

Ultramid® Advanced N3U41G6

PPA-GF30 FR(40)

BASF

Polyphthalamide, light colorable, with a high melting point, halogen-free flame-retardant, very low water absorption, good mechanical and dielectrical properties at elevated temperatures as well as excellent chemical resistance, soldering bath resistant. Colors available (e.g. Orange RAL 2003).

Markets & applications

Automotive: Automotive electrics & electronics (E&E), sensors, fuel cell, e-mobility

E&E: Connectors, SMT (surface mount technology) applications, energy distribution

Consumer goods: Home appliances, consumer electronics, cell phone parts

Rheological properties	dry / cond	Unit	Test Standard
ISO Data			
Melt volume-flow rate, MVR	30 / *	cm³/10min	ISO 1133
Temperature	325 / *	°C	-
Load	5 / *	kg	-
Molding shrinkage, parallel	0.3 / *	%	ISO 294-4, 2577
Molding shrinkage, normal	1.0 / *	%	ISO 294-4, 2577

Mechanical Properties	dry / cond	Unit	Test Standard
ISO Data			
Tensile Modulus	10500 / 10500	MPa	ISO 527
Stress at Break	140 / 130	MPa	ISO 527
Strain at Break	2.2 / 2.2	%	ISO 527
Impact Strength (Charpy), +23°C	60 / 50	kJ/m²	ISO 179/1eU
Impact Strength (Charpy), -30°C	60 / -	kJ/m²	ISO 179/1eU
Notched Impact Strength (Charpy), +23°C	6.5 / 6.5	kJ/m²	ISO 179/1eA

Thermal Properties	dry / cond	Unit	Test Standard
ISO Data			
Melting Temperature (10°C/min)	300 / *	°C	ISO 11357-1/-3
Temp. of deflection under load (1.80 MPa)	265 / *	°C	ISO 75-1/-2
Coeff. of Linear Therm. Expansion, parallel	19 / *	E-6/K	ISO 11359-1/-2
Coeff. of Linear Therm. Expansion, normal	53 / *	E-6/K	ISO 11359-1/-2
Burning Behav. at 1.5 mm Nom. Thickn.	V-0 / *	class	UL 94
Thickness tested	1.6 / *	mm	-
UL recognition	yes / *	-	-
Burning Behav. at thickness h	V-0 / *	class	UL 94
Thickness tested	0.2 / *	mm	-
UL recognition	yes / *	-	-
Burning Behav. 5V at Thickness h	5VA / *	class	IEC 60695-11-20
Thickness tested	1.6 / *	mm	-
Yellow Card available	yes / *	-	-
Oxygen index	38 / *	%	ISO 4589-1/-2

Electrical Properties	dry / cond	Unit	Test Standard
ISO Data			
Relative permittivity, 1MHz	4.1 / 3.5	-	IEC 62631-2-1
Dissipation Factor, 1MHz	110 / 160	E-4	IEC 62631-2-1
Volume Resistivity	1E13 / 1E13	Ohm*m	IEC 62631-3-1
Surface Resistivity	* / 1E15	Ohm	IEC 62631-3-2
Electric Strength	45 / 44	kV/mm	IEC 60243-1
Comparative tracking index	- / 600	-	IEC 60112

Other Properties	dry / cond	Unit	Test Standard
ISO Data			
Water Absorption	2.1 / *	%	Sim. to ISO 62
Humidity absorption	0.85 / *	%	Sim. to ISO 62
Density	1440 / -	kg/m³	ISO 1183

Material Specific Properties	dry / cond	Unit	Test Standard
ISO Data			
Viscosity number	100 / *	cm³/g	ISO 307, 1157, 1628

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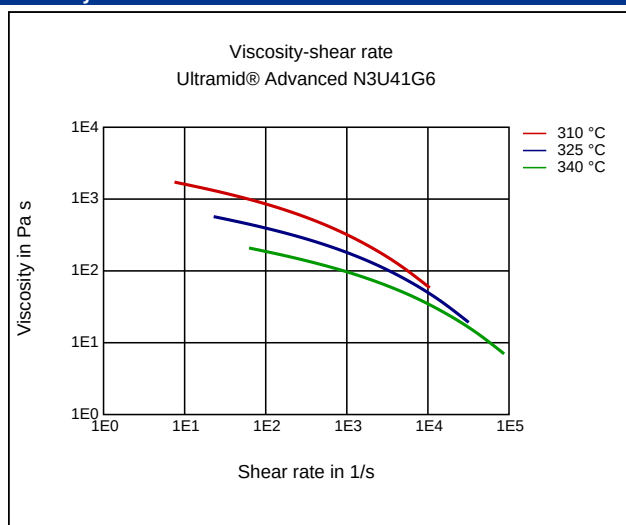
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Test specimen production	Value	Unit	Test Standard
ISO Data			
Injection Molding, melt temperature	330	°C	ISO 294
Injection Molding, mold temperature	140	°C	ISO 294

