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

Product information

Resin Identification	PET-IGF15	ISO 1043
Part Marking Code	>PET-IGF15<	ISO 11469

Rheological properties

Moulding shrinkage, parallel	0.3	%	ISO 294-4, 2577
Moulding shrinkage, normal	0.8	%	ISO 294-4, 2577
Moulding shrinkage, parallel, annealed	0.5	%	ISO 294-4
Moulding shrinkage, normal, annealed	1.2	%	ISO 294-4
Postmoulding shrinkage, normal, 48h at 80°C	0.35	%	ISO 294-4
Postmoulding shrinkage, parallel, 48h at 80°C	0.1	%	ISO 294-4

Typical mechanical properties

Tensile modulus	4700	MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	79	MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	5	%	ISO 527-1/-2
Flexural modulus	3550	MPa	ISO 178
Compressive strength	90	MPa	ISO 604
Charpy impact strength, 23°C	55	kJ/m²	ISO 179/1eU
Charpy impact strength, -30°C	25	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23°C	11	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -30°C	8	kJ/m²	ISO 179/1eA
Izod notched impact strength, 23°C	13	kJ/m²	ISO 180/1A
Izod notched impact strength, -30°C	7.7	kJ/m²	ISO 180/1A
Hardness, Rockwell, M-scale	58		ISO 2039-2
Hardness, Rockwell, R-scale	111		ISO 2039-2
Poisson's ratio	0.36		

Thermal properties

Melting temperature, 10°C/min	250	°C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	195	°C	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	235	°C	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	205	°C	ISO 306
Coeff. of linear therm. expansion, parallel, -40-23°C	98	E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), parallel	20	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, parallel, 55-160°C	109	E-6/K	ISO 11359-1/-2

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Coeff. of linear therm. expansion, normal, -40-23°C	40	E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	120	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, 55-160°C	32	E-6/K	ISO 11359-1/-2
Effective thermal diffusivity, flow	9E-8	m²/s	ISO 22007-4
RTI, electrical, 0.75mm	140	°C	UL 746B
RTI, electrical, 1.5mm	140	°C	UL 746B
RTI, electrical, 3.0mm	140	°C	UL 746B
RTI, impact, 0.75mm	120	°C	UL 746B
RTI, impact, 1.5mm	120	°C	UL 746B
RTI, impact, 3.0mm	120	°C	UL 746B
RTI, strength, 0.75mm	140	°C	UL 746B
RTI, strength, 1.5mm	140	°C	UL 746B
RTI, strength, 3.0mm	140	°C	UL 746B

Flammability

Burning Behav. at 1.5mm 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, 0.75mm	700	°C	IEC 60695-2-12
Glow Wire Flammability Index, 1.0mm	700	°C	IEC 60695-2-12
Glow Wire Flammability Index, 1.5mm	700	°C	IEC 60695-2-12
Glow Wire Flammability Index, 2.0mm	725	°C	IEC 60695-2-12
Glow Wire Flammability Index, 3.0mm	775	°C	IEC 60695-2-12
Glow Wire Ignition Temperature, 0.75mm	675	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 1.0mm	675	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 1.5mm	675	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 2.0mm	700	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 3.0mm	725	°C	IEC 60695-2-13
FMVSS Class	B		ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	33	mm/min	ISO 3795 (FMVSS 302)

Electrical properties

Relative permittivity, 100Hz	4.5		IEC 62631-2-1
Relative permittivity, 1MHz	3.9		IEC 62631-2-1
Dissipation factor, 100Hz	654	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	236	E-4	IEC 62631-2-1
Volume resistivity	1E11	Ohm.m	IEC 62631-3-1
Surface resistivity	1E13	Ohm	IEC 62631-3-2
Electric strength	38	kV/mm	IEC 60243-1
Comparative tracking index	350		IEC 60112
Comparative tracking index, 23°C	2	PLC	UL 746A

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Physical/Other properties

Humidity absorption, 2mm	0.25	%	Sim. to ISO 62
Water absorption, 2mm	2.5	%	Sim. to ISO 62
Density	1390	kg/m³	ISO 1183

Injection

Drying Recommended	yes	
Drying Temperature	120	°C
Drying Time, Dehumidified Dryer	4 - 6	h
Processing Moisture Content	≤0.02[1]	%
Melt Temperature Optimum	280	°C
Min. melt temperature	270	°C
Max. melt temperature	290	°C
Screw tangential speed	≤0.2	m/s
Mold Temperature Optimum	110	°C
Min. mould temperature	95	°C
Max. mould temperature	125	°C
Hold pressure range	≥80	MPa
Hold pressure time	4	s/mm
Back pressure	As low as possible	MPa
Ejection temperature	200	°C

