

As LEDs increase in brightness and become more cost effective, they begin to increasingly penetrate more general lighting applications.

Many of these new applications require diffusers capable of improving illumination uniformity and controlling directionality of the light without sacrificing light output. For some applications, the diffuser is required to mix the emissions of multiple sources; in others a diffuser is required to illuminate a larger symmetrical or asymmetrical area. Luminit offers Light Shaping Diffusers® (LSD) that homogenize and shape the light with high transmission efficiency – 85% to 92%.

Elliptical LSD Diffusers

Elliptical LSD diffusers shape the light in separate vertical and horizontal angles. Following is an example utilizing a strip LED light source with LED optics incorporated on the strip:

The light is shaped by spreading it 40° in the horizontal direction and 0.2° in the vertical direction.

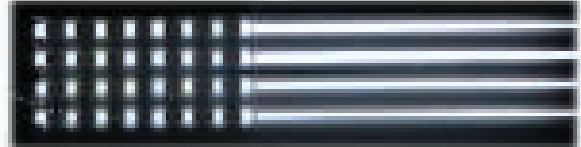


LED Lightline with $40^\circ \times 0.2^\circ$ diffuser on left

Examples utilizing a board with multiple LEDs without optics:



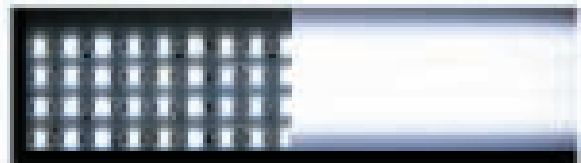
LED panel, no diffuser



LED panel with $40^\circ \times 0.2^\circ$ diffuser



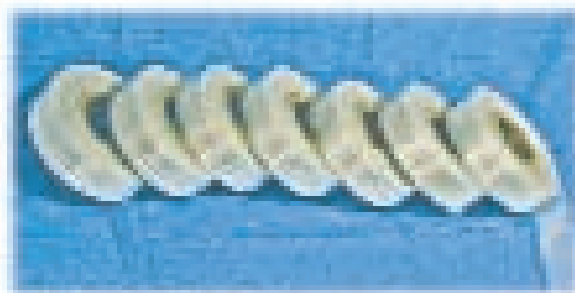
LED panel with $60^\circ \times 1^\circ$ diffuser



LED panel with $75^\circ \times 45^\circ$ diffuser

Elliptical LSD diffusers for LED strip lighting

are available in 15°x1°, 30°x1°, 50°x5°, 60°x10°, 60°x20° and 75°x45° as well as 55° circular. They are available in 250 foot lengths.



Luminit Light Shaping Diffusers (LSD) are precisely shaped holographically recorded randomized surface structures which enable high transmission efficiency, beam shaping and homogenized light output. These LSD's offer superior optical transmission between 200nm and 1600nm.

“Hotspots” and uneven light distribution are common problems with LED sources. LSD's shape and homogenize these sources providing uniform light for critical applications. LSD's are available in a range of divergent angles and sizes. Large angle LSD's produce the greatest degree of homogenized light.

LSD Technology Specifications:

LSD Angle Range FWHM	Circular: 0.2° to 80° Elliptical: minor: 0.2° to 60° major: 10° to 95°	Temperature Range	-30°C to 100°C @ 240 hrs.
Transmission Efficiency	Circular 0.2° to 20° ≥ 90% 20° to 80° ≥ 85% Elliptical ≥ 85%	Humidity	>95% ± 5% RH @ 24 hrs.
Angle Tolerance (Based on a 10"x10" area)	≤1° ± 0.5° 1° < Angle ≤10° ± 1° > 10° ± 10%	Refractive Index	PC=1.586; PE=1.640 AC=1.494; Epoxy=1.586
Transmission Spectral Range	400nm to 1600nm	Pencil Hardness	> 3H
Brightness Uniformity	≥85%	Yellow Index	0.3% glass exposure (600 hrs) 2.6% direct exposure (600 hrs)
Cosmetic Defects	Not to exceed 1000 microns	Adhesion	100% - Crosshatched adhesion test ASTM-D3359
		Laser Damage	GL=8.1 J/cm ² ; PC=0.22 J/cm ² ; PE=0.2 J/cm ² ; AC=0.17 J/cm ² @ 1064nm, 10ns pulse

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



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