PLEXIGLAS® Resist AG 100

PMMA-I

Röhm GmbH

Productprofil

PLEXIGLAS® Resist AG 100 is an amorphous thermoplastic molding compound, based on impact-modified polymethyl methacrylate (PMMA).

PLEXIGLAS® molding compounds have the following typical properties:

- high weather resistance
- excellent transmission and clarity
- brilliant appearance
- low weight – half the weight of glass
- 100% recyclable – best life cycle assessment as compared with glass and PC
- the pleasant feel and sound of the molded parts.

PLEXIGLAS® Resist AG 100 is characterized by the following special properties:

- highest breaking strength and impact strength (30 times higher breaking strength than glass)
- improved resistance to stress cracking
- balanced property profile
- clear reduction of reversible haze at very high and low temperatures
- increased heat deflection temperature under load
- AMECA listing, CAMPUS and moldflow data available

Application and approvals

PLEXIGLAS® Resist AG 100 has a balanced property profile and was specially developed for automotive glazing. This specialty molding compound meets all the relevant requirements for this field of application.
Apart from reducing the vehicle weight, injectionmolded glazing offers maximum freedom of design and functional integration, such as the integration of lighting or panel trim. An approval to ECE R43 is required for use as automotive glazing. The material has undergone and passed all tests in line with ECE R43.
The test report of the Materials Testing Agency in North Rhine-Westphalia is available for systems based on PLEXIGLAS® Resist AG 100 for rear side windows, roof and rear windows. Further details are available on request.

Processing

PLEXIGLAS® Resist AG 100 can be processed by injection molding of parts or by sheet extrusion and coextrusion. PLEXIGLAS® Resist AG 100 can be injection-molded on processing machines with a standard three-section screw for engineering thermoplastics in one-component or twocomponent processes.

Fabrication

Forming after extrusion
The forming conditions are the same as for extruded PLEXIGLAS®. The high optical quality of the surface after forming is also comparable. Predrying is not necessary in most cases. During heating, the material turns slightly white, but this disappears completely upon cooling.
Painting and screen printing
In principle, the same paints and lacquers can be used as for extruded PLEXIGLAS®. However, we recommend that you carry out preliminary tests in this case.
Coating
Surface coating, for example with polysiloxane systems, can be carried out by means of conventional processes.
Please send any questions on fabrication to **automotive-glazing@evonik.com**.

Physical Form / Packaging

PLEXIGLAS® Resist molding compounds are supplied as pellets of uniform size in 25kg polyethylene bags or 500kg boxes with PE lining. Other types of packaging are available on request.

Colors

PLEXIGLAS® Resist AG 100 for vehicle glazing is available in Clear-transparent (9V913). Beyond this, the transparent colors Green (6V176) and Gray (7V275) are available. Further colors on request: **automotive-glazing@evonik.com**

Sustainability

From production to recycling, the environmental impact of PLEXIGLAS® was tested in the life cycle assessment in accordance with ISO 14040ff and received a positive rating. In addition to its durability, PLEXIGLAS® offers convincing recyclability. It can be completely recycled by chemical conversion to its starting materials or directly reused.
Thus, in a study prepared by PE International AG, the environmental impacts during manufacture, application and disposal of automotive glazing made from PLEXIGLAS® were positively rated in comparison with reference systems (single-layer safety glass, laminated safety glass, PC). We will be pleased to provide more details on request.

Rheological properties	Value	Unit	Test Standard
ISO Data			
Melt volume-flow rate, MVR	1.1	cm³/10min	ISO 1133
Temperature	230	°C	-
Load	3.8	kg	-

Mechanical Properties	Value	Unit	Test Standard
ISO Data			
Tensile Modulus	2200	MPa	ISO 527
Yield stress	55	MPa	ISO 527
Yield strain	5	%	ISO 527
Nominal strain at break	45	%	ISO 527
Impact Strength (Charpy), +23°C	120	kJ/m²	ISO 179/1eU