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

Characteristics

Processing	Injection Moulding
Delivery form	Pellets
Additives	Release agent

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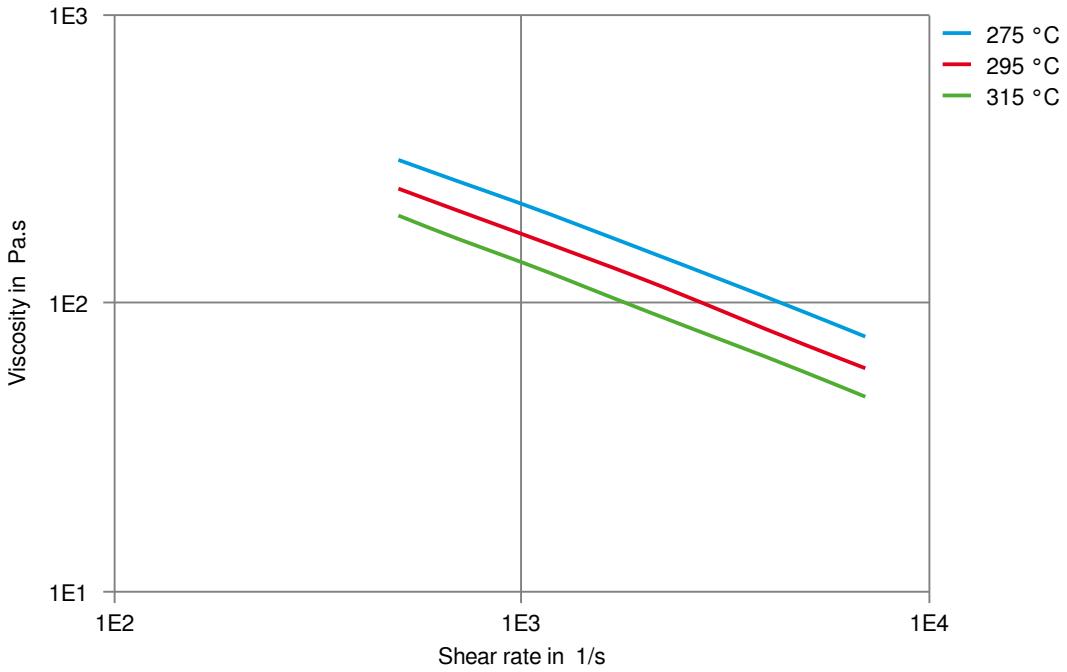
Viscosity-shear rate



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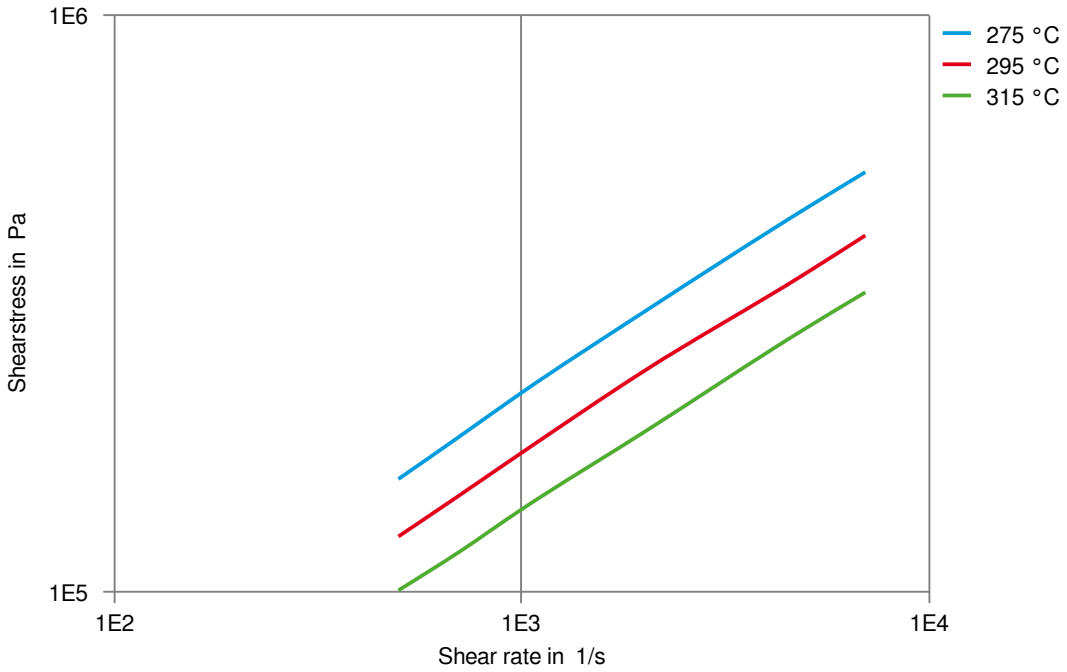
Shearstress-shear rate



