

Ultramid® A3K FC Aqua UN PA66

BASF

Ultramid® A3K FC Aqua UN is optimized for plastic parts, mandatory requiring material approvals for drinking water or direct food contact.

The product is approved according to

- 21 CFR FDA § 177.1500 "Nylon resins" (except contact with alcoholic beverages)
- European Food Contact European Food Contact Commission Regulation (EU) 10/2011
- GMP (EC) n°2023/2006

and provides the approvals for drinking water regulations of

- KTW
- DVGW W270
- WRAS
- ACS (disclosure of ingredients)
- NSF (disclosure of ingredients)

For questions regarding the compliance with further regulations, and certificates, please contact your local BASF representative or Plastics Safety (E-Mail: plastics.safety@basf.com).

Rheological properties	dry / cond	Unit	Test Standard
ISO Data			
Melt volume-flow rate, MVR	115 / *	cm ³ /10min	ISO 1133
Temperature	275 / *	°C	-
Load	5 / *	kg	-
Molding shrinkage, parallel	1.6 / *	%	ISO 294-4, 2577
Molding shrinkage, normal	1.8 / *	%	ISO 294-4, 2577

Mechanical Properties	dry / cond	Unit	Test Standard
ISO Data			
Tensile Modulus	3100 / 1100	MPa	ISO 527
Yield stress	85 / 50	MPa	ISO 527
Yield strain	5 / 20	%	ISO 527
Nominal strain at break	30 / >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/m ²	ISO 179/1eU
Impact Strength (Charpy), -30°C	no break / -	kJ/m ²	ISO 179/1eU
Notched Impact Strength (Charpy), +23°C	5 / 20	kJ/m ²	ISO 179/1eA
Notched Impact Strength (Charpy), -30°C	4 / -	kJ/m ²	ISO 179/1eA
Flexural Modulus (23°C)	2900 / -	MPa	ISO 178
Notched Impact Strength (Izod), 23°C	5.5 / no break	kJ/m ²	ISO 180/1A
Notched Impact Strength (Izod)	6 / -	kJ/m ²	ISO 180/1A
Temperature	-30	°C	-

Thermal Properties	dry / cond	Unit	Test Standard
ISO Data			
Melting Temperature (10°C/min)	260 / *	°C	ISO 11357-1/-3
Glass Transition Temperature (10°C/min)	72 / *	°C	ISO 11357-1/-2
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
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 / 1E10	Ohm*m	IEC 62631-3-1
Surface Resistivity	* / 1E10	Ohm	IEC 62631-3-2
Comparative tracking index	- / 600	-	IEC 60112

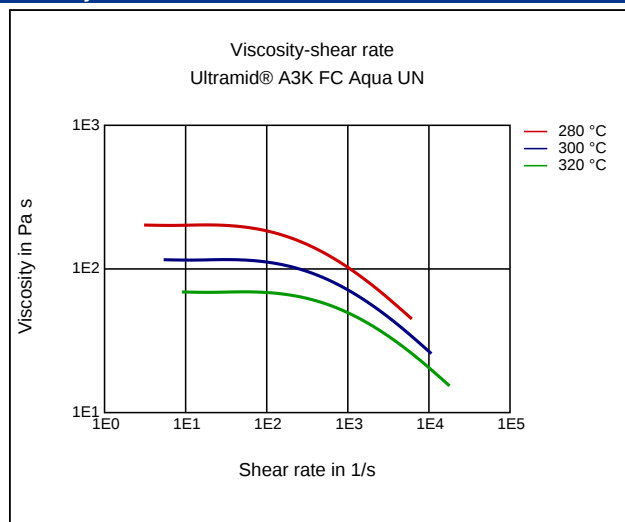
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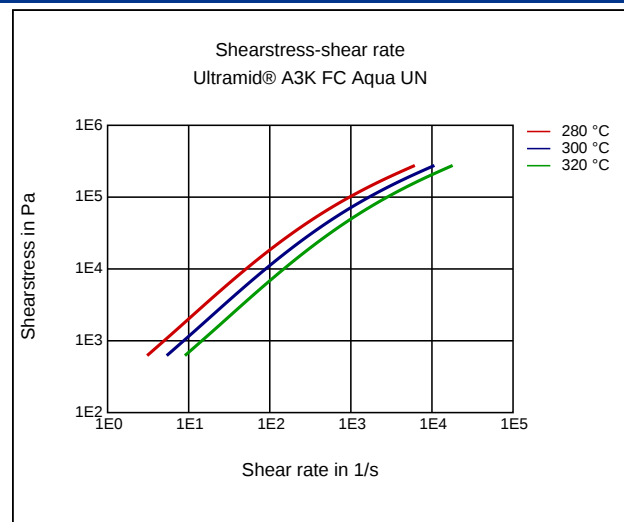
Other Properties	dry / cond	Unit	Test Standard
ISO Data			
Water Absorption	8.5 / *	%	Sim. to ISO 62
Humidity absorption	2.8 / *	%	Sim. to ISO 62
Density	1130 / -	kg/m ³	ISO 1183
Bulk density	700	kg/m ³	-
Material Specific Properties			
ISO Data			
Viscosity number	150 / *	cm ³ /g	ISO 307, 1157, 1628
Rheological calculation properties			
ISO Data			
Ejection temperature	180	°C	-
Test specimen production			
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			
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



