

# PURAVIS® High Performance Rigid Light Guides

Light Guides for Dental Curing, Fluorescence Diagnostics and Diode Laser Applications



Compared to regular light guides, PURAVIS® offers superior light performance over an enlarged wavelength spectrum allowing to shorten treatment time and to enable fluorescence diagnostic applications.

Create your individual light guide design – PURAVIS® multi-component glass can be shaped according to your needs: Bends for better access to the treatment area, cone shape to increase illuminance or imprints on the light guide (e.g. for your brand logo).

Comply with the latest regulatory requirements – our fiber optic light guides are not only long term RoHS compliant but are also fully autoclavable and chemically resistant to ensure a safe and hygienic device throughout the complete product life cycle.

Good for the environment – good to save costs. As a proprietary invention of SCHOTT, PURAVIS® is not only eco-friendly, since it is produced without the use of lead, arsenic or antimony but also features an enhanced break resistance for a safe installation and a maximum lifetime.

## Multi Core Rods (MCR): PURAVIS® MCR-85

Consist of multiple fused core/clad systems for best light performance even after bending the rod.

### Applications:

- Dental Curing
- Caries Detection
- Oral Cancer Screening
- Diode Laser Applications

## Single Core Rods (SCR): PURAVIS® SCR-85

Consist of one single high index core with a low index cladding.

### Applications:

- Homogenization of the light beam



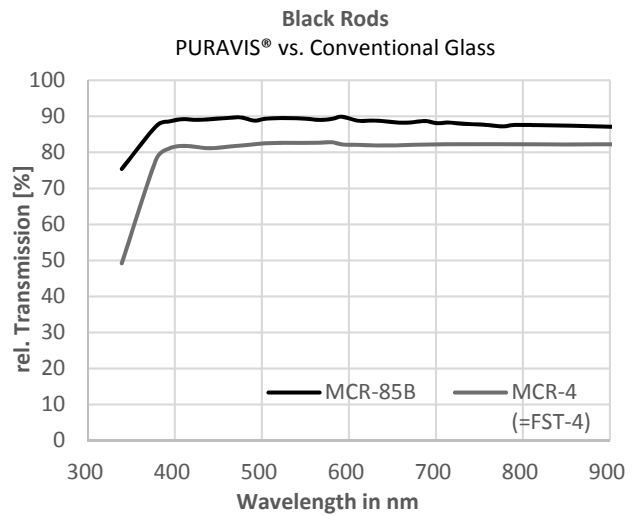
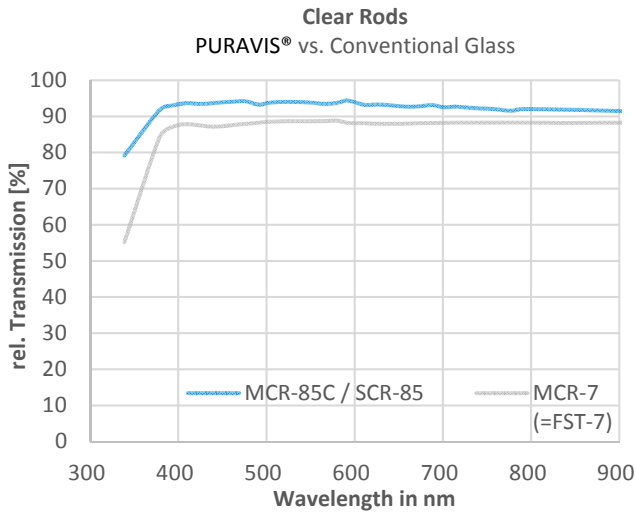
## Technical Data:

