

Ultramid® A3WG5

PA66-GF25

BASF

Glass fibre reinforced and heat aging resistance injection moulding grade for machinery components and housings of high stiffness and dimensional stability such as coil formers and bearing cages. A3EG5 and A3HG5 are the preferred grades for producing electrically insulating parts.

Rheological properties	dry / cond	Unit	Test Standard
ISO Data			
Melt volume-flow rate, MVR	40 / *	cm ³ /10min	ISO 1133
Temperature	275 / *	°C	-
Load	5 / *	kg	-
Molding shrinkage, parallel	0.4 / *	%	ISO 294-4, 2577
Molding shrinkage, normal	1.0 / *	%	ISO 294-4, 2577

Mechanical Properties	dry / cond	Unit	Test Standard
ISO Data			
Tensile Modulus	8600 / 6500	MPa	ISO 527
Stress at Break	180 / 120	MPa	ISO 527
Strain at Break	3 / 6	%	ISO 527
Tensile Creep Modulus, 1h	* / 5000	MPa	ISO 899-1
Tensile Creep Modulus, 1000h	* / 4400	MPa	ISO 899-1
Impact Strength (Charpy), +23°C	60 / 90	kJ/m ²	ISO 179/1eU
Impact Strength (Charpy), -30°C	53 / -	kJ/m ²	ISO 179/1eU
Notched Impact Strength (Charpy), +23°C	8 / 17	kJ/m ²	ISO 179/1eA
Notched Impact Strength (Charpy), -30°C	7.5 / -	kJ/m ²	ISO 179/1eA

Thermal Properties	dry / cond	Unit	Test Standard
ISO Data			
Melting Temperature (10°C/min)	260 / *	°C	ISO 11357-1/-3
Temp. of deflection under load (1.80 MPa)	245 / *	°C	ISO 75-1/-2
Temp. of deflection under load (0.45 MPa)	250 / *	°C	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	250 / *	°C	ISO 306
Coeff. of Linear Therm. Expansion, parallel	28 / *	E-6/K	ISO 11359-1/-2
Coeff. of Linear Therm. Expansion, normal	97 / *	E-6/K	ISO 11359-1/-2
Burning Behav. at 1.5 mm Nom. Thickn.	HB / *	class	UL 94
Thickness tested	1.5 / *	mm	-
UL recognition	yes / *	-	-
Burning Behav. at thickness h	HB / *	class	UL 94
Thickness tested	0.7 / *	mm	-
UL recognition	yes / *	-	-
Oxygen index	24 / *	%	ISO 4589-1/-2

Electrical Properties	dry / cond	Unit	Test Standard
ISO Data			
Relative permittivity, 1MHz	3.5 / 5.5	-	IEC 62631-2-1
Dissipation Factor, 100Hz	140 / 3000	E-4	IEC 62631-2-1
Dissipation Factor, 1MHz	140 / 3000	E-4	IEC 62631-2-1
Volume Resistivity	1E13 / 1E10	Ohm*m	IEC 62631-3-1
Surface Resistivity	* / 1E10	Ohm	IEC 62631-3-2
Electric Strength	40 / 34	kV/mm	IEC 60243-1
Comparative tracking index	- / 450	-	IEC 60112

Other Properties	dry / cond	Unit	Test Standard
ISO Data			
Water Absorption	6 / *	%	Sim. to ISO 62
Humidity absorption	1.9 / *	%	Sim. to ISO 62
Density	1320 / -	kg/m ³	ISO 1183

Material Specific Properties	dry / cond	Unit	Test Standard
ISO Data			
Viscosity number	145 / *	cm ³ /g	ISO 307, 1157, 1628

