DuPont™ Rynite® FR515 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® FR515 NC010 is a 15% glass reinforced, flame retardant modified polyethylene terephthalate resin.

General information	Value	Unit	Test Standard
Resin Identification	PET-GF15FR(17)	-	ISO 1043
Part Marking Code	PET-GF15FR(17)	-	ISO 11469
Rheological properties	**Value**	**Unit**	**Test Standard**
Melt volume-flow rate	6	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	1.15	%	ISO 294-4
Mechanical properties	**Value**	**Unit**	**Test Standard**
Tensile Modulus	6800	MPa	ISO 527-1/-2
Stress at break	107	MPa	ISO 527-1/-2
Strain at break	2.6	%	ISO 527-1/-2
Flexural Modulus	5940	MPa	ISO 178
Flexural Strength	170	MPa	ISO 178
Charpy impact strength			ISO 179/1eU
73°F	40	kJ/m^2	
-22°F	35	kJ/m^2	
-40°F	20	kJ/m^2	
Charpy notched impact strength			ISO 179/1eA
73°F	8	kJ/m^2	
-22°F	7	kJ/m^2	
-40°F	7	kJ/m^2	
Hardness, Rockwell, M-scale	88	-	ISO 2039-2
Hardness, Rockwell, R-scale	120	-	ISO 2039-2
Thermal properties	**Value**	**Unit**	**Test Standard**
Melting temperature, 18°F/min	254	°C	ISO 11357-1/-3
Temp. of deflection under load			ISO 75-1/-2
260 psi	200	°C	
65 psi	240	°C	
Vicat softening temperature, 90°F/h, 11 lbf	210	°C	ISO 306
Coeff. of linear therm. expansion, parallel	18	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion			ISO 11359-1/-2
normal	88	E-6/K	
Normal, -40-23°C	70	E-6/K	
Normal, 55-160°C	105	E-6/K	
Parallel, -40-23°C	33	E-6/K	
Parallel, 55-160°C	12	E-6/K	
RTI, electrical			UL 746B
30mil	140	°C	
60mil	140	°C	
120mil	140	°C	

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

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RTI, impact			UL 746B
30mil	140	°C	
60mil	140	°C	
120mil	140	°C	
RTI, strength			UL 746B
30mil	140	°C	
60mil	140	°C	
120mil	140	°C	
Flammability	**Value**	**Unit**	**Test Standard**
Burning Behav. at thickness h	V-0	class	IEC 60695-11-10
Thickness tested	0.86	mm	IEC 60695-11-10
UL recognition	yes	-	UL 94
Burning Behav. 5V at thickness h	5VA	class	IEC 60695-11-20
Thickness tested	1.5	mm	IEC 60695-11-20
UL recognition	yes	-	UL 94
Oxygen index	32	%	ISO 4589-1/-2
Glow Wire Flammability Index, 120mil	960	°C	IEC 60695-2-1/2
Glow Wire Ignition Temperature, 120mil	875	°C	IEC 60695-2-1/3
FMVSS Class	B	-	ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	<100	mm/min	ISO 3795 (FMVSS 302)

1: DNI

Electrical properties	**Value**	**Unit**	**Test Standard**
Relative permittivity			IEC 60250
100Hz	3.8	-	
1MHz	3.5	-	
Dissipation factor			IEC 60250
100Hz	90	E-4	
1MHz	150	E-4	
Volume resistivity	>1E13	Ohm*m	IEC 60093
Surface resistivity	1E13	Ohm	IEC 60093
Electric strength	34	kV/mm	IEC 60243-1
Comparative tracking index			
Comparative tracking index	200	-	IEC 60112
CTI, 23°C	3	PLC	UL 746A
Electric Strength, 2000 V/s, in oil, 23°C, 2mm	26	kV/mm	IEC 60243-1
Other properties	**Value**	**Unit**	**Test Standard**
Density	1530	kg/m³	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[2]	%	-
Melt Temperature Optimum	280	°C	-
Min. melt temperature	270	°C	-
Max. melt temperature	290	°C	-
Max. screw tangential speed	0.2	m/s	-
Mold Temperature Optimum	110	°C	-
Min. mold temperature	100	°C	-
Max. mold temperature	120[3]	°C	-
Hold pressure range	≥80	MPa	-
Hold pressure time	4	s/mm	-
Back pressure	As low as possible		-
Ejection temperature	170	°C	-

