Celanese
The chemistry inside innovation™

Zytel® HTNFR52G30NH NC010

HIGH PERFORMANCE POLYAMIDE RESIN

Zytel® HTN high performance polyamide resins feature high retention of properties upon exposure to elevated temperature, to high moisture, and to harsh chemical environments. Polymer families and grades of Zytel® HTN are tailored to optimise performance as well as processability.

Typical applications with Zytel® HTN include demanding applications in the automotive, electrical and electronics, domestic appliances, and construction industries.

Zytel® HTNFR52G30NH NC010 is a 30% glass reinforced, flame retardant high performance polyamide resin. It is also a PPA resin and it uses a non-halogenated flame retardant.

Product information

Resin Identification	PA6T/66-GF30FR(40)	ISO 1043
Part Marking Code	>PA6T/66-GF30FR(40)<	ISO 11469
Part Marking Code	>PPA-GF30FR<	SAE J1344
ISO designation	ISO 16396-PA6T/66,GF30 FR(40),M1F1GNR,S10-100	

Rheological properties

	dry/cond.		
Moulding shrinkage, parallel	0.3 / -	%	ISO 294-4, 2577
Moulding shrinkage, normal	1.1 / -	%	ISO 294-4, 2577

Typical mechanical properties

	dry/cond.		
Tensile modulus	10500 / 10500	MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	150 / 130	MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	2.2 / 2	%	ISO 527-1/-2
Flexural modulus	9000 / 10000	MPa	ISO 178
Flexural strength	230 / 200	MPa	ISO 178
Charpy impact strength, 23°C	45 / 40	kJ/m²	ISO 179/1eU
Charpy impact strength, -30°C	40 / 35	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23°C	8 / 7	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -30°C	7 / 7	kJ/m²	ISO 179/1eA
Poisson's ratio	0.34 / 0.34		

Thermal properties

	dry/cond.		
Melting temperature, 10°C/min	310 / *	°C	ISO 11357-1/-3
Melting temperature, first heat	310 / *	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	90 / 45	°C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	283 / *	°C	ISO 75-1/-2
Ball pressure test	290 / -	°C	IEC 60695-10-2
Coeff. of linear therm. expansion, parallel, -40-23°C	20 / *	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	20 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, -40-23°C	60 / *	E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	60 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, 55-160°C	100 / *	E-6/K	ISO 11359-1/-2
RTI, electrical, 0.4mm	140	°C	UL 746B
RTI, electrical, 0.75mm	140	°C	UL 746B

Celanese
The chemistry inside innovation™

Zytel® HTNFR52G30NH NC010

HIGH PERFORMANCE POLYAMIDE RESIN

RTI, electrical, 1.5mm	140	°C	UL 746B
RTI, electrical, 3.0mm	140	°C	UL 746B
RTI, impact, 0.75mm	115	°C	UL 746B
RTI, impact, 1.5mm	115	°C	UL 746B
RTI, impact, 3.0mm	120	°C	UL 746B
RTI, strength, 0.75mm	125	°C	UL 746B
RTI, strength, 1.5mm	125 / *	°C	UL 746B
RTI, strength, 3.0mm	130	°C	UL 746B

Flammability

	dry/cond.		
Burning Behav. at 1.5mm nom. thickn.	V-0 / *	class	IEC 60695-11-10
Thickness tested	1.5 / *	mm	IEC 60695-11-10
UL recognition	yes / *		UL 94
Burning Behav. at thickness h	V-0 / *	class	IEC 60695-11-10
Thickness tested	0.4 / *	mm	IEC 60695-11-10
UL recognition	yes / *		UL 94
Oxygen index	37 / *	%	ISO 4589-1/-2
Glow Wire Flammability Index, 0.75mm	960 / -	°C	IEC 60695-2-12
Glow Wire Flammability Index, 3.0mm	960 / -	°C	IEC 60695-2-12
Glow Wire Ignition Temperature, 0.75mm	725 / -	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 0.4mm	700 / -	°C	IEC 60695-2-12
Glow Wire Ignition Temperature, 3.0mm	800 / -	°C	IEC 60695-2-13
FMVSS Class	DNI		ISO 3795 (FMVSS 302)

