Ultramid® C3U

PA66/6 FR(30) BASF

Without halogens and posphorous flame retardant injection molding grade, used e.g. for impact resistant electrical insulating parts such as contact bases and plug connector strips. Due to the halide free stabilization the impact on corrosion is minimized and sensitive electronic components are better protected.

Rheological properties	dry / cond	Unit	Test Standard
ISO Data			
Melt volume-flow rate, MVR	160 / *	cm³/10min	ISO 1133
Temperature	275 / *	°C	-
Load	5 / *	kg	-
Molding shrinkage, parallel	1.2 / *	%	ISO 294-4, 2577
Molding shrinkage, normal	1.3 / *	%	ISO 294-4, 2577

Mechanical Properties	dry / cond	Unit	Test Standard
ISO Data			
Tensile Modulus	3500 / 1500	MPa	ISO 527
Yield stress	75 / 45	MPa	ISO 527
Yield strain	4 / 20	%	ISO 527
Nominal strain at break	6 / >50	%	ISO 527
Tensile Creep Modulus, 1h	* / 1000	MPa	ISO 899-1
Tensile Creep Modulus, 1000h	* / 890	MPa	ISO 899-1
Impact Strength (Charpy), +23°C	80 / no break	kJ/m²	ISO 179/1eU
Notched Impact Strength (Charpy), +23°C	6 / 35	kJ/m²	ISO 179/1eA
Notched Impact Strength (Charpy), -30°C	4 / -	kJ/m²	ISO 179/1eA

Thermal Properties	dry / cond	Unit	Test Standard
ISO Data			
Melting Temperature (10°C/min)	243 / *	°C	ISO 11357-1/-3
Temp. of deflection under load (1.80 MPa)	70 / *	°C	ISO 75-1/-2
Temp. of deflection under load (0.45 MPa)	210 / *	°C	ISO 75-1/-2
Coeff. of Linear Therm. Expansion, parallel	68 / *	E-6/K	ISO 11359-1/-2
Coeff. of Linear Therm. Expansion, normal	81 / *	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	0.4 / *	mm	-
UL recognition	yes / *	-	-
Oxygen index	34 / *	%	ISO 4589-1/-2

Electrical Properties	dry / cond	Unit	Test Standard
ISO Data			
Relative permittivity, 1MHz	3.6 / 6	-	IEC 62631-2-1
Dissipation Factor, 1MHz	200 / 3000	E-4	IEC 62631-2-1
Volume Resistivity	1E13 / 1E9	Ohm*m	IEC 62631-3-1
Surface Resistivity	* / 1E12	Ohm	IEC 62631-3-2
Electric Strength	32 / 28	kV/mm	IEC 60243-1
Comparative tracking index	- / 600	-	IEC 60112

Other Properties	dry / cond	Unit	Test Standard
ISO Data			
Water Absorption	8.5 / *	%	Sim. to ISO 62
Humidity absorption	2.9 / *	%	Sim. to ISO 62
Density	1160 / -	kg/m³	ISO 1183

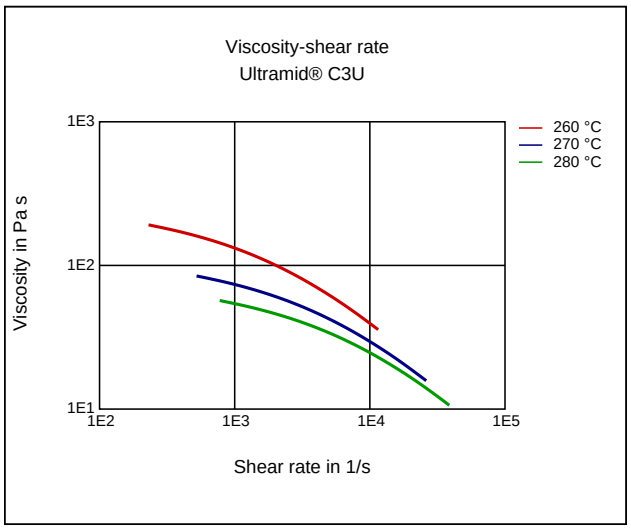
Material Specific Properties	dry / cond	Unit	Test Standard
ISO Data			
Viscosity number	145 / *	cm³/g	ISO 307, 1157, 1628