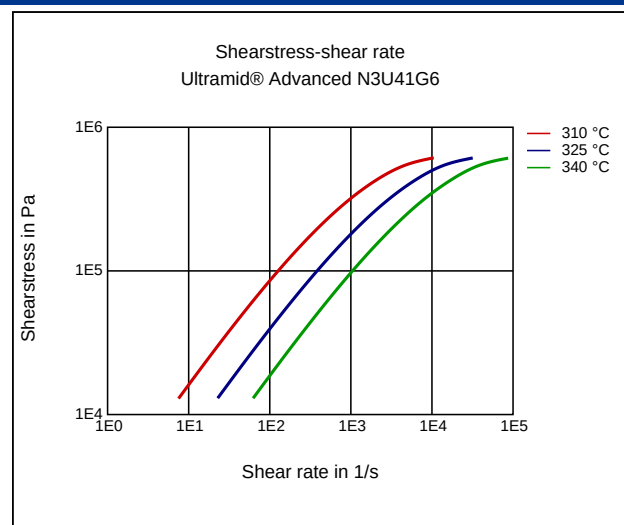
Processing Recommendation Injection Molding	Value	Unit	Test Standard
Pre-drying - Temperature	120	°C	-
Pre-drying - Time	8	h	-
Processing humidity	≤0.05	%	-
Melt temperature	310 - 340	°C	-
Mold temperature	100 - 160	°C	-

