

Ultradur® S 4090 G4 (PBT+ASA+PET)-GF20

BASF

Low-warpage injection molding grade with 20 % glass fibres for technical parts, for which dimensional stability is very important (e.g. housings, plug-and-socket connectors).

Abbreviated designation according to ISO 1043: PBT ASA PET GF20

Processing/Physical Characteristics	Value	Unit	Test Standard
ASTM Data			
Mold Shrinkage, MD	0.003	mm/mm	ASTM D 955
Density, 73 °F	1300	kg/m³	ASTM D 792

Rheological properties	Value	Unit	Test Standard
ISO Data			
Melt volume-flow rate, MVR	20	cm³/10min	ISO 1133
Temperature	275	°C	-
Load	2.16	kg	-
Molding shrinkage, parallel	0.4	%	ISO 294-4, 2577
Molding shrinkage, normal	0.7	%	ISO 294-4, 2577

Mechanical Properties	Value	Unit	Test Standard
ISO Data			
Tensile Modulus	6900	MPa	ISO 527
Stress at Break	105	MPa	ISO 527
Strain at Break	2.4	%	ISO 527
Tensile Creep Modulus, 1h	5300	MPa	ISO 899-1
Tensile Creep Modulus, 1000h	4700	MPa	ISO 899-1
Impact Strength (Charpy), +23 °C	50	kJ/m²	ISO 179/1eU
Impact Strength (Charpy), -30 °C	40	kJ/m²	ISO 179/1eU
Notched Impact Strength (Charpy), +23 °C	5.5	kJ/m²	ISO 179/1eA
Notched Impact Strength (Charpy), -30 °C	5.3	kJ/m²	ISO 179/1eA
ASTM Data			
Tensile Modulus	7102	MPa	ASTM D 638
Tensile Strength at Break	100	MPa	ASTM D 638
Elongation at Break	2.5	%	ASTM D 638
Flexural Modulus	6102	MPa	ASTM D 790
Flexural Strength	159	MPa	ASTM D 790

Thermal Properties	Value	Unit	Test Standard
ISO Data			
Melting Temperature (10 °C/min)	223	°C	ISO 11357-1/-3
Temp. of deflection under load (1.80 MPa)	160	°C	ISO 75-1/-2
Temp. of deflection under load (0.45 MPa)	205	°C	ISO 75-1/-2
Vicat softening temperature, 50 °C/h 50N	157	°C	ISO 306
Coeff. of Linear Therm. Expansion, parallel	35	E-6/K	ISO 11359-1/-2
Coeff. of Linear Therm. Expansion, normal	110	E-6/K	ISO 11359-1/-2
Burning Behav. at 1.5 mm Nom. Thickn.	HB	class	UL 94
Thickness tested	1.5	mm	-
Burning Behav. at thickness h	HB	class	UL 94
Thickness tested	0.8	mm	-
ASTM Data			
DTUL @ 66 psi	216	°C	ASTM D 648
DTUL @ 264 psi	194	°C	ASTM D 648
Melting Temperature	223	°C	ASTM D 3418

Electrical Properties	Value	Unit	Test Standard
ISO Data			
Relative permittivity, 100Hz	3.7	-	IEC 62631-2-1
Relative permittivity, 1MHz	3.6	-	IEC 62631-2-1
Dissipation Factor, 100Hz	30	E-4	IEC 62631-2-1
Dissipation Factor, 1MHz	190	E-4	IEC 62631-2-1
Volume Resistivity	>1E13	Ohm*m	IEC 62631-3-1
Surface Resistivity	1E14	Ohm	IEC 62631-3-2
Electric Strength	39	kV/mm	IEC 60243-1

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Comparative tracking index	450	-	IEC 60112
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Other Properties	Value	Unit	Test Standard
ISO Data			
Water Absorption	0.4	%	Sim. to ISO 62
Humidity absorption	0.2	%	Sim. to ISO 62
Density	1390	kg/m³	ISO 1183