Processing Recommendation Injection Molding	Value	Unit	Test Standard
Pre-drying - Temperature	80	°C	-
Pre-drying - Time	4	h	-

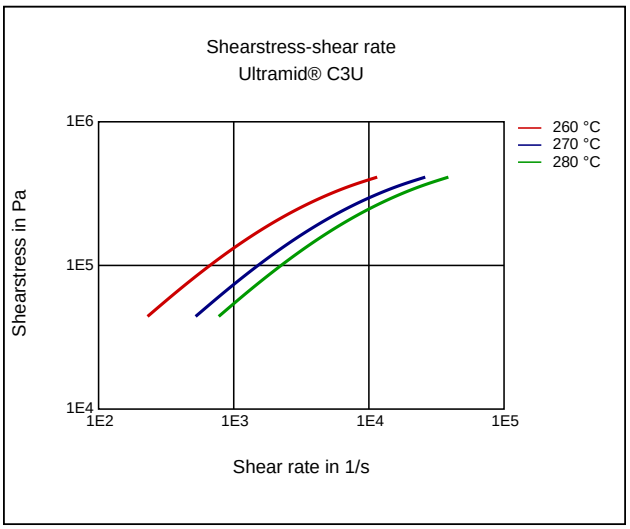
Processing humidity	≤0.15	%	-
Melt temperature	250 - 270	°C	-
Mold temperature	60 - 80	°C	-