Diagrams

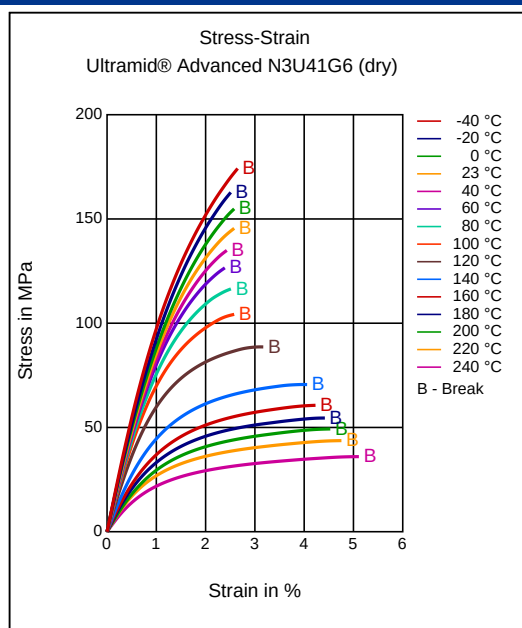
Viscosity-shear rate



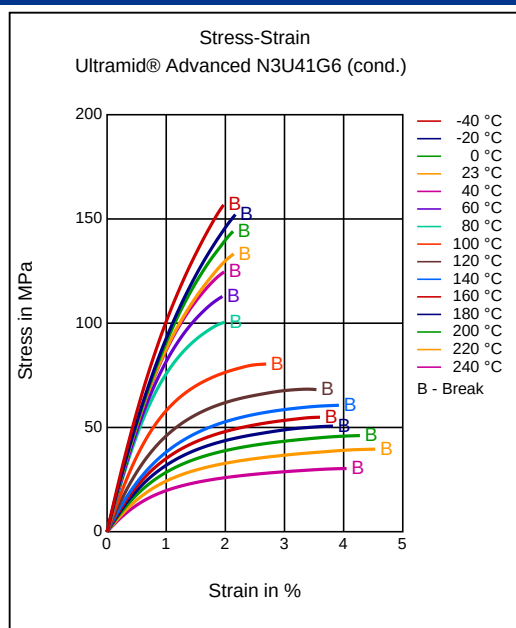
Shearstress-shear rate



Stress-strain



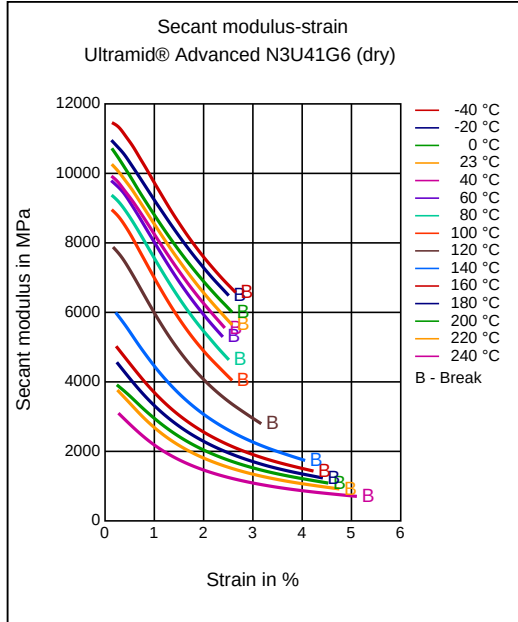
Stress-strain



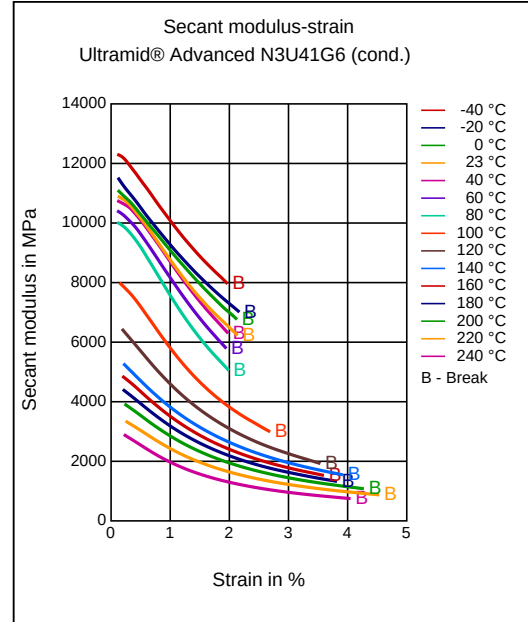
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PPA-GF30 FR(40)

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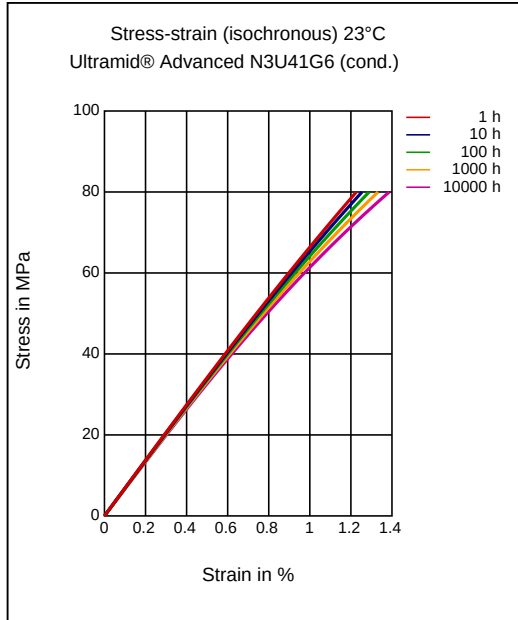
Secant modulus-strain



