

LUXFIT™ LED LIGHT PANEL

APPLICATION NOTE

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INTRODUCTION

The LUXFIT™ LED Light Panel is a new innovative lighting solution that is designed to be ultimately slim, display even illumination, and be customizable to your unique design requests. This new innovative technology and design have been shown in a variety of markets such as Retail, Signage, Display & Fixture, and Architectural Design. Well-known customers such as Sony, Versace, CVS, HP, and Hitachi have already adopted this new technology and shown tremendous success applying the product.

This application note will assist with your design and explain how to apply the product based on structural best practices for enhancing your unique application. Use this guide to help inform your lighting design decisions; this guide will help you choose appropriate surface materials and understand how to appropriately handle the product for a seamless installation experience.



DESIGN CONCEPT

A team of exceptional engineers and designers collaboratively worked to develop LUXFIT light panels using optically-refined dot pattern technology. Through this innovative process, the acrylic transforms and illuminates into a Light Guide Panel (LGP).

PROPERTIES

Acrylic plastics are made from Polymethylmethacrylate (PMMA), a material that displays brilliant clarity. The nature of the material is ideal for edge lighting applications and features even lighting. A by product of even illumination, **this material is also extremely sensitive to dust and static**. Take extra caution to care for the acrylic material so that your panels continue to illuminate evenly and flawlessly. **Please refer to page 3 of this application note for recommended cleaning instructions.**

TECHNICAL SPECS

- Ultra slim profile: 1/4"-7/16"
- Great evenness exceeding industry standard
- 20% Brighter than competitor products with the same power consumption
- 80% Energy-saving compared to traditional lighting
- Optically-refined reflective patterns
- 3-year manufacturer warranty
- Custom sizes & colors
- Custom shapes (circles, ovals and uneven shapes)
- Single or double-sided
- Max. size of single unit: 5ft x 10ft
- Larger sizes achieved by assembling multiple units

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HANDLING AND STORAGE

The following provides a clear description of recommended practices for handling and storing of the panels. Damage caused by deviation from the recommended guidelines will void the manufacturer's warranty.

LUXFIT panels may be stored flat or stacked vertically in racks. We recommended that LUXFIT panels be stored vertically rather than horizontally to avoid the accumulation of unwanted material or debris, which occurs when the pressure of horizontally-stacked panels forces such particles into the plastic. Furthermore, stacking panels vertically eliminates the likelihood that hard particles—such as sharp-edged pieces of plastic, metal chips, sand or cinders—will be lodged between the sheets.

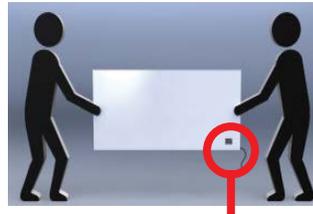
Another reason to avoid horizontal stacking is the likelihood of warping or bowing. Warping and bowing of the panel will cause permanent damage to the LED light engine and void the warranty.

REMOVING THE PROTECTIVE FILM

Protection of the LUXFIT panels during shipping and installation is of utmost importance. For added protection, LUXFIT panels are manufactured with a translucent protective film that may be easily peeled off from the panel's corner or edge. **Remove the protective film only after panels are fully installed.**

CAUTION

1. Stack panels vertically or store them flat.
2. LEDs will become permanently damaged if the panel bows or warps due to improper handling & storage.
3. Be gentle with the wire exit and mindful of wire length so as not to damage it.
4. **Damage caused by mishandling of the product will void the warranty.**



PLACE THE PANEL WITHOUT WIRE EXITS AT THE BOTTOM.



BOWING/WARPING CAUSES PERMANENT LED DAMAGE.



