DuPont™ Crastin® HR5315HFS NC010

THERMOPLASTIC POLYESTER RESIN

Product Information

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, DuPont recommends, 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® HR5315HFS is a 15% glass reinforced PBT with high flow, moderately toughened, hydrolysis resistant (HR) polybutylene terephtalate for injection molding.

General information	Value	Unit	Test Standard
Resin Identification	PBT-IGF15	-	ISO 1043
Part Marking Code	PBT-IGF15	-	ISO 11469
Rheological properties	**Value**	**Unit**	**Test Standard**
Melt volume-flow rate	12	cm³/10min	ISO 1133
Temperature	250	°C	ISO 1133
Load	2.16	kg	ISO 1133
Molding shrinkage, parallel	0.5	%	ISO 294-4, 2577
Molding shrinkage, normal	1.1	%	ISO 294-4, 2577
Flow length	400	mm	-
Flow length - pressure	80	MPa	-
Flow length - width/thickness	2	mm	-
Melt viscosity, @ 1000 sec-1, 250°C	175	Pa s	ISO 11443
Mechanical properties	**Value**	**Unit**	**Test Standard**
Tensile Modulus	5000	MPa	ISO 527-1/-2
Stress at break	100	MPa	ISO 527-1/-2
Strain at break	3.4	%	ISO 527-1/-2
Flexural Strength	145	MPa	ISO 178
Charpy impact strength			ISO 179/1eU
73°F	60	kJ/m²	
-22°F	30	kJ/m²	
Charpy notched impact strength			ISO 179/1eA
73°F	11	kJ/m²	
-40°F	7	kJ/m²	
Thermal properties	**Value**	**Unit**	**Test Standard**
Melting temperature, 18°F/min	225	°C	ISO 11357-1/-3
Glass transition temperature, 18°F/min	65	°C	ISO 11357-1/-2
Temp. of deflection under load			ISO 75-1/-2
260 psi	200	°C	
65 psi	220	°C	
Flammability	**Value**	**Unit**	**Test Standard**
Burning Behav. at 60mil nom. thickn.	HB	class	IEC 60695-11-10
Thickness tested	1.5	mm	IEC 60695-11-10
Oxygen index	20	%	ISO 4589-1/-2
Glow Wire Flammability Index, 120mil	700	°C	IEC 60695-2-1/2
FMVSS Class	B	-	ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	32	mm/min	ISO 3795 (FMVSS 302)

To find out more, visit DuPont Performance Polymers or contact nearest DuPont location.

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Electrical properties	Value	Unit	Test Standard
Relative permittivity			IEC 60250
100Hz	3.6	-	
1MHz	3.5	-	
Dissipation factor			IEC 60250
100Hz	100	E-4	
1MHz	100	E-4	
Volume resistivity	>1E13	Ohm*m	IEC 60093
Surface resistivity	1E14	Ohm	IEC 60093
Electric strength	42	kV/mm	IEC 60243-1
Comparative tracking index	600	-	IEC 60112

Other properties	Value	Unit	Test Standard
Humidity absorption, 80mil	0.15	%	Sim. to ISO 62
Water absorption, 80mil	0.4	%	Sim. to ISO 62
Density	1380	kg/m³	ISO 1183
Density of melt	1140	kg/m³	-

Injection	Value	Unit	Test Standard
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. mold temperature	30	°C	-
Max. mold temperature	130	°C	-
Hold pressure range	≥60	MPa	-
Hold pressure time	3	s/mm	-
Back pressure	As low as possible		-
Ejection temperature	170	°C	-

Characteristics			
Processing	• Injection Molding		
Delivery form	• Pellets		
Additives	• Release agent		
Regional Availability	• North America • Europe	• Asia Pacific • South and Central America	• Near East/Africa • Global

Processing Texts

Injection molding

Use of hot-runners is possible with Crastin® HR resins.
However we do not recommend temperature settings above 270°C
and residence times at 265°C should be below 10 minutes.
In case of longer residence times using hot-runners, for example after a shut-down,
the complete system must be purged with glass reinforced Crastin® (type SK602/605) before starting up again.
For successful processing of Crastin® HR with hot-runners, care should be taken
to maintain a uniform temperature, avoid hot-spots and long residence times.

