www.irflex.com

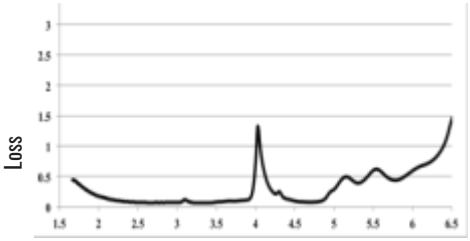
IRF-S SERIES

Chalcogenide MWIR Fibers (1.5 to 6.5µm)

Chalcogenide glass is based on the chalcogen elements (sulfur, selenium and tellurium) with the addition of other elements such as arsenic, antimony,or germanium. It offers promising properties such as transmission in the mid and far infrared regions of spectra, lower values of phonon energies, high refractive index and very large nonlinearities as compared to silica. Chalcogenide glass fibers are the ideal candidates for mid-infrared applications that require high power laser delivery, chemical sensing, thermal imaging and temperature monitoring.

IRflex's IRF-S Series mid-wave infrared (MWIR) fiber, made from extra high purity chalcogenide glass As_2S_3, is specially designed and manufactured to generate and/or guide mid-infrared wavelengths from 1.5 to 6.5µm with high transmission efficiency and nonlinearities about 100 times that of silica glass fiber.

IRF-S-100 Attenuation Spectrum



Applications

- Mid-IR laser beam delivery
- Infrared spectroscopy
- Chemical sensing
- Thermal Imaging
- Medical diagnostics
- Nonlinear supercontinuum generation
- Infrared countermeasure(IRCM)

Benefits

- Extra low loss, 0.05dB/m @2.8µm
- High power handling strength, tested in house, 6.9W CW in a 9µm core diameter fiber for 30 minutes without damage or degradation
- High mechanical flexibility

IRflex Corporation is the only U.S. company totally dedicated to the development and manufacture of mid-infrared fibers and devices for wavelengths from 1.5 to 11 micron.

IRflex has several patents on specialty chalcogenide optical fibers and expertise in these fibers' design and development. These strong patent portfolios and intellectual know-how, coupled with advanced manufacturing processes, are the core competencies which enable IRflex to sustain its leadership in the mid-infrared industry and provide cutting-edge products for mid-infrared applications.

Technical Specifications

Transmission Range (μm)	1.5 – 6.5
Typical Optical Loss (dB/m)	0.05 @ 2.8μm
Glass Composition	As_2S_3
Refractive Index	2.4
Numerical Aperture (NA)	0.30±0.02
Core Non-Circularity (%)	<1
Core/Clad Concentricity Error (μm)	<3
Tensile Proof Test (kpsi)	>15
Chemical Resistance	Insoluble in water, concentrated hydrochloric acid, non-oxidizingacids, alcohol, acetone, gasoline, and toluene. Soluble in strong alkaline solutions, such as KOH.

Fiber Models	Core /Clad/Coating Diameter (μm)	Cutoff Wavelength (μm)	Operation Wavelength (μm)*
IRF-S-6.5	6.5/125/300	2.46	1.5 - 4.15
IRF-S-9	9/170/330	2.65	1.5 – 5.3
IRF-S-50	50/85/275	-	1.5 – 6.5
IRF-S-100	100/170/340	-	1.5 – 6.5
IRF-S-200	200/250/470	-	1.5 – 6.5
** Operation wavelength (μm) range is defined as >50% more light remains inside of the core.*			

All fibers can be sold as bare fibers. All bare fibers, except IRF-S-50, can be terminated with connectors and sold as cables.

The standard fiber cables are terminated with FC/PC, FC/APC or SMA905 connectors with stainless steel ferrules. IRflex's FC/B® connector - the FC connector at Brewster Angle enables perfect coupling without reflection with polarized laser beam, is also available upon request.

The standard protective jacket is stainless steel with PVC sheathing. Other different cable jacket assembling configurations like stainless steel, PVDF, PVC and stainless steel with clear FEP sheathing (vacuum compatible) are offered upon request.

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