

DuPont™ Rynite® 415HP NC010

THERMOPLASTIC POLYESTER RESIN

Product Information

Common features of Rynite® thermoplastic polyester include mechanical and physical properties such as excellent balance of strength and stiffness, dimensional stability, creep resistance, heat resistance, high surface gloss and good inherent electrical properties at elevated temperature. It can be processed over a broad temperature range and has excellent flow properties.

Rynite® thermoplastic polyester resins are typically used in demanding applications in the automotive, electrical and electronics, appliances where they successfully replace metals and thermosets, as well as other thermoplastic polymers.

Rynite® 415HP NC010 is a 15% glass reinforced, toughened modified polyethylene terephthalate resin improved for easy, fast processing over a broad molding range.

General information			
	Value	Unit	Test Standard
Resin Identification	PET-IGF15	-	ISO 1043
Part Marking Code	PET-IGF15	-	ISO 11469
Rheological properties			
	Value	Unit	Test Standard
Melt volume-flow rate	4	cm ³ /10min	ISO 1133
Temperature	280	°C	ISO 1133
Load	2.16	kg	ISO 1133
Molding shrinkage, parallel	0.3	%	ISO 294-4, 2577
Molding shrinkage, normal	0.8	%	ISO 294-4, 2577
Molding shrinkage, parallel, annealed	0.5	%	ISO 294-4
Molding shrinkage, normal, annealed	1.2	%	ISO 294-4
Mechanical properties			
	Value	Unit	Test Standard
Tensile Modulus	4700	MPa	ISO 527-1/-2
Stress at break	79	MPa	ISO 527-1/-2
Strain at break	5	%	ISO 527-1/-2
Flexural Modulus	3550	MPa	ISO 178
Charpy impact strength			ISO 179/1eU
73 °F	55	kJ/m ²	
-22 °F	25	kJ/m ²	
Charpy notched impact strength			ISO 179/1eA
73 °F	11	kJ/m ²	
-22 °F	8	kJ/m ²	
Izod notched impact strength			ISO 180/1A
73 °F	13	kJ/m ²	
-22 °F	7.7	kJ/m ²	
Hardness, Rockwell, M-scale	58	-	ISO 2039-2
Hardness, Rockwell, R-scale	111	-	ISO 2039-2
Thermal properties			
	Value	Unit	Test Standard
Melting temperature, 18 °F/min	250	°C	ISO 11357-1/-3
Temp. of deflection under load			ISO 75-1/-2
260 psi	207	°C	
65 psi	235	°C	
Vicat softening temperature, 90 °F/h, 11 lbf	205	°C	ISO 306
Coeff. of linear therm. expansion, parallel	20	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion			ISO 11359-1/-2
normal	120	E-6/K	
Normal, -40-23 °C	40	E-6/K	
Normal, 55-160 °C	32	E-6/K	
Parallel, -40-23 °C	98	E-6/K	
Parallel, 55-160 °C	109	E-6/K	
Eff. thermal diffusivity	9E-8	m ² /s	-

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RTI, electrical			UL 746B
30mil	140	°C	
60mil	140	°C	
120mil	140	°C	
RTI, impact			UL 746B
30mil	120	°C	
60mil	120	°C	
120mil	120	°C	
RTI, strength			UL 746B
30mil	140	°C	
60mil	140	°C	
120mil	140	°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
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
Oxygen index	19	%	ISO 4589-1/-2
Glow Wire Flammability Index			IEC 60695-2-1/2
30mil	700	°C	
40mil	700	°C	
60mil	700	°C	
80mil	725	°C	
120mil	775	°C	
Glow Wire Ignition Temperature			IEC 60695-2-1/3
30mil	675	°C	
40mil	675	°C	
60mil	675	°C	
80mil	700	°C	
120mil	725	°C	
FMVSS Class	B	-	ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	33	mm/min	ISO 3795 (FMVSS 302)
Electrical properties	Value	Unit	Test Standard
Relative permittivity			IEC 60250
100Hz	4.5	-	
1MHz	3.9	-	
Dissipation factor			IEC 60250
100Hz	654	E-4	
1MHz	236	E-4	
Volume resistivity	1E11	Ohm*m	IEC 60093
Surface resistivity	1E13	Ohm	IEC 60093
Electric strength	38	kV/mm	IEC 60243-1
Comparative tracking index			
Comparative tracking index	350	-	IEC 60112
CTI, 23°C	2	PLC	UL 746A
Other properties	Value	Unit	Test Standard
Humidity absorption, 80mil	0.25	%	Sim. to ISO 62
Water absorption, 80mil	2.5	%	Sim. to ISO 62
Density	1390	kg/m ³	ISO 1183
Injection	Value	Unit	Test Standard
Drying Recommended	yes	-	-
Drying Temperature	120	°C	-
Drying Time, Dehumidified Dryer	4 - 6	h	-
Processing Moisture Content	≤0.02 ^[1]	%	-

