

PLEXIGLAS® 7N

PMMA

Röhm GmbH

Productprofil:

PLEXIGLAS® 7N is an amorphous thermoplastic molding compound (PMMA).

Typical properties of PLEXIGLAS® molding compounds are:

- good flow
- high mechanical strength, surface hardness and mar resistance
- high light transmission
- very good weather resistance
- free colorability due to crystal clarity.

Special properties of PLEXIGLAS® 7N molding compound are:

- very good mechanical properties
- high heat deflection temperature
- very good flow / melt viscosity
- AMECA listing.

Application:

Used for injection molding optical and technical items.

Example:

optical waveguides, luminaire covers, automotive lighting, instrument cluster covers, optical lenses, displays, etc.

Processing:

PLEXIGLAS® 7N can be processed on injection molding machines with 3-zone general purpose screws for engineering thermoplastics.

Physical Form / Packaging:

PLEXIGLAS® molding compounds are supplied as pellets of uniform size, packaged in 25kg polyethylene bags or in 500kg boxes with PE lining; other packaging on request.

Rheological properties	Value	Unit	Test Standard
ISO Data			
Melt volume-flow rate, MVR	6	cm ³ /10min	ISO 1133
Temperature	230	°C	-
Load	3.8	kg	-

Mechanical Properties	Value	Unit	Test Standard
ISO Data			
Tensile Modulus	3200	MPa	ISO 527
Stress at Break	73	MPa	ISO 527
Strain at Break	3.5	%	ISO 527
Tensile Creep Modulus, 1h	2800	MPa	ISO 899-1
Tensile Creep Modulus, 1000h	2200	MPa	ISO 899-1
Impact Strength (Charpy), +23°C	20	kJ/m ²	ISO 179/1eU

Thermal Properties	Value	Unit	Test Standard
ISO Data			
Glass Transition Temperature (10°C/min)	110	°C	ISO 11357-1/-2
Temp. of deflection under load (1.80 MPa)	95	°C	ISO 75-1/-2
Temp. of deflection under load (0.45 MPa)	100	°C	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	103	°C	ISO 306

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Coeff. of Linear Therm. Expansion, parallel	80	E-6/K	ISO 11359-1/-2
Burning Behav. at 1.5 mm Nom. Thickn.	HB	class	UL 94
Thickness tested	1.6	mm	-
UL recognition	yes	-	-
Oxygen index	17.2	%	ISO 4589-1/-2

Electrical Properties	Value	Unit	Test Standard
ISO Data			
Relative permittivity, 100Hz	3.7	-	IEC 62631-2-1
Relative permittivity, 1MHz	2.8	-	IEC 62631-2-1
Dissipation Factor, 100Hz	500	E-4	IEC 62631-2-1
Dissipation Factor, 1MHz	200	E-4	IEC 62631-2-1
Volume Resistivity	>1E13	Ohm*m	IEC 62631-3-1
Surface Resistivity	1E13	Ohm	IEC 62631-3-2
Comparative tracking index	600	-	IEC 60112

Other Properties	Value	Unit	Test Standard
ISO Data			
Water Absorption	2	%	Sim. to ISO 62
Humidity absorption	0.6	%	Sim. to ISO 62
Density	1190	kg/m³	ISO 1183

Material Specific Properties	Value	Unit	Test Standard
ISO Data			
Viscosity number	53	cm³/g	ISO 307, 1157, 1628
Luminous transmittance	92	%	ISO 13468-1, -2

Rheological calculation properties	Value	Unit	Test Standard
ISO Data			
Density of melt	1060	kg/m³	-
Thermal Conductivity of Melt	0.181	W/(m K)	-
Spec. heat capacity of melt	2440	J/(kg K)	-
Eff. thermal diffusivity	6.99E-8	m²/s	-
Ejection temperature	85	°C	-

Test specimen production	Value	Unit	Test Standard
ISO Data			
Processing conditions acc. ISO	8257	-	ISO-2
Injection Molding, melt temperature	243	°C	ISO 294
Injection Molding, mold temperature	63	°C	ISO 294
Injection Molding, injection velocity	195	mm/s	ISO 294

Processing Recommendation Injection Molding	Value	Unit	Test Standard
Pre-drying - Temperature	93	°C	-
Pre-drying - Time	2 - 3	h	-
Melt temperature	220 - 260	°C	-
Mold temperature	60 - 90	°C	-

