PLEXIGLAS® 7N

PMMA — Evonik Industries AG

Product Texts

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	cm³/10min	ISO 1133
Temperature	230	°C	ISO 1133
Load	3.8	kg	ISO 1133

Mechanical properties	Value	Unit	Test Standard
ISO Data			
Tensile Modulus	3200	MPa	ISO 527-1/-2
Stress at break	73	MPa	ISO 527-1/-2
Strain at break	3.5	%	ISO 527-1/-2
Tensile creep modulus, 1h	2800	MPa	ISO 899-1
Tensile creep modulus, 1000h	2200	MPa	ISO 899-1
Charpy impact strength (+23°C)	20	kJ/m²	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
Coeff. of linear therm. expansion, parallel	80	E-6/K	ISO 11359-1/-2
Burning behav. at 1.5 mm nom. thickn.	HB	class	IEC 60695-11-10
Thickness tested	1.6	mm	IEC 60695-11-10
UL recognition	UL	-	-
Oxygen index	17.2	%	ISO 4589-1/-2

Electrical properties	**Value**	**Unit**	**Test Standard**
ISO Data			
Relative permittivity, 100Hz	3.7	-	IEC 60250
Relative permittivity, 1MHz	2.8	-	IEC 60250
Dissipation factor, 100Hz	500	E-4	IEC 60250
Dissipation factor, 1MHz	200	E-4	IEC 60250
Volume resistivity	>1E13	Ohm*m	IEC 60093
Surface resistivity	1E13	Ohm	IEC 60093
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

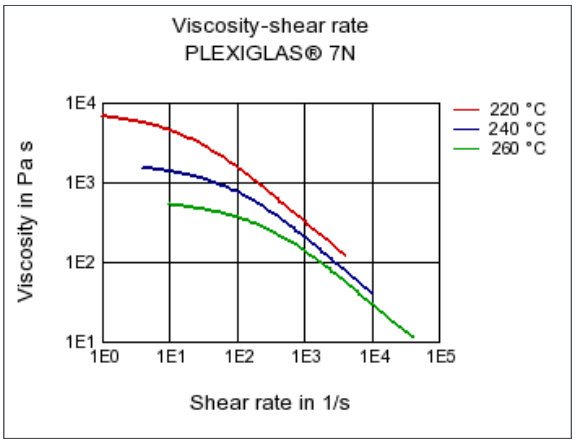
Rheological calculation properties	**Value**	**Unit**	**Test Standard**
ISO Data			
Density of melt	1060	kg/m³	-
Thermal conductivity of melt	0.181	W/(m K)	-
Spec. heat capacity of melt	2440	J/(kg K)	-
Eff. thermal diffusivity	6.99E-8	m²/s	-
Ejection temperature	85	°C	-

VDA Properties	**Value**	**Unit**	**Test Standard**
ISO Data			
Burning rate, Thickness 1 mm	72.3	mm/min	ISO 3795 (FMVSS 302)

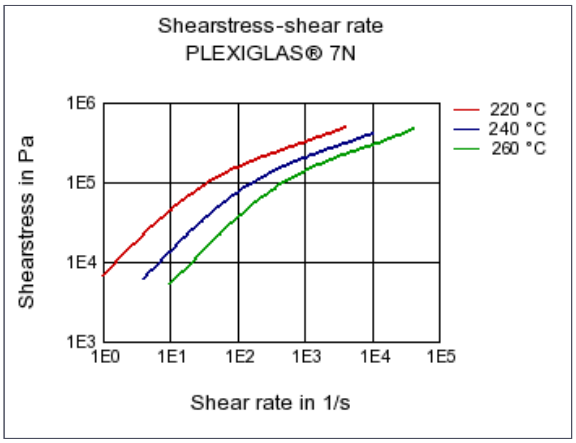
Test specimen production	**Value**	**Unit**	**Test Standard**
ISO Data			
Processing conditions acc. ISO	8260	-	ISO ....-2
Injection Molding, melt temperature	243	°C	ISO 294
Injection Molding, mold temperature	63	°C	ISO 10724
Injection Molding, injection velocity	195	mm/s	ISO 294