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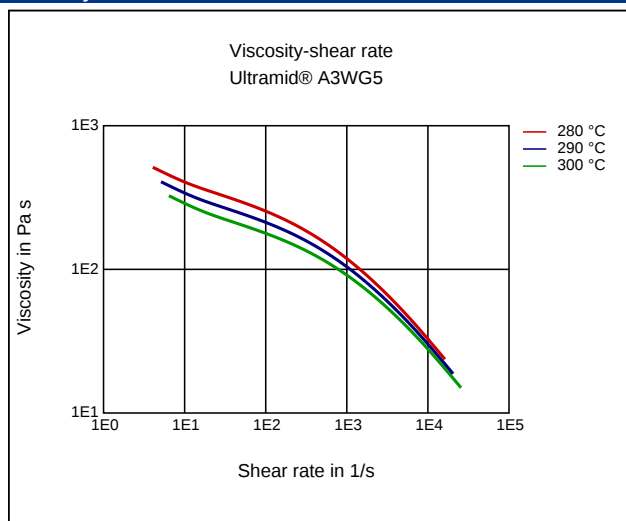
Rheological calculation properties	Value	Unit	Test Standard
ISO Data			
Ejection temperature	195	°C	-

Test specimen production	Value	Unit	Test Standard
ISO Data			
Injection Molding, melt temperature	290	°C	ISO 294
Injection Molding, mold temperature	80	°C	ISO 294
Injection Molding, injection velocity	200	mm/s	ISO 294

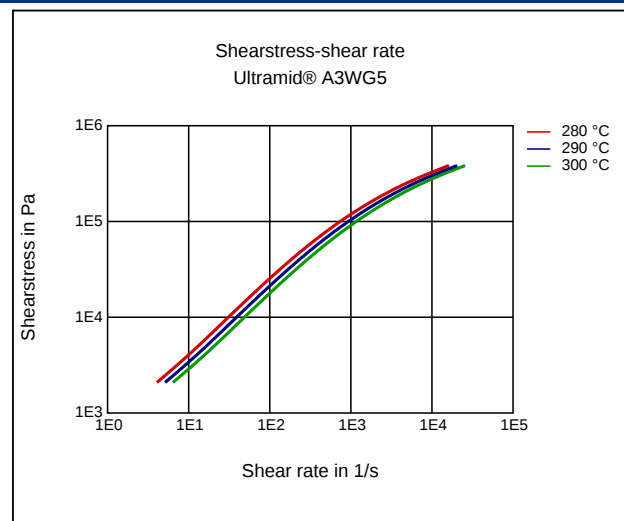
Processing Recommendation Injection Molding	Value	Unit	Test Standard
Pre-drying - Temperature	80	°C	-
Pre-drying - Time	4	h	-
Processing humidity	≤0.15	%	-
Melt temperature	280 - 300	°C	-
Mold temperature	80 - 90	°C	-

