



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
Stress at break	79 MPa	ISO 527-1/-2
Strain at break	5 %	ISO 527-1/-2
Flexural Modulus	3550 MPa	ISO 178
Compressive strength	90 MPa	ISO 604
Shear Strength	40 MPa	ASTM D 732
Charpy impact strength, 23°C	55 kJ/m ²	ISO 179/1eU
Charpy impact strength, -30°C	25 kJ/m ²	ISO 179/1eU
Charpy notched impact strength, 23°C	11 kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -30°C	8 kJ/m ²	ISO 179/1eA
Izod notched impact strength, 23°C	13 kJ/m ²	ISO 180/1A
Izod notched impact strength, -30°C	7.7 kJ/m ²	ISO 180/1A
Hardness, Rockwell, M-scale	58 -	ISO 2039-2
Hardness, Rockwell, R-scale	111 -	ISO 2039-2
Poisson's ratio	0.36 -	



Rynite® 415HP NC010

THERMOPLASTIC POLYESTER RESIN

Thermal properties

Melting temperature, 10°C/min	250 °C	ISO 11357-1/-3
Temp. of deflection under load, 1.8 MPa	207 °C	ISO 75-1/-2
Temp. of deflection under load, 0.45 MPa	235 °C	ISO 75-1/-2
Vicat softening temperature, 50°C/h, 50N	205 °C	ISO 306
CLTE, Parallel, -40-23°C	98 E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, parallel	20 E-6/K	ISO 11359-1/-2
CLTE, Parallel, 55-160°C	109 E-6/K	ISO 11359-1/-2
CLTE, Normal, -40-23°C	40 E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, 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
Eff. thermal diffusivity	9.0E-8 m ² /s	
RTI, electrical, 0.75mm	140 °C	UL 746B
RTI, electrical, 1.5mm	140 °C	UL 746B
RTI, electrical, 3mm	140 °C	UL 746B
RTI, impact, 0.75mm	120 °C	UL 746B
RTI, impact, 1.5mm	120 °C	UL 746B
RTI, impact, 3mm	120 °C	UL 746B
RTI, strength, 0.75mm	140 °C	UL 746B
RTI, strength, 1.5mm	140 °C	UL 746B
RTI, strength, 3mm	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, 1mm	700 °C	IEC 60695-2-12
Glow Wire Flammability Index, 1.5mm	700 °C	IEC 60695-2-12
Glow Wire Flammability Index, 2mm	725 °C	IEC 60695-2-12
Glow Wire Flammability Index, 3mm	775 °C	IEC 60695-2-12
Glow Wire Ignition Temperature, 0.75mm	675 °C	IEC 60695-2-13
Glow Wire Ignition Temperature, 1mm	675 °C	IEC 60695-2-13
Glow Wire Ignition Temperature, 1.5mm	675 °C	IEC 60695-2-13
Glow Wire Ignition Temperature, 2mm	700 °C	IEC 60695-2-13
Glow Wire Ignition Temperature, 3mm	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)

Rynite® 415HP NC010

THERMOPLASTIC POLYESTER RESIN

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	2 PLC	UL 746A

Other properties

Humidity absorption, 2mm	0.25 %	Sim. to ISO 62
Water absorption, 2mm	2.5 %	Sim. to ISO 62
Density	1390 kg/m ³	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	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. mould temperature	75 °C
Max. mould 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

