

Today's 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°x5°) in this application has been proven to improve 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.



**LED Lightline with 40°x 0.2° Diffuser on left**



**HB White LED Lightline from  
Advanced Illumination**



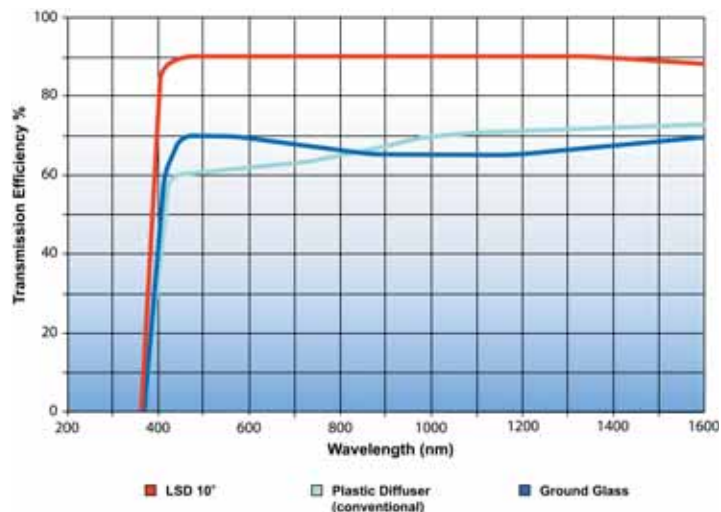
**HB Red LED Backlight from  
Advanced Illumination**

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 are currently in use in such applications to homogenize the backlight (either edge-lit or direct back-lit), 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 Diffuser Applications:**

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

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 0.5° to 80° FWHM. A wide variety of standard elliptical angles are available from 0.2° x 10° to 95° x 35°. Custom angles may also be available on request.



## LSD Technology Specifications:

LSD Angle Range FWHM	Circular: 0.2° to 80° Elliptical: minor: 0.2° to 60° major: 10° to 95°
Transmission Efficiency	Circular 0.2° to 20° ≥ 90% 20° to 80° ≥ 85% Elliptical ≥ 85%
Angle Tolerance <i>(Based on a 10"x10" area)</i>	≤1° ± 0.5° 1° < Angle ≤10° ± 1° > 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 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 that the specifications contained herein are subject to change without notice.*



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