PLEXIGLAS®
Solid Sheet

PLEXIGLAS®
THE ORIGINAL BY RÖHM

PLEXIGLAS® LED for backlighting, colored

Product

These translucent cast sheets were specially developed for backlighting with LEDs.

PLEXIGLAS® LED (colored) is the result of a patented technology that provides particularly good light diffusion combined with optimal light transmission. This makes the surface glow evenly without any LED hot spots. The colored grades are adjusted to the wavelength ranges (color coordinates) of red, green, yellow, blue or white LEDs. This allows optimum use of LED light and creates a complete energy-efficient LED system.

Particularly in illuminated signs, store fixtures and exhibition booths, the combination of LEDs with PLEXIGLAS® LED makes for maximum efficiency and superior lighting technology. Advertising messages often glow 24 hours a day, which is why energy-saving construction is becoming increasingly important. Illuminated signs with PLEXIGLAS® LED, backlit with modern LED technology, consume less energy than conventional fluorescent and neon tubes and also require much less maintenance. The full potential of LEDs can only be harnessed using the right material.

Properties

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

- extremely high weather resistance,
- ease of fabrication,
- low weight – half the weight of glass,
- 100% recyclability,

PLEXIGLAS® LED (colored) shows the following special features:

- no LED hot spots due to optimized light diffusion
- optimally adjusted to the wavelength range of LEDs
- identical effect in daylight and when lit
- higher luminous efficiency due to improved diffusion and adjustment to the light spectrum of LEDs.
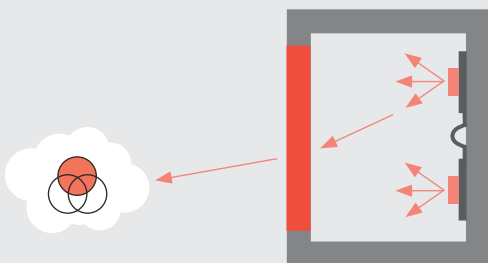

Fig. 1: Cross-section of a light box

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PLEXIGLAS® LED (colored) in comparison			
LED grade (see grade)	$\mathbf{\tau_{D65}}$* ($\mathbf{\tau_{D65}}$*)	**Color**	**Luminance (Luminance)**
1H74 (1HO1)	26 % (22 %)	yellow	79 cd/m² | + 28 % (62 cd/m²)
2H41 (2HO2)	9 % (6 %)	orange	120 cd/m² | + 35 % (89 cd/m²)
3H68 (3H67)	7 % (3 %)	red	273 cd/m² | + 81 % (151 cd/m²)
5H60 (5HO1)	7 % (5 %)	blue	78 cd/m² | + 26 % (62 cd/m²)
6H18 (6HO1)	19 % (7 %)	green	97 cd/m² | + 29 % (42 cd/m²)

Measured with OSRAM BackLED BA01MA-B2 (blue), OSRAM BA01MA-R2 (red), OSRAM BA01SA-G2 (green), OSRAM BA01SA-O2 (orange) LED modules with 115 modules/m².

* Transmittance DIN 5033, ISO 13468-2.

Applications

These properties make PLEXIGLAS® LED (colored) especially suitable for

- illuminated signs
- backlighting in store fixtures and exhibition booths
- luminous walls in architecture and design

Machining

PLEXIGLAS® LED (colored) 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)
- Joining PLEXIGLAS® (Ref. No. 311-3)
  The adhesive ACRIFIX® 2R 0195 with a matte satin surface is ideal for bonding PLEXIGLAS® Satinice.
- Fabricating Tips for PLEXIGLAS® Solid Sheet (Ref. No. 311-5)

It is advisable to backlight the colored grades with colored LEDs in order to achieve maximum energy efficiency, e.g. to use Red 3H68 with red LEDs. The potential benefits cannot be fully exploited if the unit is backlit with white light sources. The following table shows the measured brightness (luminance) of the product range in a light box assembly as compared to a conventional grade. PLEXIGLAS® LED increases the brightness by 25% to 80%. That means that, with the same brightness, the costs for an illuminated sign can be reduced by using fewer LED modules, with an equivalent saving in energy costs for operating the sign.

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Physical forms

PLEXIGLAS® LED (colored) is available in the colors listed above in size 3050 mm x 2030 mm.

You can find the complete range with all available thicknesses in the PLEXIGLAS® Sales Handbook.

PLEXIGLAS® LED (colored) 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" (No. 212-6).