



# Rynite® 545 NC010

## THERMOPLASTIC POLYESTER RESIN

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® 545 NC010 is a 45% glass reinforced modified polyethylene terephthalate resin.

### Product information

Resin Identification	PET-GF45	ISO 1043
Part Marking Code	>PET-GF45<	ISO 11469

### Rheological properties

Viscosity number	55 cm <sup>3</sup> /g	ISO 307, 1157, 1628
Molding shrinkage, parallel	0.2 %	ISO 294-4, 2577
Molding shrinkage, normal	0.8 %	ISO 294-4, 2577
Postmolding shrinkage, normal, 48h at 175°F	0.35 %	ISO 294-4
Postmolding shrinkage, parallel, 48h at 175°F	0.05 %	ISO 294-4

### Typical mechanical properties

Tensile Modulus	15500 MPa	ISO 527-1/-2
Stress at break	182 MPa	ISO 527-1/-2
Strain at break	2 %	ISO 527-1/-2
Flexural Modulus	13500 MPa	ISO 178
Compressive strength	230 MPa	ISO 604
Shear Strength	50 MPa	ASTM D 732
Tensile creep modulus, 1h	15600 MPa	ISO 899-1
Tensile creep modulus, 1000h	13300 MPa	ISO 899-1
Charpy impact strength, 73°F	60 kJ/m <sup>2</sup>	ISO 179/1eU
Charpy impact strength, -22°F	40 kJ/m <sup>2</sup>	ISO 179/1eU
Charpy notched impact strength, 73°F	11 kJ/m <sup>2</sup>	ISO 179/1eA
Charpy notched impact strength, -22°F	11 kJ/m <sup>2</sup>	ISO 179/1eA
Izod notched impact strength, 73°F	11 kJ/m <sup>2</sup>	ISO 180/1A
Hardness, Rockwell, M-scale	100 -	ISO 2039-2
Hardness, Rockwell, R-scale	120 -	ISO 2039-2
Poisson's ratio	0.33 -	



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### Thermal properties

Melting temperature, 18°F/min	252 °C	ISO 11357-1/-3
Glass transition temperature, 18°F/min	90 °C	ISO 11357-1/-2
Temp. of deflection under load, 260 psi	226 °C	ISO 75-1/-2
Temp. of deflection under load, 1200 psi	180 °C	ISO 75-1/-2
Vicat softening temperature, 90°F/h, 11 lbf	230 °C	ISO 306
Coeff. of linear therm. expansion, parallel	15 E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	83 E-6/K	ISO 11359-1/-2
Thermal conductivity solid	0.32 W/(m K)	
Eff. thermal diffusivity	1.4E-7 m <sup>2</sup> /s	
RTI, electrical, 30mil	140 °C	UL 746B
RTI, electrical, 60mil	140 °C	UL 746B
RTI, electrical, 120mil	140 °C	UL 746B
RTI, impact, 30mil	140 °C	UL 746B
RTI, impact, 60mil	140 °C	UL 746B
RTI, impact, 120mil	140 °C	UL 746B
RTI, strength, 30mil	140 °C	UL 746B
RTI, strength, 60mil	140 °C	UL 746B
RTI, strength, 120mil	140 °C	UL 746B

### Flammability

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	20 %	ISO 4589-1/-2
Glow Wire Flammability Index, 80mil	750 °C	IEC 60695-2-12
Glow Wire Flammability Index, 120mil	850 °C	IEC 60695-2-12
Glow Wire Ignition Temperature, 120mil	825 °C	IEC 60695-2-13
Glow Wire Temperature, No Flame, 40mil	775 °C	IEC 60335-1
Glow Wire Temperature, No Flame, 60mil	775 °C	IEC 60335-1
Glow Wire Temperature, No Flame, 80mil	775 °C	IEC 60335-1
Glow Wire Temperature, No Flame, 120mil	850 °C	IEC 60335-1
FMVSS Class	B -	ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	<80 mm/min	ISO 3795 (FMVSS 302)

### Electrical properties

Relative permittivity, 100Hz	4.5 -	IEC 62631-2-1
Relative permittivity, 1MHz	4.4 -	IEC 62631-2-1
Dissipation factor, 100Hz	70 E-4	IEC 62631-2-1
Dissipation factor, 1MHz	110 E-4	IEC 62631-2-1
Volume resistivity	1E13 Ohm.m	IEC 62631-3-1



