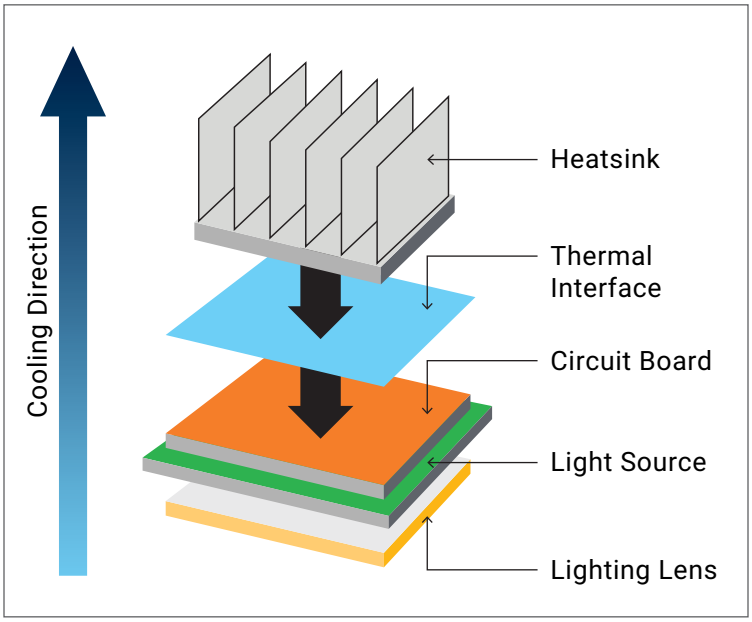
LIGHTING

H.LOEB CORPORATION

LIGHTING FIXTUTURE COMPONENTS

H. Loeb provides converting services through die cutting, kiss cutting, CNC router and CNC laser cutting for the fabrication of solid state and LED lighting fixture components. Fixture designs vary by OEM, however their use and location often determine which materials are used in the lighting fixture assembly to meet performance ratings. Our engineering department can assist with material selection for your application from tapes, pads, foams and films. Additionally, we choose the optimum production method for each component that we produce for your lighting fixture. Please contact us to discuss your component material requirements.

