Celanese
The chemistry inside innovation™

Crastin® HR5330HFS BK591

THERMOPLASTIC POLYESTER RESIN

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

Product information

Resin Identification	PBT-I-GF30	ISO 1043
Part Marking Code	>PBT-I-GF30<	ISO 11469

Rheological properties

Melt volume-flow rate	8	cm^3/10min	ISO 1133
Temperature	482	°F	
Load	4.76	lb	
Melt mass-flow rate	13	g/10min	ISO 1133
Melt mass-flow rate, Temperature	482	°F	
Melt mass-flow rate, Load	4.76	lb	
Viscosity number	2960[C, 1]	in^3/lb	ISO 307, 1628
Intrinsic viscosity	0.87[2]		ISO 307, 1628
Molding shrinkage, parallel	0.3	%	ISO 294-4, 2577
Molding shrinkage, normal	1.1	%	ISO 294-4, 2577
Melt viscosity, @ 1000 sec-1, 250°C	2300	P	ISO 11443

[C]: Calculated

[1]: VNphenol/1,2-dichlorobenzene = (141.84 * IV) - 16.00

[2]: phenol/1,2-dichlorobenzene

Typical mechanical properties

Tensile modulus	1.23E6	psi	ISO 527-1/-2
Tensile stress at break, 5mm/min	17400	psi	ISO 527-1/-2
Tensile strain at break, 5mm/min	3.3	%	ISO 527-1/-2
Flexural modulus	1.09E6	psi	ISO 178
Flexural strength	26100	psi	ISO 178
Charpy impact strength, 23°C	33.3	$ftlb/in^2$	ISO 179/1eU
Charpy impact strength, -30°C	33.3[PV]	$ftlb/in^2$	ISO 179/1eU
Charpy notched impact strength, 23°C	5.71	$ftlb/in^2$	ISO 179/1eA
Charpy notched impact strength, -30°C	3.81[PV]	$ftlb/in^2$	ISO 179/1eA

[PV]: Preliminary Value

Thermal properties

Melting temperature, 10°C/min	437	°F	ISO 11357-1/-3
Glass transition temperature, 10°C/min	149	°F	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	401	°F	ISO 75-1/-2
Coefficient of linear thermal expansion (CLTE), parallel	0.12	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	1.06	E-4/°F	ISO 11359-1/-2
Temperature index, tensile strength, 20 000h	307	°F	IEC 60216-1

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Temperature index, tensile strength, 5000h	378	°F	IEC 60216-1

Flammability

Burning Behav. at thickness h	HB	class	IEC 60695-11-10
Thickness tested	0.0295	in	IEC 60695-11-10
UL recognition	yes		UL 94
Oxygen index	20	%	ISO 4589-1/-2
Glow Wire Flammability Index, 0.4mm	1430	°F	IEC 60695-2-12
Glow Wire Flammability Index, 0.75mm	1430	°F	IEC 60695-2-12
Glow Wire Flammability Index, 1.0mm	1430	°F	IEC 60695-2-12
Glow Wire Flammability Index, 1.5mm	1380	°F	IEC 60695-2-12
Glow Wire Flammability Index, 3.0mm	1470	°F	IEC 60695-2-12
FMVSS Class	B		ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	1.54	in/min	ISO 3795 (FMVSS 302)

Electrical properties

Relative permittivity, 1000Hz	4.19[OT]		IEC 62631-2-1
Dissipation factor, 1000Hz	68[OT]	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	864	kV/in	IEC 60243-1
Comparative tracking index	525[3]		IEC 60112
Comparative tracking index, 23 °C	1	PLC	UL 746A

[OT]: One time tested

[3]: PTI = 500V

Physical/Other properties

Humidity absorption, 2mm	0.15	%	Sim. to ISO 62
Water absorption, 2mm	0.35	%	Sim. to ISO 62
Density	0.0549	lb/in³	ISO 1183

Emissions

Weather stability delta l	-9		DIN 53236
Weather stability delta a	-0.1		DIN 53236
Weather stability delta b	-2.7		DIN 53236
Weather stability delta E	9		DIN 53236
Weather stability grey scale	3-4		ISO 105-A02

