PLEXIGLAS®

PLEXIGLAS®
Solid Sheet

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THE ORIGINAL BY RÖHM

PLEXIGLAS® LED for side lighting, WH46 SC

Product

The cast, white-translucent grade WH46 SC from the PLEXIGLAS® LED product family was developed as a white lighted mirror for light box signs that incorporate side-lit LED modules.

The sheets offer special light diffusion at the surface and inside the material. This ensures more uniform light distribution combined with optimal luminous efficiency.
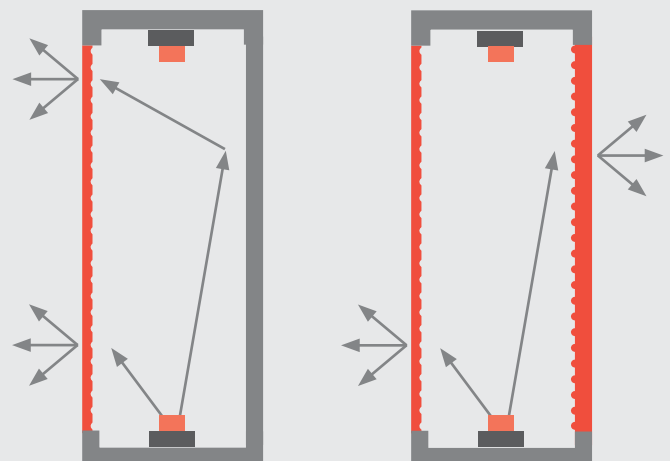
Properties

In addition to the well-known and proven properties of PLEXIGLAS®, such as

- extremely high weather resistance,
- ease of fabrication,
- 100% recyclability,

PLEXIGLAS® LED WH46 SC offers the following special features:

- more uniform light distribution when lit from the side by LEDs
- up to 30% higher luminous efficiency, depending on the chosen structure, as compared with a conventional light-diffusing sheet
- textured on one side for better light guiding. This side faces inwards (into the light box).
- The outer surface is smooth and can be printed or decorated with adhesive motifs.

(a) one luminous side   (b) two luminous sides

Fig. 1: Cross-section of side-lit light box with WH46 SC installed as a mirror, and LED modules at the top and bottom.
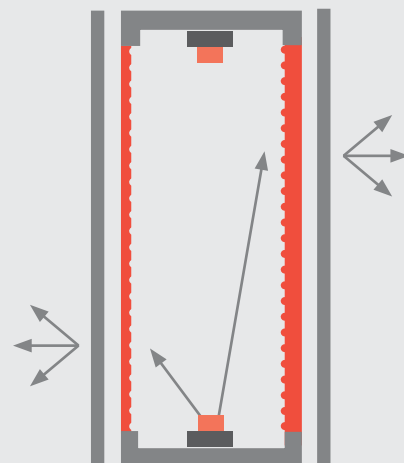

Fig. 2: Cross-section of unit with WH46 SC installed as a diffuser sheet with a backlit poster.

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Applications

These properties make PLEXIGLAS® LED WH46 SC especially suitable for side lighting with LED modules for

- light boxes with one or two luminous surfaces. PLEXIGLAS® LED WH46 SC is directly printed or provided with adhesive décor as the advertising display (see Fig. 1).
- backlit City Light posters: PLEXIGLAS® LED WH46 SC is installed between the poster and the light source as a diffuser sheet for optimized illumination (see Fig. 2).

The most homogeneous lighting is achieved in generously dimensioned light boxes with correspondingly large areas to be illuminated. The following table (Table 1) shows that WH46 SC is brighter and provides more uniform lighting than other suitable materials.

Brightness of a light box				
LED grade (see grade)	τ_{D65}* (τ_{D65}*)	Color	Luminance/ uniformity**	
WH46 SC (WH02) (WN070)	40 % (44 %) (30 %)	White	456 cd/m² 395 cd/m² 330 cd/m²	+++ + ++

Measured with OSRAM BoxLED Side Plus (one-sided) LED modules in a light box sized 1.0 m x 1.0 m.

* Transmittance to DIN 5033, ISO 13468-2.

** Average luminance and uniformity of illumination.

Machining

PLEXIGLAS® LED WH46 SC can be machined just like standard PLEXIGLAS® GS. The following Guidelines for Workshop Practice are available for PLEXIGLAS®:

- Machining PLEXIGLAS® (Ref. No. 311-1)
- Forming PLEXIGLAS® (Ref. No. 311-2)
- Surface Treatment of PLEXIGLAS® (Ref. No. 311-4)
- Fabricating Tips for PLEXIGLAS® Solid Sheet (Ref. No. 311-5)

Notes:

- Always install the textured side of WH46 SC facing inwards.
- When installing the frame, a spacing of at least 30 mm must be left between the LED modules and the sheet so that the light cones of the individual LEDs can be merged. This minimum spacing depends on the beam angles of the LEDs, and may be up to 50 mm in rare cases.
- To intensify the impression of whiteness in incident light, we recommend that you line the inside of the light box with highly reflective white material. As an alternative, an additional white-translucent film can be applied.
- You should also bear in mind the LED manufacturers' descriptions, especially with regard to the areas to be illuminated when the LEDs are installed on one or both sides of the light box. Suitable products include, for example, OSRAM BoxLED side and OSRAM BoxLED side Plus.

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Physical forms

PLEXIGLAS® LED WH46 SC is available in the following size:

PLEXIGLAS® LED WH46 SC	
Size	3050 x 2030 mm
Thickness	3 mm, 5 mm
Light transmission* TD65	40 %

* DIN 5033, ISO 13468-2

Other thicknesses and sizes are available on request.

For more details, please consult the PLEXIGLAS® Sales Handbook.

WH46 SC belongs to the PLEXIGLAS® LED product family and was specially developed for the illuminated signage industry. You can find other interesting products developed for LED applications in the information sheet "PLEXIGLAS® LED, Overview" (Ref. No. 212-6).