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CLEANING

Cleaning is an essential step in the maintenance of LUXFIT panels. Due to its innovative and efficient design, cleaning LUXFIT panels is a simple process. However, certain cautionary measures must be highlighted to avoid unintended damage. **Abrasive cleaners and some window cleaning compounds will scratch the surface of the acrylic sheet.**

Solvents such as methyl-alcohol, toluene, acetone, chlorinated solvents, dry-cleaning solutions, lacquer thinners, gasoline, etc. may damage the surface. Therefore, do not use these solvents at any point during the cleaning process. Ordinarily, dust and dirt can be easily and effectively removed with a **soft, grit-free, lint-free cloth**. Grease and oil deposits (fingerprints) usually can be removed with **naphtha or isopropyl alcohol**.



ACETONE

ISOPROPANOL



HIGH FLAMMABILITY

Both naphtha and isopropanol are *very flammable*, have *relatively low flash points*, and are *easily ignited*. Use only in a well-ventilated area and away from open flames and sparks.

Follow the manufacturer's directions for safe handling.

DRILLING

LEDCONN does not recommend drilling on-site.

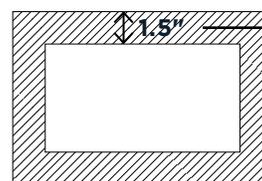
The preferred method is to request predrilled holes by LEDCONN. However, when drilling on-site is unavoidable, please consult with LEDCONN first before drilling any holes. Consultations are highly recommended to ensure procedures are conducted efficiently and effectively to produce satisfactory outcomes and to avoid sacrificing lighting quality or causing structural damage.

Please note drilling is allowed only for dry location panels. Drilling damp panels will disrupt damp treatment properties. If you insist on drilling holes on-site, please apply masking tape on both sides of the panel at the hole location before drilling. Taking this step can help prevent debris from getting stuck in the panel and affecting lighting quality.

Any commercially available power tools are

acceptable for drilling. This includes portable drills, drill presses, lathes, automatic multiple-spindle drilling units, CNC routers, and machining centers.

Tip angles on standard drill bits are commonly 118° to 130°. The point angle must be ground from 60° to 90°. This will allow the bit to quickly enter and exit the acrylic without chipping or causing other damage. Larger tip angles commonly cause cracking and blow out as the bit exits the sheet. A bit with a 90° tip angle will generate smaller chips which are easier to evacuate, thus reducing melting and improving hole



**DO NOT DRILL
INSIDE SHADED AREA**

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quality. Care must be taken at the points of entry and exit, such as pre-applying a masking tape at the location of the hole.

When drilling LUXFIT panels, heat is generated due to the proximity of the bit and hole walls and the difficulty of chip ejection; chip ejection becomes more difficult as the hole gets deeper. Friction between the bit and the material also increases because of acrylic's relatively low thermal conductivity and high thermal expansion coefficient, which cause the material to expand. These factors, if not accounted for, can cause the material to melt

and gum, resulting in a less than optimal hole quality. It is therefore essential to reduce generated heat and remove chips quickly. The workpiece should be held firmly or, preferably, solidly clamped to the worktable. For best results, back-up the piece being drilled with medium density fiberboard (MDF) so that the drill bit will continue into solid material as it penetrates the bottom surface. This will prevent chipping of the bottom surface. Use a slow feed rate when starting the drilling action to allow the bit to enter the material, and also slow the feed rate as the bit exits the bottom surface to prevent chipping.

CAUTION

DRILL SLOWLY

Drilling too fast creates excess debris. At high speeds, this excess debris can become lodged inside of the 2-ply construction of the acrylic panel and create unattractive darkspots when illuminated.

Any mishandling by the client will void the manufacturer's warranty.

DRILLING



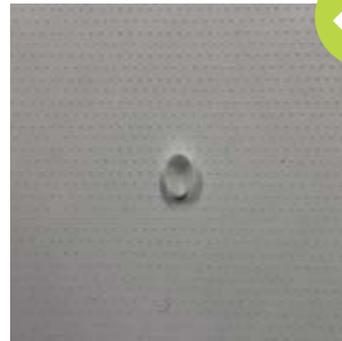
DRILL AT SLOW SPEEDS ONLY.