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Surface resistivity	1E14 Ohm	IEC 62631-3-2
Electric strength	32 kV/mm	IEC 60243-1
Comparative tracking index	250 -	IEC 60112
Comparative tracking index	2 PLC	UL 746A

### Other properties

Humidity absorption, 80mil	0.14 %	Sim. to ISO 62
Water absorption, 80mil	0.62 %	Sim. to ISO 62
Density	1690 kg/m <sup>3</sup>	ISO 1183

### VDA Properties

Fogging, G-value (condensate)	0 mg	ISO 6452
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### Injection

Drying Recommended	yes
Drying Temperature	120 °C
Drying Time, Dehumidified Dryer	4 - 6 h
Processing Moisture Content	≤0.02 <sup>[1]</sup> %
Melt Temperature Optimum	285 °C
Min. melt temperature	280 °C
Max. melt temperature	300 °C
Max. screw tangential speed	0.2 m/s
Mold Temperature Optimum	120 °C
Min. mold temperature	110 °C
Max. mold temperature	130 <sup>[2]</sup> °C
Hold pressure range	≥80 MPa
Hold pressure time	4 s/mm
Back pressure	As low as possible MPa
Ejection temperature	170 °C

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

[2]: (6mm - 1mm thickness)

### Characteristics

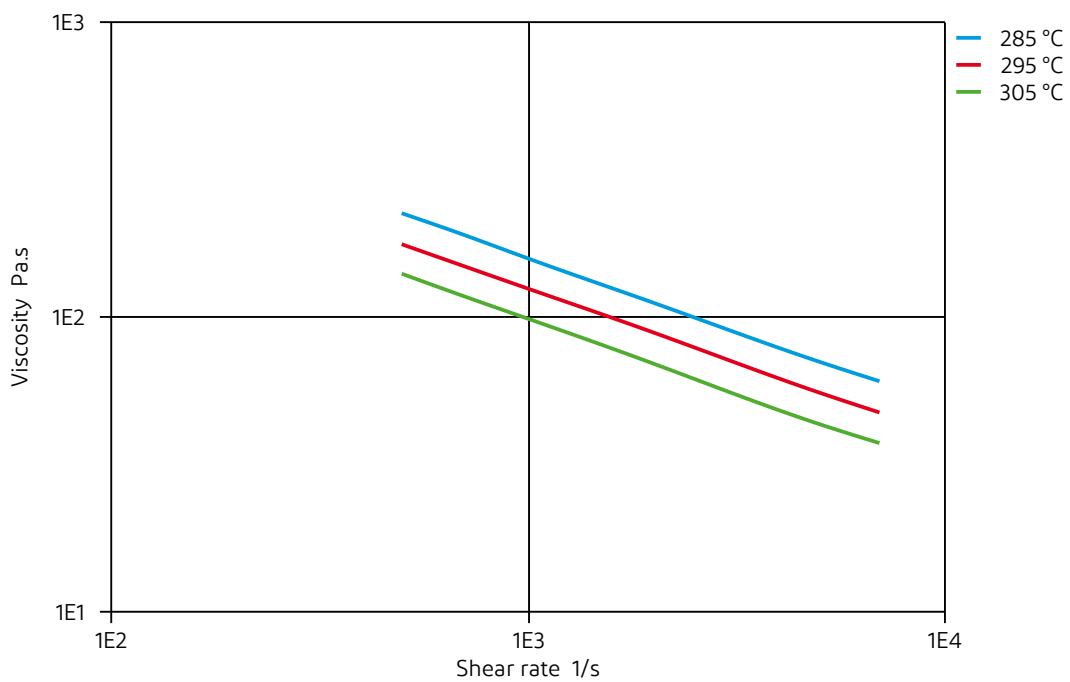
Additives	Release agent
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Viscosity-shear rate

