Technical Information

PLEXIGLAS® LED

Sheets and rods for edge lighting (former EndLighten T)

Product

As a sheet or rod, PLEXIGLAS® LED (EndLighten T) glows over its entire surface. The LED light is installed over the edge or end.

The patented light-guiding material distributes light evenly and provides high luminous efficiency.

The grade PLEXIGLAS® LED (EndLighten T) HC has a scratch-resistant coating on one side, which makes posters, for instance, insensitive to damage that might cause optical disturbances on the service side. This side is also tougher during installation.

Properties

The further development of PLEXIGLAS® LED (EndLighten) to PLEXIGLAS® LED (EndLighten T) achieved better light output. In its unlit state, the material is crystal-clear. It has no textures or printed patterns that can lead to optical disturbances. The high transparency of the optimized base material and the light-guiding principle causes LED light to be conveyed from the edge into the depths of the material due to surface reflections.

The special light-diffusing particles incorporated into the material extract the light from LEDs on its way through the sheet/the rod, and cause the surface to glow evenly.

In addition to the familiar time-tested properties of PLEXIGLAS®, such as

- very high weathering resistance and
- 100% recyclability,

PLEXIGLAS® LED (EndLighten T) offers the following special features:

- LED light is emitted across the surface with a high efficiency of 70-97%.
- No disturbing patterns that generate hot spots
- In its unlit state: crystal-clear
- When illuminated: impressively pleasant light
- Improved light diffusion towards the viewer
- Unique patented technology
- Uniform light distribution across the entire surface

PLEXIGLAS® LED (EndLighten T) HC has a scratch-resistant coating on one side:

- Excellent resistance to abrasion and chemicals and outstanding surface appearance
- Not suitable for forming

Applications

Provided with LED strip modules, the sheet glows evenly across its entire surface with LED light. This creates super-slim illuminated surfaces. In the form of rods, the product glows at the ends owing to light input at one or both ends.

PLEXIGLAS® LED is suitable for the following applications:

- sheets: for super-slim backlit posters, displays and signs. Thin decorative wall panels glow in the color of the LEDs, creating thin area lighting elements. The alternation between the play of LED light and the unlit crystal-clear transparency provides new design options.
- Rods: touches of light in architecture, design or in furniture, exhibition booths and store fixtures; individual luminaires; self-illuminated light guides

Fabrication

PLEXIGLAS® LED can be fabricated just like standard PLEXIGLAS®:

- Machining PLEXIGLAS® (Ref. no. 311-1)
- Forming PLEXIGLAS® (Ref. no. 311-2)
  The bending radius should be more than 6 times the sheet thickness or rod diameter in order for the light to follow the curvature.
  (The scratch-resistant grade cannot be formed).
- Joining PLEXIGLAS® (Ref. no. 311-3)
- Surface treatment of PLEXIGLAS® (Ref. no. 311-4). Surface defects can be removed by polishing to completely restore the material's lighting engineering properties.
- Fabricating Tips for PLEXIGLAS® Solid Sheets (Ref. no. 311-5)

Sales Range

For further details on the availability of grades and thicknesses, please consult the PLEXIGLAS® Sales Handbook.

