



A New Dimension of Light

ACRYLITE® EndLighten acrylic sheet

ACRYLITE® EndLighten acrylic sheet

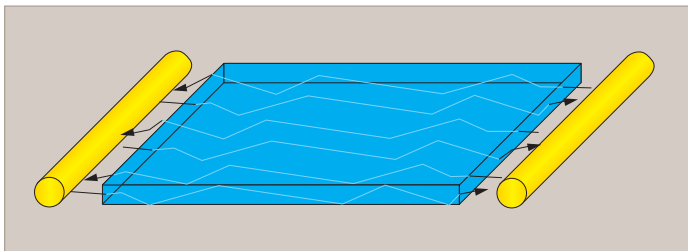
Product

Specifically engineered for edge-lit applications, ACRYLITE® EndLighten acrylic sheet is a transparent, light diffusing acrylic (PMMA) that exhibits special light-conducting properties. Whether for artwork, signage or accent lighting, ACRYLITE EndLighten sheet makes it possible to construct flat, large-surface, single or double-sided uniformly bright displays, light boxes, LCD displays, poster panels, room dividers and much more.

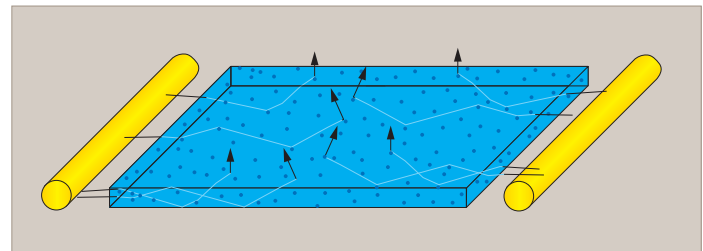
Operating Principle and Construction

ACRYLITE EndLighten sheet contains embedded colorless diffuser particles which cause the light to diffuse forward. Light is accepted through the edge and is redirected to the surface, resulting in a bright and uniform illumination (Figure 1). The lit edges should have smooth surfaces for enhanced light entry, which is easily done by buffing the edges.

Fig. 1 : Total reflection vs. forward diffusion



Normal colorless PMMA conducts light by internal total reflection. The light beams remain in the sheet and only exit at the edges.



Diffusing particles embedded in ACRYLITE EndLighten sheet selectively reduce the total reflection. Light beams can also leave the sheet at the surface.

Double-sided or single-sided emission

Signs may be constructed to emit light from one or both sides. If only one side is to be light emitting, an opaque and highly reflective cover should be provided on the back. For two-sided emission, both the covers and graphic media should consist of the same material. Graphic images should be printed on light-diffusing film or paper so light is evenly distributed upon exiting.



Fig. 2: Sectional drawing of an edge-lit display featuring ACRYLITE EndLighten sheet

The graphic media to be illuminated may be printed on film, paper or even acrylic (such as ACRYLITE® Satin Ice acrylic sheet) and placed in front of ACRYLITE EndLighten sheet. To increase the service life of your sign, a face cover of Abrasion Resistant ACRYLITE® acrylic sheet or Impact Modified ACRYLITE® Resist™ acrylic sheet is recommended.

Luminance and brightness of illuminated frames

The table at right shows the luminance/brightness of illuminated frames. These data are based on calculations and measurements with different types of lamps, lamp power and frame sizes. The lamps are mounted on both longitudinal sides and completely encased by an aluminum reflector. Light is deflected on one side of the display by a matte white surface on the back. Luminance was measured using a Minolta Chroma Meter, CS-100.

The data demonstrates the excellent light distribution properties of ACRYLITE EndLighten sheet, regardless of the light source. It shows that ACRYLITE EndLighten sheet provides noticeably more uniform light distribution than conventional matte acrylic. As mentioned above, the data applies to the stated boundary conditions and must be examined on a case-to-case basis when transferred to alternative structures.