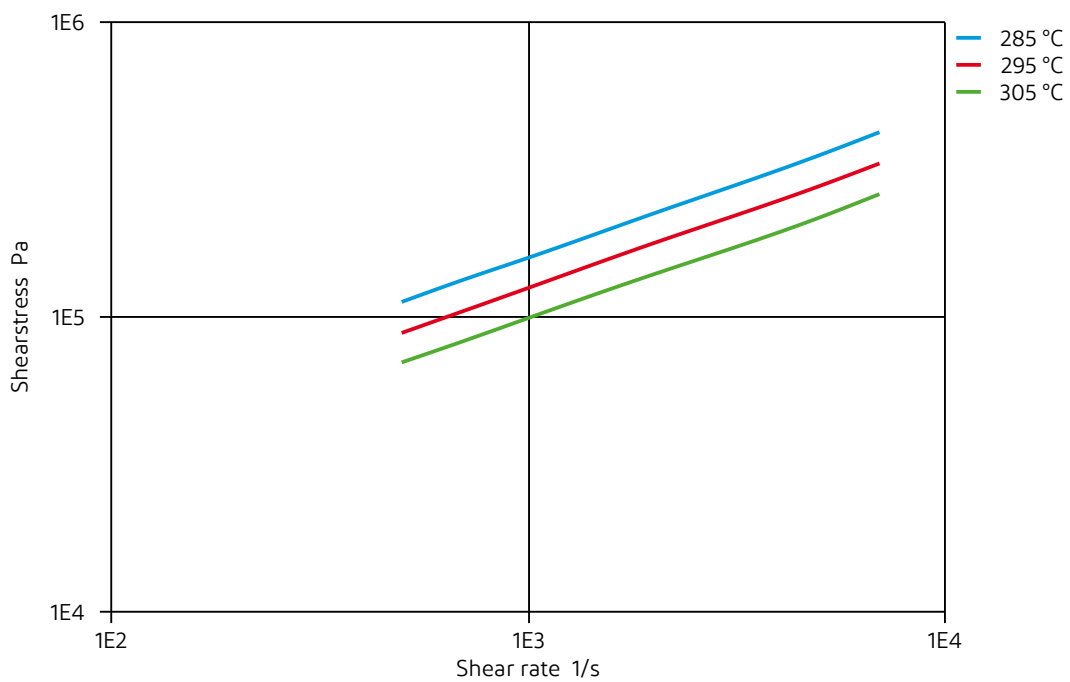




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THERMOPLASTIC POLYESTER RESIN