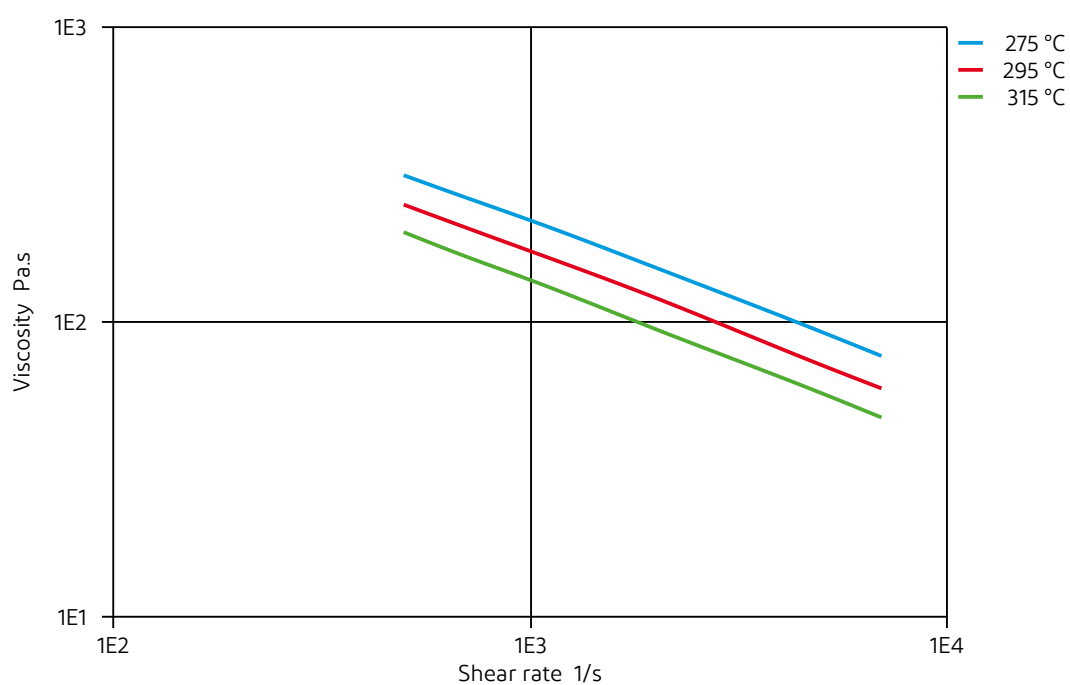
Additives	Release agent
-----------	---------------



