

PLEXIGLAS® GS, UV transmitting Clear 2458, Clear 2458 SC, Clear 2890

Product Description

The Product and Its Benefits

UV transmitting PLEXIGLAS® GS is a kind of cast acrylic (= polymethyl methacrylate, PMMA) specially developed for **tanning beds**, with **high UV (ultraviolet) transmission and UV resistance**.

UV transmitting PLEXIGLAS® GS has a perfectly coherent surface, whether in its smooth or satin-finished version. It always **feels pleasantly** warm to the skin and is **hygienic**. It is therefore ideally suited for use in both cosmetic and therapeutic UV appliances.

The material is particularly **resistant to extremes of climate**, i.e. also ideal for applications exposed to heat and humidity in addition to UV radiation. UV transmitting PLEXIGLAS® GS exhibits **high mechanical strength at low weight**.

Users can derive benefits from solid sheets made from three grades of UV transmitting PLEXIGLAS® GS:

- **Clear 2458** with **two smooth**, transparent surfaces,
- **Clear 2458 SC** with **one satin-finished** surface and a translucent appearance,
- **Clear 2890** with **specially adjusted UV transmission** for special applications.

Physical Forms

UV transmitting PLEXIGLAS® GS solid sheets are supplied

- in **thicknesses 2.5, 3, 4, 5, 6 and 8 mm**.

Both sheet surfaces are covered with a recyclable PE masking film to protect them from dirt pickup and scratching during storage, transport as well as mechanical and thermal treatment. This film can be left on the sheets even during thermoforming, provided the process is performed as befits the material, but should be removed before the finished items are used.

Fabrication

UV transmitting PLEXIGLAS® GS can be sawn, drilled, routed, sanded and polished using all tools suitable for acrylic. Scratches on UV transmitting PLEXIGLAS® GS parts with a smooth surface can be polished away, using suitable polishing pastes or waxes and a soft cloth (glovelining fabric) or a buffing wheel.

The thermoforming temperature should be between 130°C and 160°C.

If the masking film is left on the sheet during thermoforming to provide continued protection to the finished item for economical reasons, mark-off cannot always be avoided on the thermoformed part. This may be due to air entrapment in and below the film.

The quality of acrylic can be upgraded by annealing. Therefore, all parts made from UV transmitting PLEXIGLAS® GS must be annealed after manufacture to allow for the chemical and other loads to which tanning beds are exposed. This relieves the material stress produced by mechanical treatment and greatly reduces the risk of stress cracking.

Annealing is performed in airflow ovens at 70°C for two to four hours (depending on thickness), followed by slow cooling.

Hints for Application

UV transmitting PLEXIGLAS® GS is easy to clean. However, care should be taken to employ only cleaning agents that do not damage acrylic, and to follow closely the relevant manufacturer's instructions for use.

Furthermore, we advise against using cosmetics such as body oils, lotions and creams before and during tanning where there is direct contact between the skin and the tanning bed made from UV transmitting PLEXIGLAS® GS, since these substances may damage acrylic.

We as the sheet manufacturers cannot be held responsible for damage due to the use of the above-named and similar cosmetic products.

The mechanical loads to be expected in use must be considered when developing parts, particularly those of new design. You are advised to consult our technical service department.

Properties

The table summarizes the major typical property values (at 23°C / 50% RH):

