



Light Guide Rods – Extremely Customizable

Create your individual light guide design: straight, shaped, tapered, multi-bent



SCHOTT's high-performance single-core or multi-core glass rods can be shaped according to your needs. Whether straight, 3D-shaped, double-tapered, multi-bent or the combination of various shapes – create your individual light guide design.

Our light guides rods are not only long-term RoHS-compliant but also fully autoclavable, biocompatible and chemically resistant. This ensures a safe, robust and hygienic device throughout the complete product life cycle.

Technical Data					
Description	Single Core Rod (SCR)		Multi Core Rod (MCR)		
Core type	single		multi		
Glass fibers	conventional	PURAVIS® 	conventional	PURAVIS® 	
Material					
Fiber diameter	1-19 mm		25 – 400 µm		
Depending on the application					
Numerical aperture	0.60	0.68	0.60	0.63	0.68
λ = 587 nm					
Effective acceptance angle	73 °	85 °	73 °	78 °	85 °
According to DIN 58 141 Part 3 Theoretical value at λ = 546nm					
Eco-friendliness	lead-free	fully RoHS-compliant	lead-free		fully RoHS-compliant
Color	clear, brown or black				
Outer clad					
Shape	straight or custom shape (e.g. round, half-round, oval / flat, kidney-shaped)				
Biocompatibility	Yes (certificate available upon request)				
According to DIN ISO 10993-5					
Temperature operational	- 20 °C / - 4 °F ... + 350 °C / 662 °F				
Glass rod only					
Applicable wave length	350 – 900 nm				
Typical application	light homogenizer		dental illumination and dental curing caries detection and oral cancer screening diode laser applications (medical / industrial) beam detector and sensing tip		

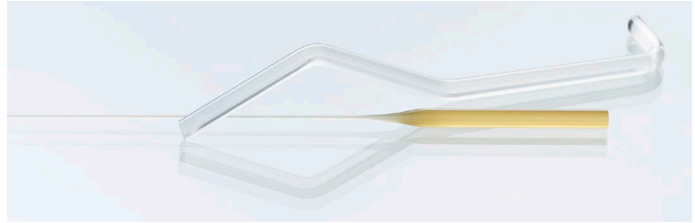
Endless design options for Light Guide Rods

Create your individual light guide design:

- straight,
- tapered
- multi-bent (2D / 3D)

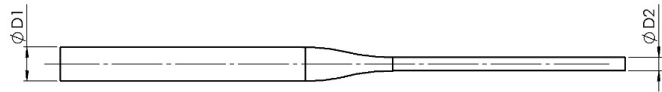
Combination of tapering and bending possible

Extremely high bending angle tolerance



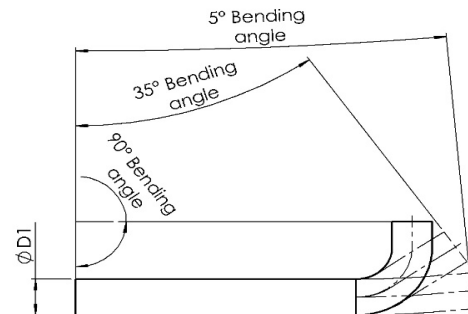
Tapered Light Guide Rods

Ø D1 [mm]	Ø D2 [mm]
2 – 19	down to 1



Bent Light Guide Rods

Ø D1 [mm]	Bending angle [in °]
2 – 13	5 - 90

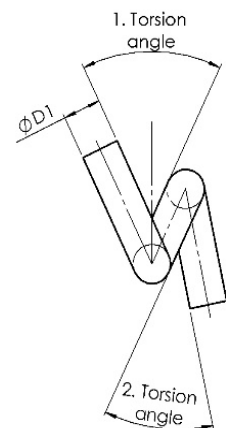
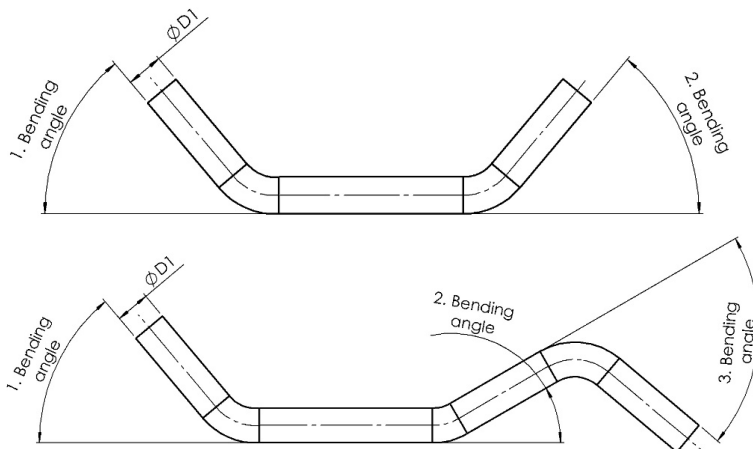


Multi-bent Light Guide Rods (2D/3D)

Ø D1 [mm]	1. Bending angle [in °]	2. Bending angle [in °]	3. Bending angle [in °]
2 - 13	5 - 90	5 - 20	5 - 90