Injection

Drying Recommended	yes	
Drying Temperature	248	°F
Drying Time, Dehumidified Dryer	2 - 4	h
Processing Moisture Content	≤0.04	%
Melt Temperature Optimum	482	°F
Min. melt temperature	464	°F
Max. melt temperature	500	°F
Mold Temperature Optimum	176	°F

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Min. mold temperature	140	°F
Max. mold temperature	266	°F
Hold pressure range	≥8700	psi
Hold pressure time	0.0762	s/mil
Hold Pressure Time (h is the max. wall thickness of the part in mm)	h^2+2	s
Back pressure	as low as possible	psi
Ejection temperature	338	°F

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	01994_15_00092, BK591
VW Group	VW 50136-PBT-7-A	

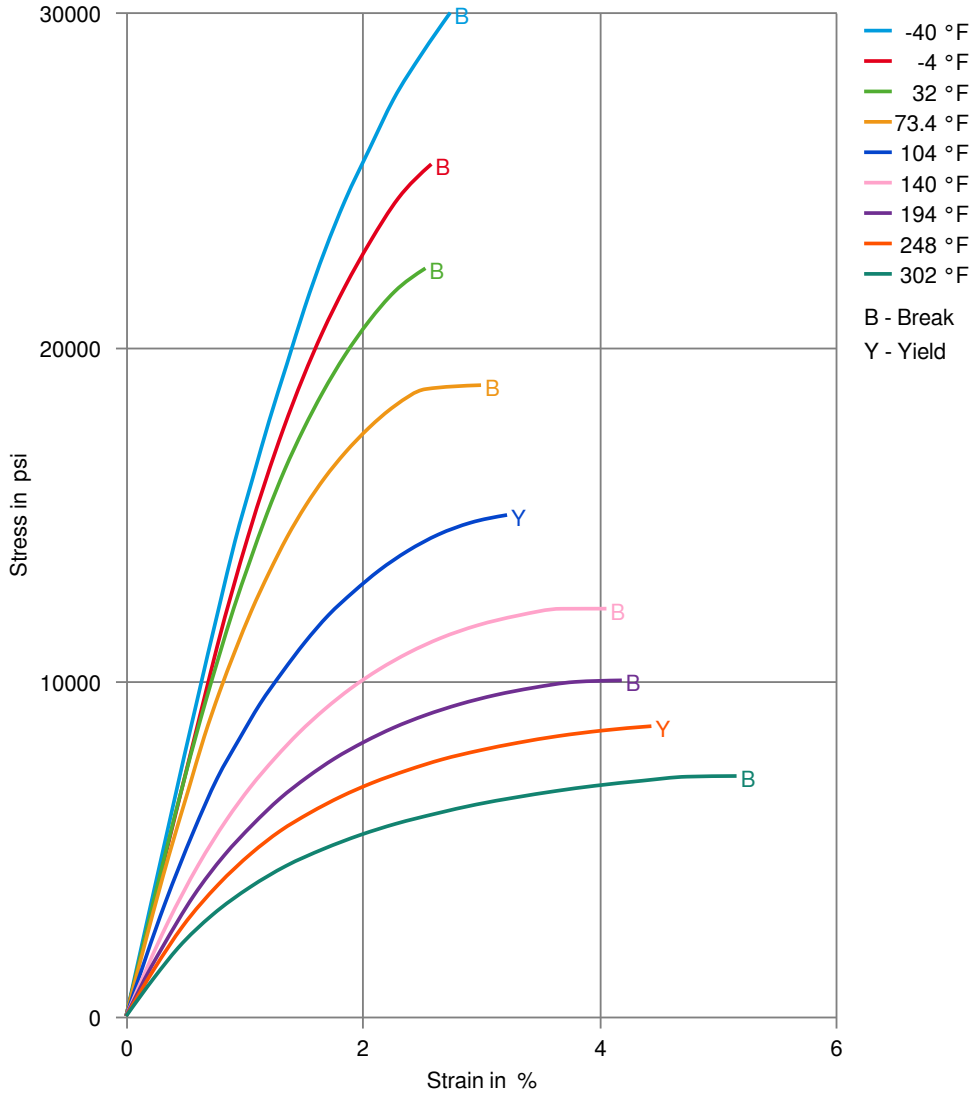
Characteristics

Processing	Injection Molding
Additives	Release agent
Special characteristics	Hydrolysis resistant, Laser Markable, High Flow