Electrical properties

	dry/cond.		
Relative permittivity, 100Hz	4.1 / -		IEC 62631-2-1
Relative permittivity, 1MHz	3.9 / -		IEC 62631-2-1
Dissipation factor, 100Hz	65 / -	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	120 / -	E-4	IEC 62631-2-1
Volume resistivity	>1E13 / 5E11	Ohm.m	IEC 62631-3-1
Surface resistivity	* / >1E15	Ohm	IEC 62631-3-2
Electric strength	39 / -	kV/mm	IEC 60243-1
Comparative tracking index	600 / -		IEC 60112
Electric Strength, Short Time, 2mm	26 / -	kV/mm	IEC 60243-1
Dielectric Constant, 1 GHz	3.7 / -		ASTM D 2520 B
Dielectric Constant, 23°C, 10 GHz	3.8 / -		ASTM D 2520 B / IPC-TM-650
Dissipation Factor, 1 GHz	110 / -	E-4	ASTM D 2520 B
Dissipation Factor, 23°C, 10 GHz	100 / -	E-4	ASTM D 2520 B / IPC-TM-650

Physical/Other properties

	dry/cond.		
Humidity absorption, 2mm	1.6 / *	%	Sim. to ISO 62
Water absorption, 2mm	3.9 / *	%	Sim. to ISO 62
Density	1440 / -	kg/m³	ISO 1183

Celanese
The chemistry inside innovation™

Zytel® HTNFR52G30NH NC010

HIGH PERFORMANCE POLYAMIDE RESIN

VDA Properties

Odour	3.5	class	VDA 270

Injection

Drying Recommended	yes	
Drying Temperature	100	°C
Drying Time, Dehumidified Dryer	6 - 8	h
Processing Moisture Content	≤0.1	%
Melt Temperature Optimum	325	°C
Min. melt temperature	320	°C
Max. melt temperature	330	°C
Mold Temperature Optimum	100	°C
Min. mould temperature	90	°C
Max. mould temperature	130	°C
Ejection temperature	259	°C

Characteristics

Processing	Injection Moulding
Delivery form	Pellets
Additives	Release agent, Flame retardant, Non-halogenated/Red phosphorous free flame retardant
Special characteristics	Flame retardant, Lead-free soldering resistant

Additional information

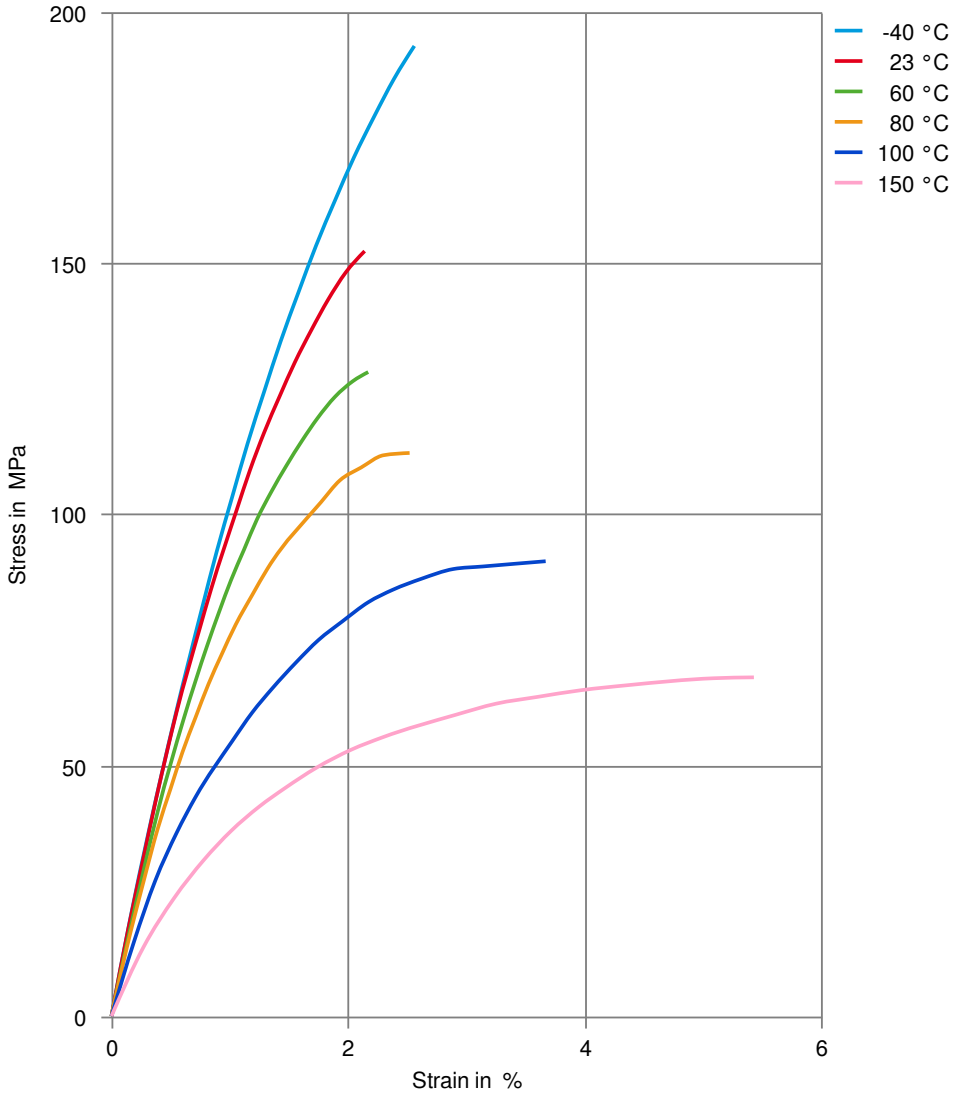
Injection molding	For molding machine components, use corrosion resistant and wear resistant steel. For details please contact our representative. Limit the residence time of the resin in the machine. Use proper protective equipment and adequate ventilation.