HAND DRILL
PERPENDICULAR DRILLING
AT STANDARD SPEEDS

CNC MACHINE
PLEASE DRILL AT
A SPEED BETWEEN
18000 - 24000RPM



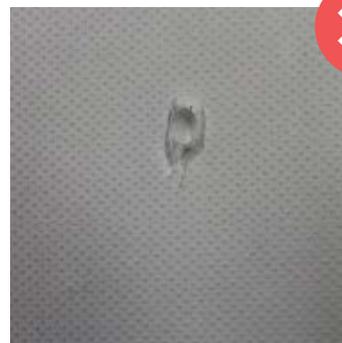
RESULT



DO NOT DRILL AT FAST SPEEDS.

HAND DRILL
DO NOT DRILL SO FAST THAT THE
ACRYLIC STARTS TO CRACK, MELT,
OR CREATE EXCESS DEBRIS THAT
WILL LODGE BETWEEN THE BACKER
AND ACRYLIC

CNC MACHINE
18000RPM - 24000RPM



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INSTALLATION PRECAUTIONS

LUXFIT panels can be installed for built-in, suspended, and mounted applications. The built-in installation offers a modern and sleeker look while mounted and suspended installations provide accent lighting.

BUILT-IN

Built-in applications such as countertops offer a highly customizable way to add lighting to any building. Below are some guidelines to follow when installing the LUXFIT panels.

1. Install the light panel in accordance with project specifications or consult a designer.
2. Do not expose the LED panels to damp or wet environments without specific approval from LEDCONN.
3. Secure the LED panels to the assembly with clips, channels, and other non-penetrating fasteners except where specifically permitted, such as any predrilled holes by LEDCONN.
4. Install the face material securely to the framing or mounting accessories in accordance with manufacturer recommendations. **Do not adhere face material to LUXFIT Light panel. Adhesives on the LUXFIT panel surface will reduce lighting quality, and create unevenness or dark spots.**
5. Consult Architects, General Contractors, or Fabricators for recommendations when field conditions require modifications to approved Submittal or mockup.

SUSPENDED

While suspended applications provide a decorative accent to the installation, they also present unique challenges that should be considered beforehand. Reach out to the LEDCONN team for more information.



GIVE US ADVANCE NOTICE

Because panels will sag when hung without proper support, **make sure to notify LEDCONN in advance of the intent to suspend the lighting fixture** so that we can prepare the panel specifically for this type of installation.

MOUNTING: SINGLE PANELS

Use pre-drilled standard drywall screws with stand-offs or mirror clips to mount LUXFIT on a vertical surface. Avoid screwing stand-offs or mirror clips too tightly, which can cause the panel to crack.

The location of the screw or holes might affect the quality of light traveling across the acrylic panel. **It's recommended to conduct a mockup with specific project face materials in the actual size to validate the design.**



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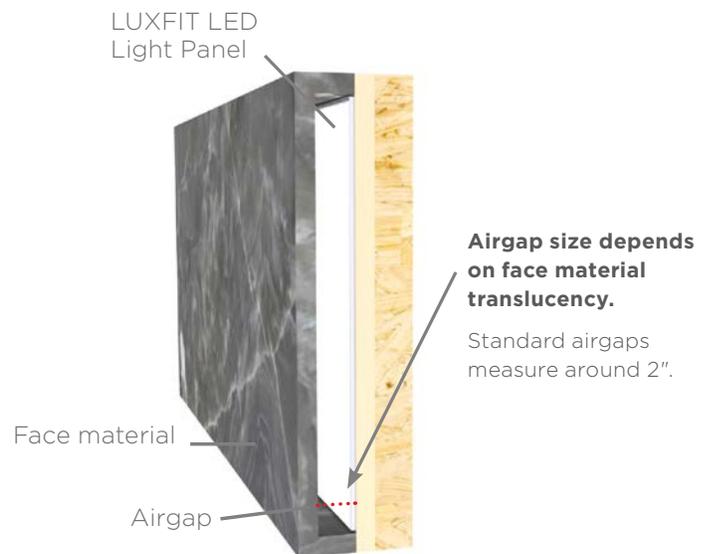
MOUNTING: MULTIPLE PANELS

Mounting multiple panels to one surface, commonly referred to as tiling, presents several challenges during installation. Challenges such as seams and hot spots can be addressed by adding an air gap in front of the lighting fixture with the face material on top. A real-life mock up will validate the design and confirm the requisite air gap for the desired application. The general guideline for air gaps is two inches (2") in the space between the LUXFIT panel and face material.

