DuPont™ Crastin® ST820 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® ST820 NC010 is an unreinforced, Super Tough polybutylene terephthalate resin for injection molding.

General information	Value	Unit	Test Standard
Resin Identification	PBT-HI	-	ISO 1043
Part Marking Code	PBT-HI	-	ISO 11469
Rheological properties	**Value**	**Unit**	**Test Standard**
Molding shrinkage, parallel	1.9	%	ISO 294-4, 2577
Molding shrinkage, normal	1.8	%	ISO 294-4, 2577
Molding shrinkage, parallel, annealed	2.5	%	ISO 294-4
Mechanical properties	**Value**	**Unit**	**Test Standard**
Tensile Modulus	1700	MPa	ISO 527-1/-2
Yield stress	38	MPa	ISO 527-1/-2
Yield strain	7	%	ISO 527-1/-2
Nominal strain at break	>50	%	ISO 527-1/-2
Strain at Break, 23°C, 50mm/min	150	%	ISO 527-1/-2
Flexural Modulus	1550	MPa	ISO 178
Flexural Strength	50	MPa	ISO 178
Charpy impact strength			ISO 179/1eU
73°F	N	kJ/m²	
-22°F	N	kJ/m²	
Charpy notched impact strength			ISO 179/1eA
73°F	85	kJ/m²	
-22°F	10	kJ/m²	
-40°F	10	kJ/m²	
Izod notched impact strength			ISO 180/1A
73°F	60	kJ/m²	
-22°F	15	kJ/m²	
-40°F	10	kJ/m²	
Izod impact strength			ISO 180/1U
73°F	N	kJ/m²	
-22°F	N	kJ/m²	
-40°F	270	kJ/m²	
Hardness, Rockwell, R-scale	104	-	ISO 2039-2
Thermal properties	**Value**	**Unit**	**Test Standard**
Melting temperature, 18°F/min	225	°C	ISO 11357-1/-3
Temp. of deflection under load			ISO 75-1/-2
260 psi	50	°C	
65 psi	100	°C	
65 psi, annealed	145	°C	
Vicat softening temperature, 90°F/h, 11 lbf	125	°C	ISO 306
Coeff. of linear therm. expansion, parallel	190	E-6/K	ISO 11359-1/-2

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

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Coeff. of linear therm. expansion, normal	190	E-6/K	ISO 11359-1/-2
Thermal conductivity of melt	0.2	W/(m K)	-
Spec. heat capacity of melt	2100	J/(kg K)	-
RTI, electrical, 30mil	75	°C	UL 746B
RTI, impact, 30mil	75	°C	UL 746B
RTI, strength, 30mil	75	°C	UL 746B
Flammability	**Value**	**Unit**	**Test Standard**
Burning Behav. at thickness h	HB	class	IEC 60695-11-10
Thickness tested	0.8	mm	IEC 60695-11-10
UL recognition	yes	-	UL 94
Oxygen index	19	%	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	38	mm/min	ISO 3795 (FMVSS 302)
Electrical properties	**Value**	**Unit**	**Test Standard**
Relative permittivity, 1MHz	3.4	-	IEC 60250
Dissipation factor			IEC 60250
100Hz	200	E-4	
1MHz	190	E-4	
Volume resistivity	>1E13	Ohm*m	IEC 60093
Surface resistivity	1E15	Ohm	IEC 60093
Electric strength	27	kV/mm	IEC 60243-1
Comparative tracking index	600	-	IEC 60112
Electric Strength, Short Time, 2mm	2-3	kV/mm	IEC 60243-1
Other properties	**Value**	**Unit**	**Test Standard**
Humidity absorption, 80mil	0.12	%	Sim. to ISO 62
Water absorption, 80mil	0.31	%	Sim. to ISO 62
Density	1220	kg/m³	ISO 1183
Density of melt	1030	kg/m³	-
VDA Properties	**Value**	**Unit**	**Test Standard**
Fogging, G-value (condensate)	0.1	mg	ISO 6452
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 • Profile Extrusion	• Sheet Extrusion • Other Extrusion	• Coating
Delivery form	• Pellets		
Additives	• Release agent		
Regional Availability	• North America • Europe	• Asia Pacific • South and Central America	• Near East/Africa • Global