Diagrams

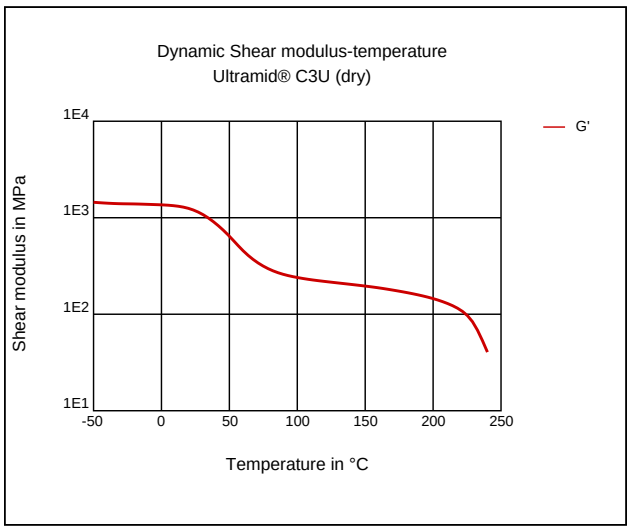
Viscosity-shear rate



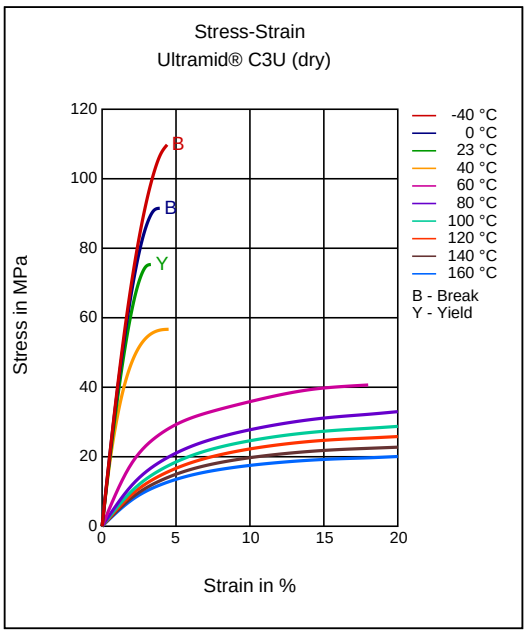
Shearstress-shear rate



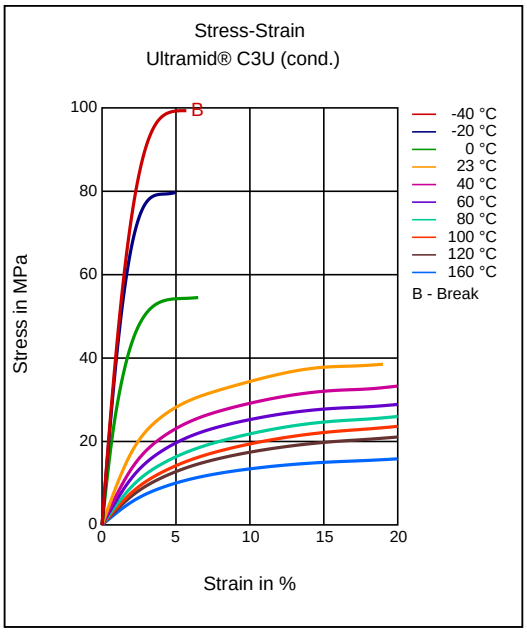
Dynamic Shear modulus-temperature



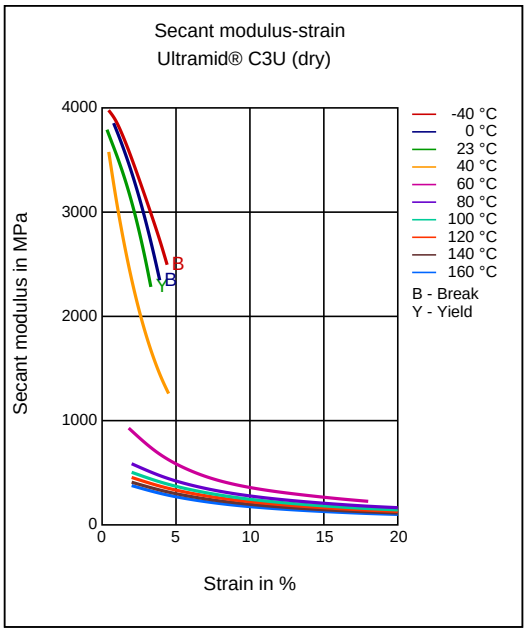
Stress-strain



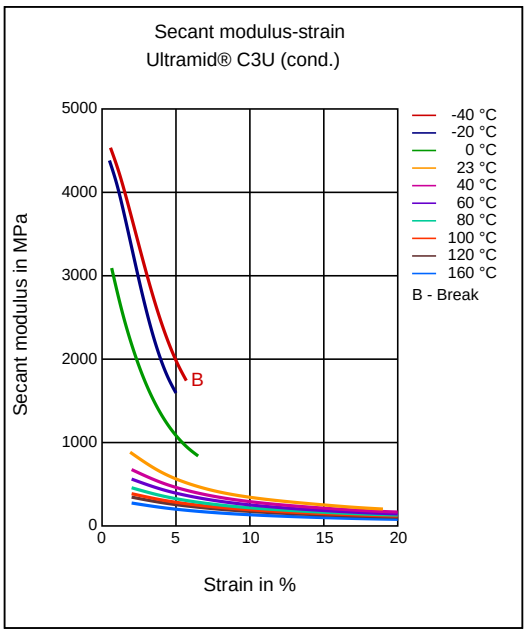
Stress-strain



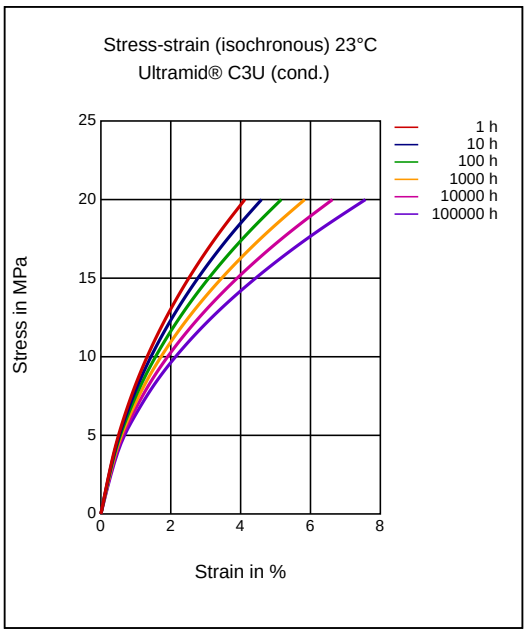
Secant modulus-strain



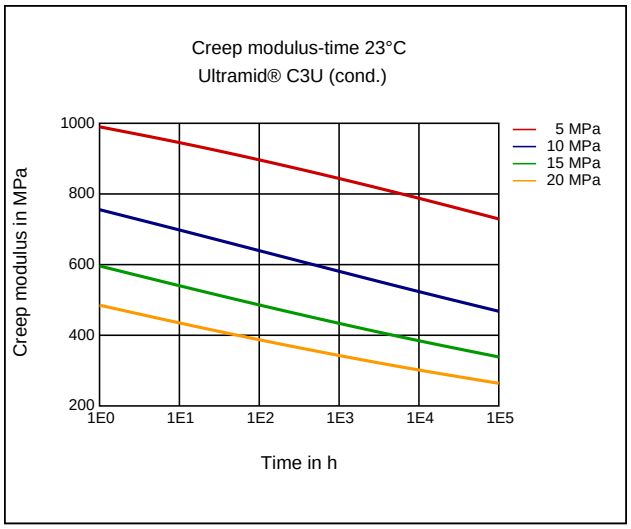
Secant modulus-strain



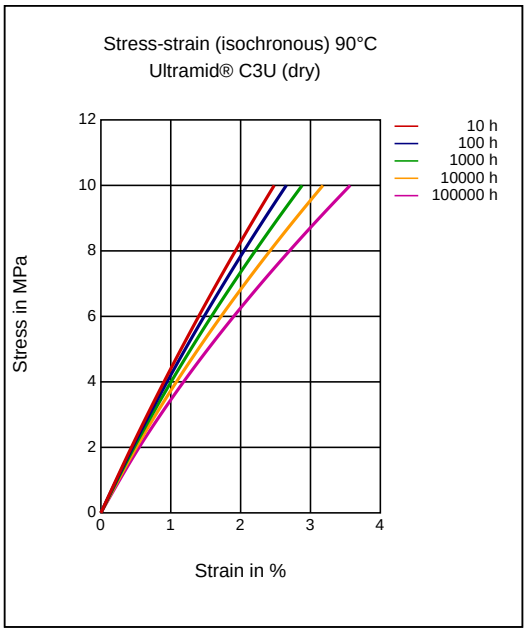
Stress-strain (isochronous) 23°C



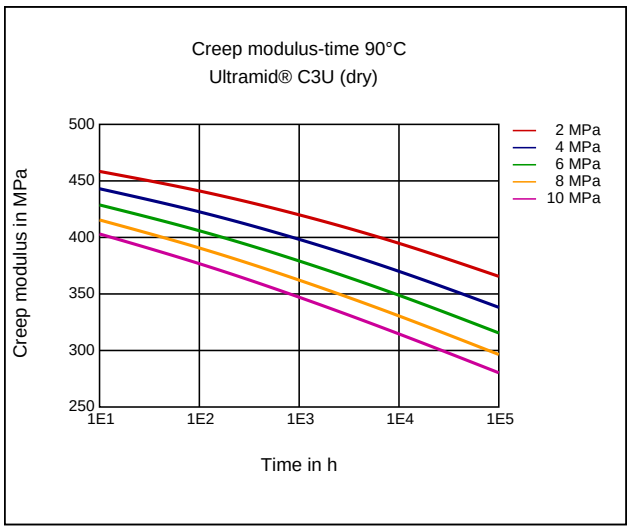
Creep modulus-time 23 °C



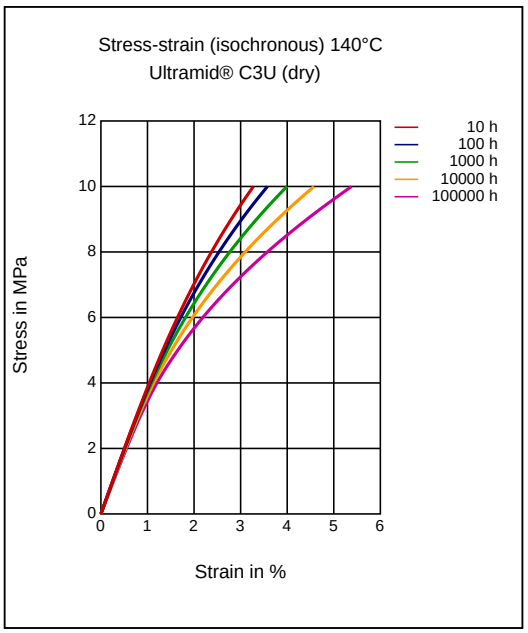
Stress-strain (isochronous) 90 °C



