



### THERMOPLASTIC POLYESTER RESIN

Crastin® HR5330HFS BK591 is a 30% Glass Reinforced Polybutylene Terephthalate with high flow, moderately toughened, and hydrolysis resistant (HR) for injection moulding. Crastin® HR5330HFS BK591 can also be laser marked at 355, 532 and 1064 nm.

### **Product information**

Resin Identification	PBT-IGF30	ISO 1043
Part Marking Code	>PBT-IGF30<	ISO 11469

### Rheological properties

Melt volume-flow rate	8	cm <sup>3</sup> /10min	ISO 1133
Temperature	250	°C	
Load	2.16	kg	
Melt mass-flow rate	13	g/10min	ISO 1133
Melt mass-flow rate, Temperature	250	°C	
Melt mass-flow rate, Load	2.16		
Viscosity number	107 <sup>[C, 1]</sup>		ISO 307, 1628
Intrinsic viscosity	$0.87^{[2]}$		ISO 307, 1628
Moulding shrinkage, parallel	0.3	%	ISO 294-4, 2577
Moulding shrinkage, normal	1.1	%	ISO 294-4, 2577
Melt viscosity, @ 1000 sec-1, 250°C	230	Pa.s	ISO 11443
[C]: Calculated			
[1]: VNphenol/1,2-dichlorobenzene = (141.84 * IV) - 16.00			

# [2]: phenol/1,2-dichlorobenzene Typical mechanical properties

Tensile modulus	8500	MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	120	MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	3.2	%	ISO 527-1/-2
Flexural modulus	7500	MPa	ISO 178
Flexural strength	180	MPa	ISO 178
Charpy impact strength, 23°C		kJ/m²	ISO 179/1eU
Charpy impact strength, -30°C	70 <sup>[PV]</sup>	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23°C	12	kJ/m <sup>2</sup>	ISO 179/1eA
Charpy notched impact strength, -30°C	8 <sup>[PV]</sup>	kJ/m²	ISO 179/1eA
Poisson's ratio	0.34		
[PV]: Preliminary Value			

### Thermal properties

memai properties			
Melting temperature, 10°C/min	225	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	65	°C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	205	°C	ISO 75-1/-2
Coefficient of linear thermal expansion	22	E-6/K	ISO 11359-1/-2
(CLTE), parallel			
Coefficient of linear thermal expansion (CLTE),	190	E-6/K	ISO 11359-1/-2
normal			

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Temperature index, tensile strength, 20 000h Temperature index, tensile strength, 5000h	153 192		IEC 60216-1 IEC 60216-1
Flammability  Burning Behav. at thickness h Thickness tested UL recognition Oxygen index Glow Wire Flammability Index, 0.4mm Glow Wire Flammability Index, 0.75mm Glow Wire Flammability Index, 1.0mm Glow Wire Flammability Index, 1.5mm Glow Wire Flammability Index, 3.0mm FMVSS Class Burning rate, Thickness 1 mm	0.75 yes 20 775 775 775 750 800 B	% °C °C °C	IEC 60695-11-10 IEC 60695-11-10 UL 94 ISO 4589-1/-2 IEC 60695-2-12
Electrical properties  Relative permittivity, 1000Hz Dissipation factor, 1000Hz Volume resistivity Surface resistivity Electric strength Comparative tracking index Comparative tracking index, 23 °C [OT]: One time tested [3]: PTI = 500V	>1E15 34 525 <sup>[3]</sup>	Ohm.m	IEC 62631-2-1 IEC 62631-2-1 IEC 62631-3-1 IEC 62631-3-2 IEC 60243-1 IEC 60112 UL 746A
Physical/Other properties  Humidity absorption, 2mm Water absorption, 2mm Density	0.15 0.35 1500		Sim. to ISO 62 Sim. to ISO 62 ISO 1183
VDA Properties  Weather stability delta I  Weather stability delta a  Weather stability delta b  Weather stability delta E  Weather stability grey scale	-9 -0.1 -2.7 9 3-4		DIN 53236 DIN 53236 DIN 53236 DIN 53236 ISO 105-A02
Injection  Drying Recommended Drying Temperature Drying Time, Dehumidified Dryer Processing Moisture Content Melt Temperature Optimum Min. melt temperature Max. melt temperature	yes 120 2 - 4 ≤0.04 250 240 260	h % °C °C	