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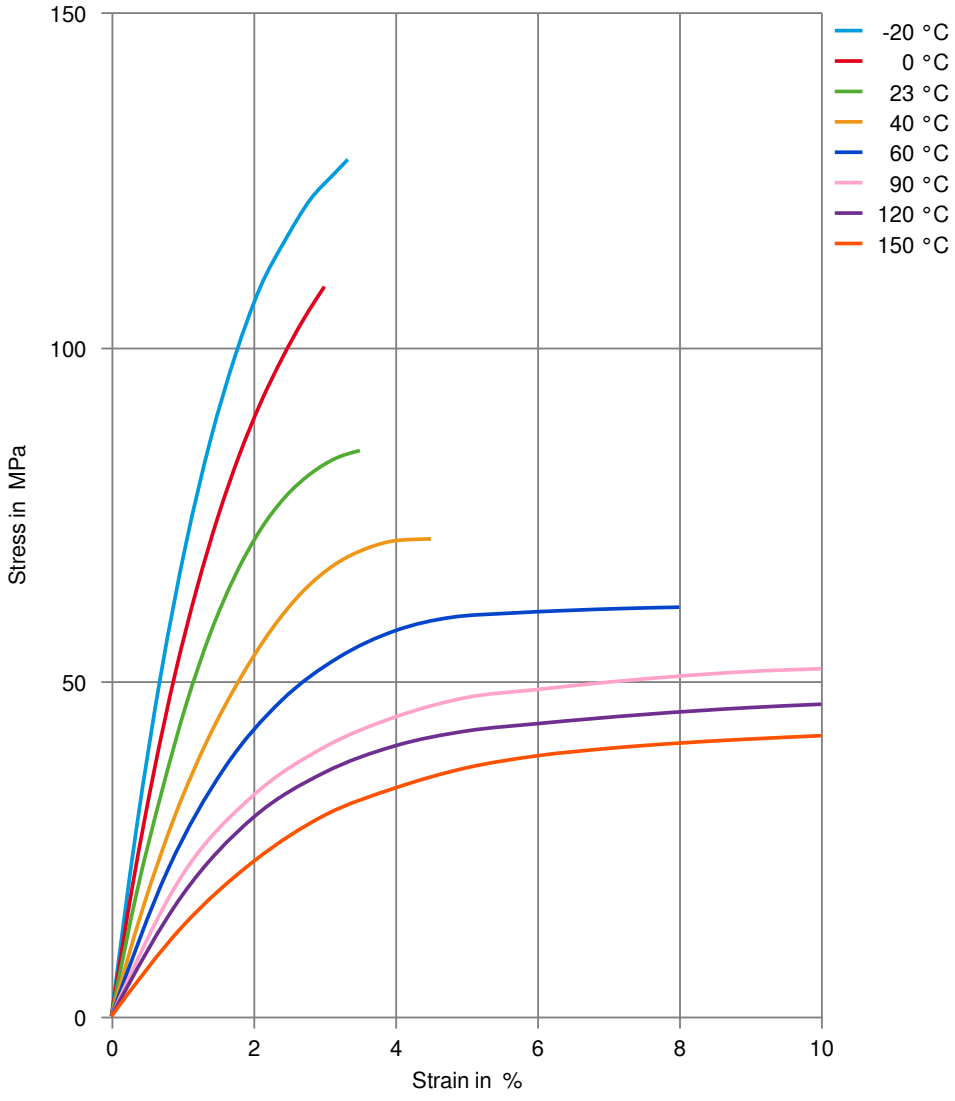
Stress-strain