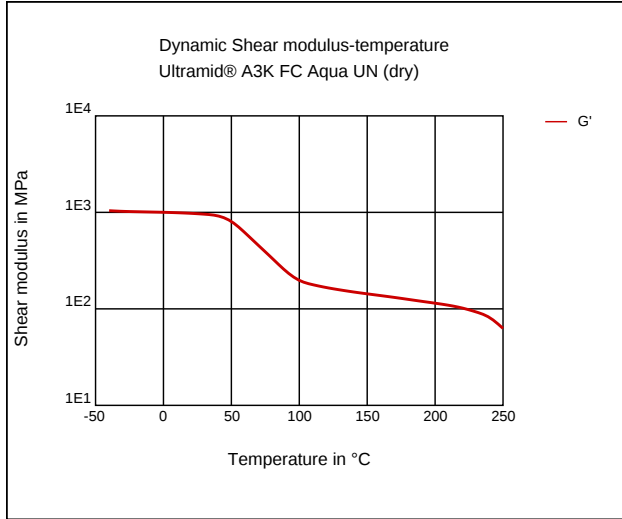
Shearstress-shear rate



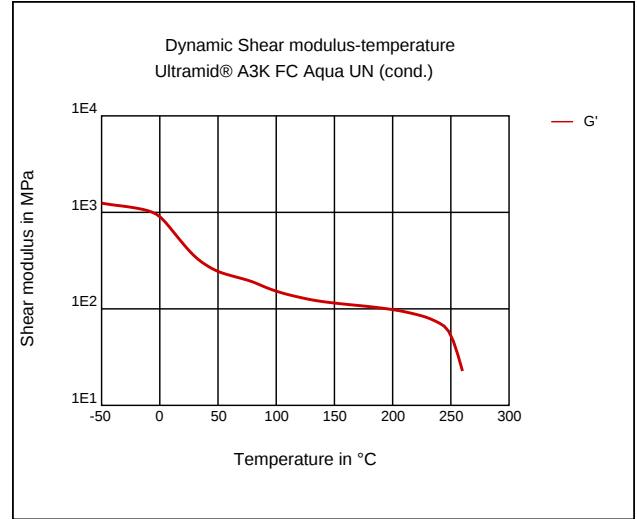
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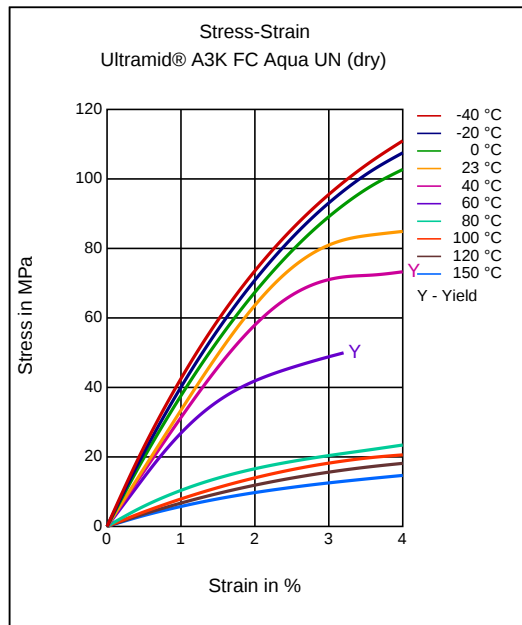
Dynamic Shear modulus-temperature