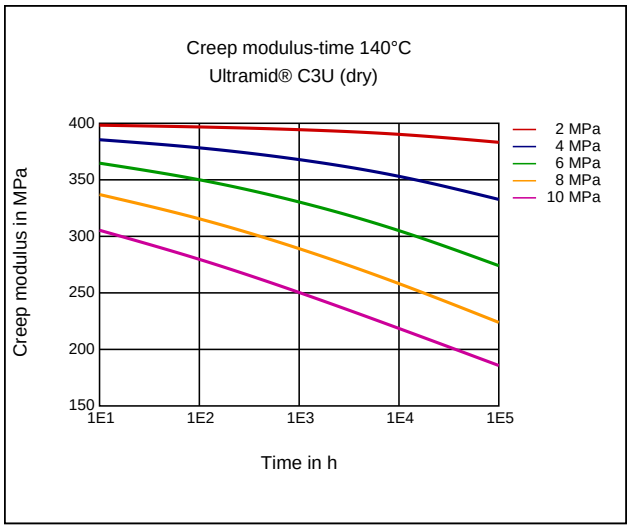
Creep modulus-time 90 °C



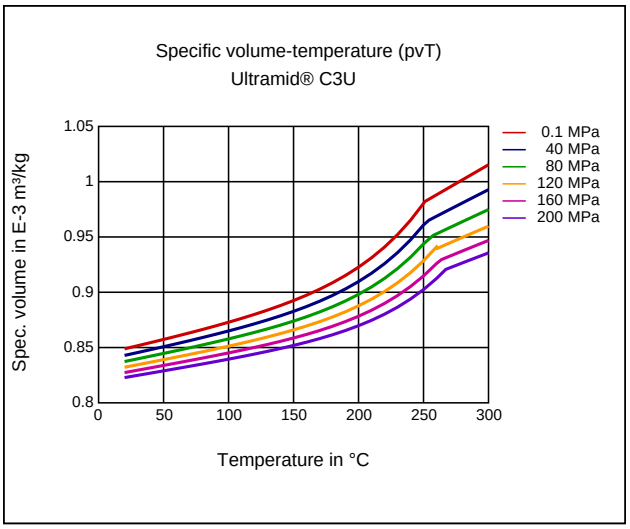
Stress-strain (isochronous) 140 °C



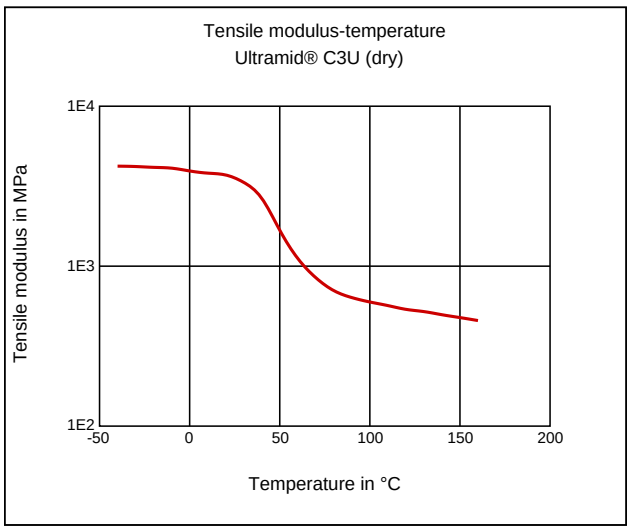
Creep modulus-time 140 °C



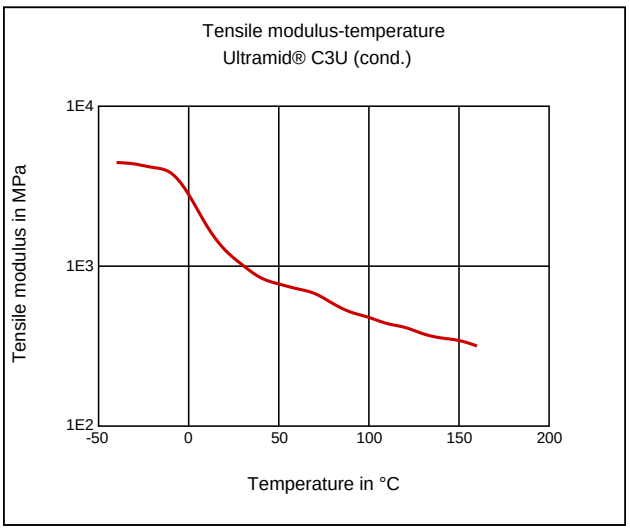
Specific volume-temperature (pvT)



Tensile Modulus-Temperature



Tensile Modulus-Temperature



Characteristics

Processing
Injection Molding

Special Characteristics
Flame retardant, Halogen-free, Heat aging stabilized

Delivery form
Pellets

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: 250 - 270 °C
injection molding, Melt temperature, recommended: 260 °C
injection molding, Mold temperature, range: 60 - 80 °C