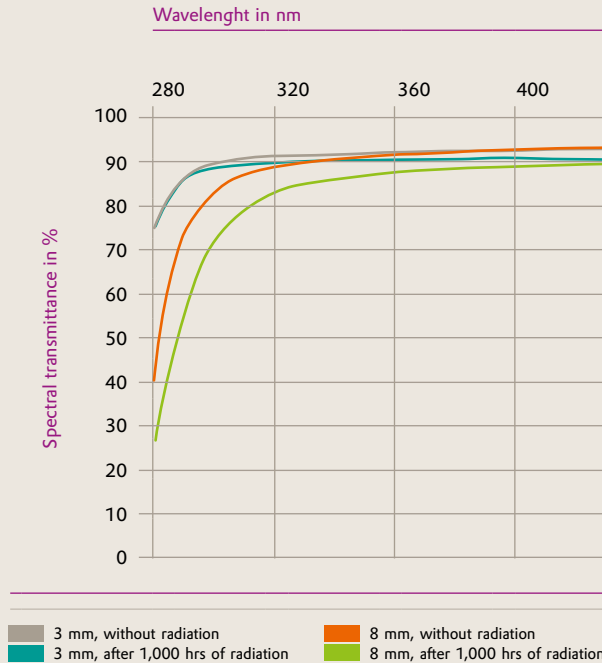
Table of Typical Values

Properties	PLEXIGLAS® GS, UV transmitting, 3 mm thickness			Unit	Test Method
	Clear 2458	Clear 2458 SC	Clear 2890		
Mechanical					
Density	1,19	1,19	1,19	g/cm ³	ISO 1183
Elongation at break	≥ 5	≥ 5	≥ 5	%	ISO 527
Tensile strength	≥ 60	≥ 60	≥ 60	MPa	ISO 527
Flexural strength	≥ 90	≥ 90	≥ 90	MPa	ISO 178
Elastic modulus	≥ 2500	≥ 2500	≥ 2500	MPa	ISO 527
Thermal					
Coefficient of linear thermal expansion (0 to 50°C)	$7 \cdot 10^{-5}$	$7 \cdot 10^{-5}$	$7 \cdot 10^{-5}$	1/K	DIN 53752-A
Thermal conductivity	0,19	0,19	0,19	W/mK	DIN 52612
Vicat softening temperature	100	100	100	°C	ISO 306/B 50
Fire rating	B2, normally flammable	B2, normally flammable	B2, normally flammable	–	DIN 4102
	Class 3	Class 3	Class 3	–	BS 476, Part 7
	M4	M4	M4	–	NF P 92501/-5
	HB	HB	HB	–	UL 94
Optical					
Transmission in the UV range 315 nm				%	DIN 5036, Part 3
3 mm thickness	≥ 80	≥ 80	≥ 60		
8 mm thickness	≥ 70	≥ 70	≥ 25		
Transmission in the visible range from 380 to 780 nm	≥ 90	≥ 90	≥ 90	%	DIN 5036, Part 3

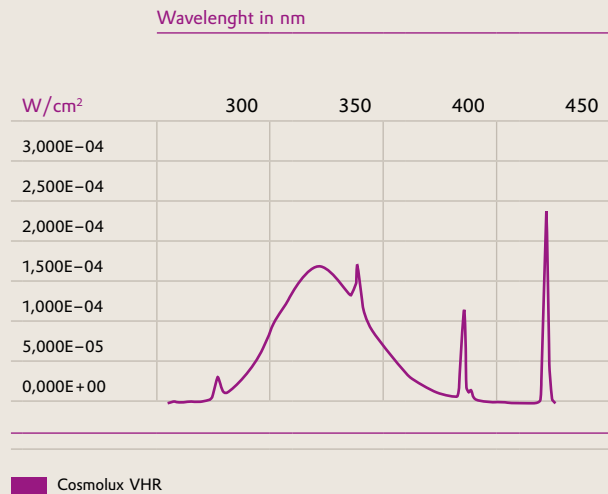
The diagram shows the spectral transmittance of PLEXIGLAS® GS Clear 2458* measured on 3 and 8 mm thick sheets prior to irradiation and after 1,000 hours' exposure to the radiation of a Philips CLEO Professional 160 W lamp:

The following graph shows the emission spectrum of the radiation source employed for the transmittance measurement, a Cosmolux VHR 160 Watt lamp:

PLEXIGLAS® GS, UV transmitting



Cosmolux VHR



* Spectral transmittance curves of UV transmitting PLEXIGLAS® GS Clear 2458 SC and Clear 2890 available on request.

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* = registered trademark PLEXIGLAS is a registered trademark of Evonik Röhm GmbH, Darmstadt, Germany.

Certified to DIN EN ISO 9001 (Quality) and DIN EN ISO 14001 (Environment)

Evonik Industries is a worldwide manufacturer of PMMA products sold under the PLEXIGLAS® trademark on the European, Asian, African and Australian continents and under the ACRYLITE® trademark in the Americas.

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