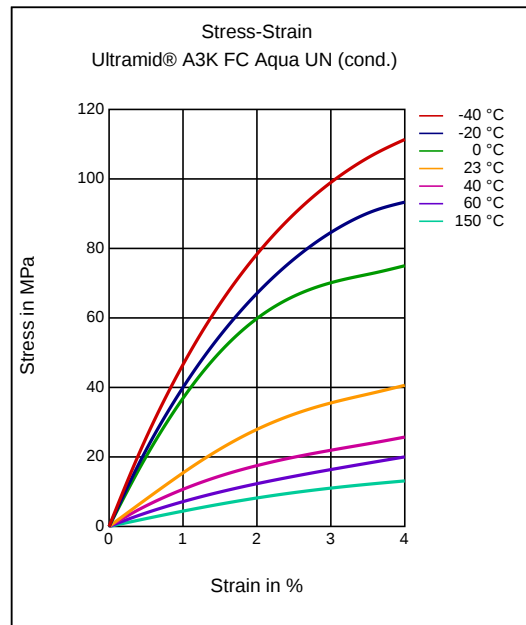
Dynamic Shear modulus-temperature



Stress-strain



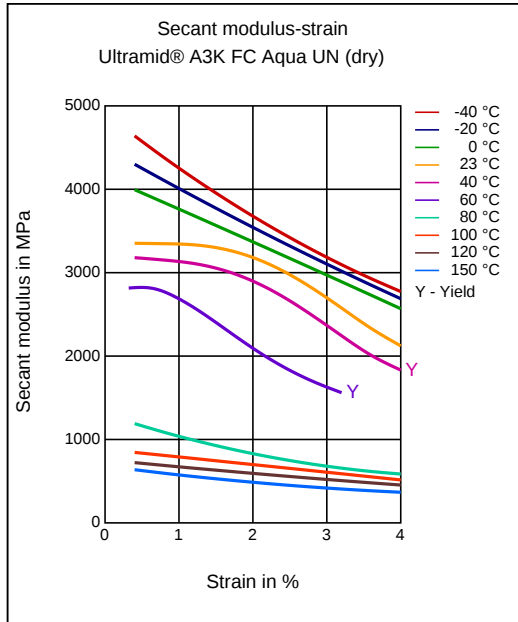
Stress-strain



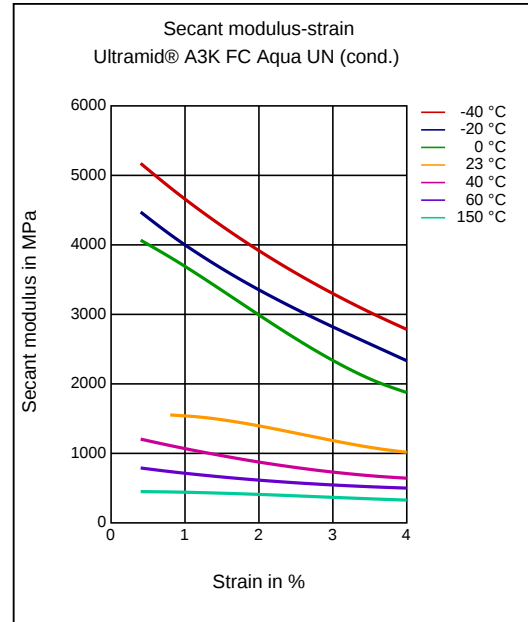
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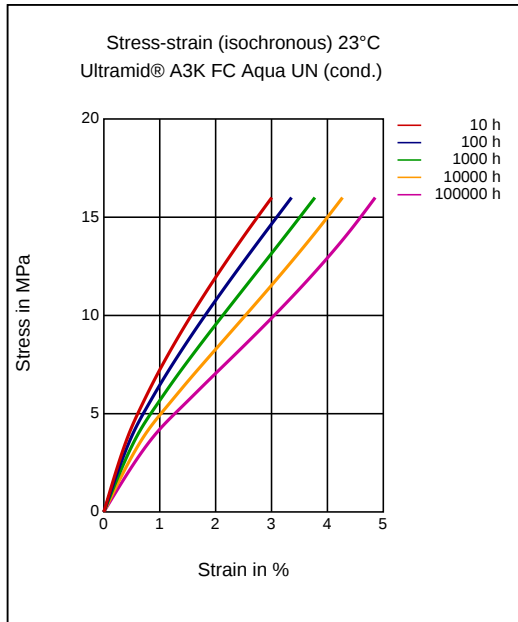
Secant modulus-strain