Material Specific Properties	Value	Unit	Test Standard
ISO Data			
Viscosity number	105	cm³/g	ISO 307, 1157, 1628

Rheological calculation properties	Value	Unit	Test Standard
ISO Data			
Density of melt	1180	kg/m³	-
Thermal Conductivity of Melt	0.18	W/(m K)	-
Spec. heat capacity of melt	1900	J/(kg K)	-
Ejection temperature	160	°C	-

Test specimen production	Value	Unit	Test Standard
ISO Data			
Injection Molding, melt temperature	270	°C	ISO 294
Injection Molding, mold temperature	80	°C	ISO 294
Injection Molding, injection velocity	200	mm/s	ISO 294

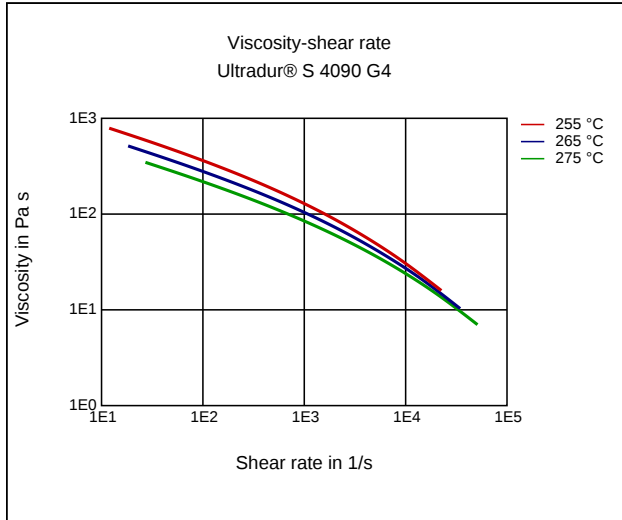
Processing Recommendation Injection Molding	Value	Unit	Test Standard
Pre-drying - Temperature	80 - 120	°C	-
Pre-drying - Time	4	h	-
Processing humidity	≤0.04	%	-
Melt temperature	250 - 275	°C	-
Mold temperature	60 - 100	°C	-

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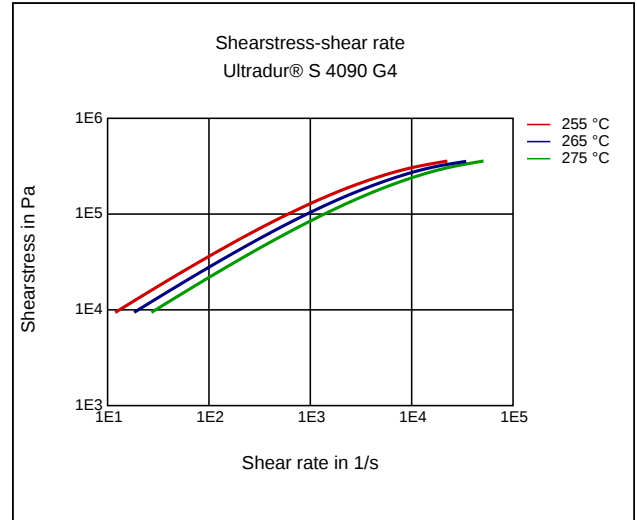
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Diagrams