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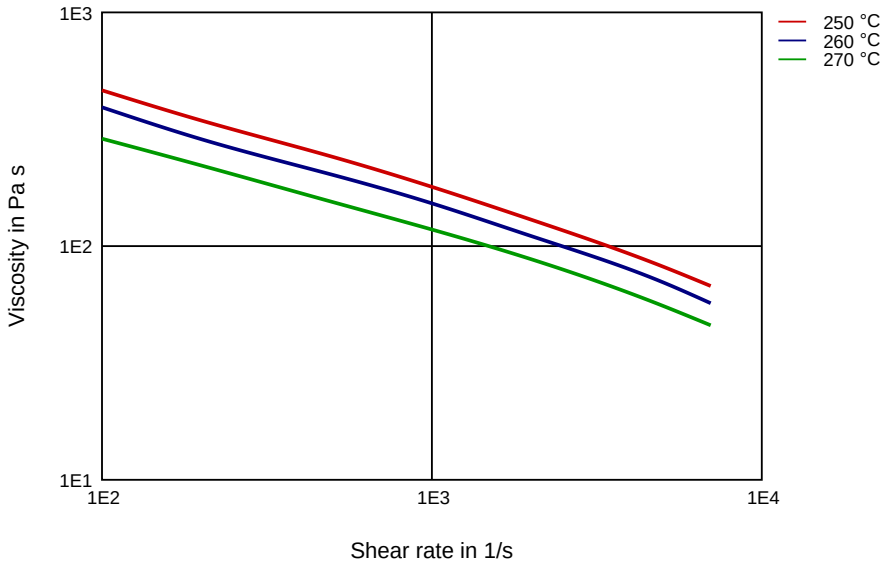
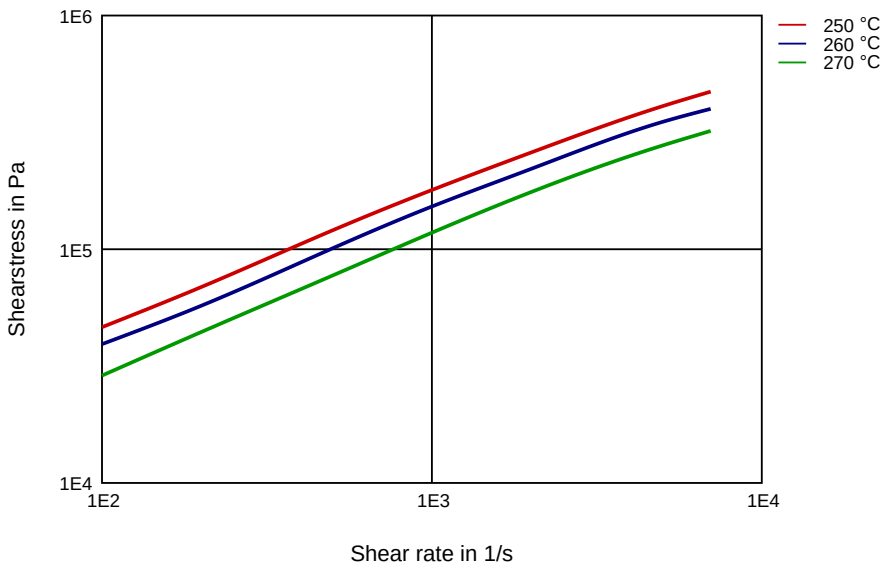
Diagrams

