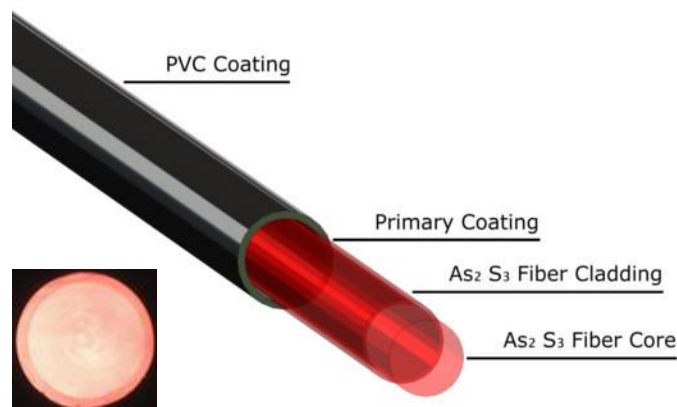


# Chalcogenide InfraRed (CIR-) fiber

Chalcogenide InfraRed (CIR-) As-S glass fibers transmit radiation in the spectral range 1.1 – 6.5  $\mu\text{m}$ . High performance CIR Core/Clad fibers are drawn with the core diameters span from 8 to 500  $\mu\text{m}$ . Advanced drawing process with double polymer jacket provides CIR-fibers with a superior mechanical strength and high flexibility. Low optical losses and small absorption peaks over the mentioned spectral range ensure a successful use of CIR-fibers in a broad range of applications.



## Applications:

- Mid IR spectroscopy
- Flexible IR pyrometry
- Flexible IR-Imaging systems
- Power delivery for Quantum Cascade Lasers

## Features:

- High transmittance in the range 1.1 – 6.5  $\mu\text{m}$
- Low optical losses of about 0.2 – 0.3 dB/m at 2.5 – 4  $\mu\text{m}$  and 4.5 – 5  $\mu\text{m}$
- Core/Clad structure with core diameters span from 8 to 500  $\mu\text{m}$
- Double polymer coating for high flexibility

\* See transmission data

## Parameters of standard Chalcogenide fibers

Code	Type	Core, $\mu\text{m}$	Cladding, $\mu\text{m}$	Protective Jacket, $\mu\text{m}$	NA	Min. bending Radius, mm
CIR8/300	Step Index Singlemode	8 $\pm$ 1	300 $\pm$ 10	400 $\pm$ 20	0.25 $\pm$ 0.02	60
CIR50/250	Step Index Few-mode	50 $\pm$ 3	250 $\pm$ 10	410 $\pm$ 30	0.13 $\pm$ 0.02	50
CIR250/300	Step Index Multimode	250 $\pm$ 10	300 +10/-15	400 $\pm$ 30	0.30 $\pm$ 0.03	60
CIR340/400	Step Index Multimode	340 $\pm$ 10	400 +10/-15	510 $\pm$ 30	0.30 $\pm$ 0.03	80
CIR500/550	Step Index Multimode	500 $\pm$ 10	550 +10/-20	700 $\pm$ 30	0.30 $\pm$ 0.03	100

## Specifications

Core/Clad composition	As <sub>2</sub> S <sub>3</sub>
Spectral Range	1.1 – 6.5 μm
Core Refractive Index	2.42
Fresnel Reflection Losses	31%
Attenuation at 3 – 4 μm & 4.5 – 5 μm	0.2 – 0.4 dB/m
Effective Numerical Aperture NA	see table above
Glass Transition Temperature, T <sub>g</sub>	185 °C
Operating Temperature	–273°C to +90°C
Core/Clad Diameter (standard)	see table above
Protective Jacket	Fluoro polymer + PVC
Tensile Strength	> 70 MPa
Minimum Bending Radius (fixed)	100x [Fiber Diameter]
Minimum Elastic Bending Radius	200x [Fiber Diameter]

## Attenuation and Transmission Spectra of CIR fibers