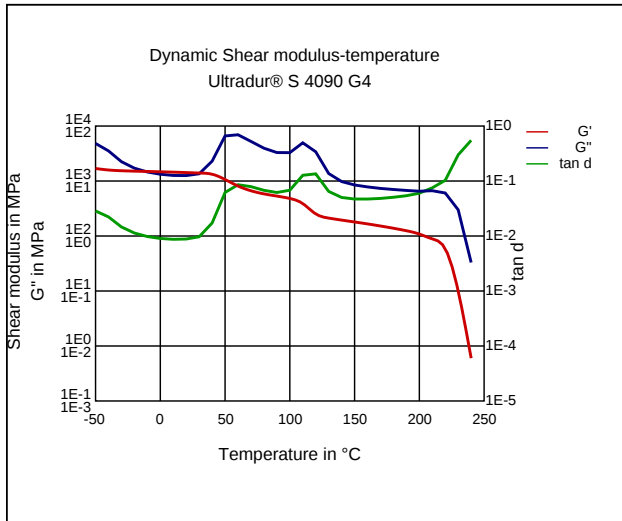
Viscosity-shear rate



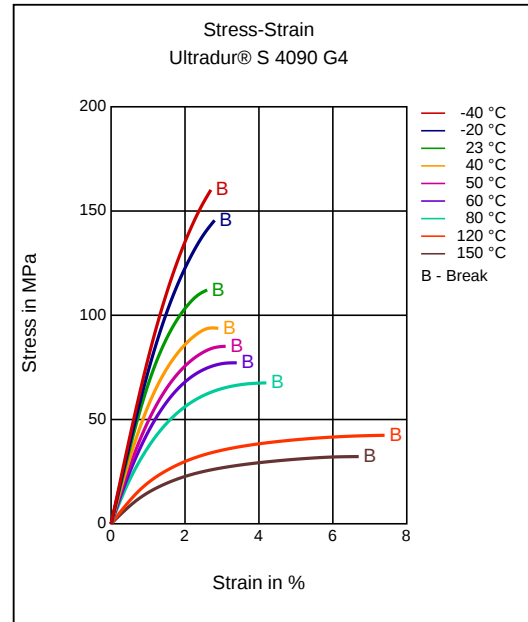
Shearstress-shear rate



Dynamic Shear modulus-temperature



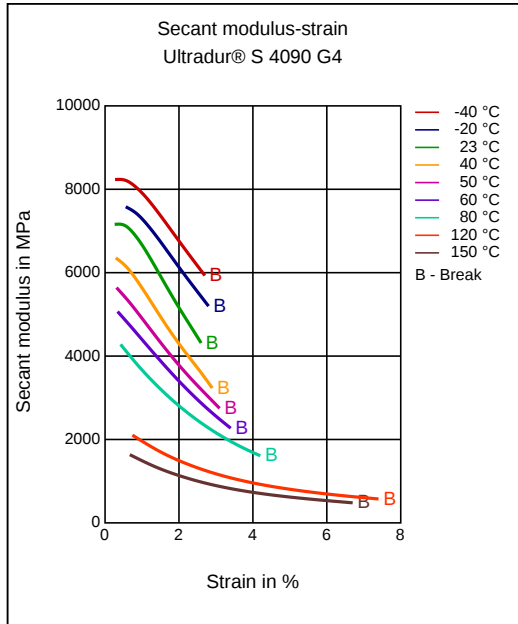
Stress-strain



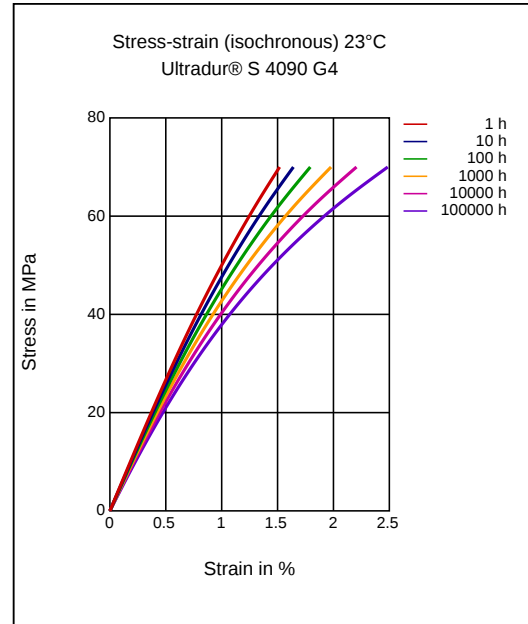
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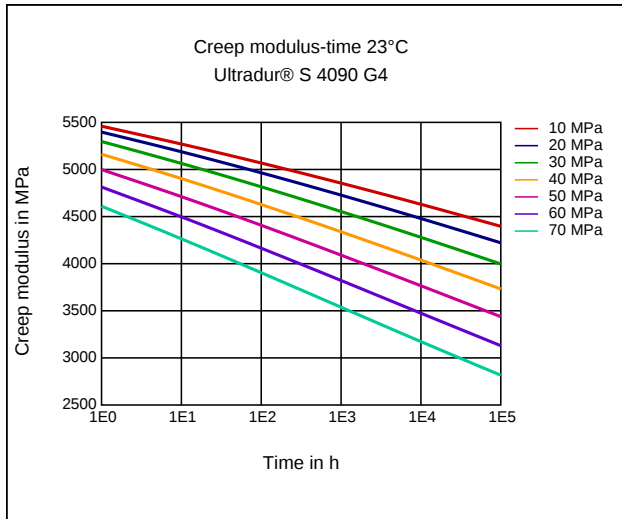
Secant modulus-strain