2: At levels above 0.02%, strength and toughness will decrease, even though parts may not exhibit surface defects. 3: (6mm - 1mm thickness)

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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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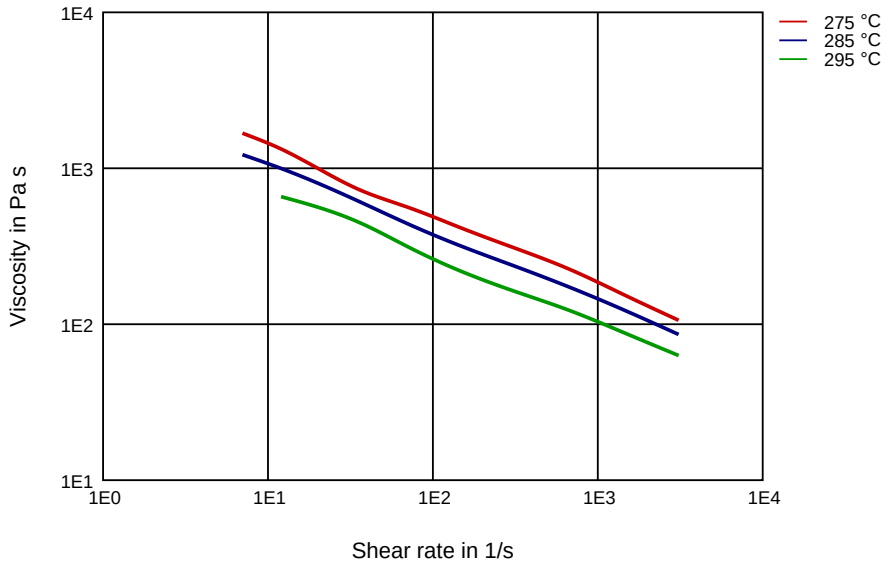
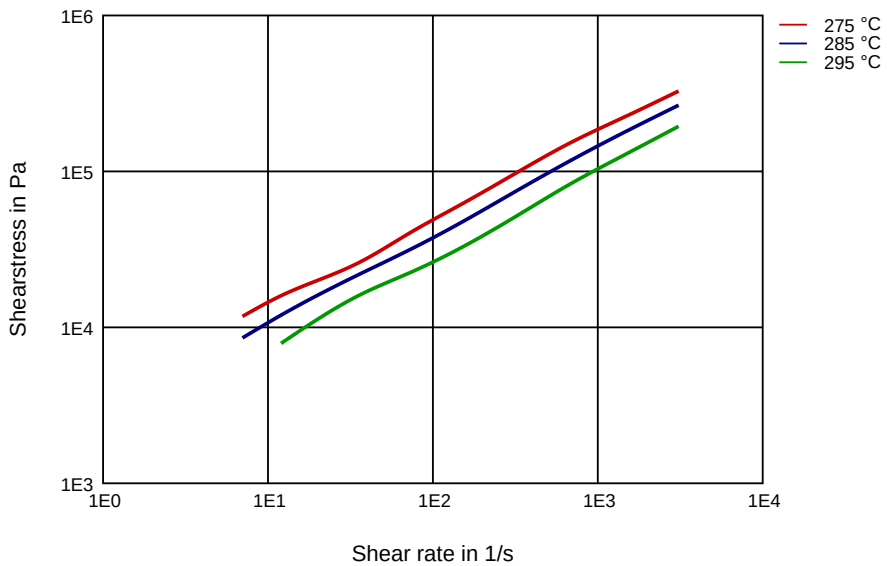
Diagrams