Frame Size	ACRYLITE EndLighten sheet	Luminance/brightness in cd/m ²	
		Half distance from frame center	Frame center
DIN A3 (420 x 300 mm)a	ACRYLITE EndLighten L sheet, 8 mm	55	54
DIN A3 (420 x 300 mm)b	ACRYLITE EndLighten L sheet, 8 mm	223	218
DIN A0 (1190 x 840 mm)c	ACRYLITE EndLighten XL sheet, 8 mm	579	551

- a) Illuminated on both sides with LED, OSRAM LINEAR Light OS-LM1A-W1-854, 450 mm
b) Illuminated on both sides with a specific luminosity of ca. 1560 lumen/m, corresponding to T5 neon tubes of type OSRAM L 8W/840
c) Illuminated on both sides with a specific luminosity of ca. 3500 lumen/m, corresponding to T5 neon tubes of type Philips TL5 HO 39W/865 or OSRAM FQ 39W/860

Advantages of reflectors for lighting the edges

Different light sources may be used (neon tubing, aperture lamps, LEDs, cold cathode lamps, etc.). Suitable reflectors should be placed around the lamps to feed the maximum amount of light into the outside edges and keep the clearance between the lamp and edge as small as possible (Fig. 3).

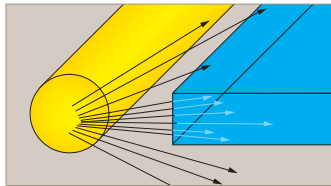


Fig. 3a: Without a reflector, part of the light is wasted.

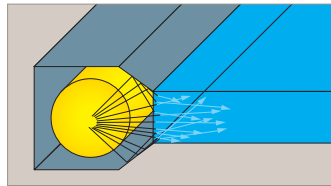


Fig. 3b: The reflector guides the light toward the edge of the sheet.

Advantages of smooth, glossy edges for edge lighting

To minimize scattering loss when beaming in the light, the roughness on the edge surfaces is smoothed by diamond milling or flame polishing (Fig. 4). Cutting the sheet to size with laser cutting machines results in edges that require no further polishing (Fig. 4). The smooth glossy edge reduces scattering losses by as much as 6% compared to a sawed edge.

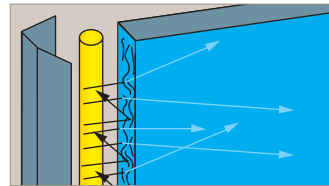


Fig. 4a: Rough edge: Some scattering on the sheet edge.

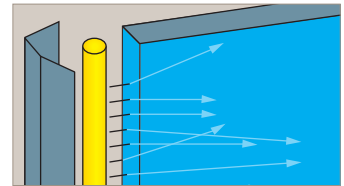


Fig. 4b: Smooth edge: Very little scattering on the sheet edge.

Advantages of reflective adhesive tape

Edges that are not lit should be covered with self-adhesive reflective tape (with a high-gloss adhesive side). This prevents unused light from escaping (Fig. 5)

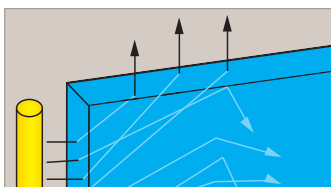


Fig. 5a: No mirror coating: Light leaves the sheet.

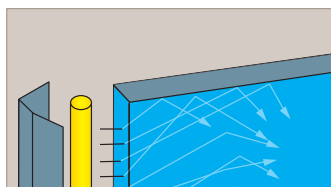


Fig. 5b: With mirror coating: Light is reflected back into the sheet.

Attaching the graphic media

The covers and graphic media should not be glued or laminated to the surface of ACRYLITE EndLighten sheet since disturbing bright and dark spots will appear where optical contact is made (Fig. 6). An appropriate distance needs to be maintained in the structure.

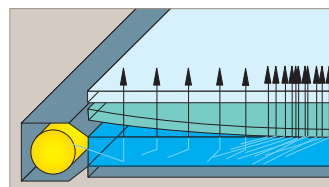


Fig. 6a: Optical contacts sheet/poster: Optical distortions appear.

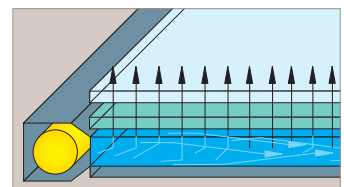


Fig. 6b: No optical contact sheet/poster: Light is only emitted by ACRYLITE EndLighten sheet.