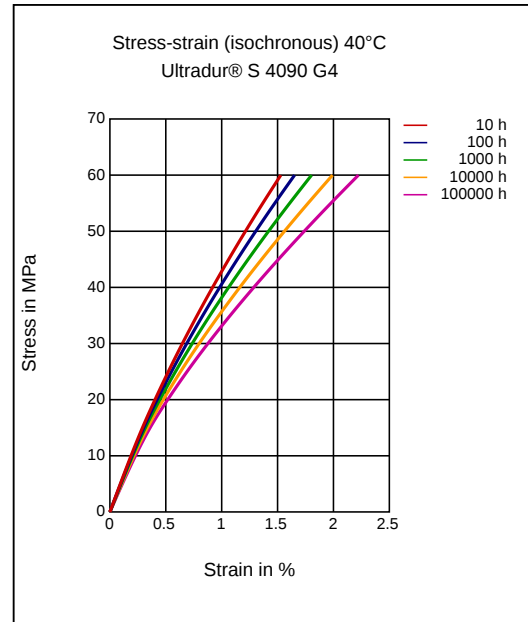
Stress-strain (isochronous) 23 °C



Creep modulus-time 23 °C



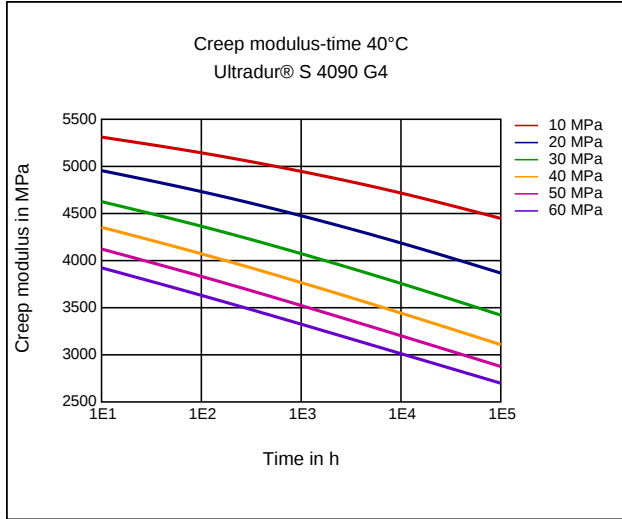
Stress-strain (isochronous) 40 °C



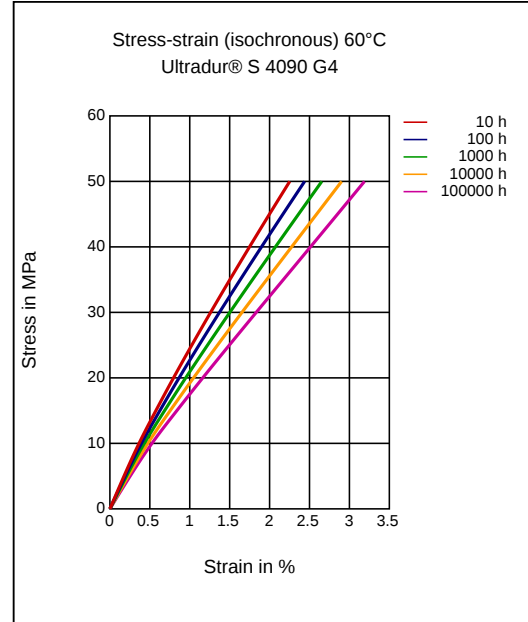
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Creep modulus-time 40°C



