

Ultramid® A3W

PA66

BASF

An easy flowing, heat aging resistant injection moulding grade for fast processing. Uses include highly stressed parts such as bearings, bearing cages, gear-wheels, coil formers and cable connectors.

Rheological properties	dry / cond	Unit	Test Standard
ISO Data			
Melt volume-flow rate, MVR	100 / *	cm³/10min	ISO 1133
Temperature	275 / *	°C	-
Load	5 / *	kg	-
Molding shrinkage, parallel	1.5 / *	%	ISO 294-4, 2577
Molding shrinkage, normal	1.8 / *	%	ISO 294-4, 2577

Mechanical Properties	dry / cond	Unit	Test Standard
ISO Data			
Tensile Modulus	3000 / 1100	MPa	ISO 527
Yield stress	85 / 50	MPa	ISO 527
Yield strain	4.4 / 20	%	ISO 527
Nominal strain at break	25 / >50	%	ISO 527
Tensile Creep Modulus, 1h	* / 1100	MPa	ISO 899-1
Tensile Creep Modulus, 1000h	* / 700	MPa	ISO 899-1
Impact Strength (Charpy), +23°C	no break / no break	kJ/m²	ISO 179/1eU
Impact Strength (Charpy), -30°C	no break / -	kJ/m²	ISO 179/1eU
Notched Impact Strength (Charpy), +23°C	6 / 20	kJ/m²	ISO 179/1eA
Notched Impact Strength (Charpy), -30°C	5 / -	kJ/m²	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)	75 / *	°C	ISO 75-1/-2
Temp. of deflection under load (0.45 MPa)	220 / *	°C	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	250 / *	°C	ISO 306
Coeff. of Linear Therm. Expansion, parallel	98 / *	E-6/K	ISO 11359-1/-2
Burning Behav. at 1.5 mm Nom. Thickn.	V-2 / *	class	UL 94
Thickness tested	1.5 / *	mm	-
UL recognition	yes / *	-	-
Burning Behav. at thickness h	V-2 / *	class	UL 94
Thickness tested	0.8 / *	mm	-
UL recognition	yes / *	-	-
Oxygen index	28 / *	%	ISO 4589-1/-2

Electrical Properties	dry / cond	Unit	Test Standard
ISO Data			
Relative permittivity, 100Hz	3.8 / -	-	IEC 62631-2-1
Relative permittivity, 1MHz	3.2 / 5	-	IEC 62631-2-1
Dissipation Factor, 100Hz	50 / -	E-4	IEC 62631-2-1
Dissipation Factor, 1MHz	250 / 2000	E-4	IEC 62631-2-1
Volume Resistivity	1E13 / 1E9	Ohm*m	IEC 62631-3-1
Surface Resistivity	* / 1E9	Ohm	IEC 62631-3-2
Comparative tracking index	- / 500	-	IEC 60112

Other Properties	dry / cond	Unit	Test Standard
ISO Data			
Water Absorption	8.5 / *	%	Sim. to ISO 62
Humidity absorption	2.8 / *	%	Sim. to ISO 62
Density	1130 / -	kg/m³	ISO 1183

Material Specific Properties	dry / cond	Unit	Test Standard
ISO Data			
Viscosity number	150 / *	cm³/g	ISO 307, 1157, 1628

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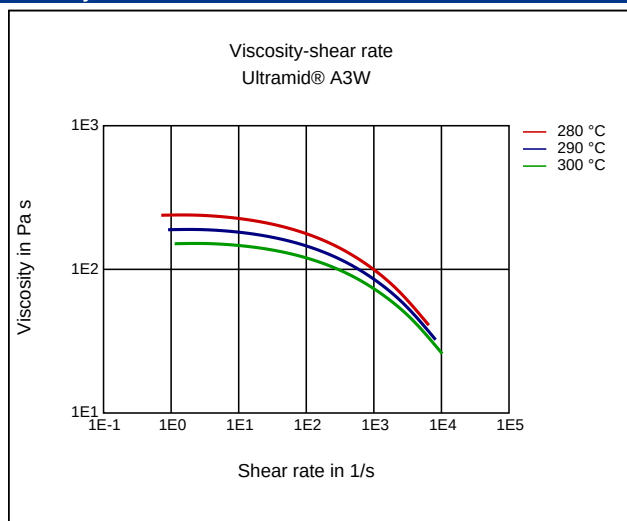
Rheological calculation properties	Value	Unit	Test Standard
ISO Data			
Ejection temperature	180	°C	-