ACRYLITE® EndLighten acrylic sheet

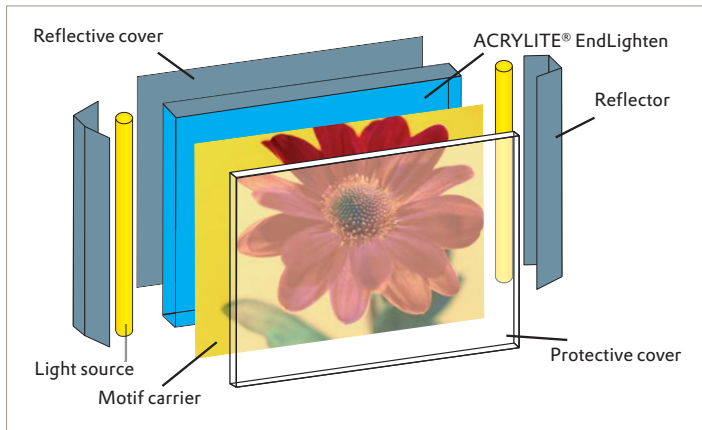


Fig. 7: Sectional drawing of an edge-lit display featuring ACRYLITE EndLighten sheet.

Applications

The versatility of ACRYLITE EndLighten sheet make it the ideal material choice whether you are fabricating an ultra slim edge lit sign or designing for interior aesthetics. Our in-house experts can work with your design team to select the right system to meet your project specifications.

Applications for ACRYLITE EndLighten sheet have included:

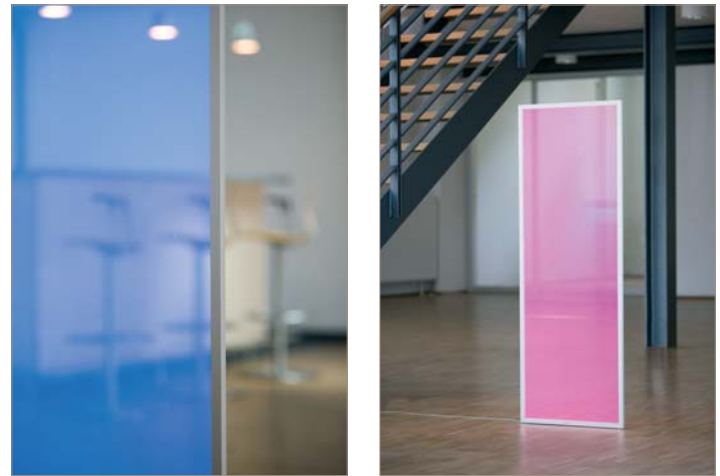
- Illuminated poster displays
- Restaurant menu boards
- Bus depots
- Column signs
- Aesthetic lighting
- Shelving
- Luminaries
- Artistic installations

Product Offering

ACRYLITE EndLighten sheet	Thickness in mm	Recommended lamp spacing for illumination on both sides
ACRYLITE EndLighten sheet, L Grade number 0N001	6 and 8	300 – 600 mm
ACRYLITE EndLighten sheet, XL Grade number 0N002	8 and 10	600 – 1300 mm
ACRYLITE EndLighten sheet, XXL Grade number 0N003	10	1300 – 2000 mm

* The recommended lamp spacing is halved in the case of illumination on one side only.

ACRYLITE EndLighten sheet is available in the standard size of 80 x 120" (3050 x 2050 mm). Special lengths and thicknesses are available on request.



ACRYLITE EndLighten sheet illuminated on four sides with colored LEDs

Evonik Degussa

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

IMPORTANT NOTICE

The information and statements contained herein are not to be taken as a warranty or representation for which we assume legal responsibility nor as permission, inducement or recommendation to practice any patented invention without a license. The information is offered solely for your consideration investigation and verification. Users should perform their own testing and verification to determine the applicability and suitability of the information and any products for their own particular purpose.

Fire Precautions

ACRYLITE® acrylic sheet is a combustible thermoplastic. Precautions used to protect combustibles from flames and high heat sources should also be observed with this material. ACRYLITE sheet usually burns rapidly to completion if not extinguished. The products of combustion, if sufficient air is present, are carbon dioxide and water. However, in many fires sufficient air will not be available and toxic carbon monoxide will be formed, as it will from other common combustible materials. We urge good judgment in the use of this versatile material.

CYRO Industries is a whollyowned subsidiary of Evonik Degussa Corporation. ACRYLITE® is a registered trademark of CYRO Industries. © 2008 CYRO Industries, Parsippany, NJ 07054. All rights reserved. www.cyro.com



CYRO Industries

Evonik Degussa Corporation
379 Interpace Parkway
Parsippany, NJ 07054 USA
PHONE 800.631.5384
973.541.8000
www.cyro.com
www.evonik.com

Evonik. Power to create.