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Stress-strain

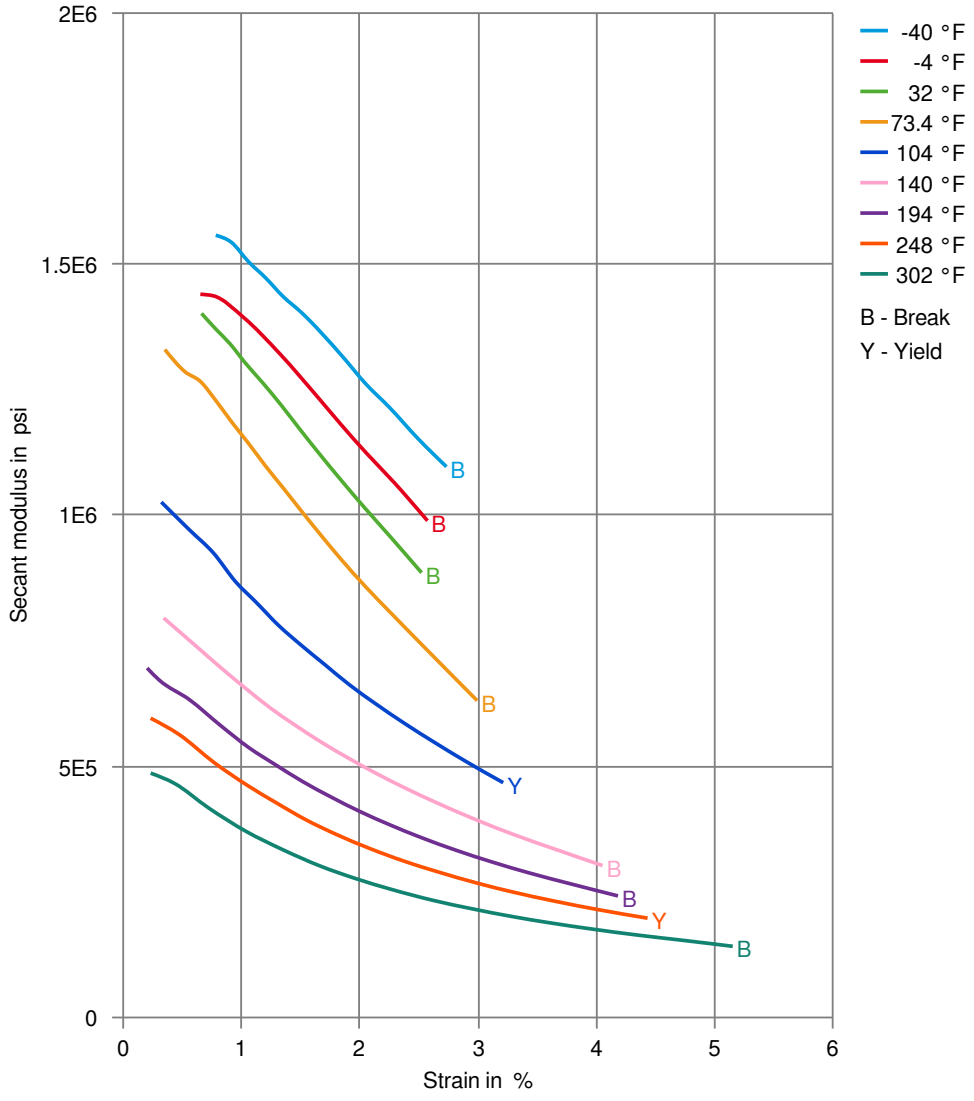


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Secant modulus-strain



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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
- ✔ 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

- ✘ 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

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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
- ✘ 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).

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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. Colorants or other additives may cause significant variations in data values. Properties of molded 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 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 seek and adhere to the manufacturer's current instructions for handling each material they use, and entrust the handling of such material to adequately trained personnel only. Please call the telephone numbers listed for additional technical information. Call Customer Services for the appropriate Materials Safety Data Sheets (MSDS) before attempting to process our products.
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