Rynite[®] 415HP NC010

THERMOPLASTIC POLYESTER RESIN

Viscosity-shear rate

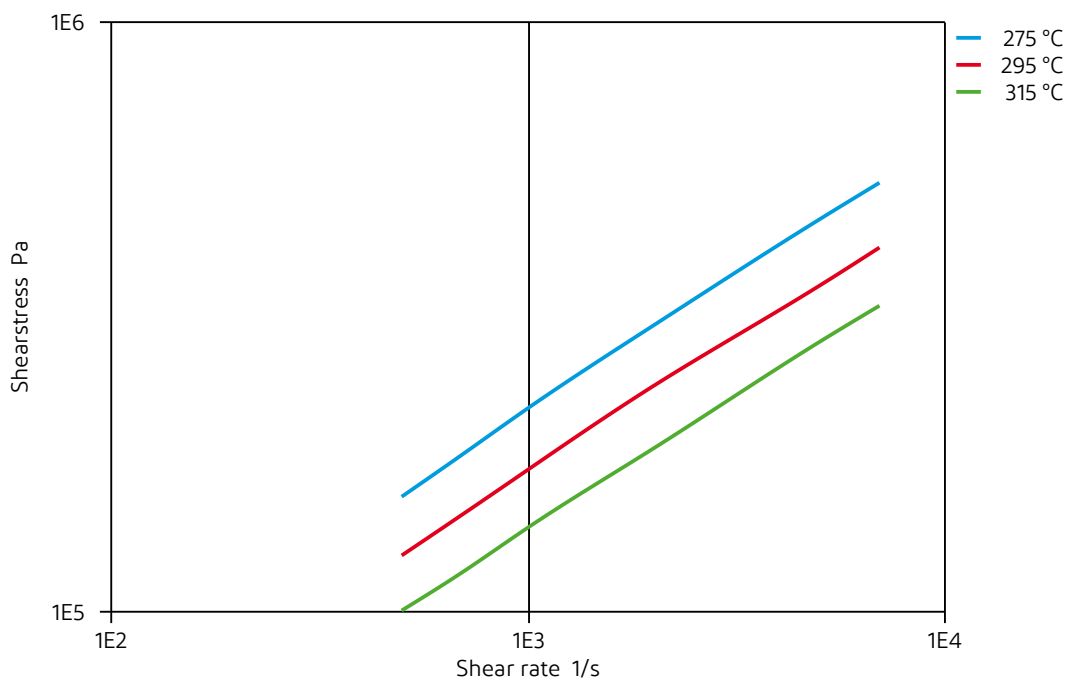




Rynite[®] 415HP NC010

THERMOPLASTIC POLYESTER RESIN

Shearstress-shear rate

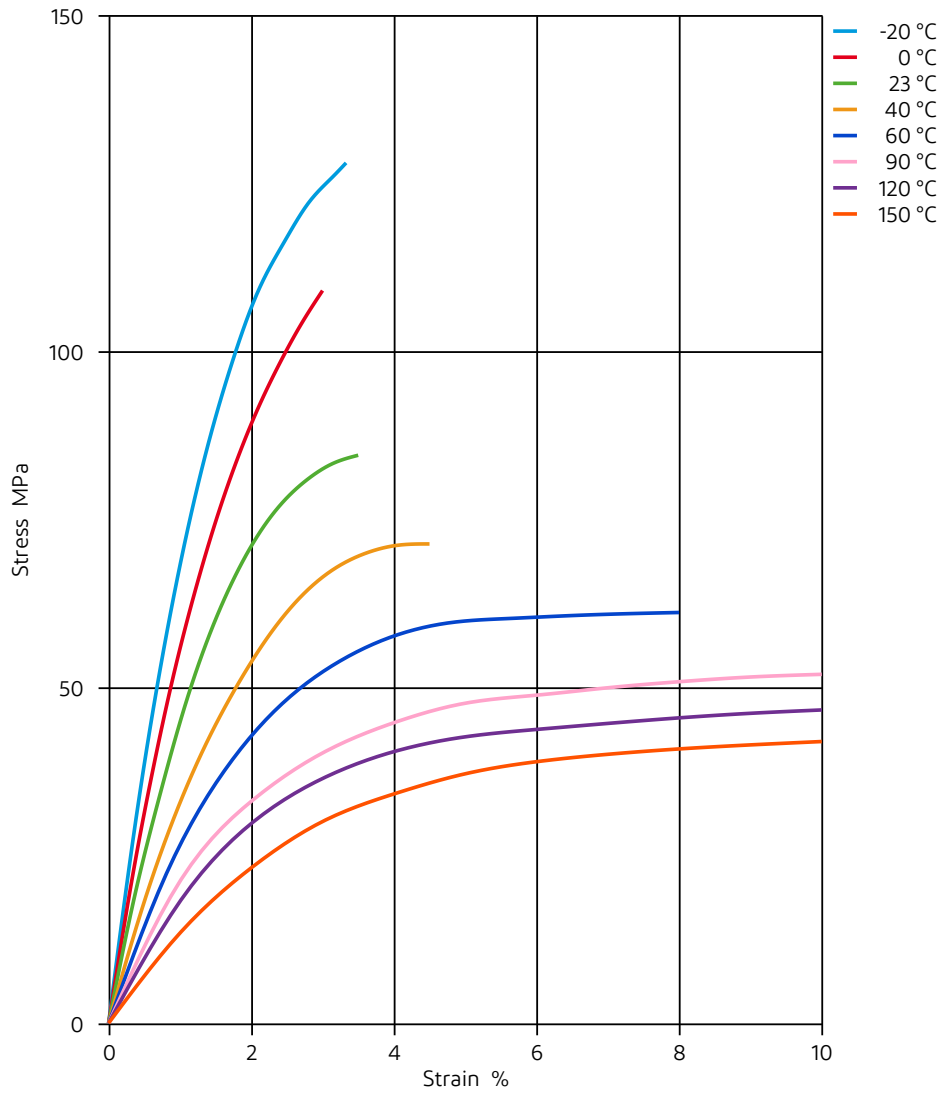




Rynite[®] 415HP NC010

THERMOPLASTIC POLYESTER RESIN

Stress-strain

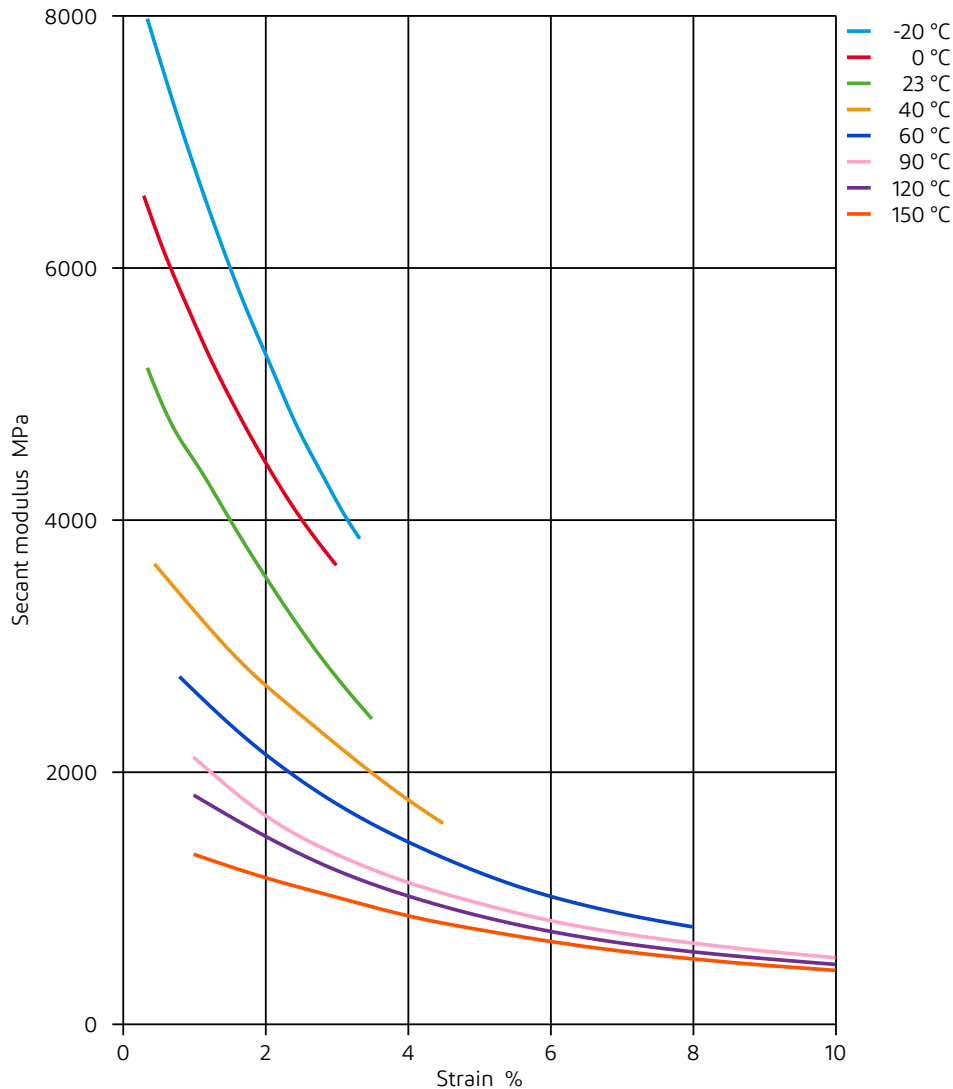




Rynite[®] 415HP NC010

THERMOPLASTIC POLYESTER RESIN

Secant modulus-strain



Revised: 2019-07-26

Page: 7 of 7

dupont.com

The information set forth herein is furnished free of charge, is based on technical data that DuPont believes to be reliable, and represents typical values that fall within the normal range of properties. This information relates only to the specific material designated and may not be valid for such material used in combination with other materials or in other processes. It is intended for use by persons having technical skill, at their own discretion and risk. This information 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 and comply with applicable law. 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 DuPont materials in medical applications involving implantation in the human body or contact with internal body fluids or tissues unless the material has been provided from DuPont under a written contract or other acknowledgement that is consistent with the DuPont policy regarding medical applications and expressly acknowledges the contemplated use. For further information, please contact your DuPont representative.

DuPont's sole warranty is that our products will meet our standard sales specifications in effect at the time of shipment. Your exclusive remedy for breach of such warranty is limited to refund of purchase price or replacement of any product shown to be other than as warranted. TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, DUPONT SPECIFICALLY DISCLAIMS ANY OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, OR NON-INFRINGEMENT. DUPONT DISCLAIMS LIABILITY FOR ANY SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES.

DuPont[™], the DuPont Oval Logo, and all trademarks and service marks denoted with [™], SM or [®] are owned by affiliates of DuPont de Nemours, Inc. unless otherwise noted.

© 2021 DuPont. All rights reserved.