# LED LIGHTING APPLICATIONS

Many **LED LIGHTING APPLICATIONS** require diffusers capable of improving the uniformity and controlling the beam angle of the fixture without sacrificing light output. In some applications the diffuser is required to mix the color emissions of multiple sources or to illuminate a larger symmetrical or asymmetrical area. "Hotspots" and uneven light distribution are common problems with LED sources.

Luminit offers Light Shaping Diffusers® (LSD) that homogenize and shape the light with high transmission efficiency – 85% to 92%. LSD's are available in a variety of circular and elliptical angles on thin film or rigid substrates. LSD's can be used to eliminate or minimize hotspots while maintaining high transmission efficiency.

Elliptical LSD diffusers shape the light in separate horizontal and vertical angles. Following is an example of a 60°x1° elliptical LSD utilizing a strip LED light source with incorporated primary optics. The light is shaped by spreading it 60° in the horizontal direction, but only 1° in the vertical direction eliminating hotspots.

LED Lightline with 60°x1° Diffuser

*Examples utilizing a board with multiple LEDs without optics:*

LED panel, no diffuser

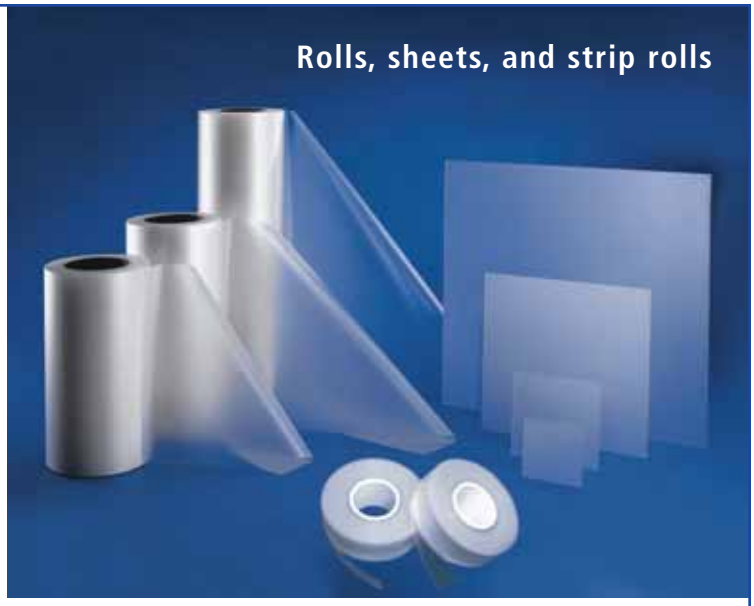
LED panel with 40° x 0.2° diffuser

LED panel with 60° x 1° diffuser

LED panel with 80° diffuser

## LSD Availability

- LSD's are available in circular and elliptical angles from 1° to 80°.
- Thin film LSD diffusers are available in rolls, sheets or parts cut to your specifications. Standard rolls are 20" wide and 500' long. Strip rolls are also available in your specified width.
- Rigid polycarbonate sheets are also available in sheets or cut to your specifications.




- Low cost injection molded LSD's can be custom made for high volume OEM LED lighting applications like down lights.

## LSD Technology Specifications:

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|---|---|
| LSD Angle Range FWHM | Circular: 1° to 80°<br>Elliptical:<br>minor: 1° to 60°<br>major: 10° to 95° |
| Transmission Efficiency | Circular<br>1° to 20° ≥ 90%<br>20° to 80° ≥ 85%<br>Elliptical ≥ 85% |
| Angle Tolerance<br>*(Based on a 10"x10" area)* | ≤1° ± 0.5°<br>1° < Angle ≤10° ± 1°<br>> 10° ± 10% |
| Transmission Spectral Range | 400nm to 1500nm |
| Temperature Range | -30°C to 80°C @ 240 hours |
| Humidity | >95% ± 5% RH @ 24 hrs. |
| Refractive Index | PC=1.586; PE=1.51<br>AC=1.494; Epoxy=1.50 |
| Pencil Hardness | > 2H |
| Yellow Index | 0.3% glass exposure (600 hrs)<br>2.6% direct exposure (600 hrs) |
| Adhesion | ASTM D3359 |

*Note that the specifications contained herein are subject to change without notice.*

**For more information, email info@LuminitCo.com**

Luminit
SHAPING LIGHT AS NEEDED

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