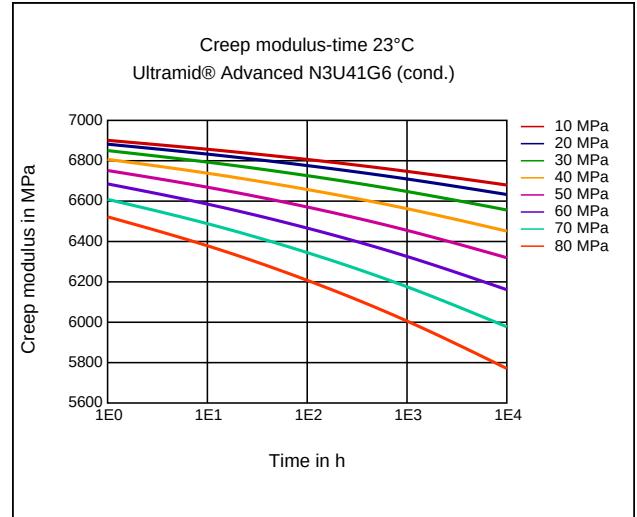
Secant modulus-strain



Stress-strain (isochronous) 23 °C



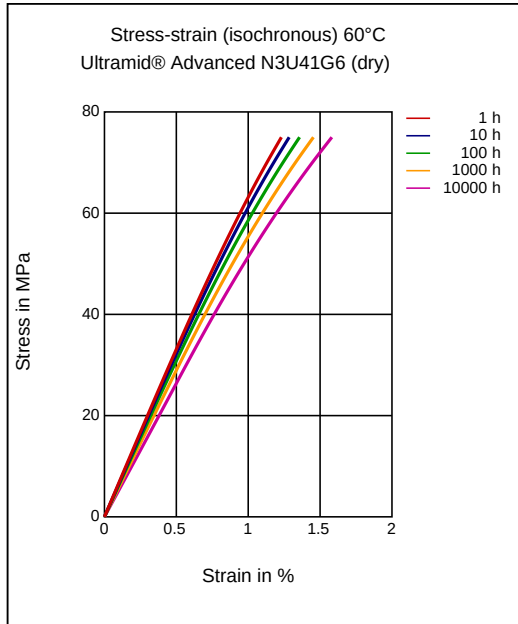
Creep modulus-time 23 °C



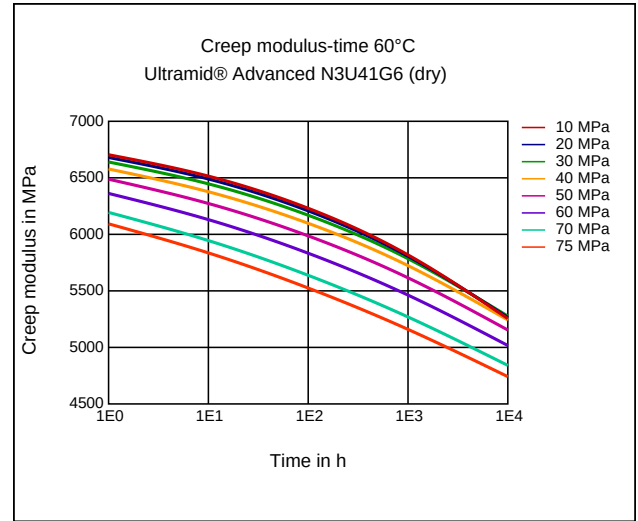
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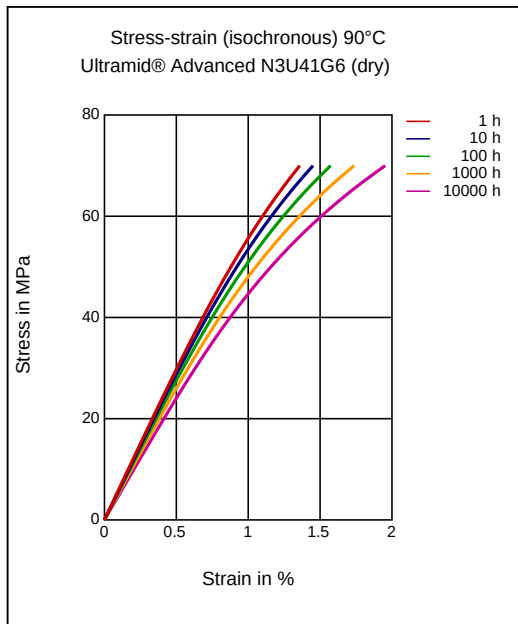
Stress-strain (isochronous) 60 °C



