LUMATEC®

# LIQUID LIGHT GUIDES

## ENGINEERED TO MAXIMIZE THROUGHPUT

www.lumatec.de

# ONE INGENIOUS IDEA, COUNTLESS APPLICATIONS

Our light guides are available in various cross-sections and with a range of sleeve types to fit your needs. We also offer a selection of connectors with up to four poles.

Photo above:
Single-Pole Lightguide,
Light-Entry: Lumatec D,
Light-Exit: Lumatec
Standard, Cladding: PVC

Photo below:
Four-Pole Lightguide,
Light-Entry: Lumatec D,
Light-Exit: Lumatec
Standard, Cladding: Silicone

## LIQUID LIGHT GUIDES – THE PERFECT ALTERNATIVE TO SILICA FIBER BUNDLES

Liquid light guides are clearly superior to light guides made of silica fiber bundles by the very nature of their design. A liquid light guide is much like a single silica fiber with a very large diameter. It has the cross-section of an open pipe, transmitting light with total reflectance using all the space available. Silica fiber bundles, in contrast, are like many small tubes in a larger pipe with spaces between the individual strands remaining unused. These dead spots do not transmit light. This is why our liquid light guides are able to deliver light with much greater intensity to the target object.

## LIQUID LIGHT GUIDES - FLEXIBLE IN MORE WAYS THAN ONE

Our liquid light guides consist of a polymer tube with a liquid core. They do not break. Bundles of optical fibers, in contrast, will fatigue if they are frequently bent and eventually break. Lumatec liquid light guides have much larger apertures, are more efficient and serve many different applications. They are the perfect solutions for applications that demand uniform, high-intensity light. We offer devices designed for diverse spectra ranging from ultraviolet to infrared and a broad selection of end fittings. Feel free to talk to us if you wish to learn more about our liquid light guides. We'll be happy to discuss which options are best suited for your purposes. The possibilities are many, and we're always exploring fascinating new applications with our customers.

## THE FEW LIMITATIONS OF OUR LIQUID LIGHT GUIDES

There are not many constraints that limit our liquid light guides' use. One of the few is that their cross sections have to be circular; another is that they can only tolerate extreme temperatures for short periods. Apart from the end fittings, which are very robust, they work best in environments that people find comfortable.

## FOUR PROVEN STANDARD LIGHT GUIDES

To date, we have developed four types of liquid light guides that differ mainly in terms of their liquids' optical properties. The following charts and tables show the various transmission spectra and other specifications of our light guides.

## YOUR BENEFITS AT A GLANCE

Very powerful instrument that transmits light with great intensity

Flexible and unbreakable

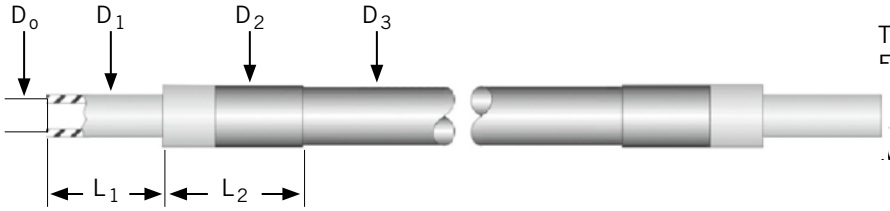
Large aperture about twice the size of silica fiber light guides

Competitively priced

Highest quality

## STANDARD END FITTINGS (SERIES 300, 380)

| Active Core Ø [mm] | Standard End Fittings [mm] | | | | Protective Sleeve [mm] | min. Bending Radius [mm] |
|---|---|---|---|---|---|---|
| $D_o$ | $D_1$ | $L_1$ | $D_2$ | $L_2$ | $D_3$ | |
| 2 | 4 | 6.7 | 8 | 20 | 5.5 | 30 |
| 3 | 5 | 20 | 9 | 24 | 7 | 40 |
| 5 | 7 | 20 | 10 | 24 | 9.5 | 60 |
| 6.5 | 9 | 20 | 13.5 | 38 | 11.5 | 80 |
| 8 | 10 | 20 | 15 | 40 | 12.5 | 100 |
| 10 | 14 | 20 | 19.8 | 41 | 15 | 200 |