Celanese
The chemistry inside innovation™

Zytel® HTNFR52G30NH NC010

HIGH PERFORMANCE POLYAMIDE RESIN

Stress-strain (dry)

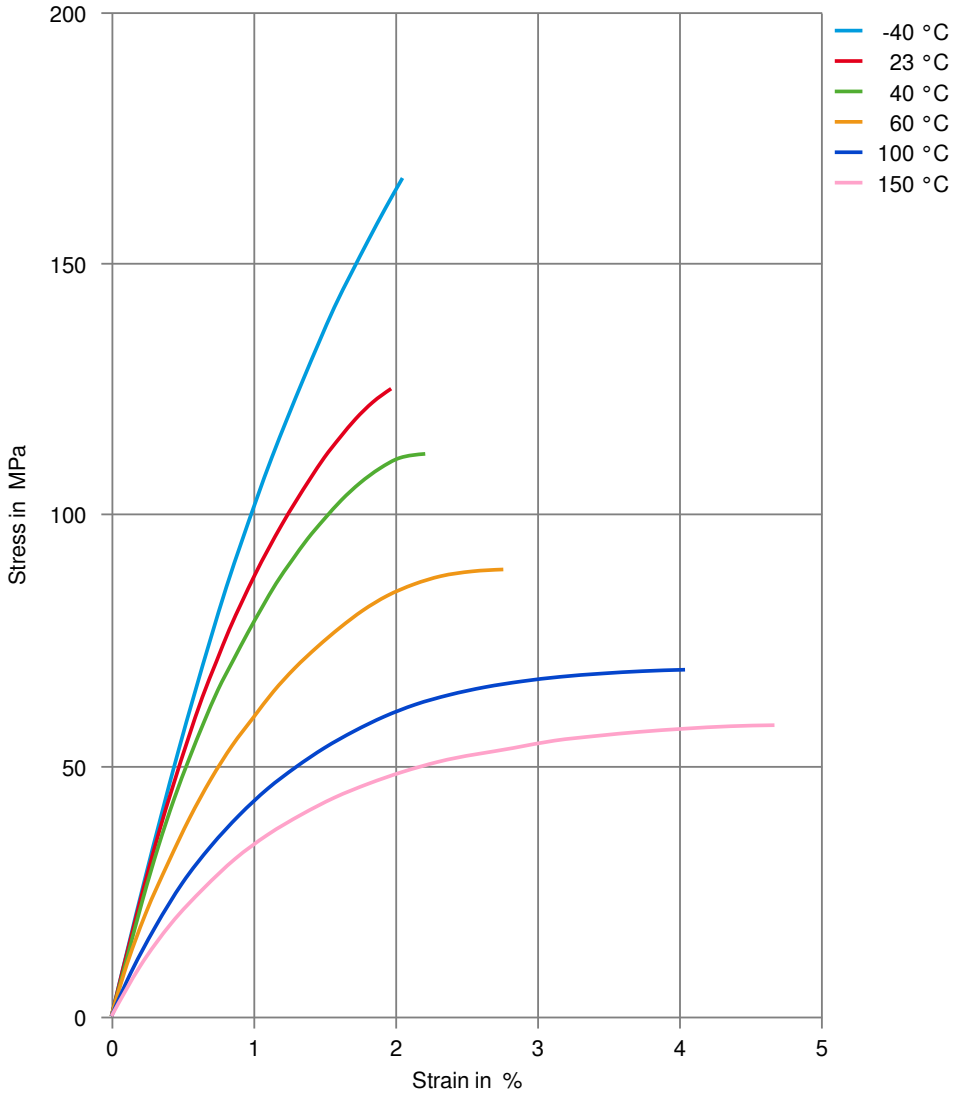


Celanese
The chemistry inside innovation™

Zytel® HTNFR52G30NH NC010

HIGH PERFORMANCE POLYAMIDE RESIN

Stress-strain (cond.)