Keep in mind that certain face materials may require a larger air gap depending on the opacity of the face material. For example, glass typically requires a larger gap beyond the standard two-inch (2") recommendation, while dark color onyx may only need 0.5"-1" air gap. Depending on the transparency of the face material, air gaps can be two-inch (2") or larger. Be mindful that with custom applications LEDCONN will request that the client provides a sample of the face material.

For the success of the project, we highly encourage our clients to create a mockup of the air gap with the selected face material before making any final purchases or specifications. Please keep in mind that creating any mockups is the client's responsibility.


BEFORE

AFTER

CAUTION

MOCKUPS ARE ESSENTIAL & YOUR RESPONSIBILITY

Since every application is different, mockups to test the illumination of the face material with LUXFIT panels are strongly recommended. LEDCONN will not assume responsibility if the LED hotspots and seams are not properly diffused due to the opacity of the face material, position of the LEDs, and insufficient air gap. Air gap size depends on the opacity of the illuminated face material. **Test out your surfaces & air gaps before making any final decisions. Mockup and testing are entirely your responsibility. LEDCONN will not be liable for the results should you choose to skip this critical step.**

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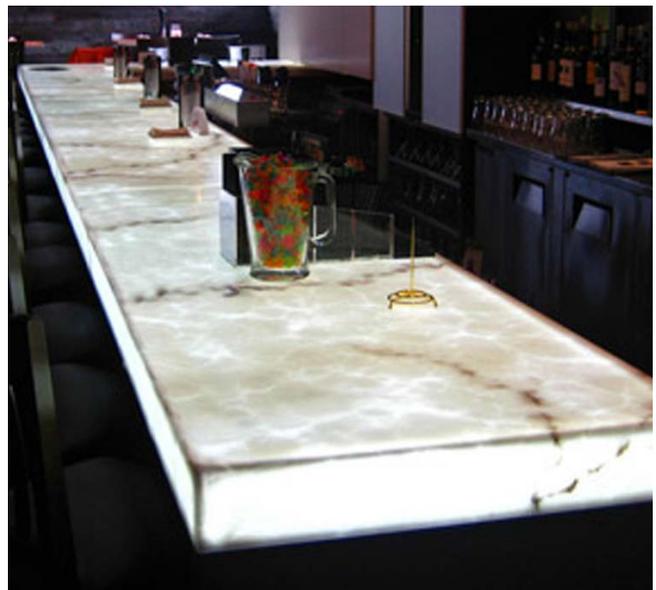
BACKLIT SURFACE MATERIALS

Although the environmental benefits of light emitting diodes, commonly referred to as LED, are well-known, less is known about the specifics of LED light panels. LUXFIT panels are made out of Polymethylmethacrylate (PMMA) acrylic and can be cut to different sizes and shapes. With LEDCONN's laser dot pattern technology, rest assured that there will be minimum loss of brightness at the center and that your desired dimensions can be met with precision and accuracy.

The customizability of LUXFIT light panels allows for backlighting nearly any interior surface, including walls, backsplashes, floors, bar tops, and shelves. The most popular residential application is the backlighting of countertops. Translucent surfaces such as onyx and resins have been available for many years, but it was not until recently that LED light panels were available to provide a uniform, functional, and easy backlighting solution for these types of surfaces. Unlike fluorescent lighting or other LED modules and bulbs, LED light panels do not need a large air gap behind the surface to adequately illuminate a countertop. This along with the ability to cut LUXFIT panels to the exact shape of the countertop has made it easy and efficient to backlight surfaces that were once quite challenging to illuminate. The following describes some of the most popular countertop surfaces that can be transformed by this innovative product known as LUXFIT.