Shearstress-shear rate

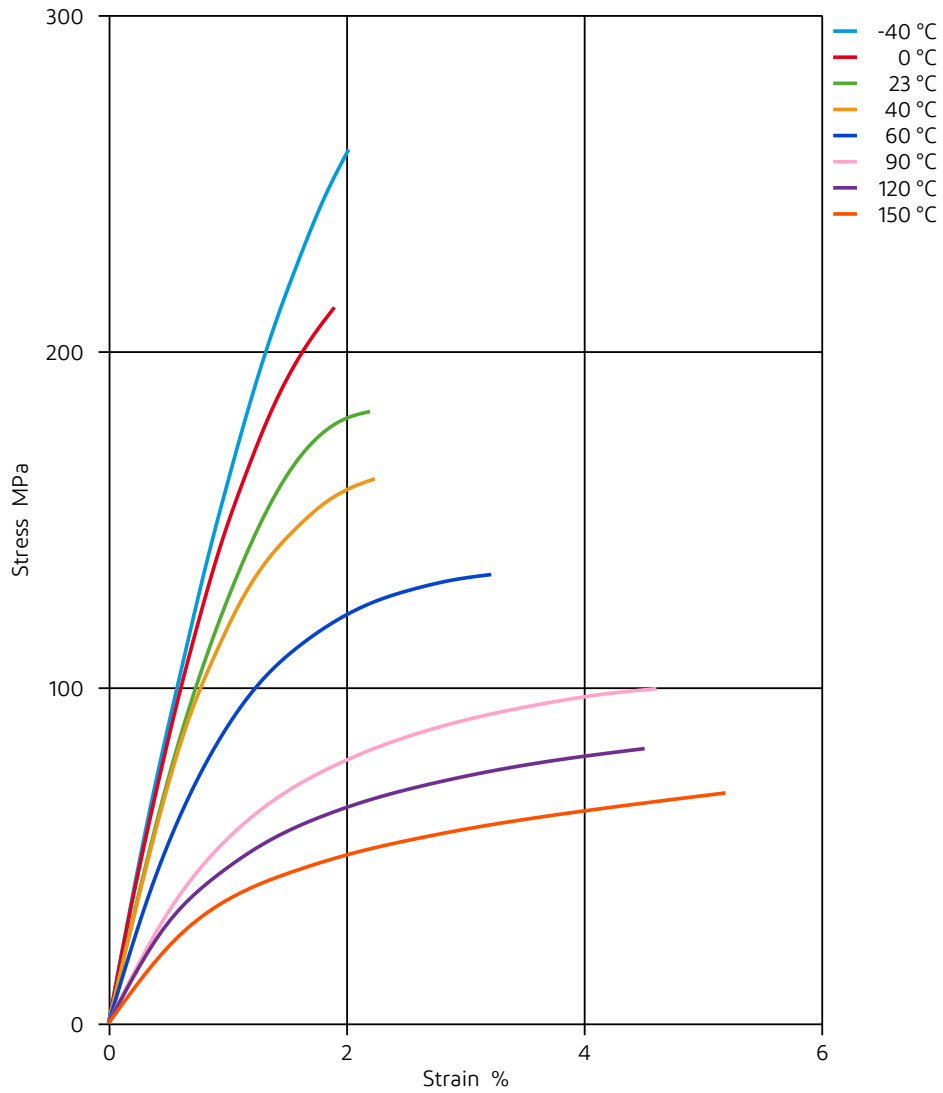




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## Stress-strain

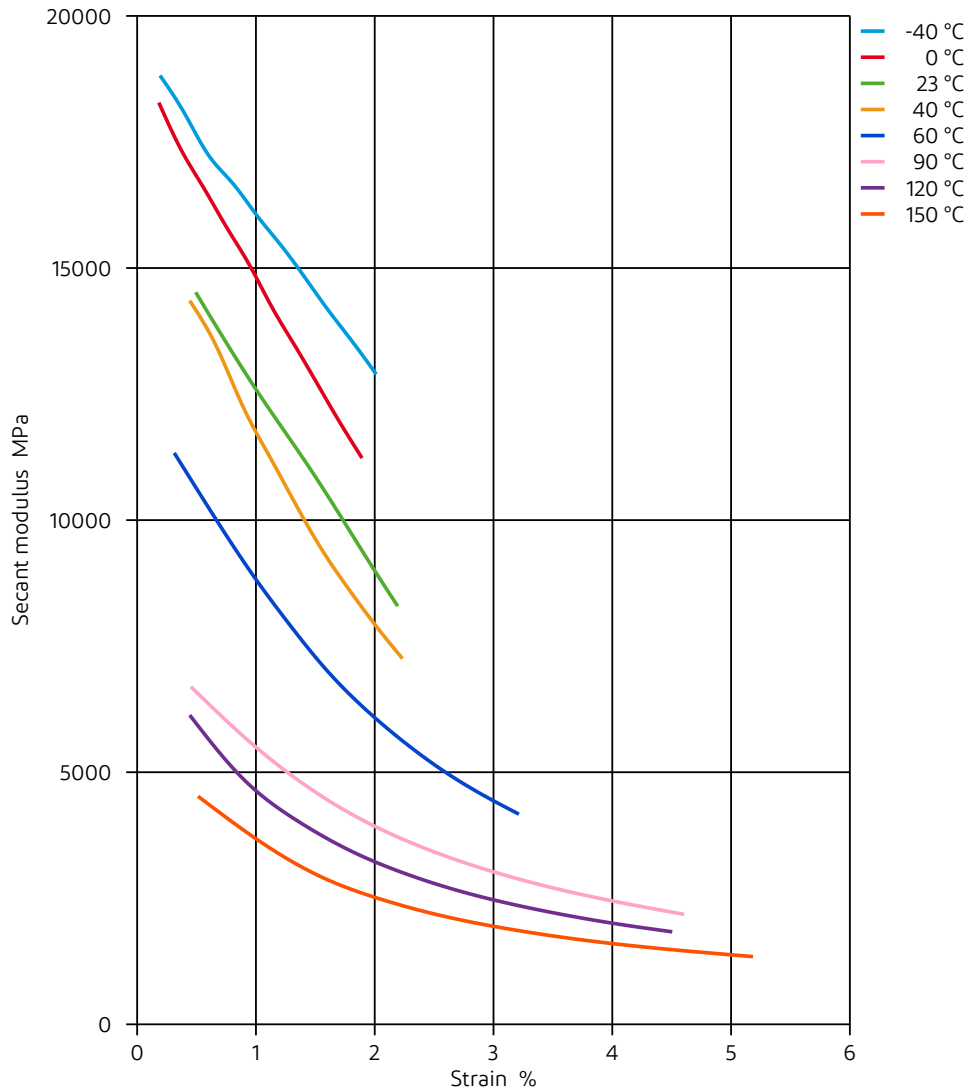




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## Secant modulus-strain



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