Thermal Properties	Value	Unit	Test Standard
ISO Data			
Glass Transition Temperature (10°C/min)	112	°C	ISO 11357-1/-2
Temp. of deflection under load (1.80 MPa)	100	°C	ISO 75-1/-2
Temp. of deflection under load (0.45 MPa)	105	°C	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	105	°C	ISO 306
Coeff. of Linear Therm. Expansion, parallel	110	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	-	-

Other Properties	Value	Unit	Test Standard
ISO Data			
Water Absorption	1.5	%	Sim. to ISO 62
Humidity absorption	0.5	%	Sim. to ISO 62
Density	1160	kg/m³	ISO 1183

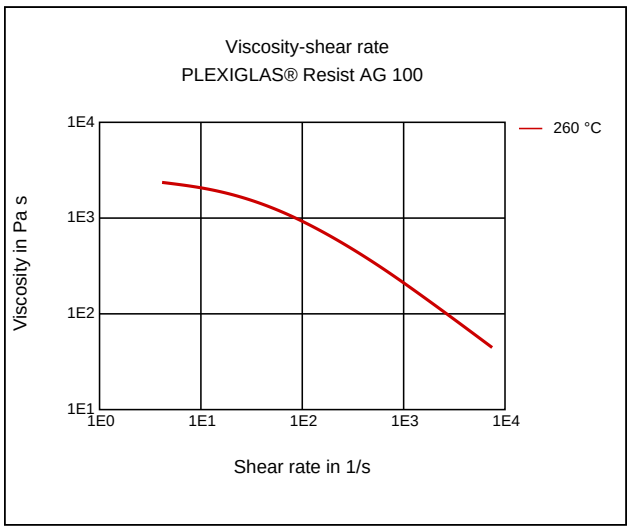
Material Specific Properties	Value	Unit	Test Standard
ISO Data			
Luminous transmittance	91	%	ISO 13468-1, -2

Test specimen production	Value	Unit	Test Standard
ISO Data			
Injection Molding, melt temperature	250	°C	ISO 294
Injection Molding, mold temperature	82	°C	ISO 294
Injection Molding, injection velocity	195	mm/s	ISO 294

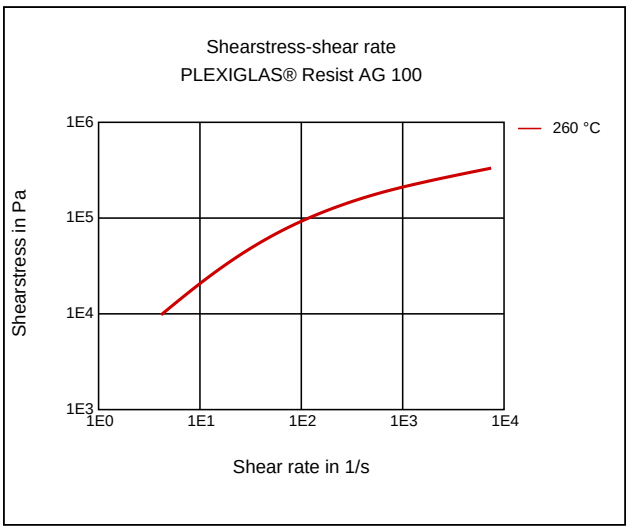
Processing Recommendation Injection Molding	Value	Unit	Test Standard
Pre-drying - Temperature	70 - 80	°C	-
Pre-drying - Time	3 - 4	h	-
Melt temperature	235 - 270	°C	-
Mold temperature	60 - 80	°C	-