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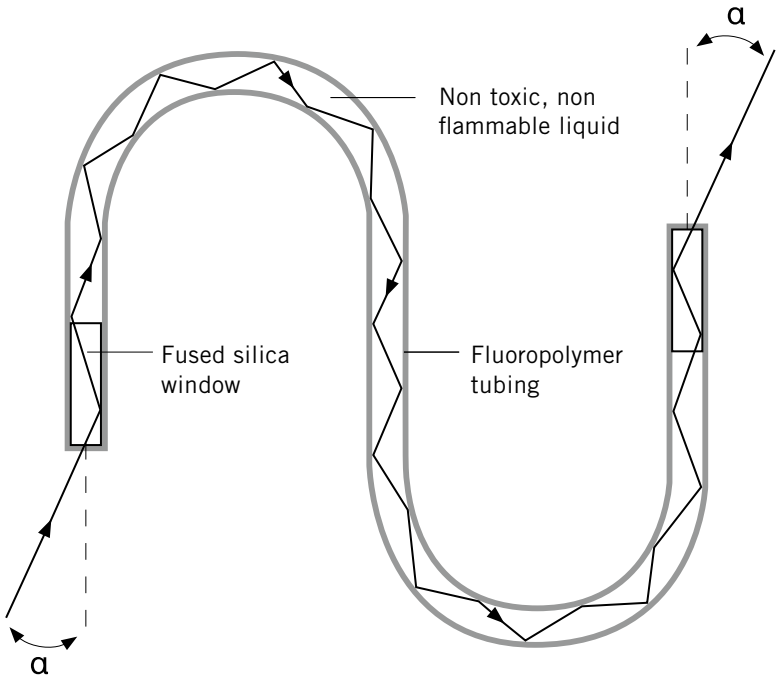
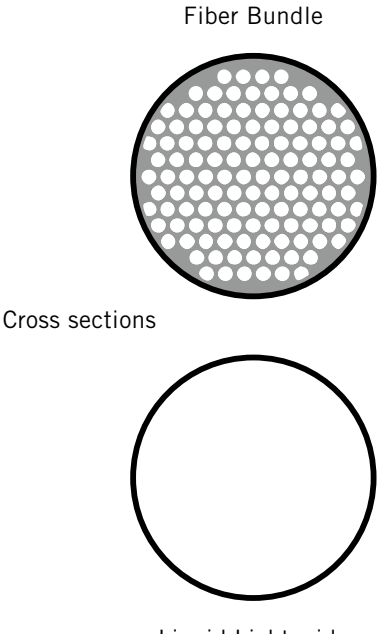
Many other end fittings and custom designs are available on request.