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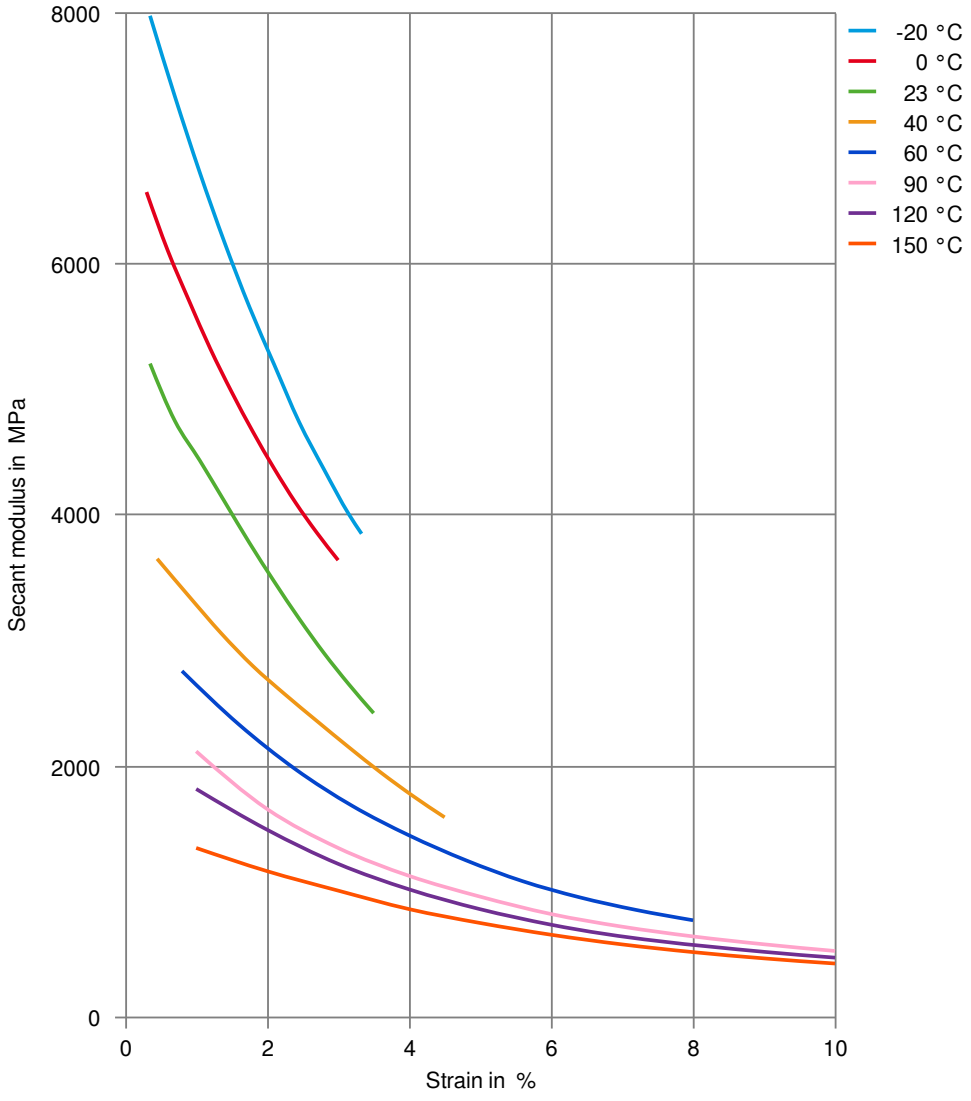
Secant modulus-strain



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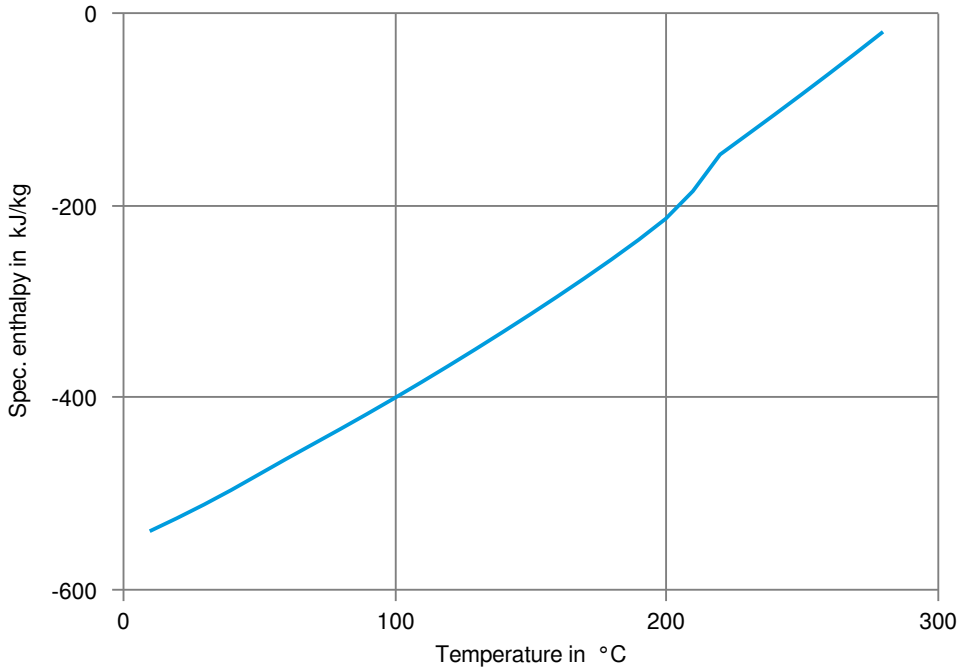
Spec. enthalpy/mass-temp. (DSC)



Revised: 2024-11-20 Source: Celanese Materials Database