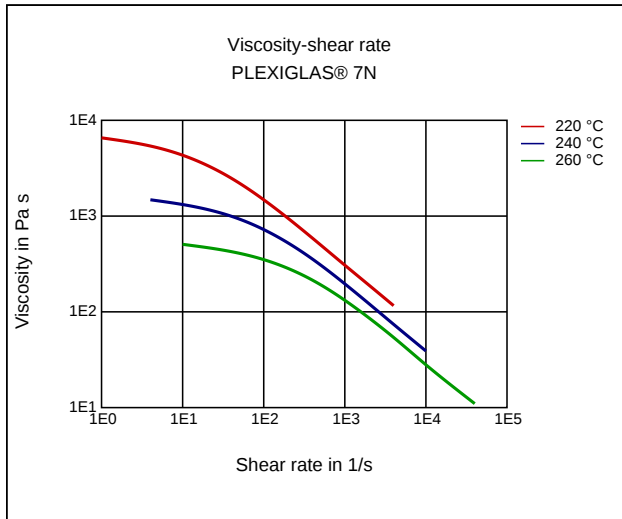
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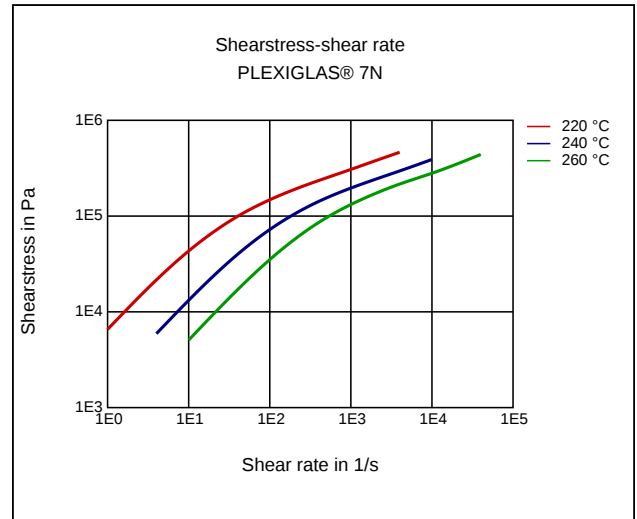
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Diagrams