Diagrams

Viscosity-shear rate



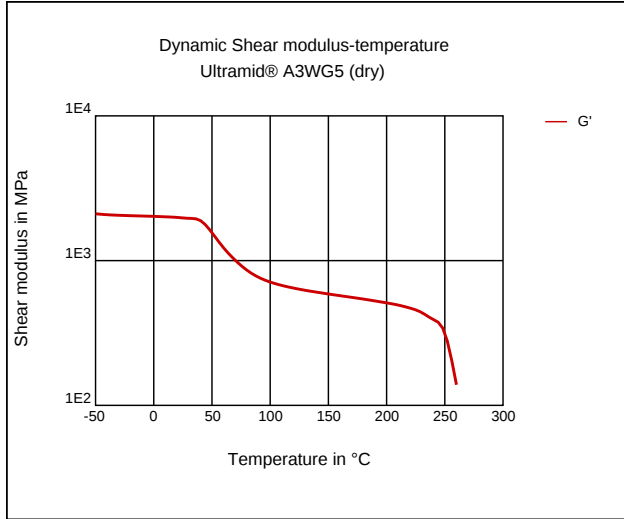
Shearstress-shear rate



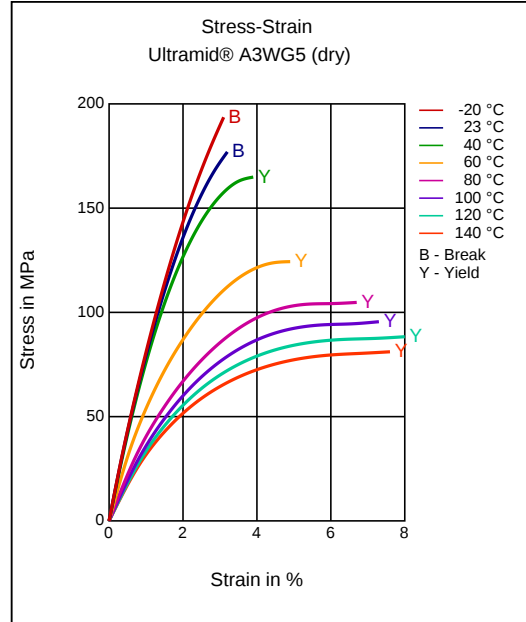
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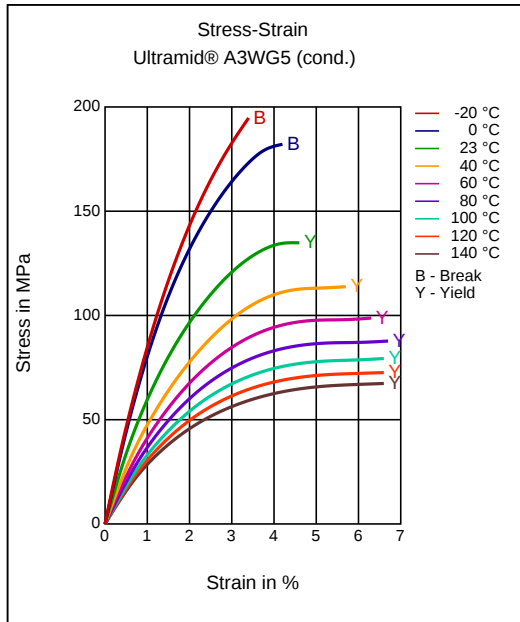
Dynamic Shear modulus-temperature