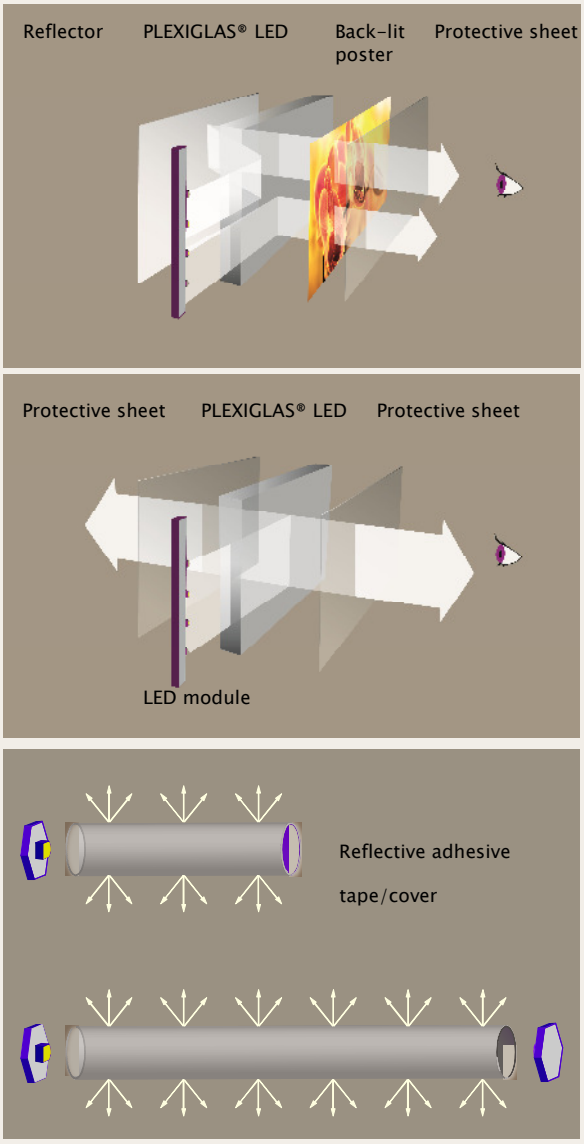
PLEXIGLAS® LED (EndLighten T)

	SM	L	XL	XXL
Area to be illuminated Light fed in on two sides	up to 300 mm	300 – 600 mm	600 – 1200 mm	1200 – 2000 mm
Light fed in on one side	up to 150 mm	150 – 300 mm	300 – 600 mm	600 – 1000 mm
Sheet thickness [mm]	4	4, 6, 8, 10	4, 6, 8, 10	8, 10
Scratch-resistant (HC), extruded (3050 x 2050 mm)	0E010 HC	0E011 HC	0E012 HC	0E013 HC
Extruded (3050 x 2050 mm)	0E010 SM	0E011 L	0E012 XL	0E013 XXL
Rod diameter [mm]	–	D8, D20, D40	D8, D20, D40	D8, D20, D40
Extruded rod (L: 2000 mm)	0E010 SM	0E011 L	0E012 XL	0E013 XXL

Abrasion resistance of PLEXIGLAS® LED (EndLighten T) HC

	Standard	PLEXIGLAS® LED (EndLighten T) with scratch-resistant coating (HC)	Uncoated acrylic sheet
Abrasion resistance to Taber Abrader test (100 cycles, 4.9 N, CS-10F)	ISO 9352	haze < 3%	haze 20 - 30%
Falling abrasive test	DIN 52348	2.3 cd/(lx · m²)	22 cd/(lx · m²)
Pencil hardness	DIN EN 13523-4	5H	2H
Adhesion	DIN EN ISO 2409	GT 0	-

Installation setup



Top: Backlighting a poster
Center: Transparent luminous surfaces
Bottom: Feeding in light at one or both ends for rods

PLEXIGLAS® LED (EndLighten T) is provided with LED strip modules on one or two sides, and on four sides for extremely high brightness. A protective sheet protects the light guide from damage that might cause undesired light output. This protective sheet can be transparent, or can take the form of a diffuser sheet for decorative applications (see table for further materials).

Notes:

- Complete light guiding is only achieved after the masking film is removed.
- For optimum luminous efficiency, please make sure to choose the suitable grade (SM, L, XL, XXL).
- Polish all edges to minimize light loss. Edges that are not provided with LEDs should be covered with white reflective material.
- Bonding, lamination and printing disturb the light guiding effect and lead to less uniform illumination.
- Install LEDs close to the edge so that the light cone is completely fed into the material.
- Weak points in the overall LED system reduce the overall performance. Please select the right LEDs and LED heat management.

Further recommended materials

Back sheet reflector	PLEXIGLAS® WH01 PLEXIGLAS® WN297	White, cast White, extruded
Diffuser	PLEXIGLAS® LED (truLED), WH14 PLEXIGLAS® Satinice, 0D010 DF	White translucent Highly efficient, light-diffusing velvety surface
Transparent protective sheet	PLEXIGLAS® Optical, 0A570 HC PLEXIGLAS® XT, 0A570 AR PLEXIGLAS® GS and XT, Clear	Scratch-resistant with special UV protection Anti-reflective Universal

Evonik 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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