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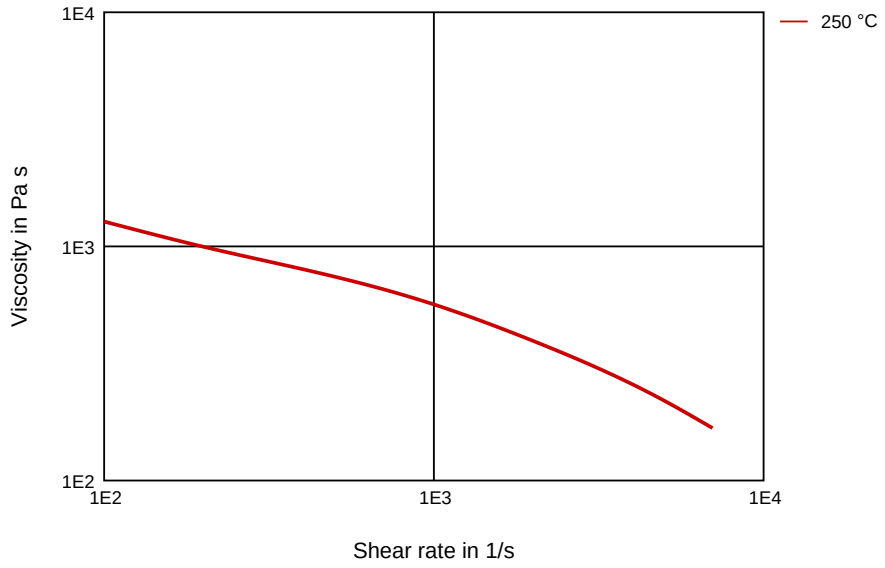
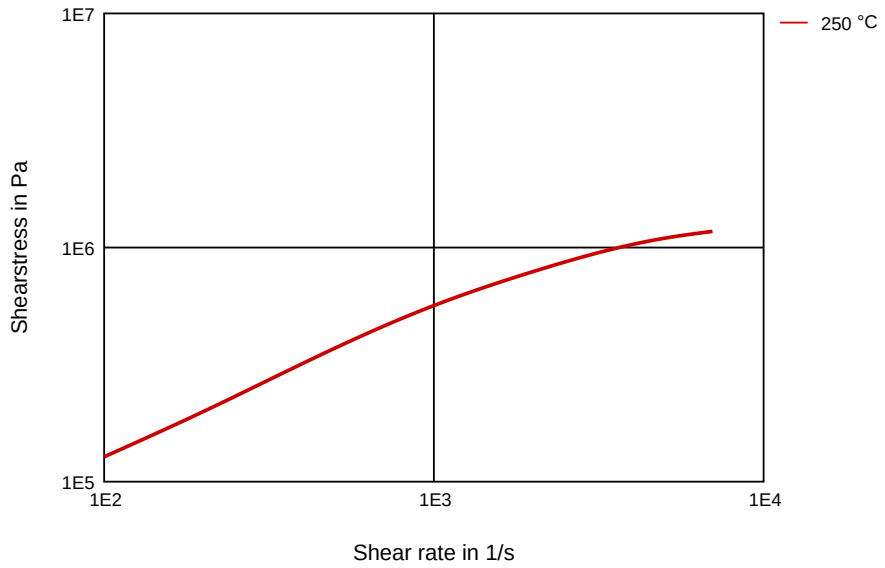
Diagrams