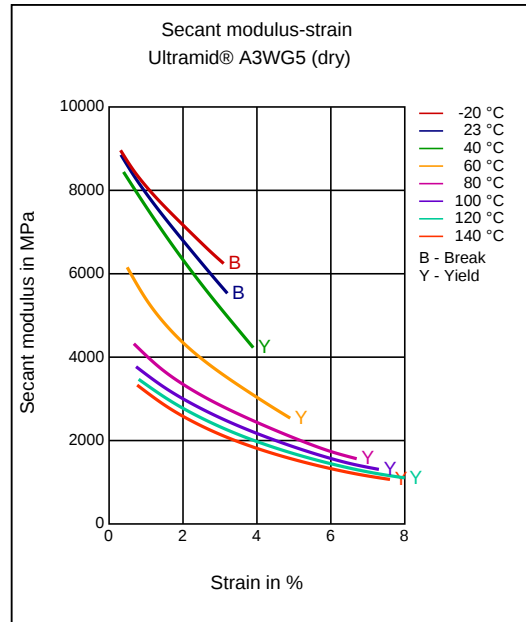
Stress-strain



Stress-strain



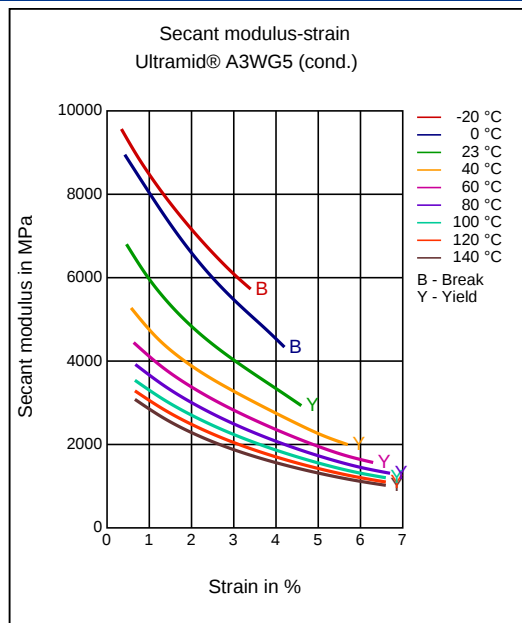
Secant modulus-strain



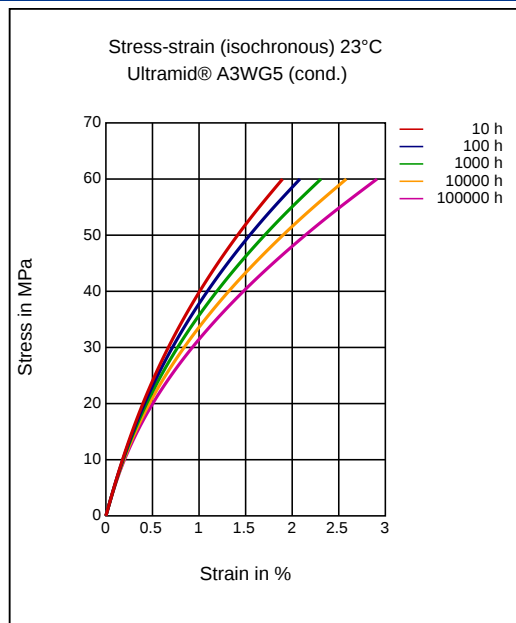
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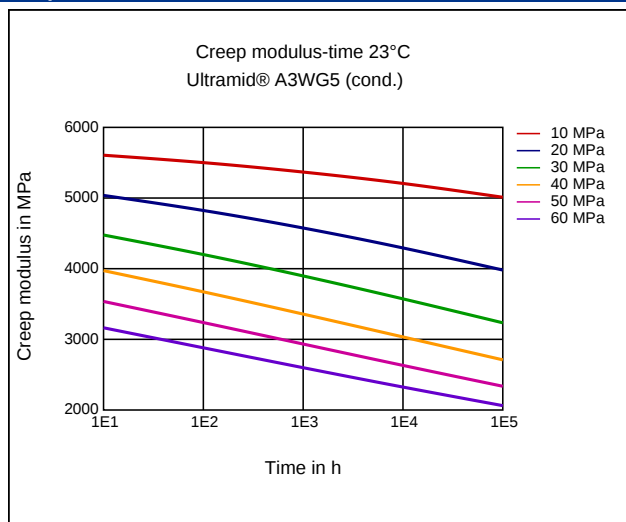
Secant modulus-strain