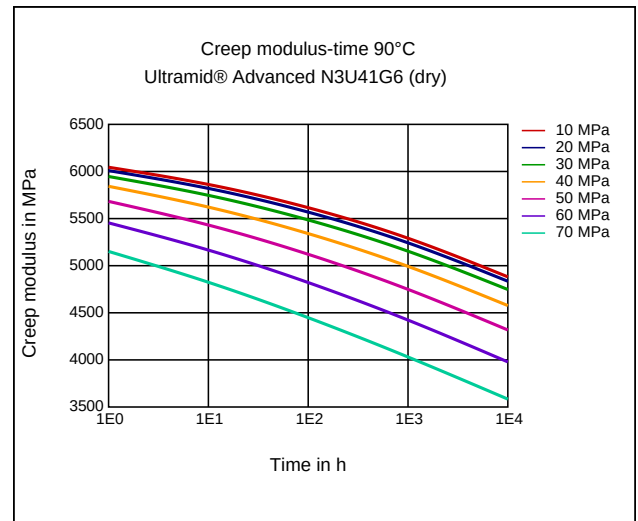
Creep modulus-time 60 °C



Stress-strain (isochronous) 90 °C



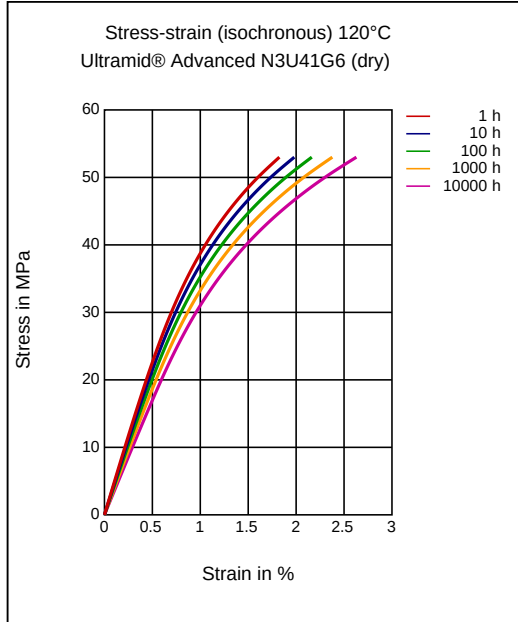
Creep modulus-time 90 °C



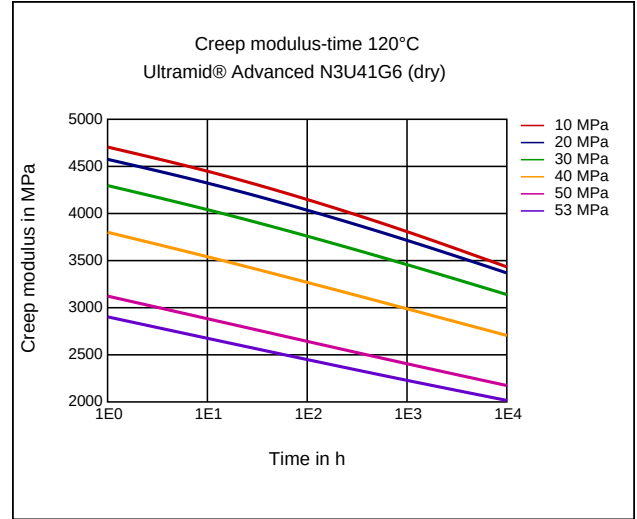
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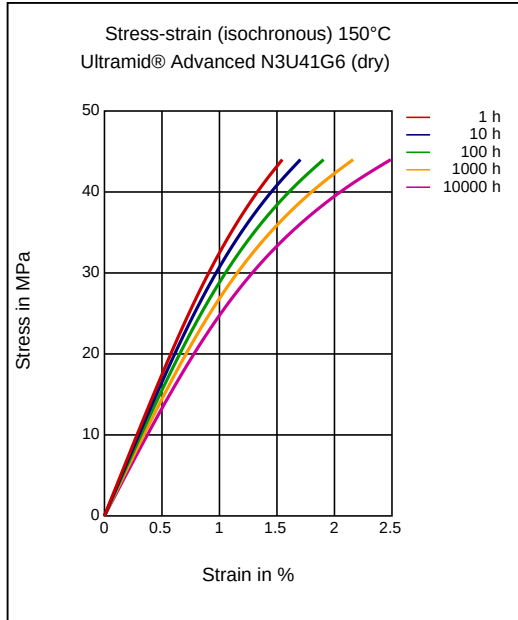
Stress-strain (isochronous) 120°C