Description	PURAVIS® SCR-85	PURAVIS® MCR-85C	PURAVIS® MCR-85B
<b>Core Type</b>	single	multi	multi
<b>Color Outer Clad</b>	clear	clear	black
<b>Numerical Aperture</b> ( $\lambda = 587 \text{ nm}$ )	0.68	0.68	0.68
<b>Effective Acceptance Angle</b> according to DIN 58 141 Part 3 Theoretical value at $\lambda = 546 \text{ nm}$	85°	85°	85°
<b>Eco-Friendliness</b> Compliant to RoHS directive EU 2011/65 EU without using the exception according appendix III and IV.	without -lead -arsenic -antimony	without -lead -arsenic -antimony	without -lead -arsenic -antimony
<b>Biocompatibility</b> According to DIN ISO 10993-5	yes	yes	yes
<b>Temperature</b> <b>Operational</b> (glass rod only) <b>Storage/Transport</b>	- 20°C/-4°F ...+350°C/662°F - 20°C/-4°F ...+70°C/158°F		



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

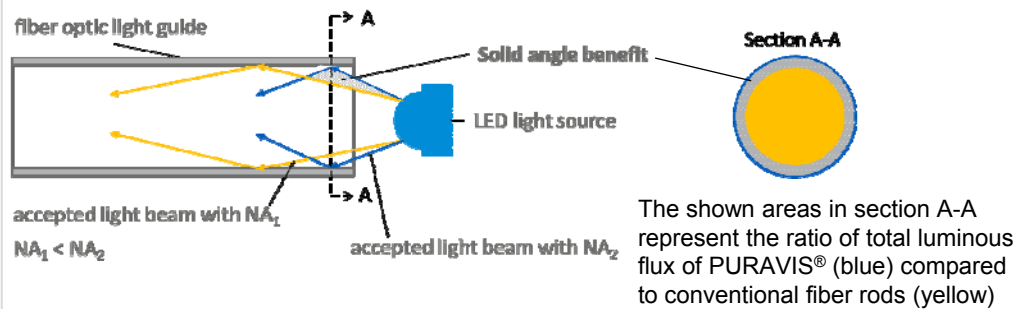
The transmission curves displayed below represent SCHOTT's typical manufacturing level for SCHOTT PURAVIS® MCR-85 and SCR-85 and is monitored in the wavelength range between 460 and 660 nm.



**Larger Numerical Aperture of PURAVIS® MCR-85/SCR-85**

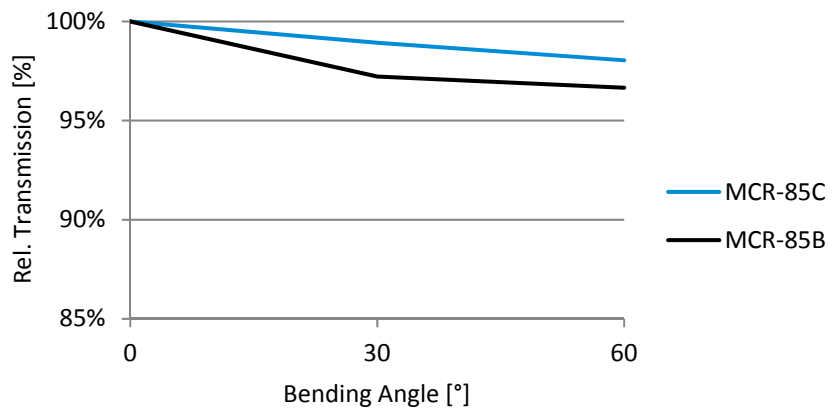
PURAVIS® fiber rods feature a larger numerical aperture (NA) and thus a larger acceptance angle compared to conventional fiber rods.

This allows for a solid angle benefit and thus a better utilization of LED beam characteristics.



**Typical Dependence of Transmission on Bending Angle**

The transmission of a straight PURAVIS® MCR changes after bending. The effect depends on the bending angle as displayed in the graph to the right.