STONE

Translucent stone complies with backlighting transforms a standard stone countertop into an incredible piece of art and attractive visual focal point. If the goal is to create a stunning countertop, then the translucent stone is the way to go. Because it is often difficult to foresee how a piece of stone will look when it is illuminated, the outcome is surprising and appealing. The stone is transformed through the veining, coloring, and translucency of the backlighting process, creating a final effect that is both artistic and sleek. **For best results, request a light panel sample to test the stone beforehand.** Additionally, be sure to double check that the stone is translucent enough to ensure that an adequate amount of light shines through per your liking and fits



the ambiance. Backlighting darker colored onyx can create a mysterious or luxurious appeal compared to lighter colored onyx, which is often thought to create a modern or refreshing ambiance. And onyx coupled with RGB lighting creates a more surprising look.

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RESIN

Less expensive but just as stunning a countertop option as stone is that of resin. If you are looking for a more affordable solution than stone, then resin is the preferred material. Unlike countertops made of purely natural material, resin has the advantage of being made into different patterns, shapes, and colors. Resin can even include custom ordered material such as leaves, glitter, or metal. With resin, the space can be more fun and interesting.



USE RESIN TO ADD AN ARTISTIC FLAIR TO YOUR LIGHTING INSTALLATION.

GLASS

A less commonly thought of material for backlighting is glass. Because of its ease of customization, glass is a showstopper when properly illuminated; it can be customized by texture, color, and shape. Due to the inherent transparency of glass, adding illumination will heighten its clarity, producing a pristine effect. For best results, remember to carefully engineer the design structure so that the light panel and LEDs do not show through the glass due to its high translucency.



THE SIMPLICITY OF GLASS NEVER FAILS TO CREATE DELIGHT IN THE BUILT ENVIRONMENT.

CAUTION

FIELD MEASUREMENTS ARE HIGHLY RECOMMENDED

Please note prior to any production, field measurements would be needed for shop drawing approval. LEDCONN lighting solutions are custom made to the requested specification. It is the customers responsibility to ensure field measurement are accurate prior to production.

Customers will be liable for incorrect measurements that were not communicated prior to production.

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APPLICATION BY INDUSTRY

RETAIL DISPLAYS & FIXTURES

Retail environments are expanding their in-store design initiatives with illuminated displays, fixtures, and promotions that create a focus on the brand and products offered with lighting. Illuminated visual marketing has been used to display new campaigns and product lines throughout the store to emphasize stronger brand awareness and impressions. Illuminated shelves and in-store lighting applications help to convey a modern and trendy environment designed to captivate customer attention to displayed products.



LUXFIT ILLUMINATION HELPS LUXURY AND BEAUTY BRANDS STAND OUT AND CREATE AN ELEGANT RETAIL STORE.



DISPLAYS FEATURING ALCOHOL AND SPIRITS ALSO BENEFIT GREATLY FROM CUSTOM LED ILLUMINATED LUXFIT PANELS.

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ARCHITECTURAL ACCENT LIGHTING

Commercial or residential projects are now also incorporating LUXFIT Panels for accent lighting elements. With LUXFIT LED light panels, architects and lighting designers can now highlight areas that were once impossible to illuminate. Current applications include nightclubs, museums, restaurants and retail stores with walls, ceilings, or bar countertops illuminated to the color and shape of their design. The LUXFIT panel can illuminate almost any surface, giving the designer limitless creative applications to choose from!



SIGNAGE

LUXFIT panels are used frequently in signage applications since they provide a slim option for illuminating LED light boxes. Signage professionals can use LUXFIT LED Light Panels to minimize the thickness of current light boxes and create a slimmer aesthetic in signage and visual displays. Illuminating signs with LED edge-lit technology benefits signage applications with the environmentally-friendly features and energy cost-savings of LEDs while providing high brightness to the sign or promotions.