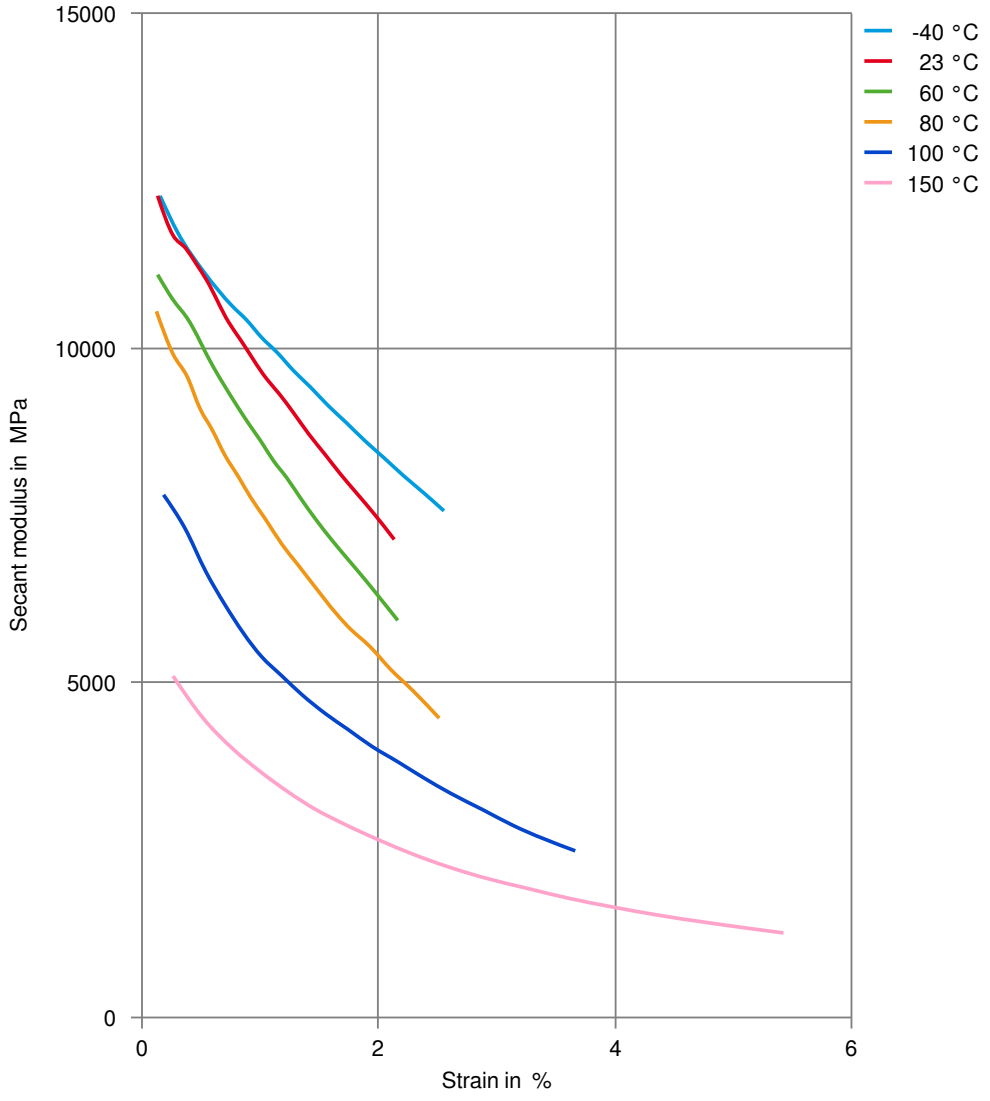


Celanese
The chemistry inside innovation™

Zytel® HTNFR52G30NH NC010

HIGH PERFORMANCE POLYAMIDE RESIN

Secant modulus-strain (dry)