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Melt Temperature Optimum	285 °C	-
Min. melt temperature	270 °C	-
Max. melt temperature	290 °C	-
Max. screw tangential speed	0.2 m/s	-
Mold Temperature Optimum	95 °C	-
Min. mold temperature	75 °C	-
Max. mold temperature	95 °C	-
Hold pressure range	≥80 MPa	-
Hold pressure time	4 s/mm	-
Back pressure	As low as possible	-
Ejection temperature	170 °C	-

1: At levels above 0.02%, strength and toughness will decrease, even though parts may not exhibit surface defects.

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

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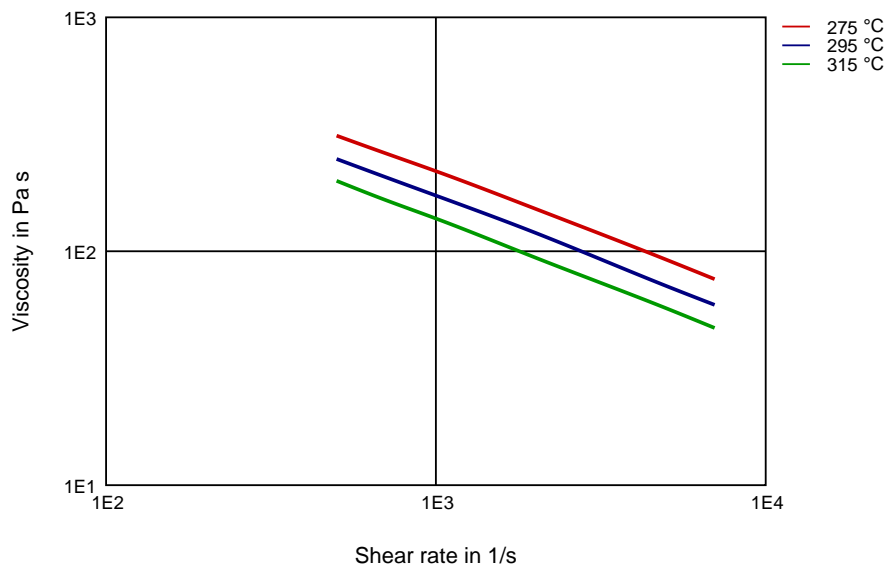


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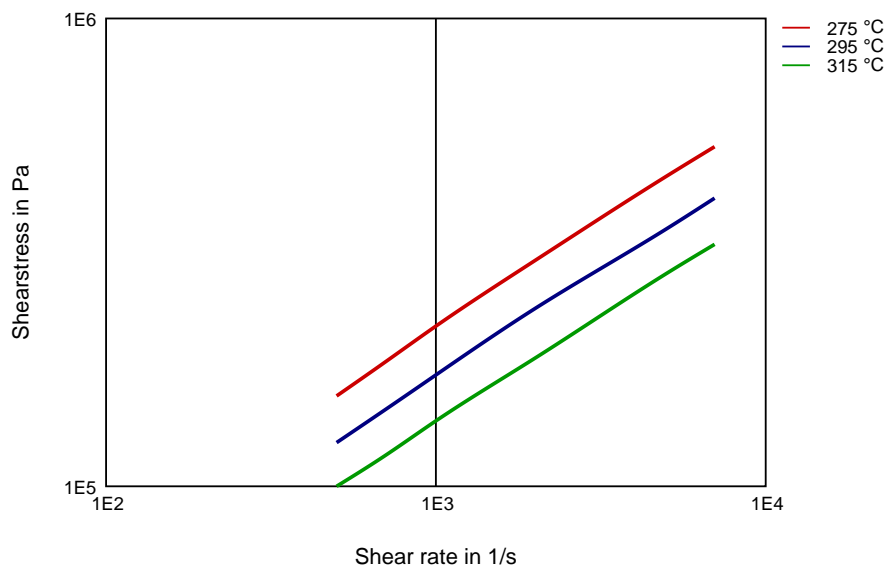
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Diagrams

