Product Information

PLEXIGLAS® Resist AG 100

Product Profile

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

Properties

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
- pleasant feel and sound of molded parts

PLEXIGLAS® Resist AG 100 is characterized by the following additional 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.

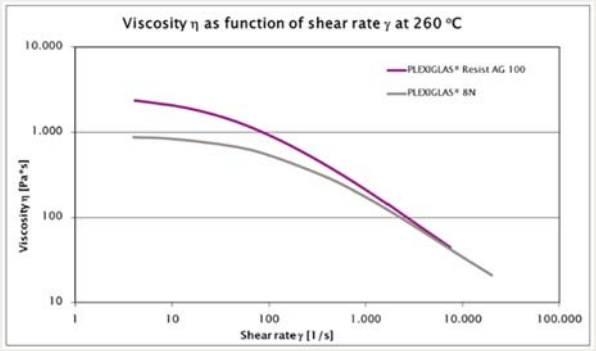
Apart from reducing the vehicle weight, injection-molded glazing offers maximum freedom of design and functional integration, such as the integration of lighting or panel trim. An approval to ECE R43 is required for use as automotive glazing. The material has undergone and passed all tests in line with 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.

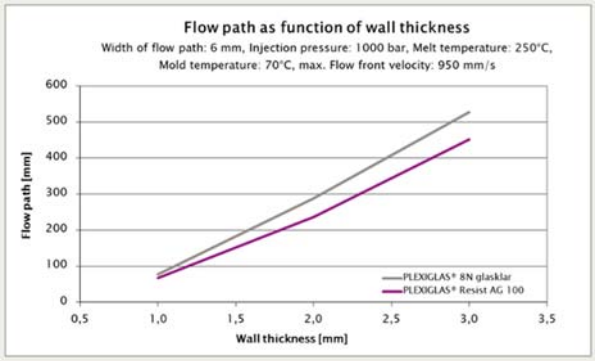
Processing

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 two-component processes.

Viscosity as a function of shear rate



Flow path as a function of wall thickness



More information is available free of charge in the CAMPUS® database (http://www.campusplastics.com).

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 and 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.

Typical values

	Parameter	Unit	Standard	PLEXIGLAS® Resist AG 100
Mechanical values				
Tensile modulus	1 mm/min	MPa	ISO 527	2200
Tensile stress at yield	50 mm/min	MPa	ISO 527	55
Yield strain	50 mm/min	%	ISO 527	5
Nominal strain at break		%	ISO 527	45
Charpy impact strength	23°C	kJ/m²	ISO 179/1eU	120
Thermal values				
Vicat softening temperature	B/50	°C	ISO 306	105
Glass transition temperature		°C	ISO 11357	112
Deflection temperature	0.45 MPa	°C	ISO 75	105
Deflection temperature	1.8 MPa	°C	ISO 75	100
Coefficient of linear thermal expansion	0–50 °C	E-5/°K	ISO 11359	11
Flammability UL 94	1.5 mm	Class	IEC 707	HB
Rheological values				
Melt volume rate, MVR	230°C / 3.8 kg	cm³/10 min	ISO 1133	1.1
Melt volume rate, MVR	260°C / 3.8 kg	cm³/10 min	ISO 1133	7.7
Optical values	d = 3mm			
Transmittance	D_{65}	%	ISO 13468-2	91
Haze		%	ASTM D1003	0.7
Refractive index			ISO 489	1.49
Other values				
Density		g/cm³	ISO 1183	1.16
Water absorption in water		%	ISO 62	1.5
Moisture absorption	23°C / 50 %	%	ISO 62	0.5
Recommended processing conditions				
Predrying temperatures		°C		70–80
Length of predrying Desiccant-type dryer		h		3–4
Mass temperature		°C		235–270
Mold temperature (injection molding)		°C		60–80
Die temperature (extrusion)		°C		240

All the listed technical data are typical material data that were determined on clear-transparent materials and serve as a guide. They are not binding and do not constitute a material specification.

Certified to ISO 9001:2015, ISO 14001:2015 and IATF 16949:2016.

File: PLEXIGLAS® Resist AG 100_E | Date: 2018-03-27

Evonik Performance Materials GmbH
Kirschenallee
64293 Darmstadt

plexiglas.polymers@evonik.com
www.plexiglas-polymers.de