injection molding, Mold temperature, recommended: 70 °C

injection molding, Dwell time, thermoplastics: 10 min

Chemical Media Resistance

Acids

- ✔ Acetic Acid (5% by mass) (23°C)
- ✔ Citric Acid solution (10% by mass) (23°C)
- ✔ Lactic Acid (10% by mass) (23°C)
- ✖ Hydrochloric Acid (36% by mass) (23°C)
- ✖ Nitric Acid (40% by mass) (23°C)
- ✖ Sulfuric Acid (38% by mass) (23°C)
- ✖ Sulfuric Acid (5% by mass) (23°C)
- ✖ Chromic Acid solution (40% by mass) (23°C)

Bases

- ✖ Sodium Hydroxide solution (35% by mass) (23°C)
- ✔ Sodium Hydroxide solution (1% by mass) (23°C)

Alcohols

- ✔ Isopropyl alcohol (23°C)
- ✔ Methanol (23°C)
- ✔ Ethanol (23°C)

Hydrocarbons

- ✔ n-Hexane (23°C)
- ✔ Toluene (23°C)
- ✔ iso-Octane (23°C)

Ketones

- ✔ Acetone (23°C)

Ethers

- ✔ Diethyl ether (23°C)

Mineral oils

- ✔ SAE 10W40 multigrade motor oil (23°C)
- ✔ SAE 10W40 multigrade motor oil (130°C)

Standard Fuels

- ✔ Diesel fuel (pref. ISO 1817 Liquid F) (23°C)
- ✖ Diesel fuel (pref. ISO 1817 Liquid F) (>90°C)

Salt solutions

- ✔ Sodium Chloride solution (10% by mass) (23°C)
- ✖ Sodium Hypochlorite solution (10% by mass) (23°C)
- ✖ Zinc Chloride solution (50% by mass) (23°C)

Other

- ✔ Ethyl Acetate (23°C)
- ✖ Hydrogen peroxide (23°C)
- ✖ DOT No. 4 Brake fluid (130°C)
- ✖ Ethylene Glycol (50% by mass) in water (108°C)
- ✔ Water (23°C)

Disclaimer

Liability Exclusion
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