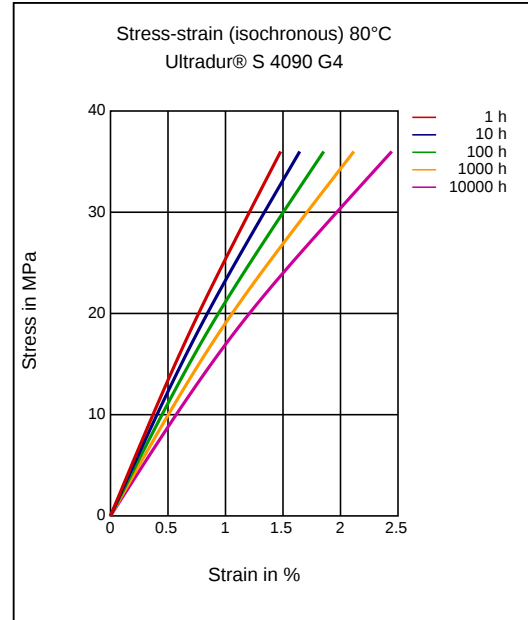
Stress-strain (isochronous) 60°C



Creep modulus-time 60°C



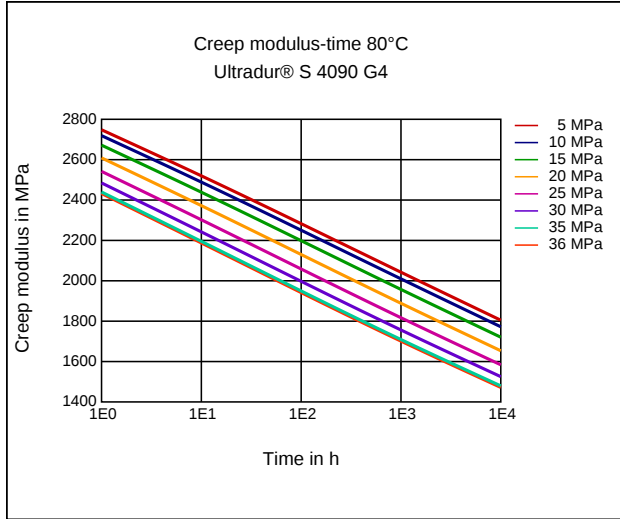
Stress-strain (isochronous) 80°C



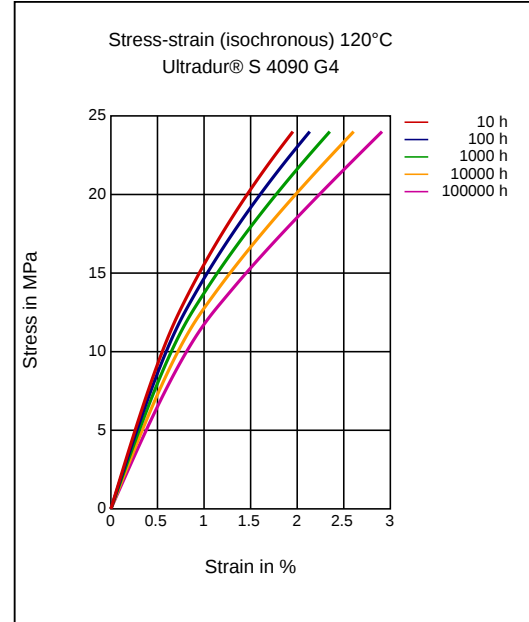
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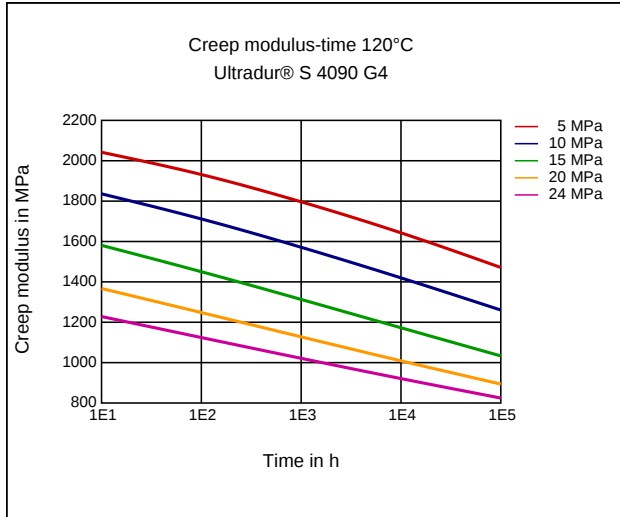
Creep modulus-time 80 °C



