

Light Shaping Diffusers®

Machine Vision Applications

Advanced Automatic Optical Inspection (AOI) platforms incorporate the latest high-resolution cameras to detect and measure defects on surfaces ranging from silicon wafers to champagne bottles. Integral to this process are illumination systems that provide highly homogenized and precisely controlled illumination angles. Luminit diffusers enable both of these attributes with minimal transmission loss for both line scan and backlight applications.

Line scan applications typically require LED or fiber optic lightlines with a high level of uniformity across the long axis. The use of Luminit's asymmetrical diffusers (e.g. $30^\circ \times 5^\circ$) in this application improves uniformity beyond 95% when the long axis is oriented in parallel with the wider-angle axis of the diffuser. These diffusers are available in custom shapes with any lengths up to 1,500 feet.

Highly uniform backlights are required for inspection of transparent objects (e.g. bottles, LCD glass, etc) to detect imperfections or cracks. Luminit's symmetrical diffusers homogenize the backlight (either edge-lit or direct backlit), resulting in more repeatable and accurate dimensional measurement of the part under inspection. Circular diffusers are available in any size up to 60" diagonal.

Machine Vision Applications

- Lightline
- Backlighting
- Co-axial Lighting
- Ring Lighting



LED lightline with $40^\circ \times 1^\circ$ diffuser on the left

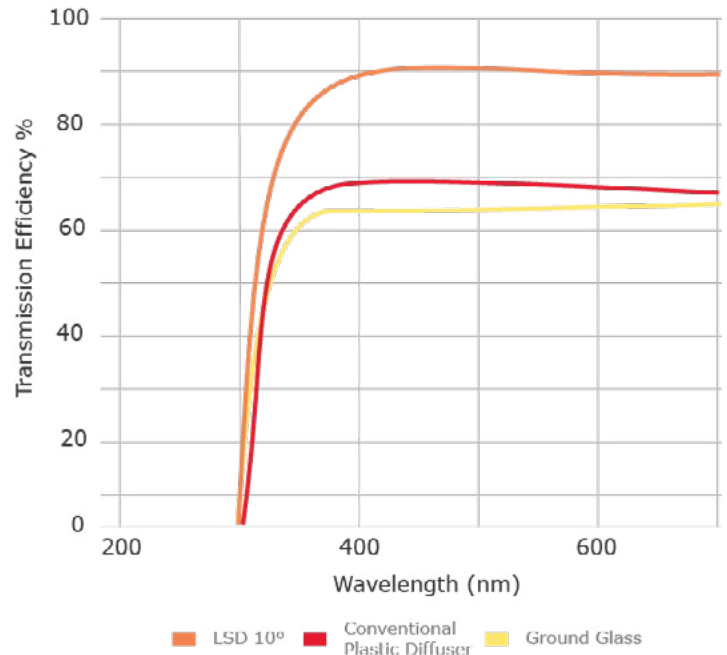


HB White LED lightline from Advanced Illumination



HB Red LED backlight from Advanced Illumination

Luminit Light Shaping Diffusers[®] (LSD[®]) shape, control and distribute light. The patented holographic master recording process allows a wide variety of circular or elliptical light patterns. Standard circular angles range from 1° to 80° FWHM. A wide variety of standard elliptical angles are available from 10°×1° to 95°×35°. 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.



Contact sales@luminitco.com for further details.

SPECIFICATIONS

LSD Angle Range (FWHM):	Circular: 1° to 80° Elliptical minor: 1° to 60° Elliptical major: 10° to 95°
Transmission Efficiency:	Circular: 1° to 20° ≥ 90% / 20° to 80° ≥ 85% Elliptical: ≥ 85%
Angle Tolerance: (Based on a 10"×10" 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
Humidity:	> 95% ± 5% RH @ 24 hours
Refractive Index:	PC=1.586; PET=1.51 / AC=1.494; Epoxy=1.50
Pencil Hardness:	>2H
Yellow Index:	0.3% glass exposure (600 hrs.) 2.6% direct exposure (600 hrs.)
Adhesion:	ASTM D3359

Note: All specifications contained herein are subject to change without notice.

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