Viscosity-shear rate



Shearstress-shear rate



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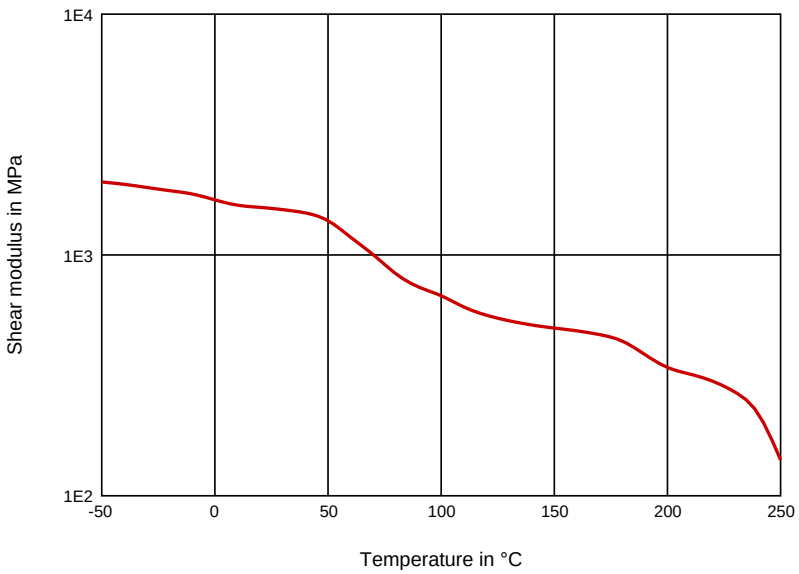
Dynamic Shear modulus-temperature



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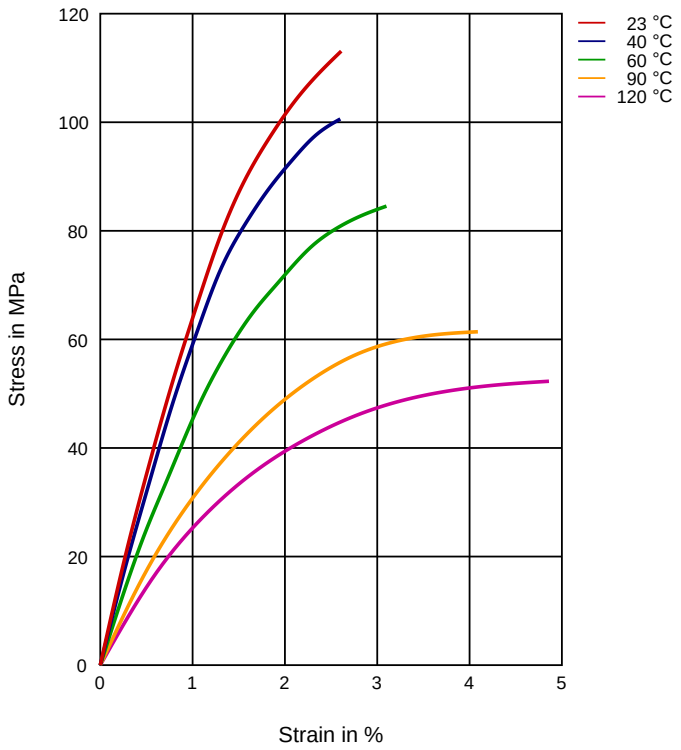
Stress-strain



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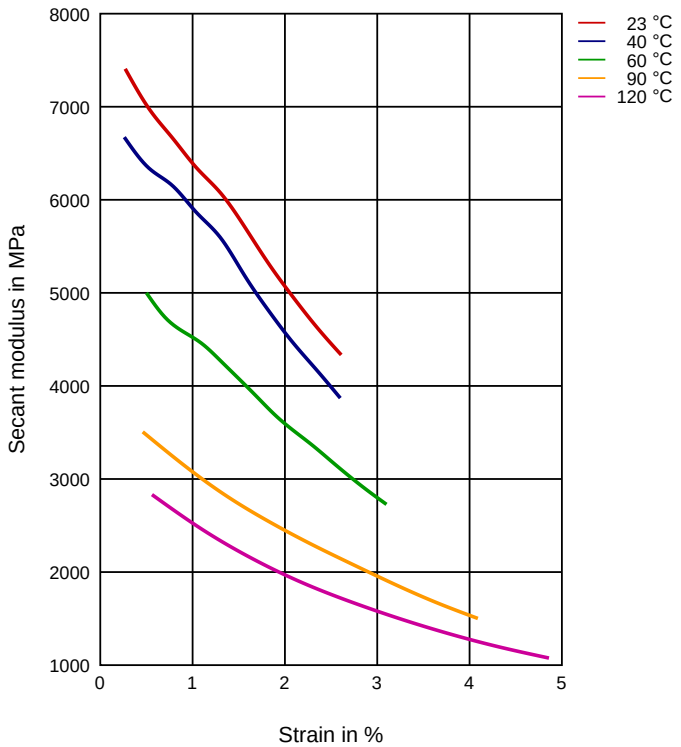
Secant modulus-strain



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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