/m²	ISO 179/1eA
Izod notched impact strength, 23°C	4	kJ/m <sup>2</sup>	ISO 180/1A
Izod notched impact strength, -40°C	4.0	kJ/m <sup>2</sup>	ISO 180/1A
Ball indentation hardness, H 961/30	139	MPa	ISO 2039-1
Poisson's ratio	0.38		
Thermal properties			
Melting temperature 10°C/min	225	°C	ISO 11357-1/-3
Glass transition temperature 10°C/min	55	°Č	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa, annealed	60	°C	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	150	°C	ISO 75-1/-2

Printed: 2024-09-04



## THERMOPLASTIC POLYESTER RESIN

Temperature of deflection under load, 0.45 MPa,	180	°C	ISO 75-1/-2
BTL electrical 0.75mm	130	°C	LII 746B
BTL electrical 15mm	130	°C	UL 746B
BTL electrical 3.0mm	130	°C	UL 746B
BTL electrical 6mm	130	°C	UL 746B
BTL impact 0.75mm	115	°C	
BTL impact 15mm	115	°C	
BTL impact 3.0mm	115	°C	
BTL impact 6mm	115	°C	
BTL strength 0.75mm	120	°C	UL 746B
BTI strength 15mm	120	°C	UL 746B
RTL strength 3.0mm	120	°C	
RTI strength 6mm	120	°C	
	120	0	0L 740D
Flammability			
Burning Behav. at 1.5mm nom. thickn.	HB	class	IEC 60695-11-10
Thickness tested	1.5	mm	IEC 60695-11-10
UL recognition	yes		UL 94
Burning Behav. at thickness h	HB	class	IEC 60695-11-10
Thickness tested	0.75	mm	IEC 60695-11-10
UL recognition	yes		UL 94
Glow Wire Flammability Index, 3.0mm	750	°C	IEC 60695-2-12
FMVSS Class	В		ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	28	mm/min	ISO 3795 (FMVSS 302)
Electrical properties			
Comparative tracking index	375 <sup>[DS]</sup>		IEC 60112
[DS]: Derived from similar grade	0/0		
Physical/Other properties			
Density	1310	kg/m³	ISO 1183
VDA Properties			
Odour	3	class	VDA 270
Fogging, F-value (refraction)	95	%	ISO 6452
Fogging, G-value (condensate)	0.2	mg	ISO 6452
Injection			
Drving Recommended	VAS		
Drying Temperature	120	۰C	
Drying Time Dehumidified Dryer	2 - 4	h	
Processing Moisture Content	<0.04	%	
Melt Temperature Ontimum	0.04 250	°C	
Min melt temperature	2JU 240	°C	
Max melt temperature	240	°C	
Mold Temperature Ontimum	200 ՋՈ	°C	
	00	0	

Printed: 2024-09-04



## THERMOPLASTIC POLYESTER RESIN

Min. mould temperature	30	°C
Max. mould temperature	130	°C
Hold pressure range	≥60	MPa
Hold pressure time	4	s/mm
Back pressure	As low as	MPa
	possible	
Election temperature	170	°C

Ejection temperature

#### Stress-strain (measured on Crastin® S600F40 NC010)





THERMOPLASTIC POLYESTER RESIN

#### Secant modulus-strain







### 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
- ★ 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

- ✗ 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
- 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
- ¥ 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
- X 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

Printed: 2024-09-04



### THERMOPLASTIC POLYESTER RESIN

- ✓ 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).

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).

Printed: 2024-09-04

Page: 6 of 6

#### Revised: 2024-07-13 Source: Celanese Materials Database

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 cause significant variations in data values. Properties of moulded parts can be influenced by a wide variety of factors including, but not limited to, material selection, additives, part design, processing conditions and environmental exposure. Other than those product 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 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 s

© 2024 Celanese or its affiliates. All rights reserved. Celanese®, registered C-ball design and all other trademarks identified herein with ®, TM, SM, unless otherwise noted, are trademarks of Celanese or its affiliates. Fortron is a registered trademark of Fortron Industries LLC. KEPITAL is a registered trademark of Korea Engineering Plastics Company, Ltd.