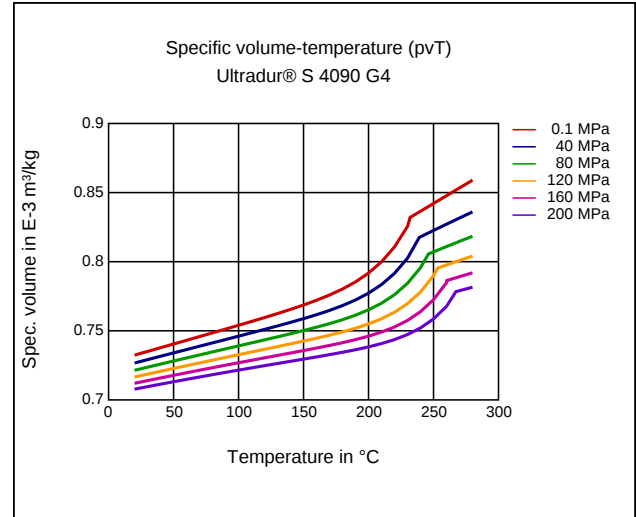
Stress-strain (isochronous) 120 °C



Creep modulus-time 120 °C



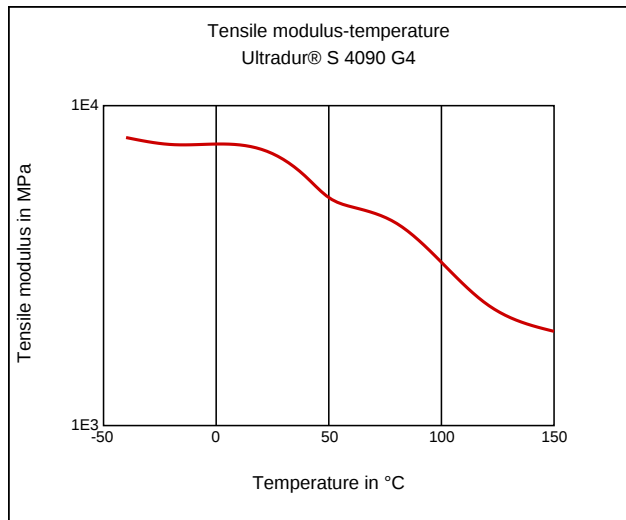
Specific volume-temperature (pvT)



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Tensile Modulus-Temperature



Characteristics

Processing

Injection Molding

Additives

Lubricants

Delivery form

Pellets, Natural Color

Special Characteristics

Light stabilized or stable to light, UV stablized, Heat aging stabilized

Injection Molding

PREPROCESSING

Pre/Post-processing, max. allowed water content: .04 %

Pre/Post-processing, Pre-drying, Temperature: 80 - 120 °C

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

PROCESSING

injection molding, Melt temperature, range: 250 - 275 °C

injection molding, Melt temperature, recommended: 270 °C

injection molding, Mold temperature, range: 60 - 100 °C

injection molding, Mold temperature, recommended: 80 °C

Chemical Media Resistance

Acids

- ✓ Acetic Acid (5% by mass) (23°C)