## Long Term Stability of SCHOTT PURAVIS® Glass

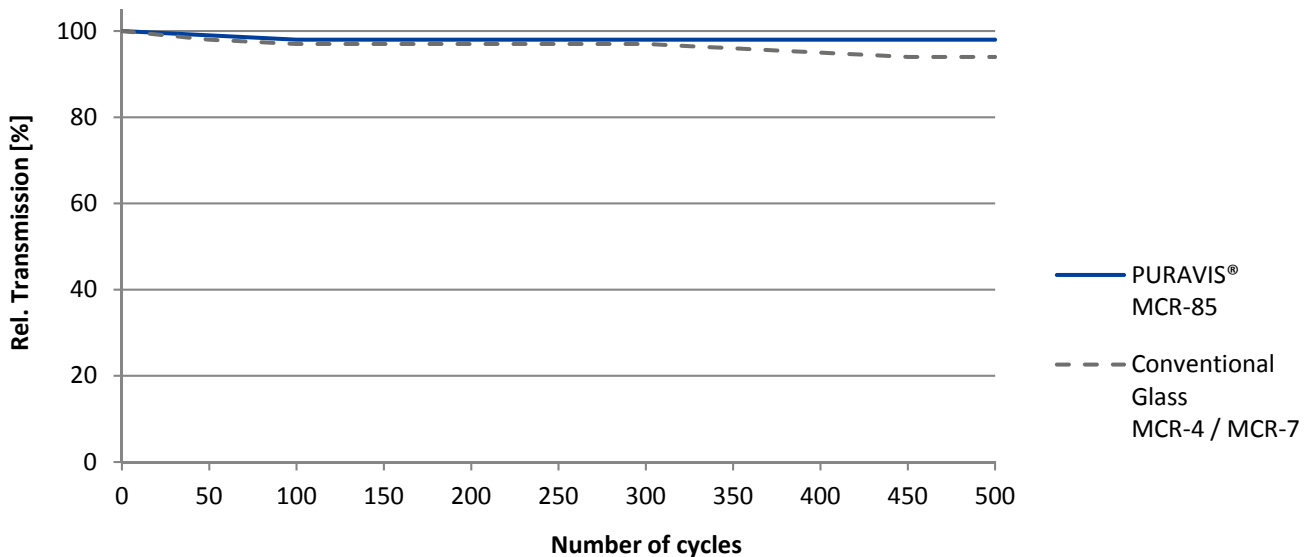
SCHOTT PURAVIS® features high chemical stability. Core and cladding glasses have high chemical resistance, which ensure long-term stability over lifetime under repeated autoclave cycles.

### 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%

### Sample preparation:

- SCHOTT® MCR-85C rods
- Diameter: 10 mm
- Length: 85.6 mm (Straight)



### Test Conditions

Autoclave

- Lautenschläger Protocert 839

Autoclaving program

- Temperature/pressure: 134 °C at 3 bar
- Sterilization time: 10 min
- Cycle time: 17 min

## Design Options for SCHOTT PURAVIS® MCR-85

### Straight Rods

- Length: 2.5 mm ..... 1000 mm
- Diameter: 1 ..... 14 mm

### Fiber Optic Cones

Straight SCHOTT PURAVIS® MCR can be drawn into a cone shape to increase intensity in a smaller spot diameter.

Please note: Changing the diameter from input to output changes the original acceptance angle of the rod material.

- Examples of typical cones: 13 to 8 mm, 8 to 4 mm, 6 to 2 mm diameter

### Bent Rods

Straight or conical-shaped SCHOTT PURAVIS® MCR can be bent into angled shapes. Most common are bends of up to 60°. Depending on the diameter of the raw rod radii of the bent rods range from 5 to 12 mm.

- Common rod diameters: 4, 6, 8, 10, 13 mm
- Design recommendation for minimum length of short leg "A":

Bending Angle \ Diameter	B = 50°	B = 60°	B = 70°
4 to 6 mm	13 ± 2	13 ± 2	13 ± 2
8 mm	14 ± 2	14 ± 2	15 ± 2
10 mm	16 ± 2	16 ± 2	17 ± 2
13 mm	19 ± 2	20 ± 2	20 ± 2

### Ferrules

- Customer specified ferrules, made from stainless steel, German silver or polymers, can be glued onto the rod.
- Polymer ferrules can be added directly onto the rod with an injection molding process.

### Printing

Customer specific information can be printed onto the rods. Different colors are available.

### Coating

Anti-reflective coatings on end surfaces are available upon request.