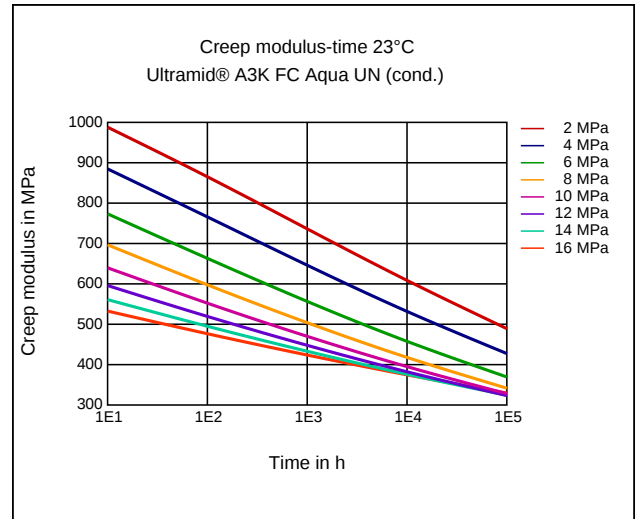
Secant modulus-strain



Stress-strain (isochronous) 23 °C



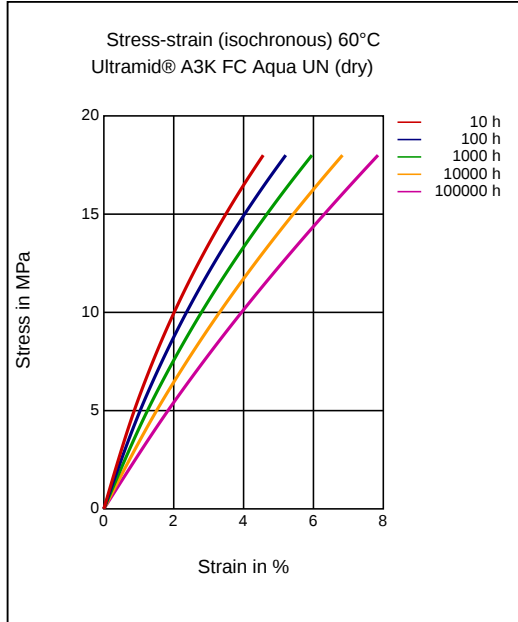
Creep modulus-time 23 °C



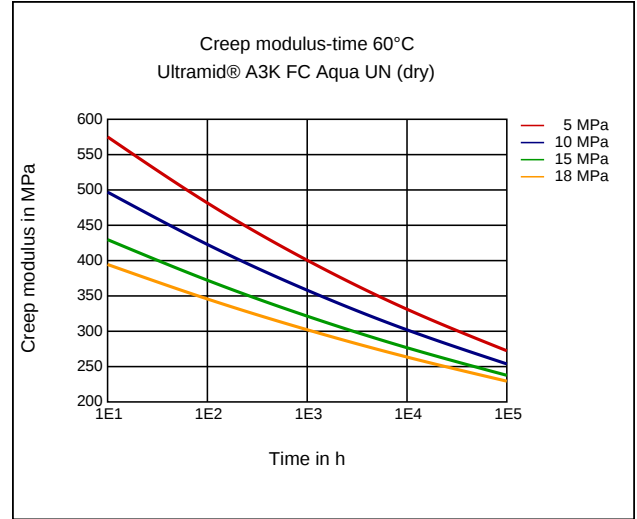
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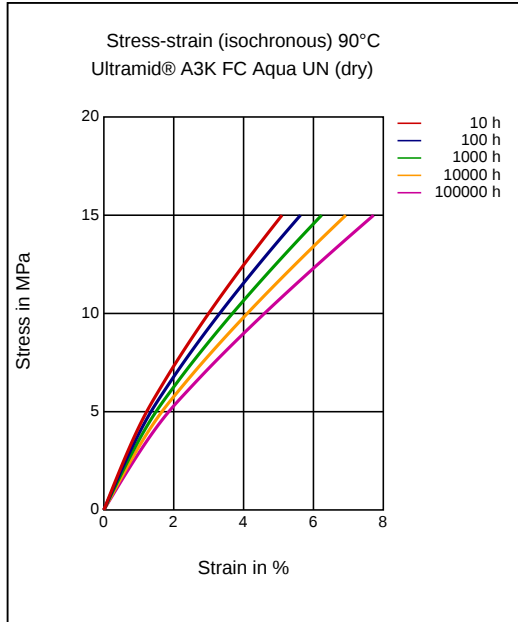
Stress-strain (isochronous) 60 °C