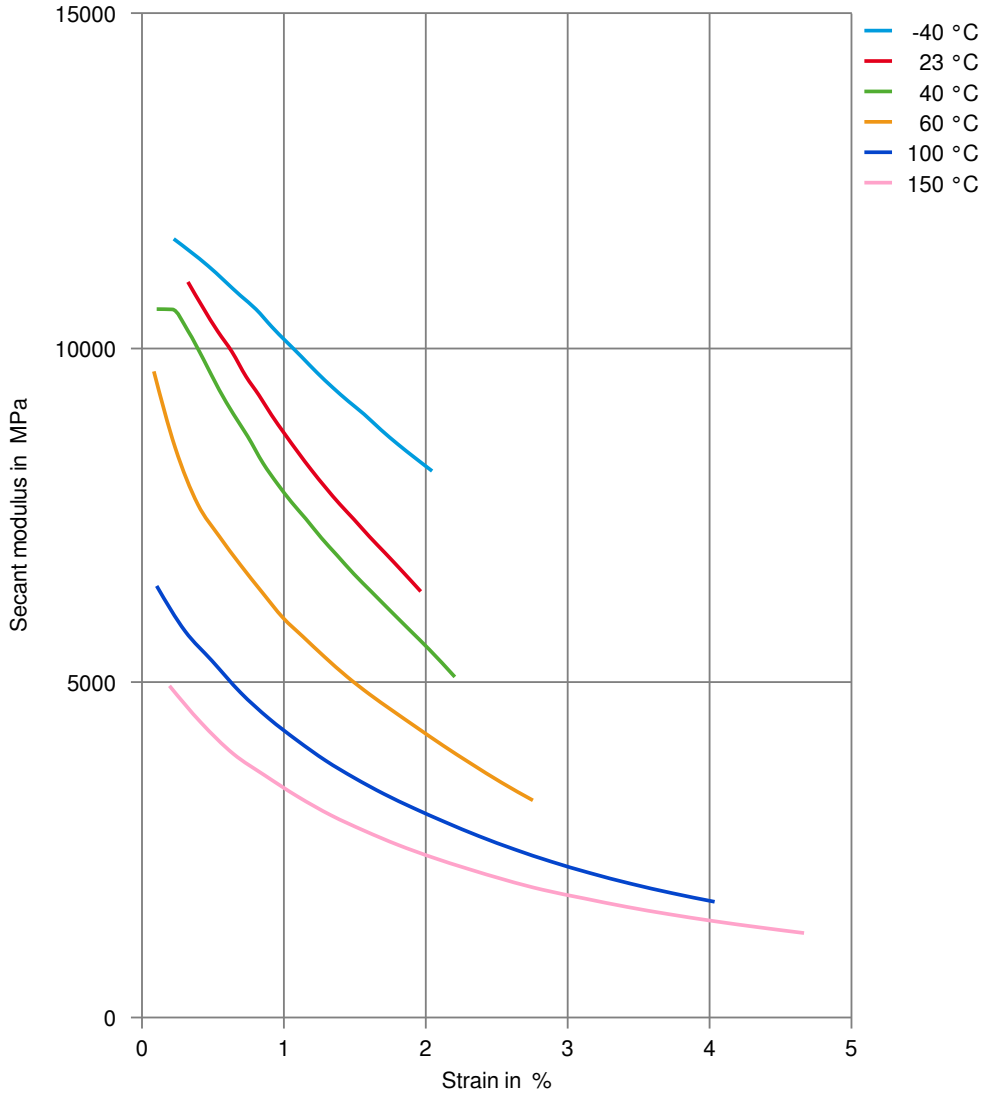


Celanese
The chemistry inside innovation™

Zytel® HTNFR52G30NH NC010

HIGH PERFORMANCE POLYAMIDE RESIN

Secant modulus-strain (cond.)