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Mold Temperature Optimum80 °CMin. mould temperature60 °CMax. mould temperature130 °CHold pressure range≥60 MPaHold pressure time3 s/mmBack pressureAs low as possible

Ejection temperature 170 °C

### Characteristics

Processing Injection Moulding

Delivery form Pellets

Additives Release agent

Special characteristics Hydrolysis resistant, High Flow

### **Automotive**

OEM STANDARD ADDITIONAL INFORMATION

General Motors Black/BK591; Special Parts Approval, See

Your CE Account Representative for Further

Details.

Hyundai MS216-03 Type F-2

Renault-Nissan UB02d, No Spec, Special Part Approval, See

Your CE Account Manager.

Renault-Nissan UB25a, No Spec, Special Part Approval, See

Your CE Account Manager.

Renault-Nissan UB27b, No Spec, Special Part Approval, See

Your CE Account Manager.

Stellantis B62 0300 / 61/U4/220E/218M/13/C1B/C5

VW Group VW 50136-PBT-7-A

01994\_15\_00092, BK591

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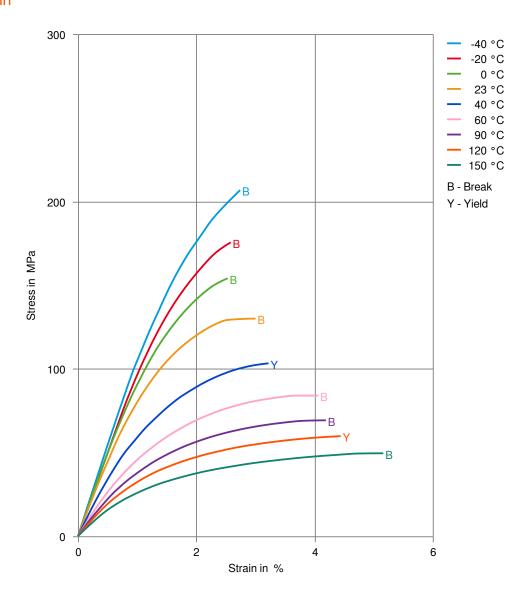
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### THERMOPLASTIC POLYESTER RESIN

### Stress-strain



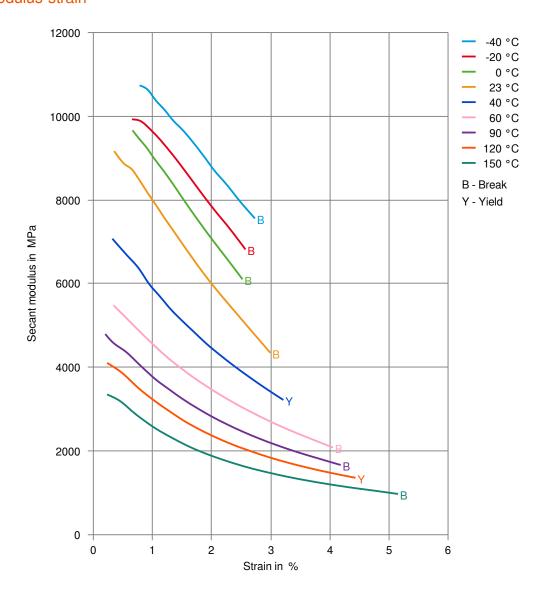
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### Secant modulus-strain



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### 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
- ✓ SAE 10W40 multigrade motor oil, 130°C
- ✓ SAE 80/90 hypoid-gear oil, 130°C
- ✓ Insulating Oil, 23°C
- ✓ Motor oil OS206 304 Ref.Eng.Oil, ISP, 135°C
- ✓ Automatic hypoid-gear oil Shell Donax TX, 135°C
- ✓ Hydraulic oil Pentosin CHF 202, 125°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
- ✓ 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

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#### 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
- ➤ 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 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 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, pr

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