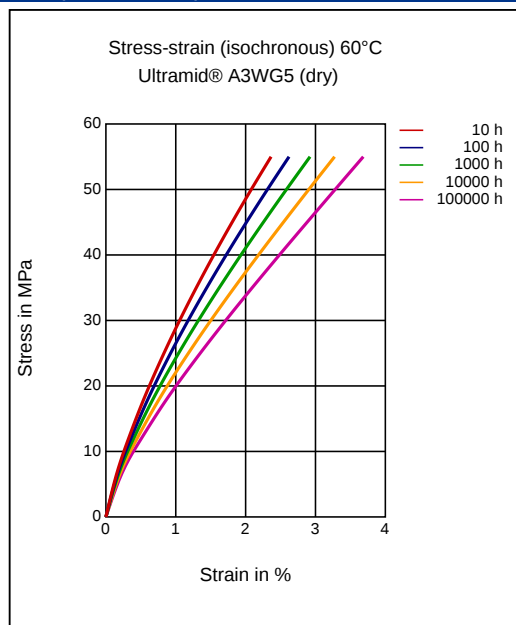
Stress-strain (isochronous) 23°C



Creep modulus-time 23°C



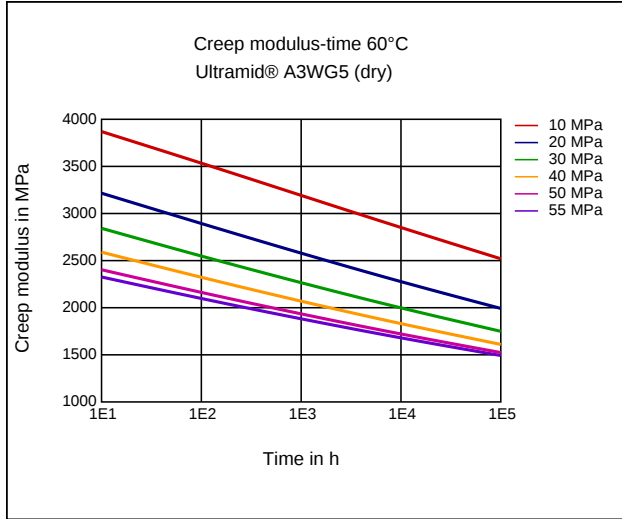
Stress-strain (isochronous) 60°C



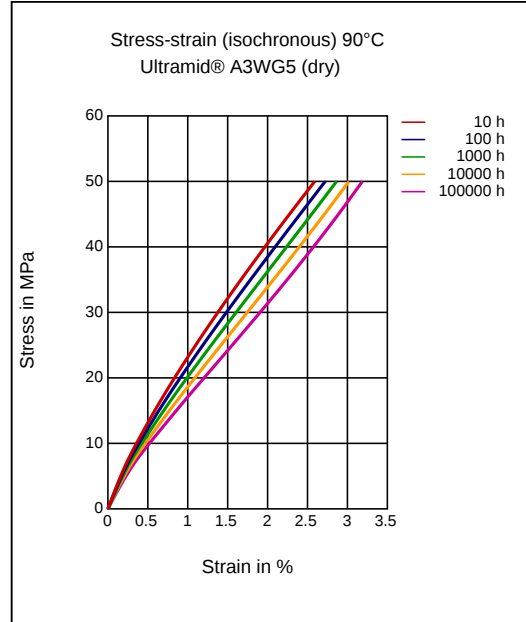
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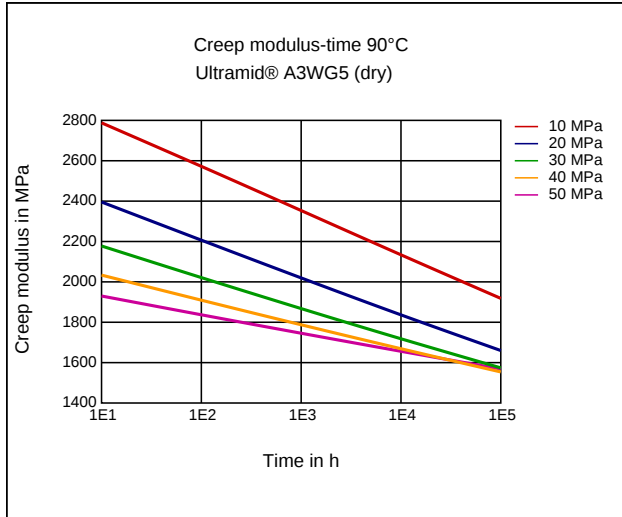
Creep modulus-time 60°C