Diagrams

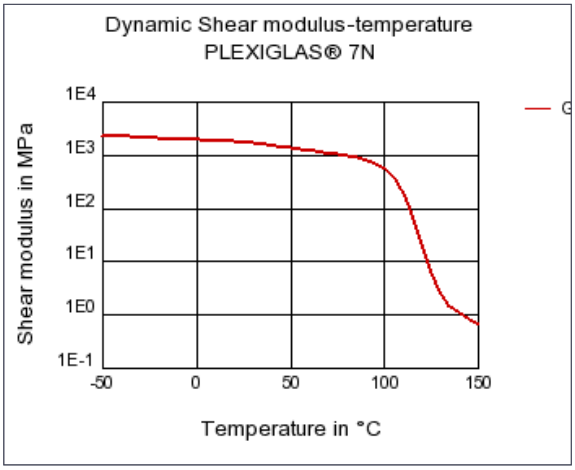
Viscosity-shear rate



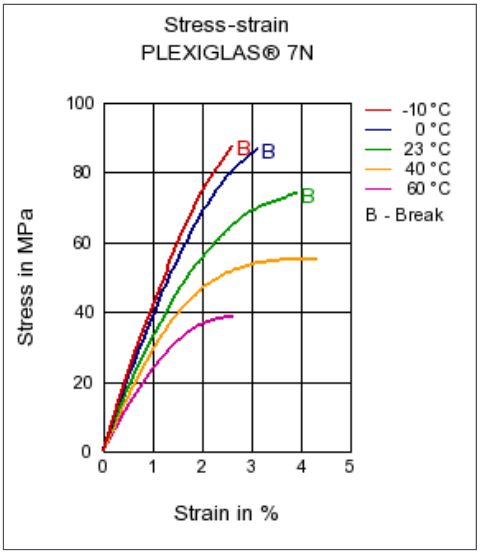
Shearstress-shear rate



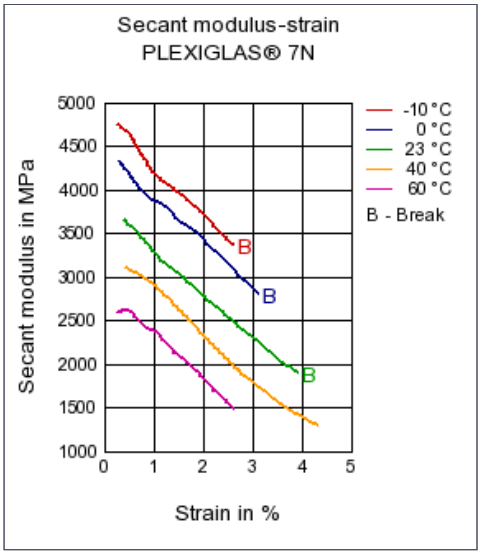
Dynamic Shear modulus-temperature



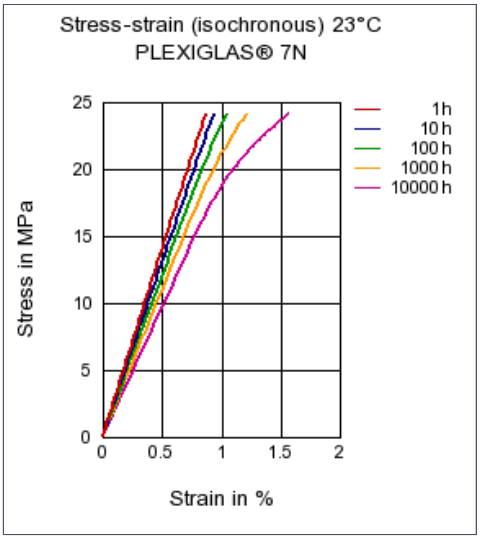
Stress-strain



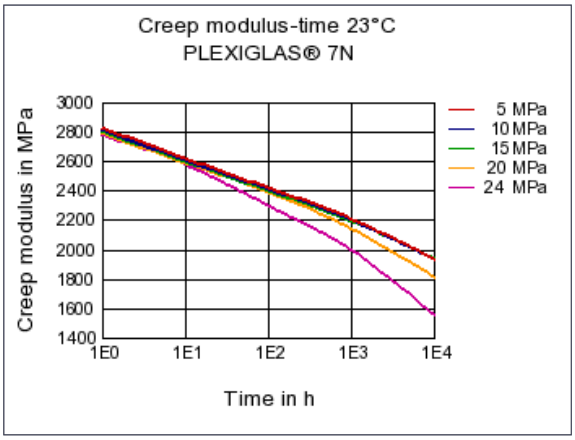
Secant modulus-strain



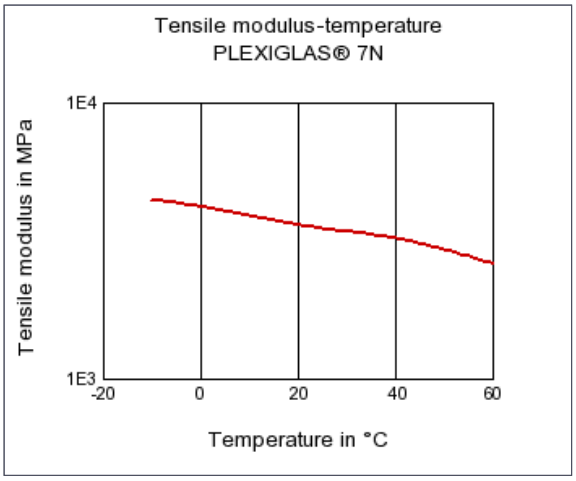
Stress-strain (isochronous) 23°C



Creep modulus-time 23°C



Tensile modulus-temperature



Characteristics

Processing
Injection Molding

Special Characteristics
Light stabilized or stable to light, U.V. stabilized or stable to weather, Transparent

Delivery form
Pellets

Other text information

Injection Molding
PREPROCESSING
Predrying temperature: max. 93 °C
Predrying time in a desiccant-type drier: 2 - 3 h
PROCESSING
Min. melt temperature: 220 - 260°C
Min. 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)