Viscosity-shear rate



Shearstress-shear rate



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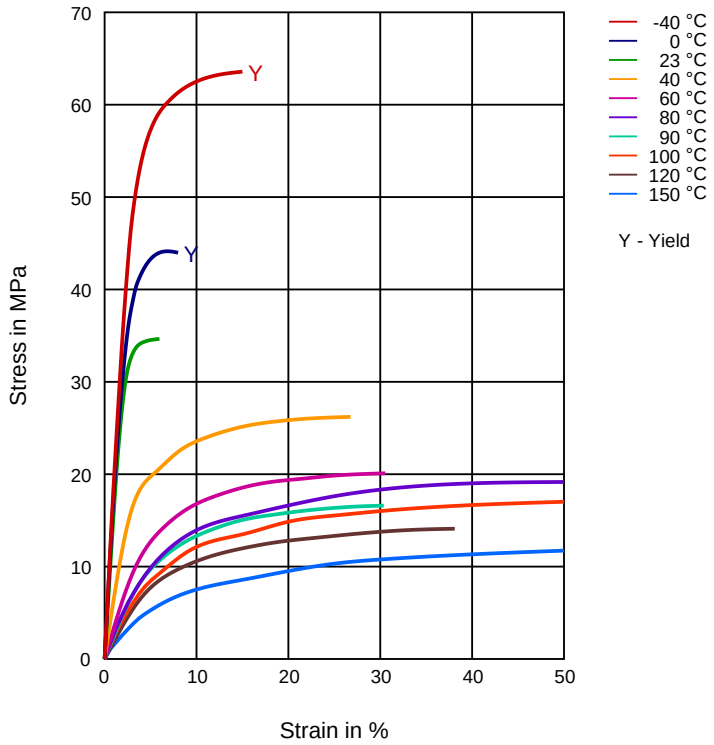
Stress-strain



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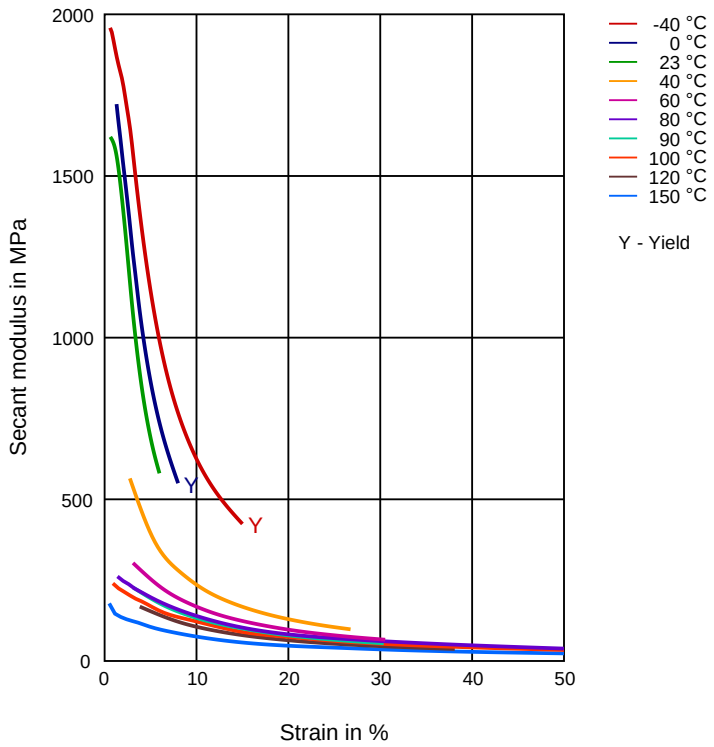
Secant modulus-strain



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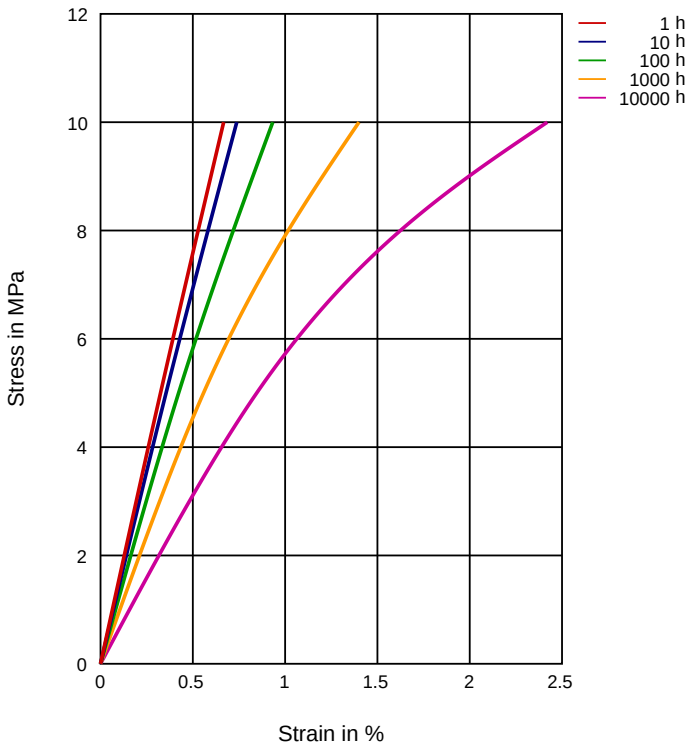
Stress-strain (isochronous) 23°C