Viscosity-shear rate



Shearstress-shear rate



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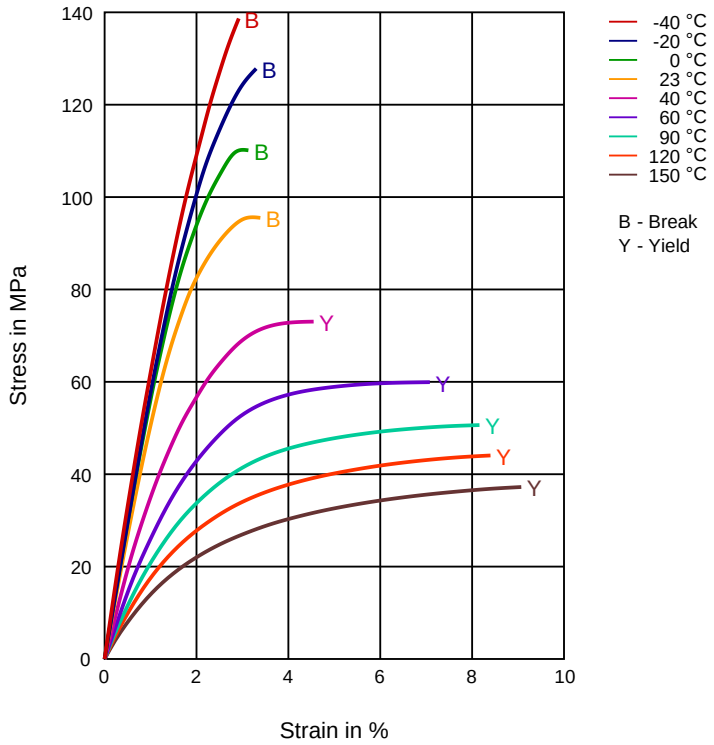
Stress-strain



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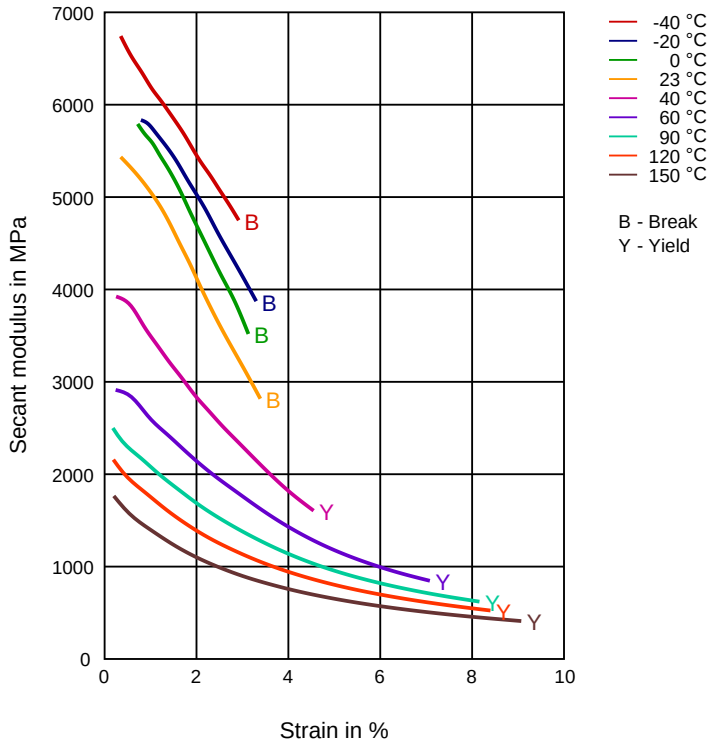
Secant modulus-strain



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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)

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)

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✓	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)
✗	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).

Contact DuPont for Material Safety Data Sheet, general guides and/or additional information about ventilation, handling, purging, drying, etc. ISO Mechanical properties measured at 160 mil (Hytrel® measured at 80 mil), IEC Electrical properties measured at 80 mil, all ASTM properties measured at 120 mil, and test temperatures are 73°F unless otherwise stated.

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