Diagrams

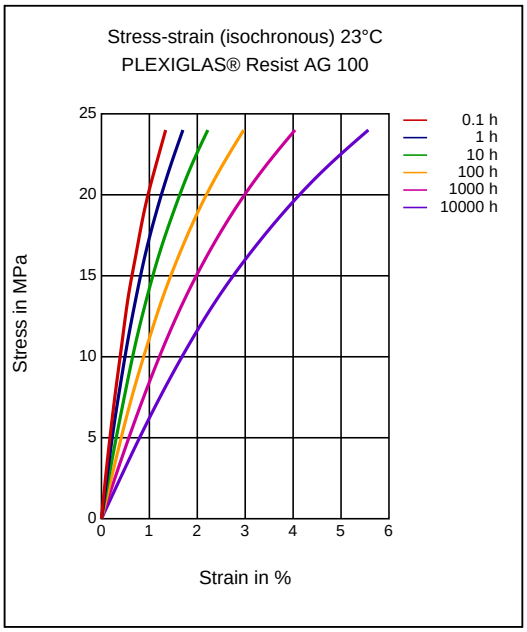
Viscosity-shear rate



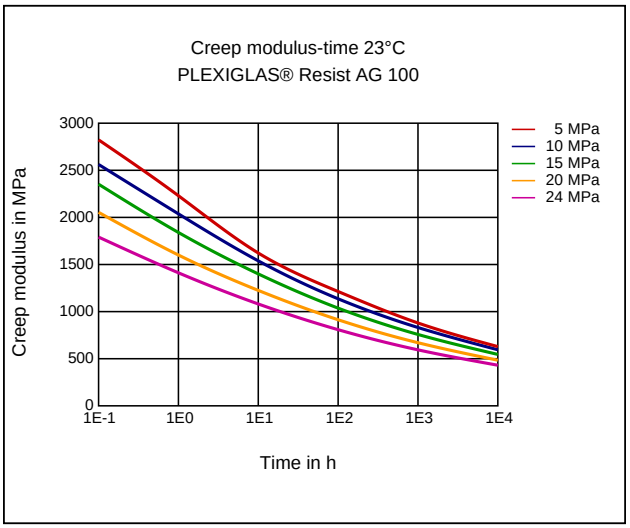
Shearstress-shear rate



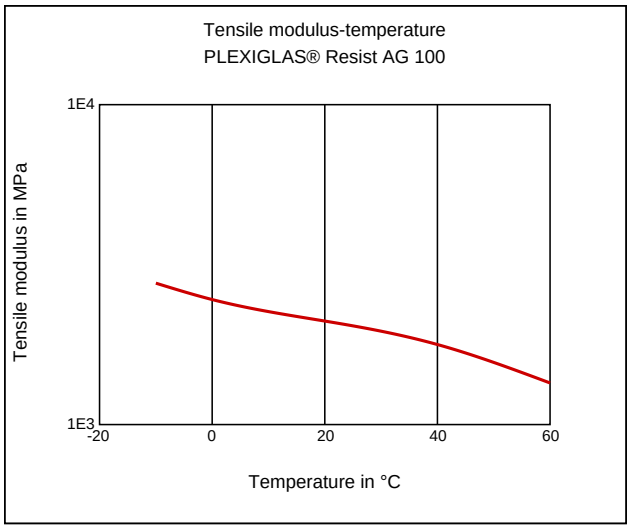
Stress-strain (isochronous) 23 °C



Creep modulus-time 23 °C



Tensile Modulus-Temperature



Characteristics

Processing
Injection Molding, Film Extrusion, Profile Extrusion, Sheet Extrusion, Other Extrusion, Thermoforming

Delivery form
Pellets

Additives
Release agent

Special Characteristics
Impact modified, Light stabilized or stable to light, UV stablized, Transparent

Features
Amorphous

Chemical Resistance
Environmental Stress Crack Resistance

Applications
Automotive

Injection Molding
PREPROCESSING
Predrying temperature: 70 - 80°C
Predrying time in a desiccant-type drier: 3 - 4 h
PROCESSING
Melt temperature: 235 - 270°C
Mold temperature:60 - 80°C

Chemical Media Resistance

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

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)

Other

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

Disclaimer

Liability Exclusion
These guide values are measured and provided by the product manufacturer and have been determined on standardised test specimens and can be affected by pigmentation, mould design and processing conditions. M-Base has taken the guide values from the producer's original Technical Data Sheet. **ALBIS AND M-BASE ARE THEREFORE NOT RESPONSIBLE FOR THE ACCURACY OF THE GUIDE VALUES AND CANNOT GIVE ANY WARRANTY WITH REGARD TO THEIR CORRECTNESS.**

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