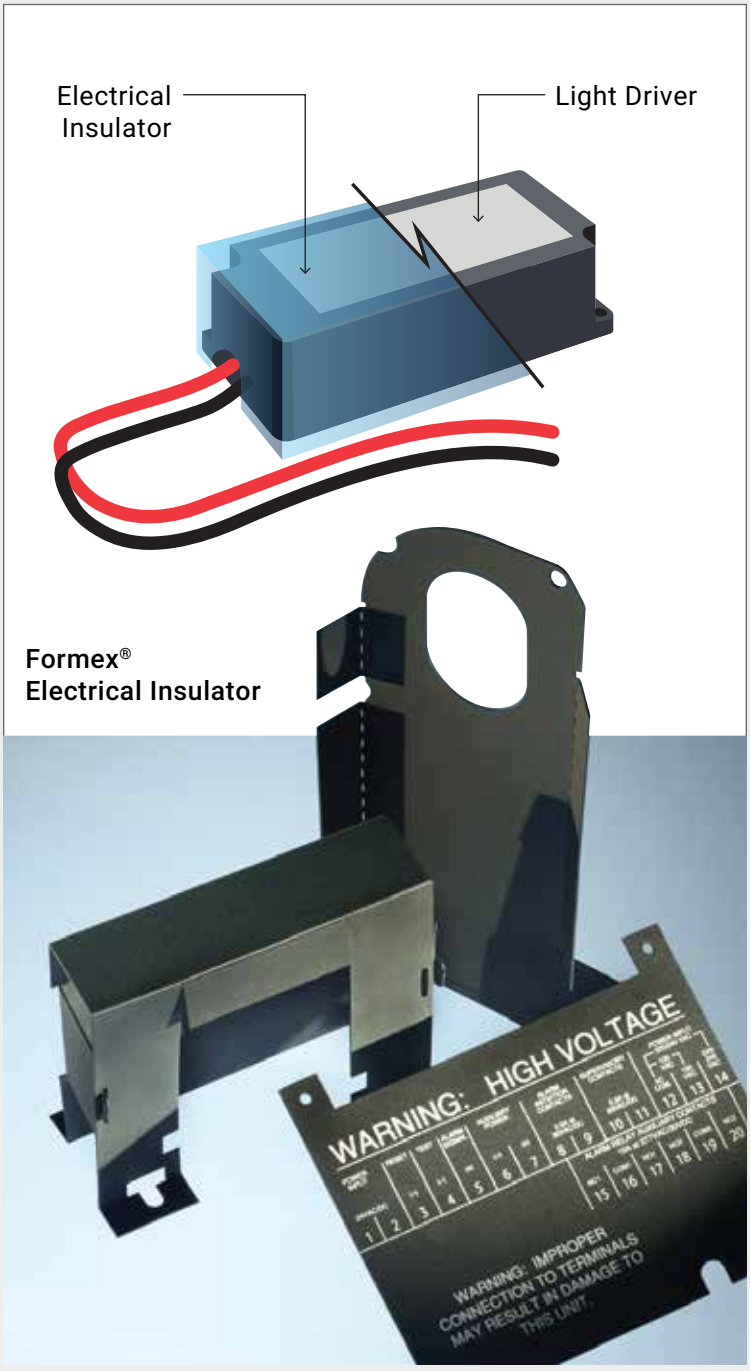


Thermal Interface Materials (TIM)

Thermal interface materials are commonly used between a heat source and a cooling system. Their primary function is to enhance thermal coupling and increase heat dissipation in the thermal path between components. The light emitted from an LED creates heat. In an LED lamp or luminaire a TIM is used to transfer the heat created by the LED board to the heat sink. High intensity LED lighting applications require this heat management for long term LED performance. Effective TIM have high thermal conductivity values and are used with a sufficient thickness to eliminate air gaps between components to create a low thermal resistance in LED cooling. TIM are typically made of silicone pads or foam tapes that we die cut and package to your specifications.

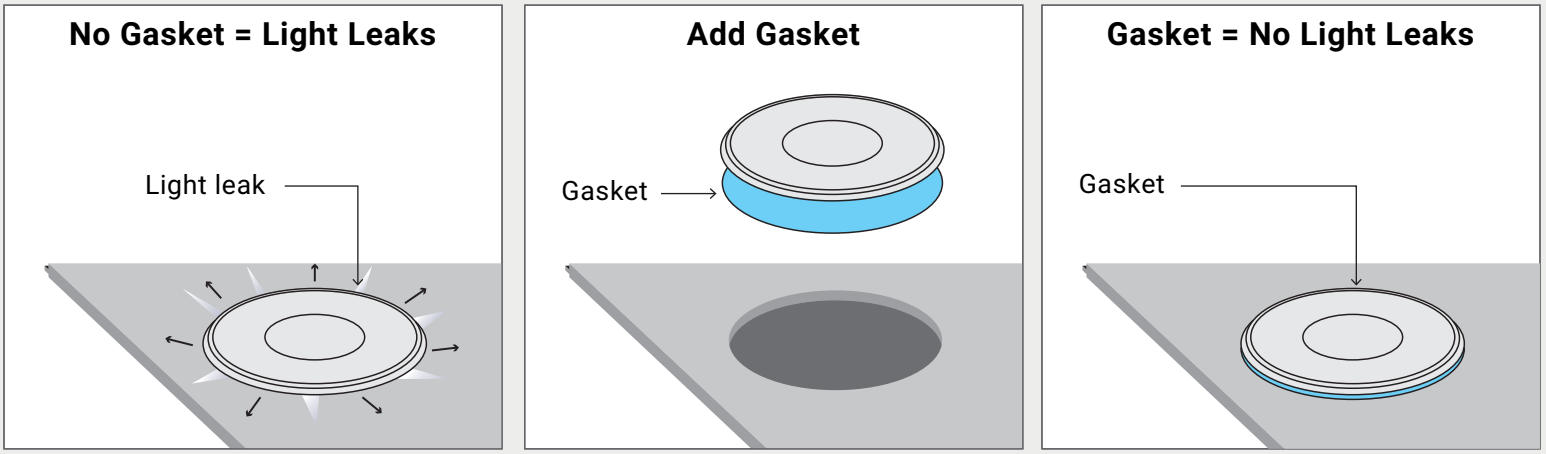
Electrical Insulation Materials

Power supplies and drivers in LED light fixtures are typically enclosed in an insulating material. The insulating material prevents any undesired electrically conductive paths in the lighting assembly. To be effective, the material must have good dielectric strength in order to withstand the electric field without breakdown. Fish paper is a common solution, however Formex has a greater dielectric strength which allows it to be thinner in application. Formex is also hygroscopic (does not wick moisture) so it can be used in outdoor as well indoor lighting fixtures. We die cut and kiss cut Fish paper, Formex, Nomex, Thermovolt and other insulation materials to your requirements helping to protect your products.