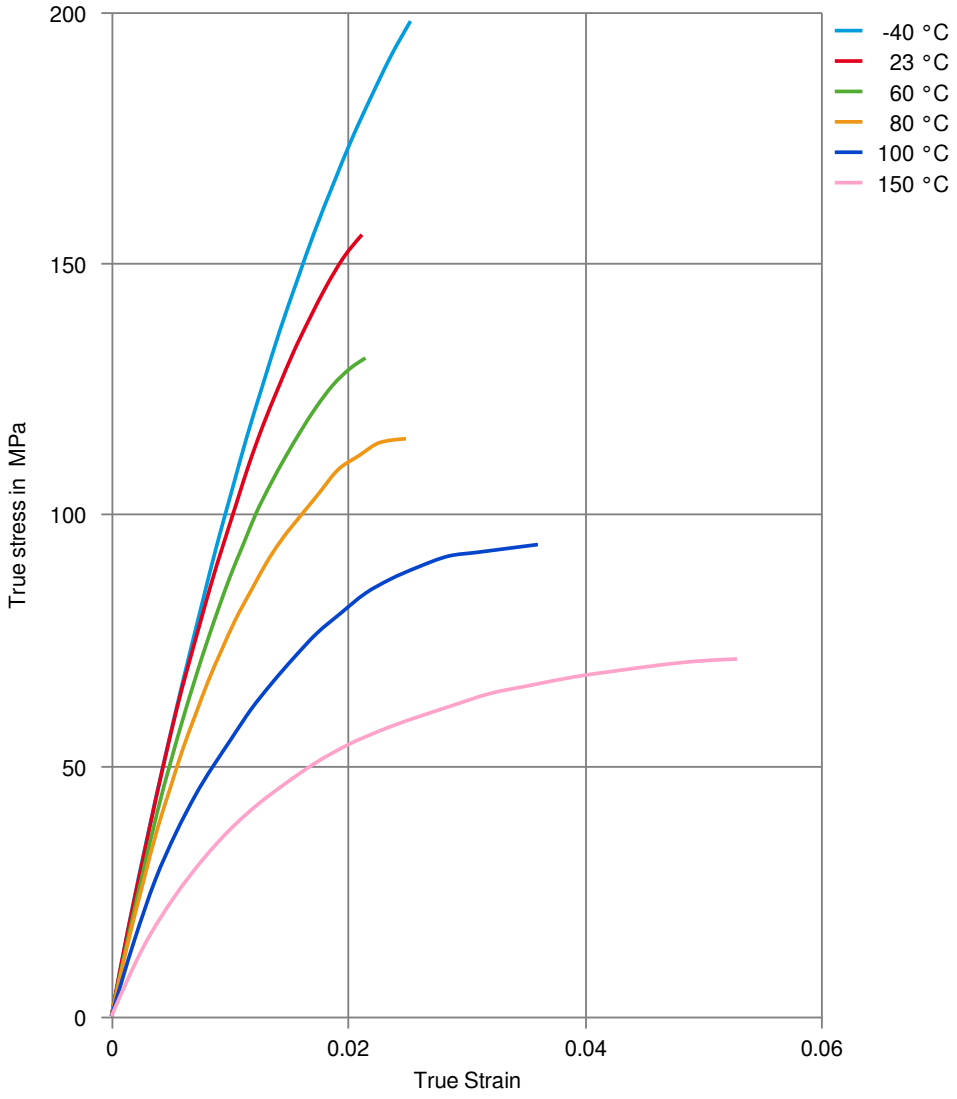


Celanese
The chemistry inside innovation™

Zytel® HTNFR52G30NH NC010

HIGH PERFORMANCE POLYAMIDE RESIN

True stress-strain (dry)



Celanese
The chemistry inside innovation™

Zytel® HTNFR52G30NH NC010

HIGH PERFORMANCE POLYAMIDE RESIN

True stress-strain (cond.)