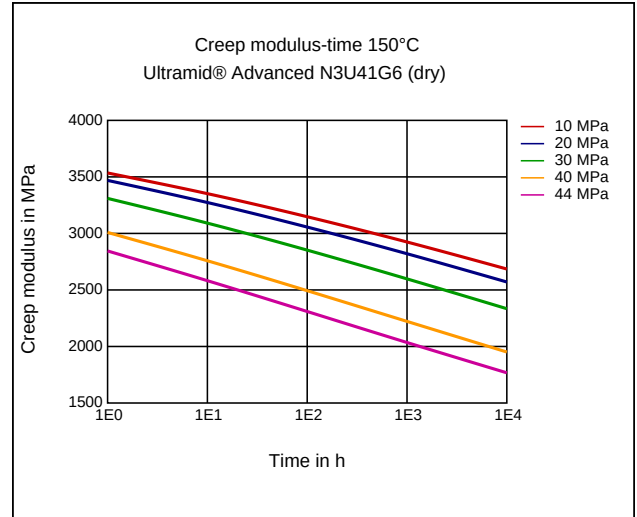
Creep modulus-time 120°C



Stress-strain (isochronous) 150°C



Creep modulus-time 150°C

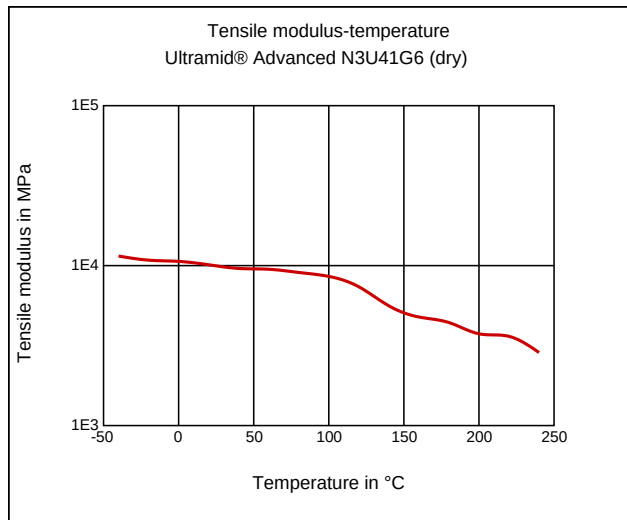


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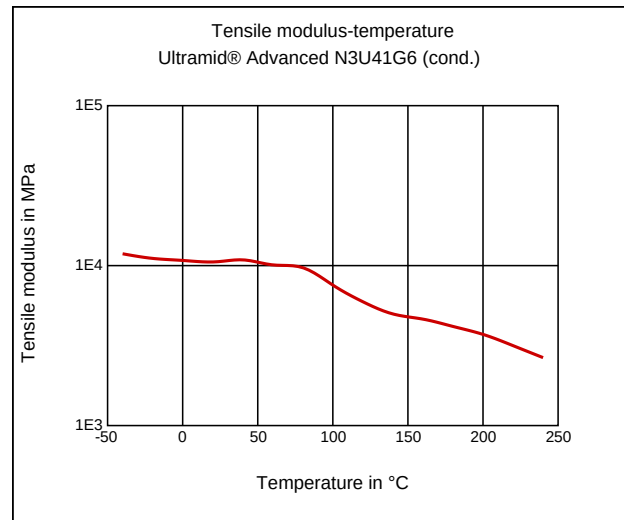
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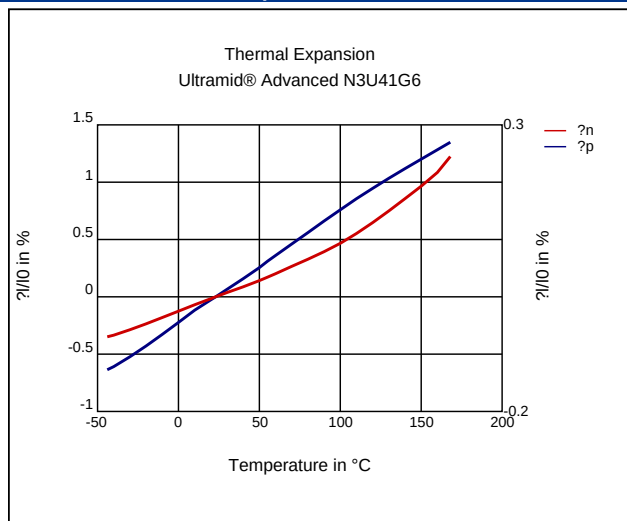
Tensile Modulus-Temperature



Tensile Modulus-Temperature



Coeff. of linear thermal expansion, normal



Characteristics

Processing

Injection Molding

Special Characteristics

Flame retardant, Halogen-free

Features

Melt Strength, Thermal Stability

Chemical Resistance

General Chemical Resistance

Applications

Automotive, Electrical and Electronical

Injection Molding

PREPROCESSING

Pre/Post-processing, max. allowed water content: .05 %

Pre/Post-processing, Pre-drying, Temperature: 120 °C

Pre/Post-processing, Pre-drying, Time: 8 h

PROCESSING

injection molding, Melt temperature, range: 310 - 340 °C

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injection molding, Melt temperature, recommended: 330 °C
injection molding, Mold temperature, range: 100 - 160 °C
injection molding, Mold temperature, recommended: 140 °C
injection molding, Dwell time, thermoplastics: 5 min