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

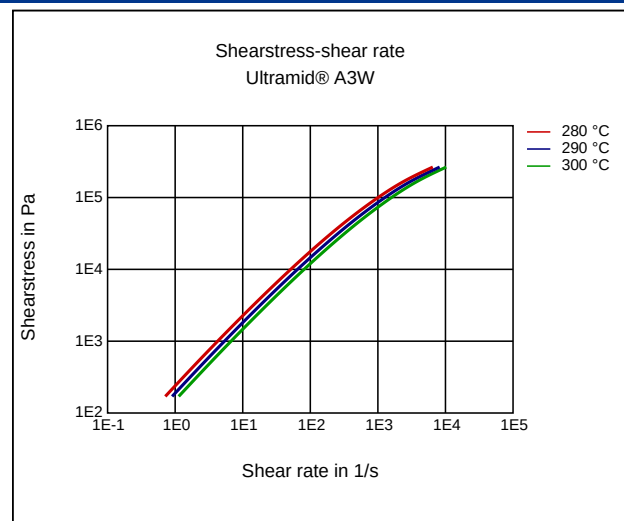
Processing Recommendation Injection Molding	Value	Unit	Test Standard
Pre-drying - Temperature	80	°C	-
Pre-drying - Time	4	h	-
Processing humidity	≤0.15	%	-
Melt temperature	280 - 300	°C	-
Mold temperature	60 - 80	°C	-

Diagrams

Viscosity-shear rate



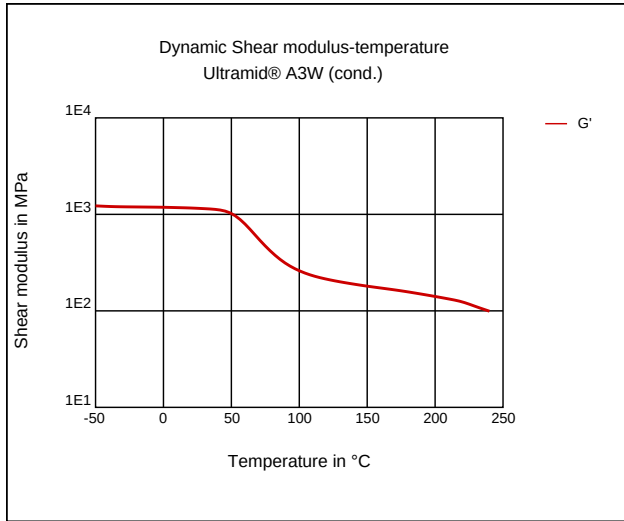
Shearstress-shear rate



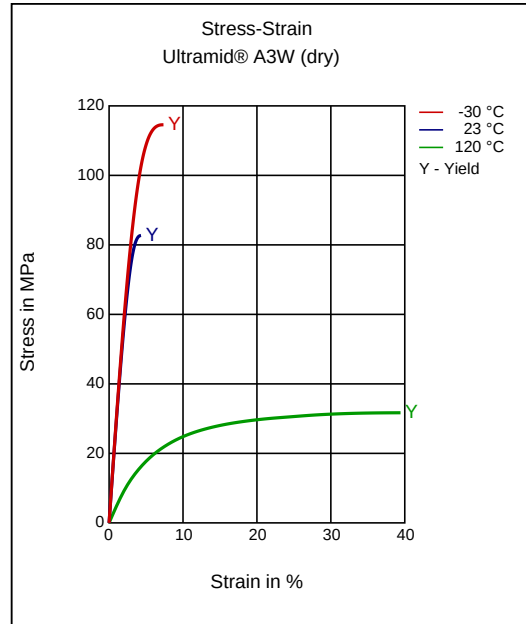
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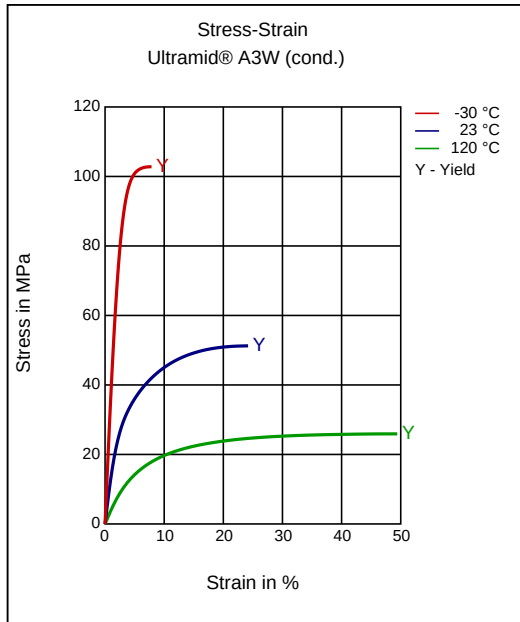
Dynamic Shear modulus-temperature