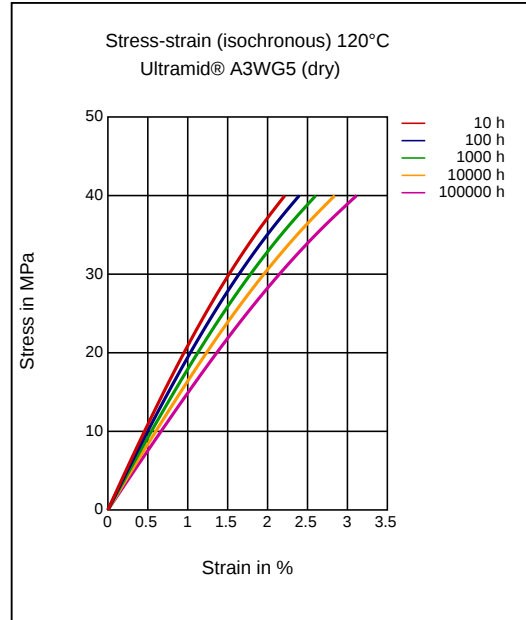
Stress-strain (isochronous) 90°C



Creep modulus-time 90°C



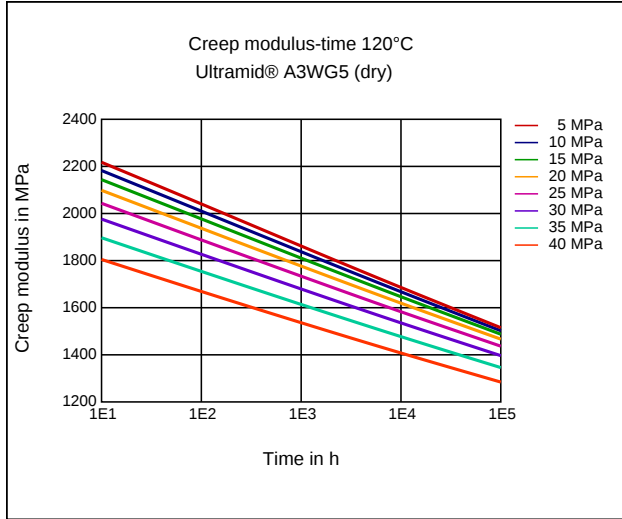
Stress-strain (isochronous) 120°C



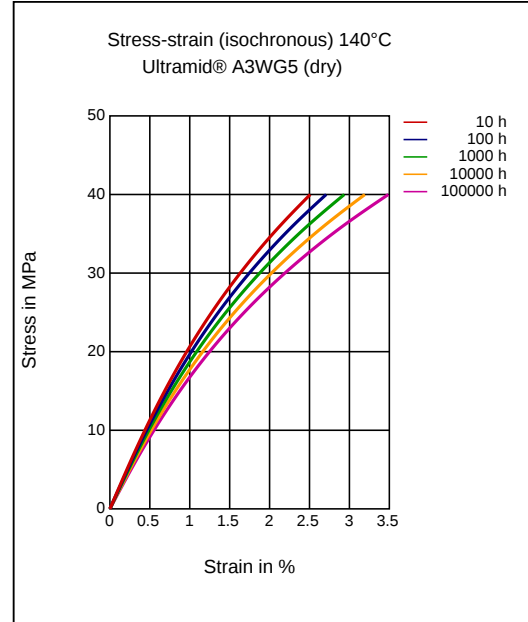
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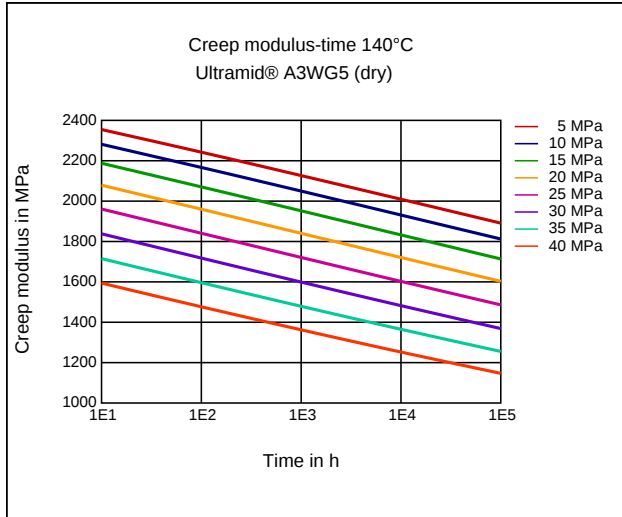
Creep modulus-time 120 °C