Viscosity-shear rate



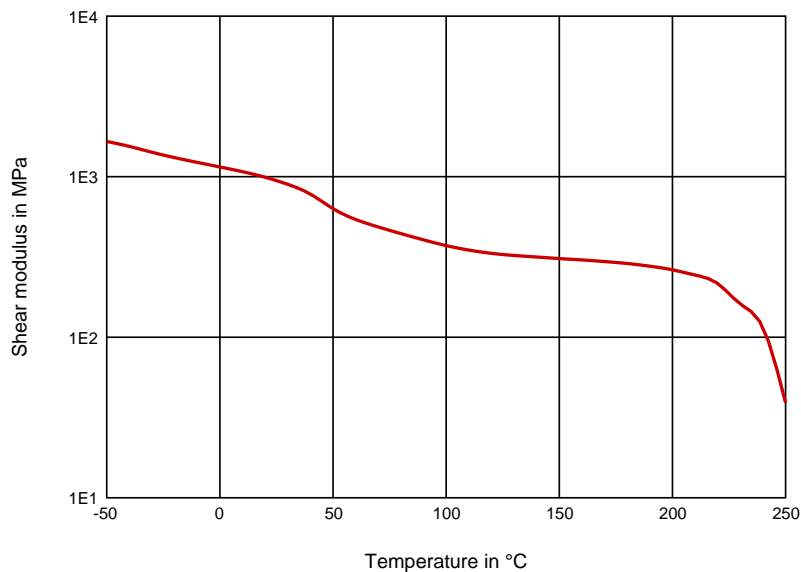
Shearstress-shear rate



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Dynamic Shear modulus-temperature



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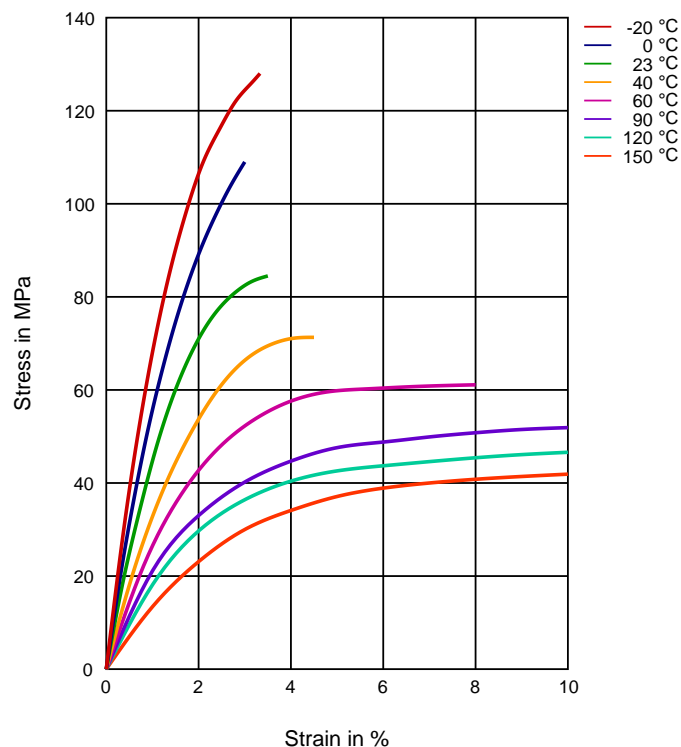
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Stress-strain



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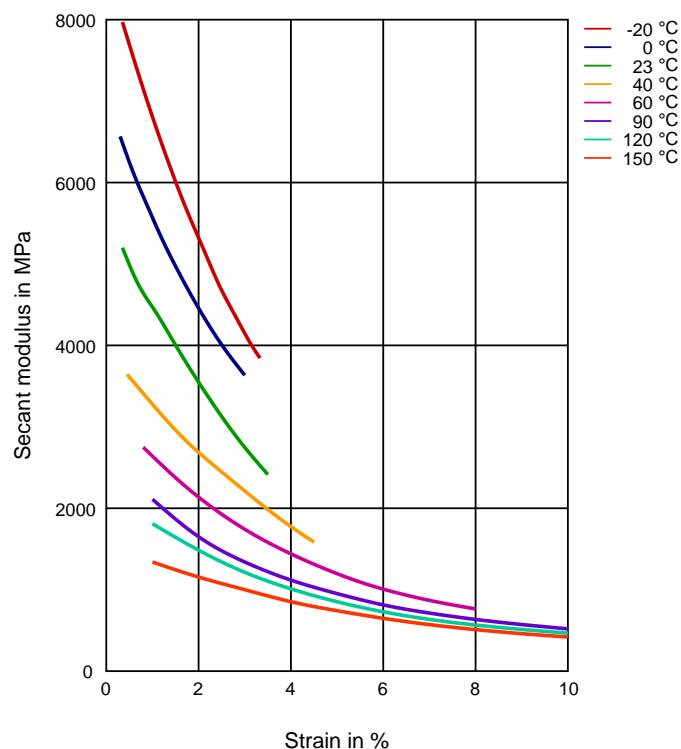


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Secant modulus-strain



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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