Formex® Electrical Insulator

Gaskets

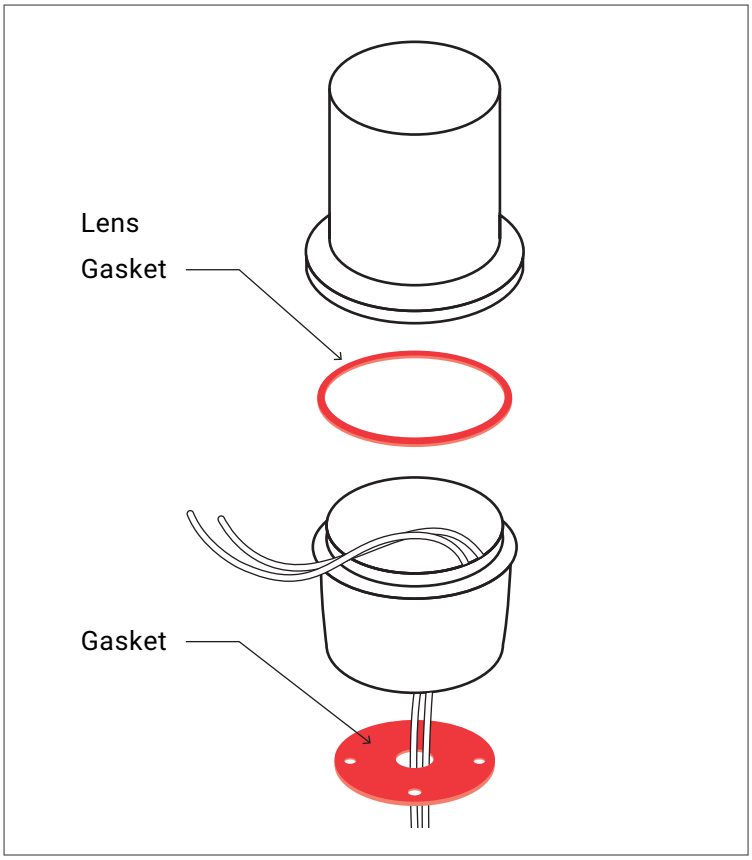


Gaskets

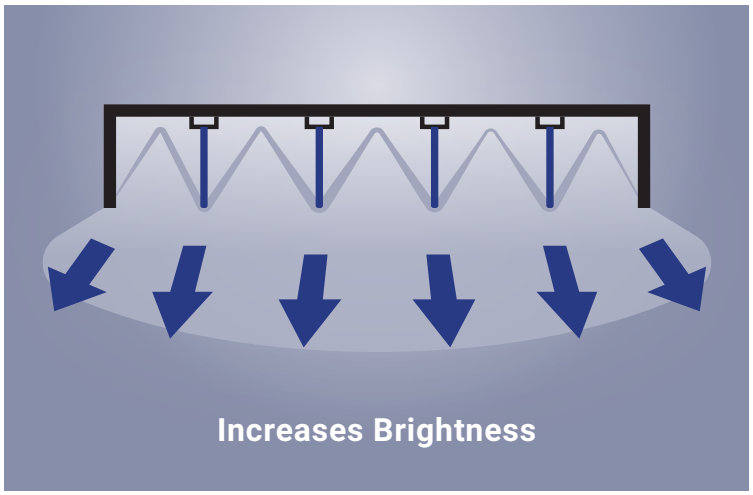
Gaskets in lighting fixtures provide air and water tight seals, keeping out dust and rain and stopping light leaks. Gaskets are used in different locations on a light fixture and electrical enclosures to achieve specific ingress protection ratings (IPXX). IP ratings vary depending on the use and location of the light. Examples include; enclosure or housing gaskets, LED bezel gaskets and connection or access hatch gaskets. For outdoor lighting or lamp applications, silicone rubber materials such as silicone sponge or silicone foam tape are used as gaskets to seal and protect. Silicones have better long term performance when exposed to outdoor conditions such as temperature cycles and weather conditions. For indoor lighting or luminaire fixtures, neoprene, SBR and EPDM rubber materials are commonly used as gaskets as well as Poron – a urethane foam. In either location, LED light sources generate heat, so the gasket material choices must have long term thermal stability and the proper UL flame rating. Lighting fixtures installed in a ceiling air plenum may have special gasketing requirements. Any fixture installed in the city of Chicago, for example, requires a fixture gasket to completely enclose the junction box, splice compartment or fixture wire-way to avoid electrical sparking, fire or other hazardous situations that might encroach into the ceiling plenum or room below. Cleanroom and food processing locations also require a fixture to plenum opening gasket. The gasket in this application, separates the air plenum space above from the room below, preventing dust and other contaminants from entering the conditioned, clean working space.