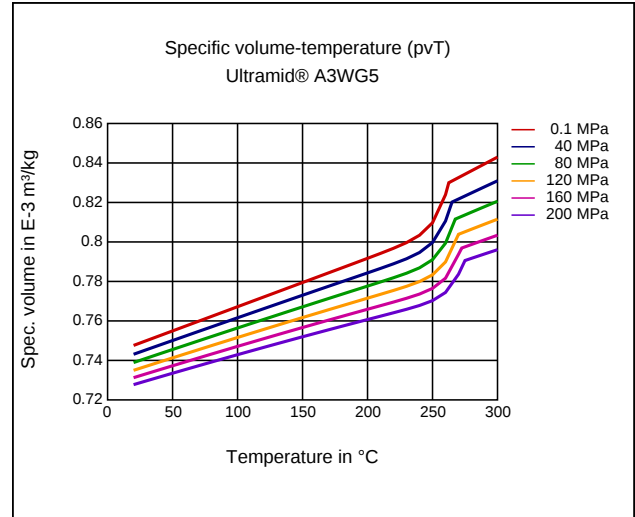
Stress-strain (isochronous) 140 °C



Creep modulus-time 140 °C



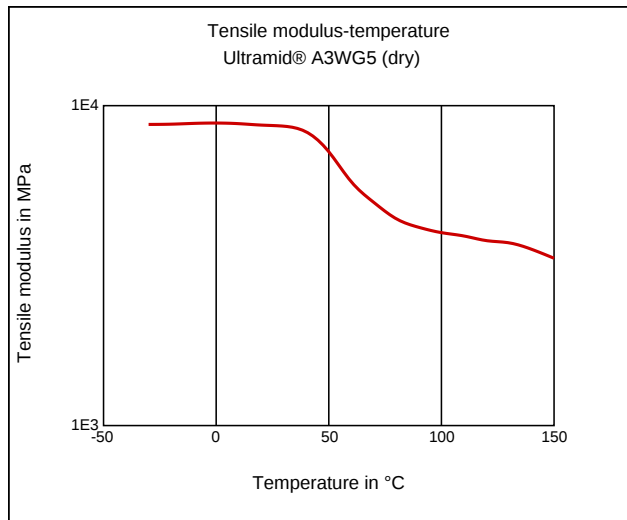
Specific volume-temperature (pvT)



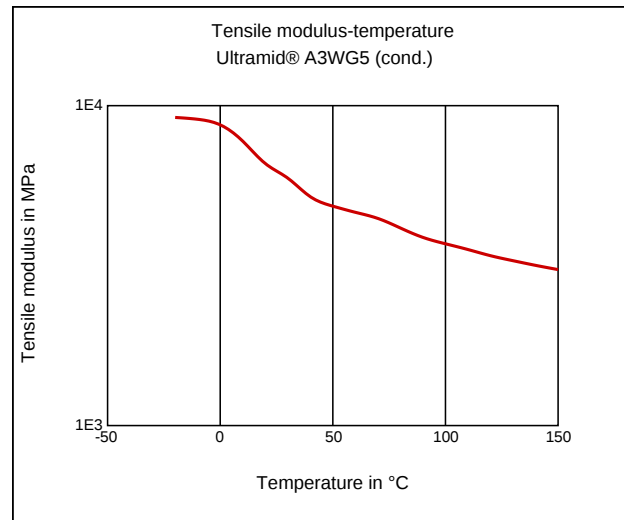
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Tensile Modulus-Temperature



Tensile Modulus-Temperature



Characteristics

Processing

Injection Molding

Delivery form

Pellets

Additives

Lubricants, Release agent

Special Characteristics

Heat aging stabilized

Injection Molding

PREPROCESSING

Pre/Post-processing, max. allowed water content: .15 %

Pre/Post-processing, Pre-drying, Temperature: 80 °C

Pre/Post-processing, Pre-drying, Time: 4 h

PROCESSING

injection molding, Melt temperature, range: 280 - 300 °C

injection molding, Melt temperature, recommended: 290 °C

injection molding, Mold temperature, range: 80 - 90 °C

injection molding, Mold temperature, recommended: 80 °C

injection molding, Dwell time, thermoplastics: 10 min

Chemical Media Resistance

Acids

- ✓ Acetic Acid (5% by mass) (23°C)