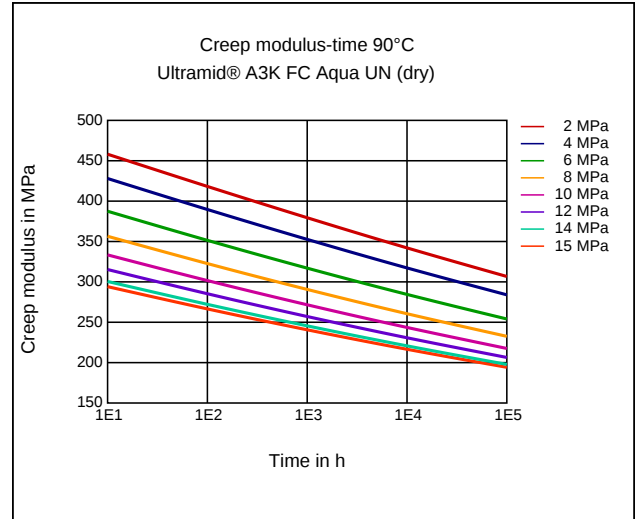
Creep modulus-time 60 °C



Stress-strain (isochronous) 90 °C



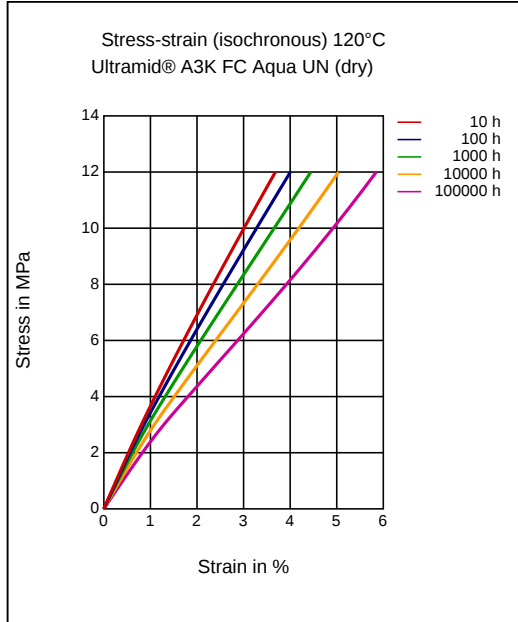
Creep modulus-time 90 °C



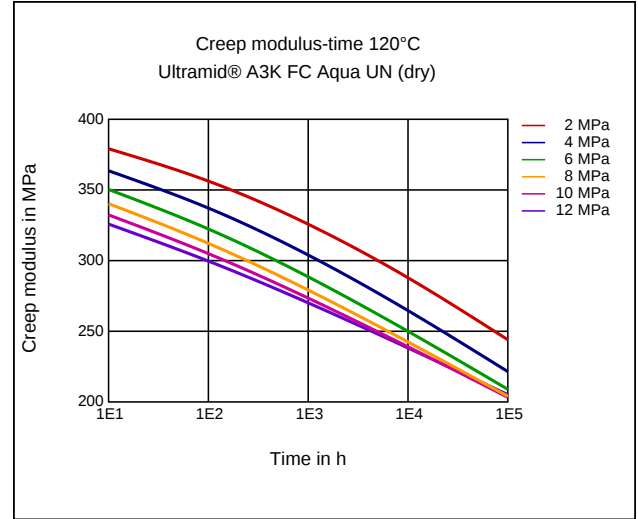
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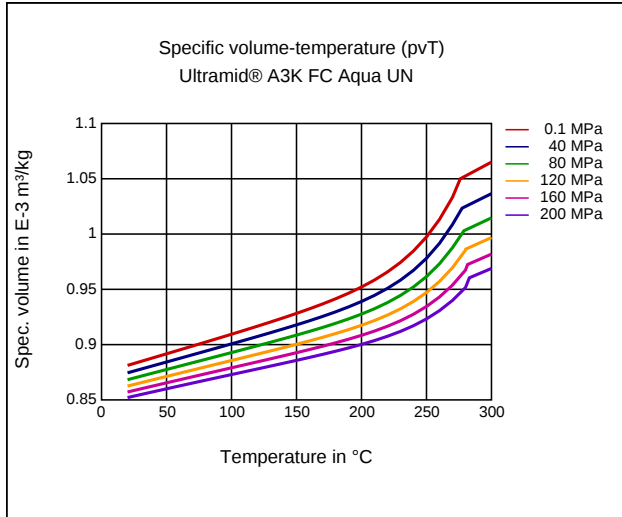
Stress-strain (isochronous) 120°C



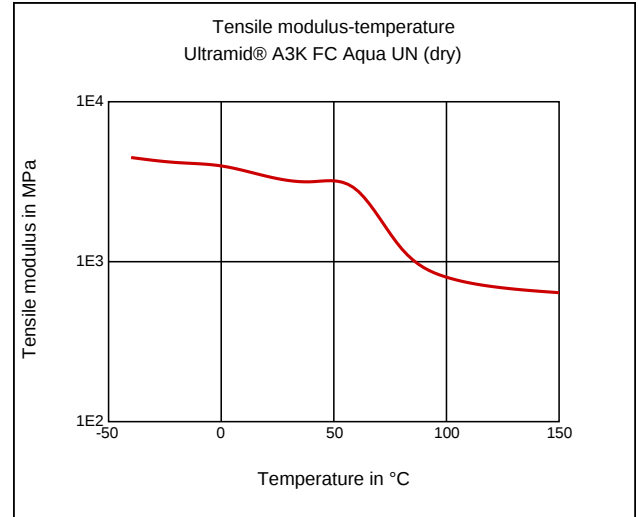
Creep modulus-time 120°C



Specific volume-temperature (pvT)



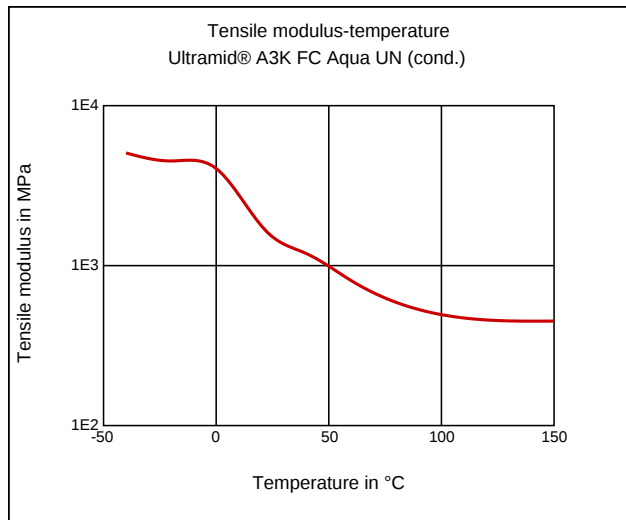
Tensile Modulus-Temperature



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Tensile Modulus-Temperature



Characteristics

Processing

Injection Molding, Other Extrusion

Delivery form

Pellets, Natural Color

Additives

Lubricants, Release agent

Special Characteristics

Heat aging stabilized

Certifications

Food approval, Food approval 10/2011, Food Contact (FDA),
Water contact, Water contact KTW, Water contact DVGW W270,
NSF Approval

Applications

Automotive

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)