



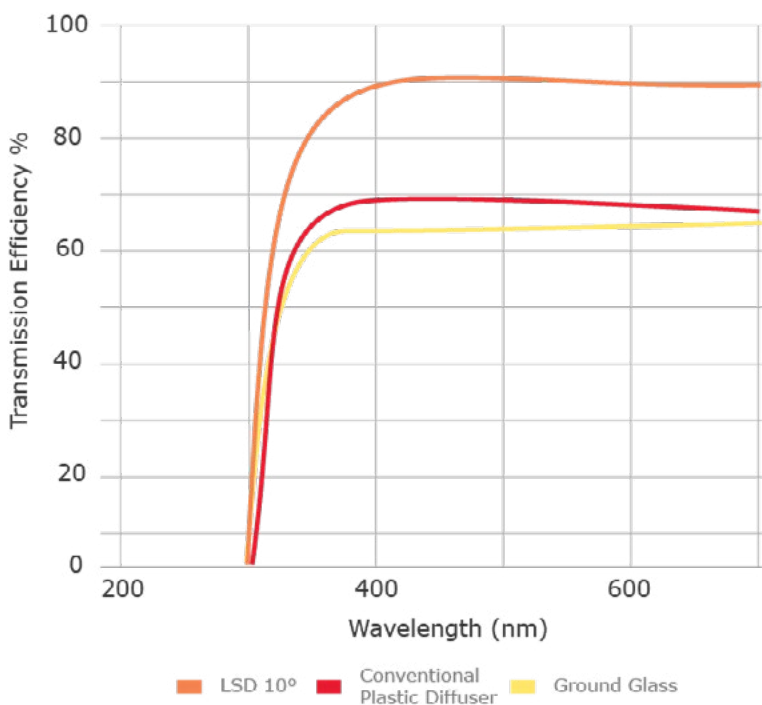
Light Shaping Diffusers®

Bio-Medical Applications

Today's medical instrumentation includes a wide selection of light sources, from fluorescent fixtures to advanced lasers. Each light source and each application requires precise optics that provide directionality and uniformity with minimum loss of light. Luminit provides a large array of Light Shaping Diffusers® with transmission efficiencies that can exceed 90%. Zero order or a specular component will be less than 1% for visible wavelengths, but may be higher if our standard product is used with wavelengths >700nm. Luminit is able to design custom diffuser for wavelengths in the infra-red region. Please contact sales@luminitco.com for further details.

When Uniform Light Is Critical

"Hotspots" and uneven light distribution are common problems with filament, arc, LED, CCFL, fiber optic and laser light sources. LSDs greatly smooth and homogenize sources while providing uniform light in critical applications such as laser surgery, biological analysis systems and biological microscopy.



Bio-Medical Diffusers

- Light Shaping Diffusers®
- UV Diffusers
- High-temperature/High-power Laser Diffusers
- Non-imaging Optics/Lenses

Bio-Medical Applications

- Laser eye surgery
- Laser cosmetic surgery
- Laser hair removal
- Bacteria identification systems
- Biological imaging systems
- Teeth whitening systems
- Blood analyzer systems

How Light Shaping Diffusers Work

LSD surface relief holograms are replicated from a holographically recorded master. The pseudo random, non-periodic structures can be thought of as randomized micro-lenslets. LSDs are non-wavelength dependent and will work with white, monochromatic, coherent or incoherent light. LSDs diverge light, emulating a negative lens. While LSDs work best with collimated light, they will also work well with non-collimated light. The randomized structures eliminate Moiré and color diffraction, and incoming light is precisely controlled within well defined areas. Light does not escape these boundaries, resulting in greater control and utilization of light, thus maximizing photon utilization.

SPECIFICATIONS

LSD Angle Range (FWHM):	Circular: 1° to 80° Elliptical: Minor: 1° to 60° Major: 10° to 95°
Transmission Efficiency:	Circular: 1° to 20° ≥ 90% / 20° to 80° ≥ 85% Elliptical: ≥ 85%
Angle Tolerance: (Based on a 10"x10" area)	$\alpha < 1^\circ \pm 0.5^\circ$ $1^\circ \leq \alpha \leq 10^\circ \pm 1^\circ$ $\alpha > 10^\circ \pm 10\%$
Transmission Spectral Range:	400nm to 700nm
Temperature Range:	-30°C to 80°C @ 240 hours or -40° C to 500° C*
Humidity:	> 95% ± 5% RH @ 24 hours
Refractive Index:	PC=1.586; PET=1.51 / AC=1.494; Epoxy=1.50
Pencil Hardness:	> 2H
UV Resistance: UVA/UVB (900 Kjm ²)	PET P1 P3 $\Delta a = -2.3$ $\Delta a = -2.98$ $\Delta a = 1.90$ $\Delta b = -4.42$ $\Delta b = 10.27$ $\Delta b = 3.98$
Adhesion:	100% on PET 5mil per 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
Yellow Index:	0.3% glass exposure (600 hrs.) 2.6% direct exposure (600 hrs.)
Cleaning Procedure:	DI water rinse followed by forced air drying, wipe gently with lens paper soaked with methanol, followed with forced clean air or nitrogen drying.

* Glass on Glass Diffusers. Note: All specifications contained herein are subject to change without notice.

Download our other product datasheets at
<https://luminitco.com/downloads/data-sheets>