Electrical Enclosures

Housings and enclosures used in industrial, electrical, and electronic applications often require gaskets at the front panel, door, cover and connector locations to meet ingress protection standards and/or pass NEMA test ratings. Additionally, depending on the type of enclosure and its weather proofing criteria, the gasket materials used in the enclosure assembly must meet UL performance standards for; physical properties, aging and environmental exposure such as UV resistance. H. Loeb provides die cutting services for OEM and replacement part gaskets and slitting for gasket materials of all types.



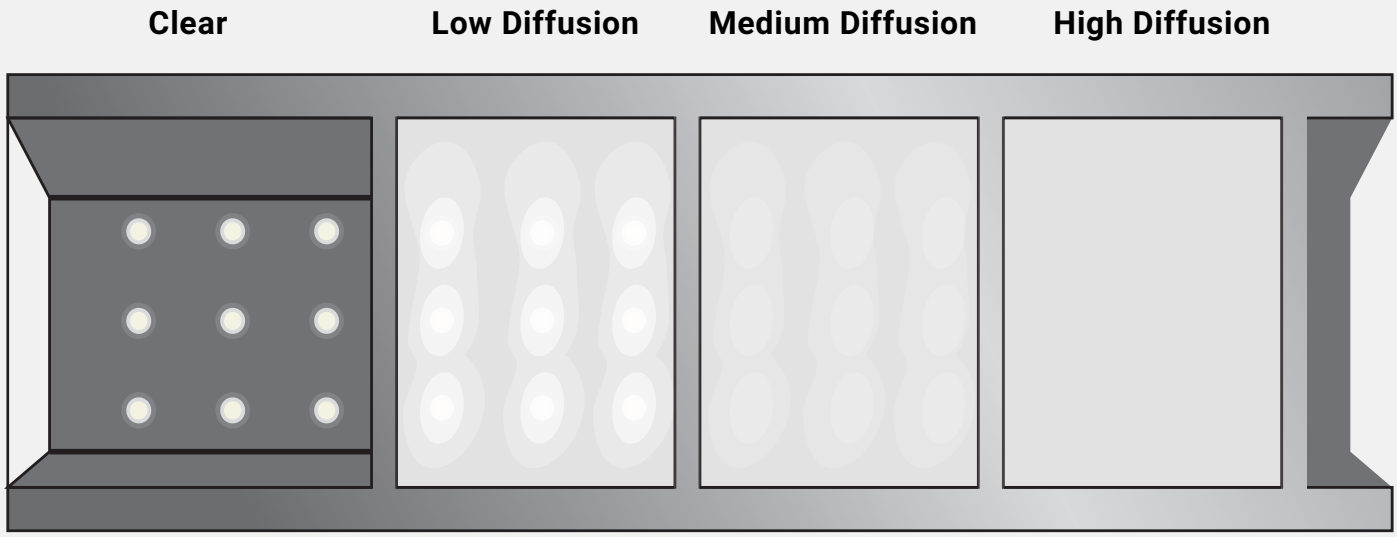
WhiteOptics F16 Light Reflection



Reflective Films

Used directly on the interior of the fixture housing or on the LED board to increase light intensity, creating more light. We die cut and package parts or slit these films to your OEM requirements. H. Loeb is the preferred material converter for White Optics®. White Optics® offers a variety of optical products that can collimate, focus and guide light so that light can be used efficiently in your lighting fixture.

Lenses and Diffusers



Acrylic and polycarbonate plastics are common material choices for lamp and luminaire lenses. Both materials have high transmissivity properties (transmission of light). Which material to use depends on the fixture design and light heat source intensity. Clarity, weatherability, UV and temperature exposure must also be considered in material selection of a lens. Likewise, light diffusers are also made with acrylic and polycarbonate or thin film. The choice depends on the fixture design. LED light sources can create “hot spots” on a fixture lens which in turn can cause yellowing and reduce material strength (impact resistance). A diffuser is designed to diffuse the LED hot spots, spreading out the light evenly, without compromising light transmission. We offer CNC router and laser cutting services for lenses of all types as well as die cutting and sheeting services for thin film diffuser parts.

H. Loeb has experience working with and converting materials from a wide variety of manufacturers including:

3M · ROGERS CORPORATION · Laird · BERGQUIST · TIMTEL · DuPont™ NOMEX® · ITW Formex Flame Retardant Materials

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