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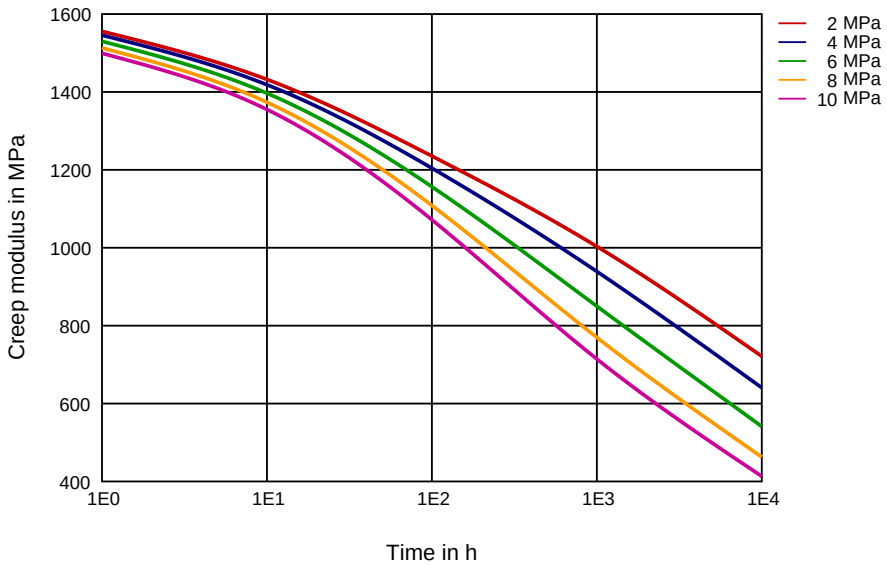
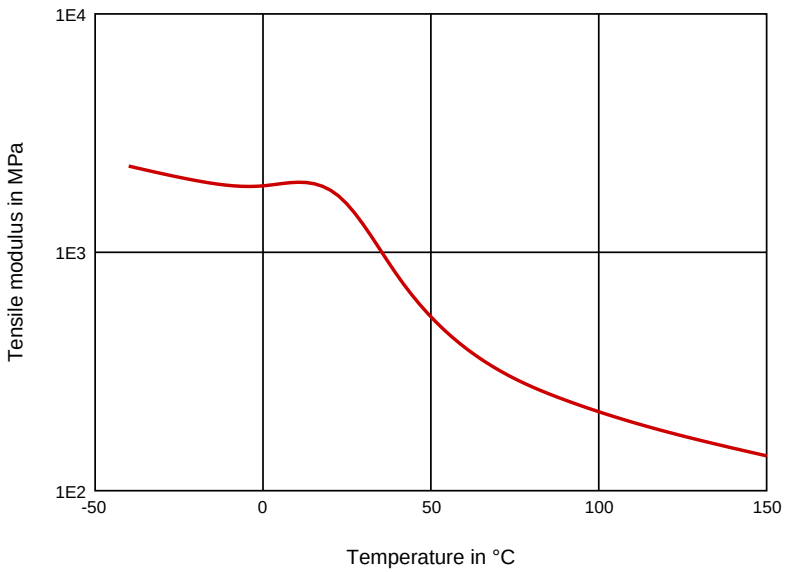
Creep modulus-time 23 °C



Tensile modulus-temperature



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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.

The information set forth herein is furnished free of charge and is based on technical data that DuPont believes to be reliable and falls within the normal range of properties. It is intended for use by persons having technical skill, at their own discretion and risk. This data should not be used to establish specification limits nor used alone as the basis of design. Handling precaution information is given with the understanding that those using it will satisfy themselves that their particular conditions of use present no health or safety hazards. Since conditions of product use and disposal are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information. As with any product, evaluation under end-use conditions prior to specification is essential. Nothing herein is to be taken as a license to operate or a recommendation to infringe on patents. Caution: Do not use in medical applications involving permanent implantation in the human body. For other medical applications, discuss with your DuPont customer representative and read Medical Caution H-50103-5.

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