



Biomedical Diffuser Applications

Today's medical instrumentation includes a wide selection of light sources from fluorescent fixtures to UV sources to lasers for applications from general lighting to laser surgery and everything in between. Each light source and each application requires optics that will provide directionality and uniformity with minimum loss of light. Luminit provides a large array of Light Shaping Diffuser[®] products that work from 200nm to 1600nm with transmission efficiencies that can exceed 90%.



Cosmetic Laser Surgery

Luminit is a world-wide leader in technical innovation in the transmission of light. Our broad product line of Light Shaping Diffusers[®] and custom designed solutions can be tailored to your most exacting needs. Following is a list of a few of our products that are used in biomedical instrumentation:

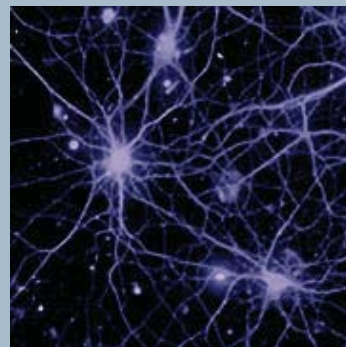
- Light Shaping Diffusers (LSD)
- UV Diffusers
- High Temperature/High Power Laser Diffusers
- Custom Optical Light Pipes
- "White" Diffusers
- Non-imaging optics/lenses

Applications

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



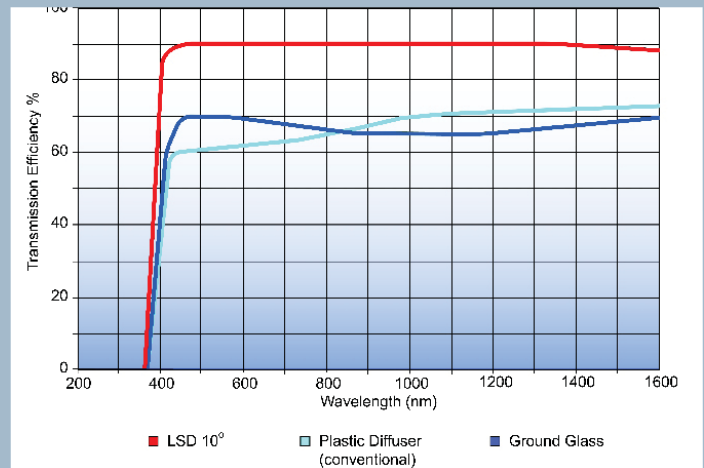
Biological Analysis Systems



Biological Microscopy

Luminit Light Shaping Diffusers (LSD) are 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 filament, LED, CCFL, fiberoptic and laser light 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.



Transmission Efficiency Chart

LSD Technology Specifications

LSD Angle Range FWHM	Circular: 0.2° to 80° Elliptical: minor: 0.2° to 60° major: 10° to 95°	Humidity	>95% ± 5% RH @ 24 hrs.
Transmission Efficiency	Circular 0.2° to 20° ≥ 90% 20° to 80° ≥ 85% Elliptical ≥ 85%	Refractive Index	PC=1.586; PE=1.640 AC=1.494; Epoxy=1.586
Angle Tolerance (Based on 10"x10" area)	≤ 1° ± 0.5° 1° < Angle ≤ 10° ± 1° > 10° ± 10%	Pencil Hardness	> 3H
Transmission Spectral Range	400nm to 1600nm or 200nm to 1500nm*	Yellow Index	0.3% glass exposure (600 hrs) 2.6% direct exposure (600 hrs)
Brightness Uniformity	≥85%	Adhesion	100% - Crosshatched adhesion test ASTM-D3359
Cosmetic Defects	Not to exceed 1000 microns	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
Temperature Range	-30°C to 100°C @ 240 hrs. or -40°C to 500°C*	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 LSD's Note: Data and properties shown may vary with application			

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



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