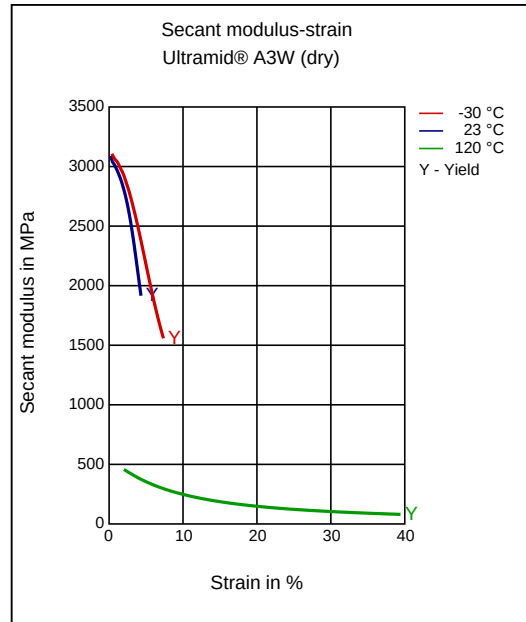
Stress-strain



Stress-strain



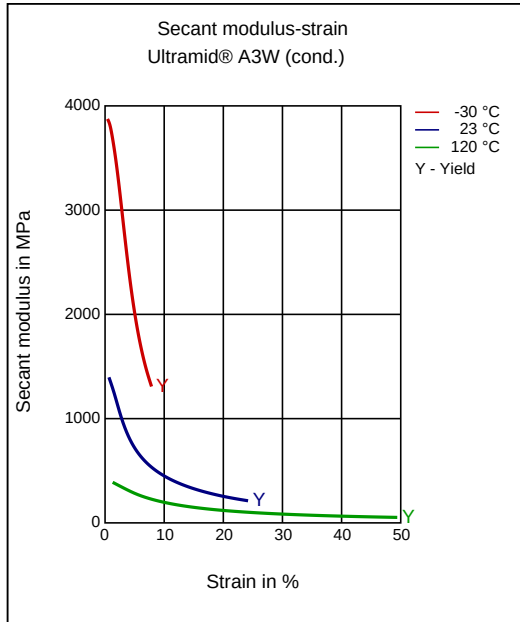
Secant modulus-strain



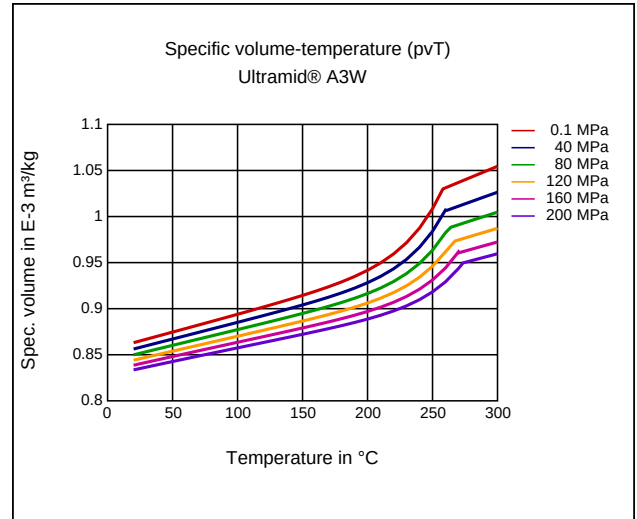
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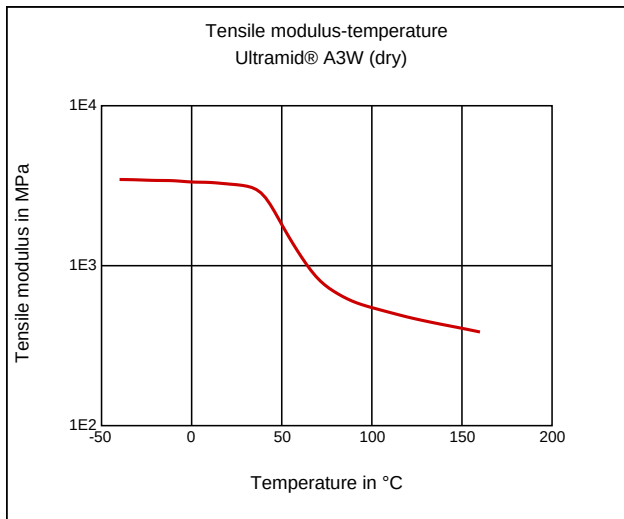
Secant modulus-strain



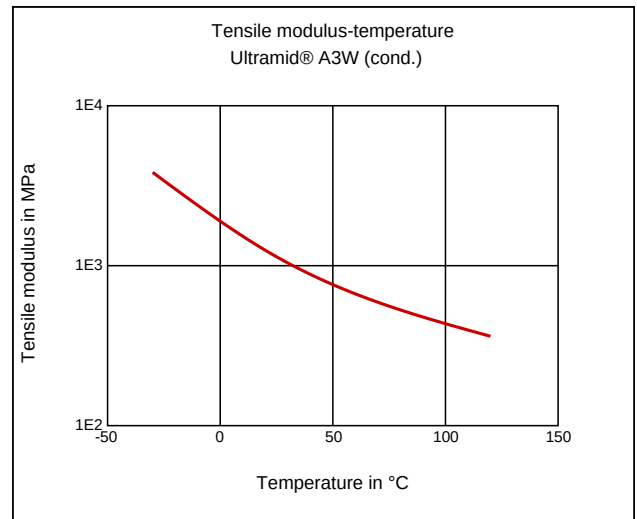
Specific volume-temperature (pvT)



Tensile Modulus-Temperature



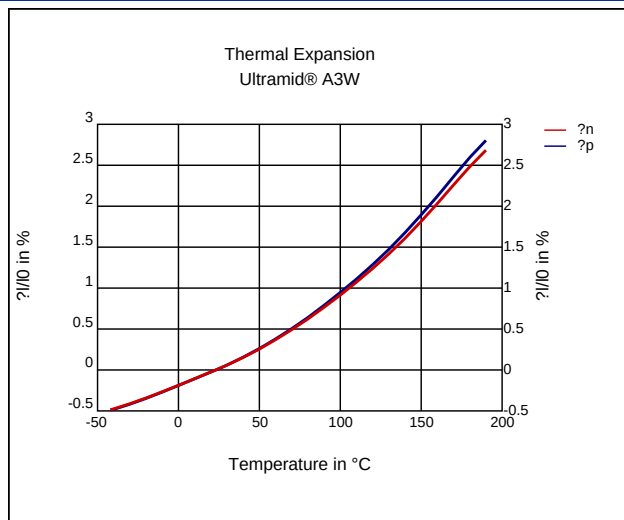
Tensile Modulus-Temperature



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Coeff. of linear thermal expansion, normal



Characteristics

Processing

Injection Molding, Other Extrusion

Additives

Lubricants, Release agent

Delivery form

Pellets

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: 60 - 80 °C

injection molding, Mold temperature, recommended: 60 °C

injection molding, Dwell time, thermoplastics: 10 min

Chemical Media Resistance

Acids

- ✓ Acetic Acid (5% by mass) (23°C)