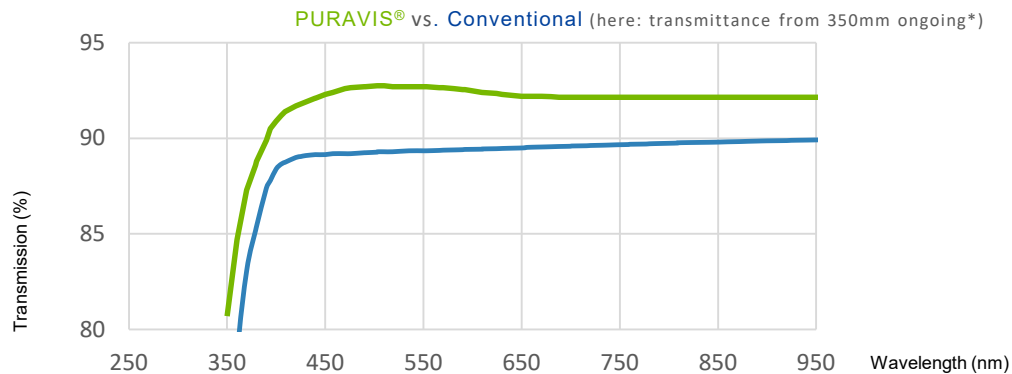
Optional:

Torsion angle [in °]
0 - 360



Typical Transmission (Measured in accordance with DIN 58 141 Part 2)

The transmission curves displayed below represent the typical manufacturing level for SCHOTT Light Guide Rods.



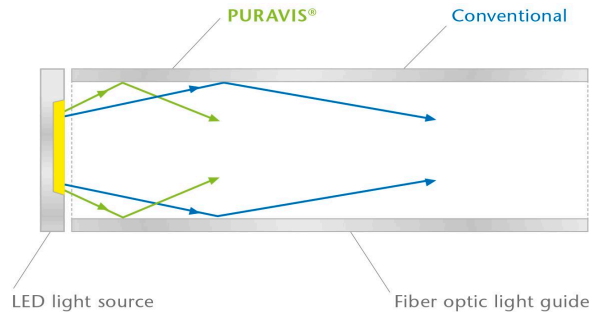
*More data upon request

Please note:

There is a minimal loss in transmission with blackened rods. The transmission of a Light Guide Rod changes after bending/shaping.

Numerical Aperture

The numerical aperture (NA) of an optical system is a dimensionless number that characterizes the range of angles over which the system can accept or emit light. When all angles are equal or smaller than the acceptance angle, light is transmitted within the fiber.



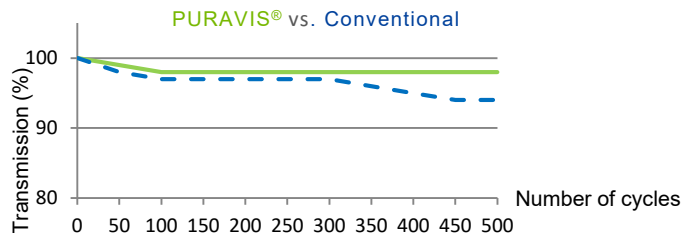
Light Guide Rods made of PURAVIS® fibers feature a larger numerical aperture (NA) and thus a larger acceptance angle than Light Guide Rods made from conventional fibers (see data on page 1). This allows for a solid angle benefit and thus a better utilization of LED beam characteristics.

Long-term Stability of SCHOTT PURAVIS®

SCHOTT PURAVIS® fibers feature excellent chemical stability. Core and cladding glasses have high chemical resistance which ensure long-term stability over lifetime under repeated autoclave cycles.

Validation of long-term stability by optical measurement

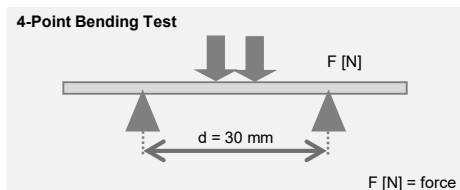
- Relative transmission measured in accordance with DIN 58 141 Part 2
- Aperture of light beam: 0.1
- Measurement wavelength: $\lambda = 535 \text{ nm}$
- Prior to each measurement: cleaning of end surface with acetic acid 5%



Chemical Resistance Classes	Conventional	PURAVIS
Acid resistance class SR (acc. to ISO 8424: 1996 [2])	1.0 - 2.2	1.0
Alkaline resistance class AR (acc. to ISO 10629: 1996[3])	1.0	1.0
Climatic resistance class CR (acc. to proposed standard ISO/CD13384 [1])	1.0 – 2.0	1.0
Stain resistance class: FR	0	0



Mechanical Strength (4-point bending test)	all SCHOTT fibers
Fire-polished	≥ 350 MPa
Rounded	≥ 250 MPa



Certification

SCHOTT offers high quality products and services along tight regulatory directives, including **ISO 13485**, **ISO 50001** and **ISO 9001 / 14001**.



Outstanding optical
performance



Chemical stability



Temperature resistance



Mechanical robustness