## PRINCIPLE

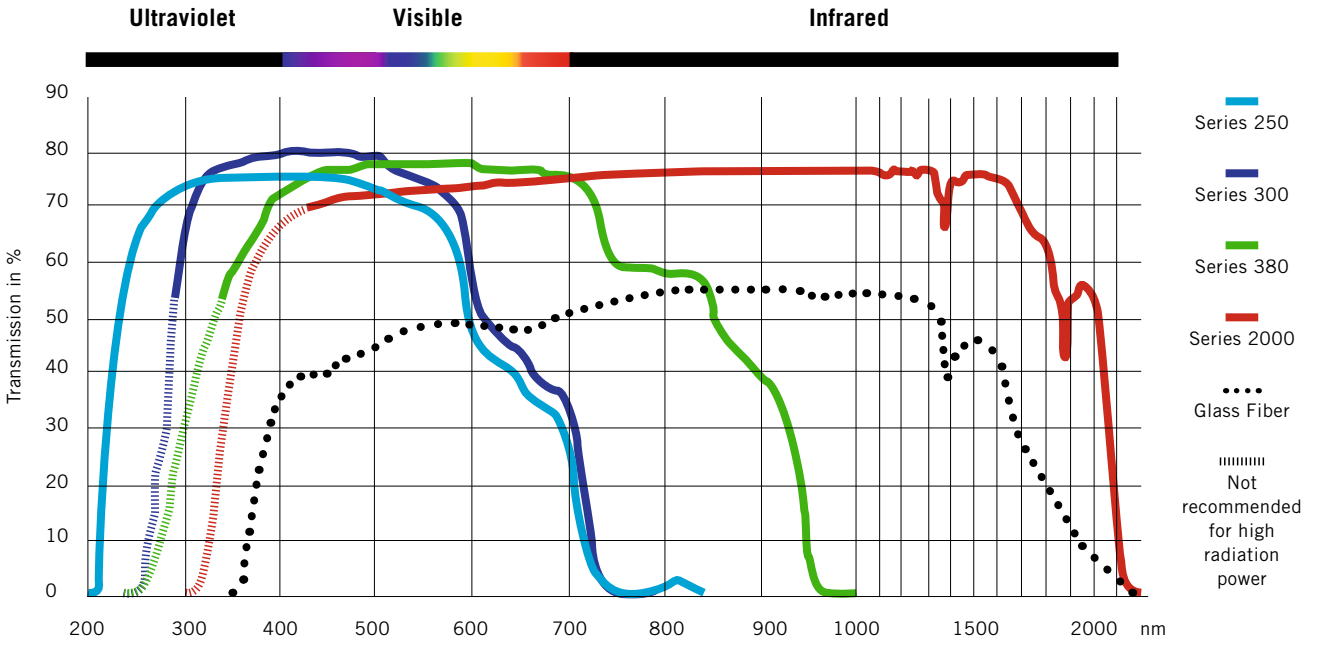


## SPECIFICATIONS

| Series | Core Diameters | NA 2α | Application Examples and Spectrum | Specific Properties |
|---|---|---|---|---|
| 250 | 3, 5, 8 mm | 50° | Wafer manufacturing, curing of UV adhesives with tack free surfaces. Lengths up to 5m (15ft). 220 nm – 650 nm | Outstanding photo stability even in the UVC range, suitable for high power UV lasers. Recommended light sources: Deep UV Mercury, Xenon, Excimer. Temperature range (long term): +5 °C to +30 °C |
| 300 | 2, 3, 5, 6.5, 8, 10 mm | 72° | UV adhesive curing and UV fluorescence inspection at lengths of up to 20 m (60 ft). 280 nm – 650 nm | Superior transmission of up to 5W of UV radiation. Suitable for very rugged environments. Recommended light sources: Mercury and Xenon, Tungsten Halogen, LED. Temperature range (long term): -5 °C to + 35 °C |
| 380 | 2, 3, 5, 6.5, 8, 10 mm | 72° | Outstanding white light illumination at lengths of up to 30 m (100ft). 340 nm – 800 nm | Excellent transmission from the near UV to the far red even at a length of 30 m. Suitable for very rugged environments. Recommended lightsources: Tungsten Halogen, LED, Xenon, Metal Halide. Temperature range (long term): -5 °C to +35 °C |
| 2000 | 3, 5, 8 mm | 62° | Visible and near infrared illumination. Lengths up to 4 m (12ft). 420 nm – 2000 nm | Transmission of high power near infrared radiation in the multi-watt range. Integrated long pass filter for radiation below 420 nm. Recommended light sources: Xenon or Tungsten Halogen lamps, Nd-YAG or Diode Lasers. Temperature range (long term): +5 °C to +35 °C |

## SPECTRAL CHARACTERISTICS




Measured with 2α=50° (Series 250 2α=34°), length 2000mm, active core Ø5mm

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This leaflet is not a complete technical documentation. Specifications can change without notice.