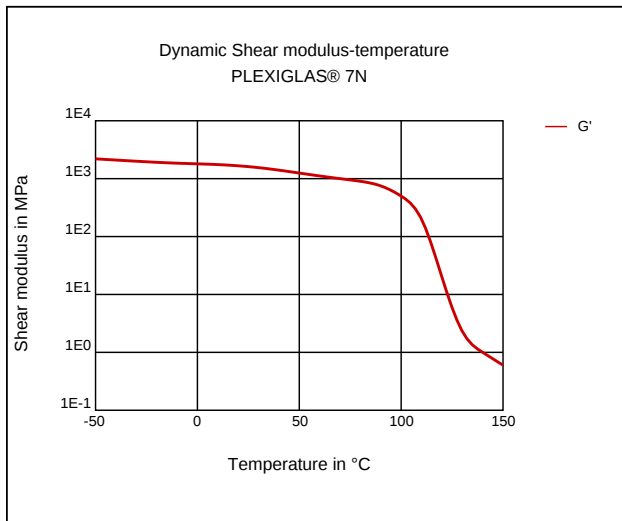
Viscosity-shear rate



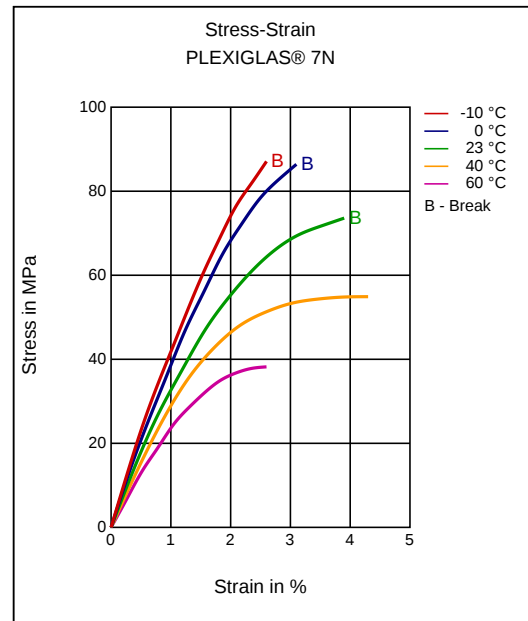
Shearstress-shear rate



Dynamic Shear modulus-temperature



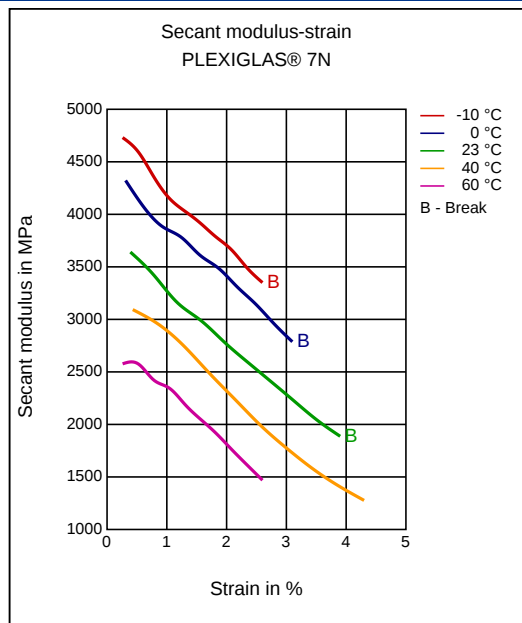
Stress-strain



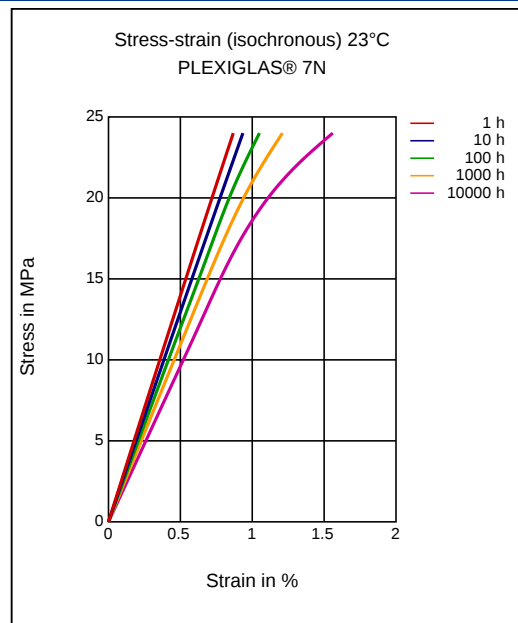
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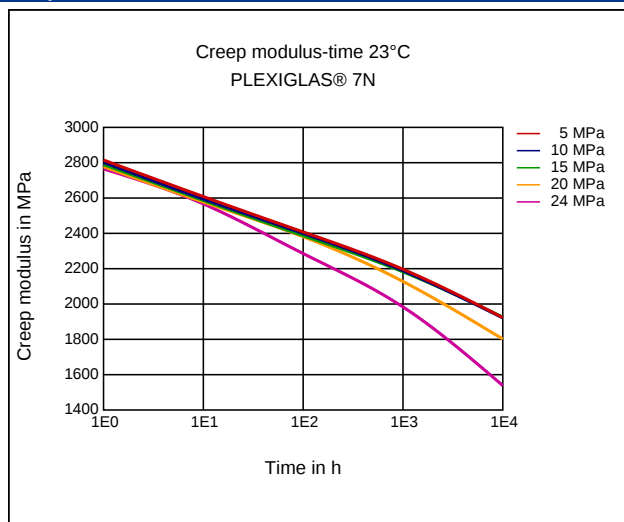
Secant modulus-strain



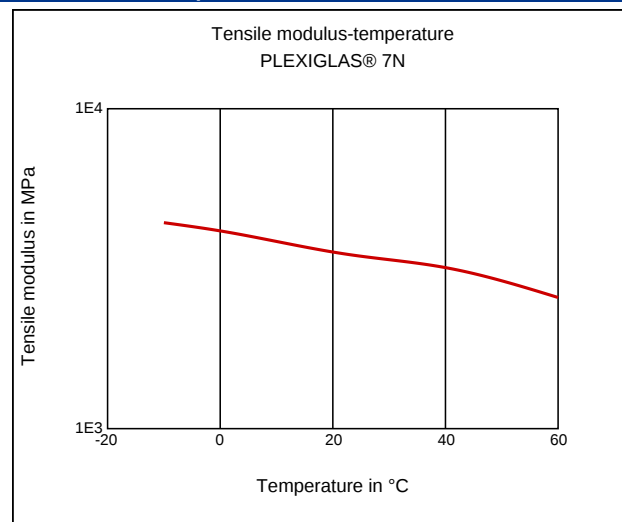
Stress-strain (isochronous) 23 °C



Creep modulus-time 23 °C



Tensile Modulus-Temperature



Characteristics

Processing

Injection Molding

Delivery form

Pellets

Special Characteristics

Light stabilized or stable to light, UV stabilized, Transparent

Features

Amorphous

Applications

Automotive

Injection Molding

PREPROCESSING

Predrying temperature: max. 93 °C

Predrying time in a desiccant-type drier: 2 - 3 h

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PROCESSING

Melt temperature: 220 - 260 °C

Mold temperature: 60 - 90 °C

Chemical Media Resistance

Acids

- ✓ Citric Acid solution (10% by mass) (23 °C)
- ✓ Lactic Acid (10% 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)

Bases

- ✓ Sodium Hydroxide solution (35% by mass) (23 °C)
- ✓ Sodium Hydroxide solution (1% by mass) (23 °C)
- ✓ Ammonium Hydroxide solution (10% by mass) (23 °C)

Hydrocarbons

- ✓ n-Hexane (23 °C)
- ✓ iso-Octane (23 °C)

Standard Fuels

- ✓ Standard fuel without alcohol (pref. ISO 1817 Liquid C) (23 °C)
- ✓ Standard fuel with alcohol (pref. ISO 1817 Liquid 4) (23 °C)
- ✓ Diesel fuel (pref. ISO 1817 Liquid F) (23 °C)

Salt solutions

- ✓ Sodium Carbonate solution (20% by mass) (23 °C)
- ✓ Sodium Carbonate solution (2% by mass) (23 °C)

Other

- ✓ 50% Oleic acid + 50% Olive Oil (23 °C)
 - ✓ Water (23 °C)
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