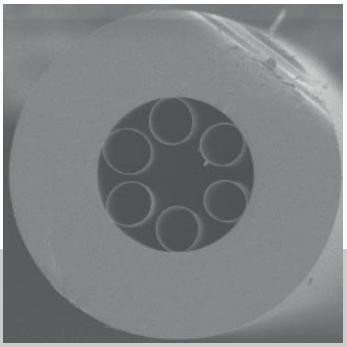
PHOTONICS BRETAGNE
Photonics Innovation Hub

SPECSHEET
11/2024

MICROSTRUCTURED FIBRES | HOLLOW-CORE ANTI-RESONANT FIBRES



Product line PERFOS

Optical signal in a hollow core anti-resonant fibre propagates in an air core surrounded by single ring of anti-resonant tube elements. Guidance is based on an anti-resonance from the thin glass membranes constituted by the non-touching tubes surrounding the hollow core. The extremely low overlap of guided power with the surrounding silica, less than $2x10^{-5}$, added to the mode effective area, confers to this fibre design ultra-low nonlinearity. Fibres transmitting at other wavelengths up to 3µm and mode field adaptors (MFA) for optimizing light coupling are available on request.

MAIN CHARACTERISTICS

- High damage threshold
- Nearly single mode guidance
- Ultra low dispersion in the transmission bands

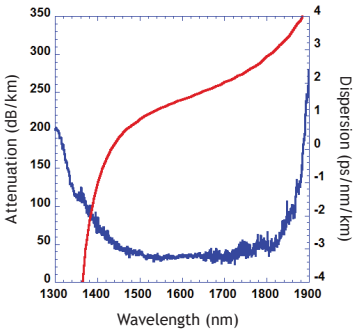
APPLICATIONS

- Low latency data transmission
- Gas-filled AR hollow core fibre laser
- Molecular tracing, gas detection
- High power delivery for pico- and sub-picoseconds optical pulses

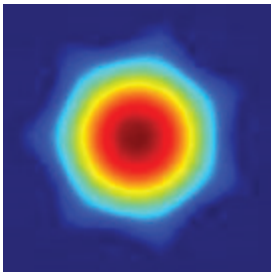
FIBRE SPECIFICATIONS *Optimised for*	ARF-40-240 *750 nm*	ARF-41-240 *920 nm*	ARF-33-160 *1064 nm*	ARF-45-240 *1550 nm*
Optical Parameters				
Attenuation (dB/km)	< 50 @ 750 nm	< 75 @ 920 nm	< 55 @ 1064 nm	< 35 @ 1550 nm
Transmission Bandwidth (nm) (< 100 dB/km)	700 – 915	820 - 990	1000 - 1260	1450 - 1750
Mode Field Diameter (µm) (1)	29 @ 750 nm	34 @ 920 nm	26 @ 1064 nm	37 @ 1550 nm
Dispersion (ps/nm/km) (1)	1@ 750 nm	1@ 920 nm	2 @ 1064 nm	1@ 1550 nm
Numerical Aperture (1)	0.02	0.02	0.03	0.03
3 dB Bend Loss Radius (cm)	≤ 5 @ 750 nm	≤ 5 @ 920 nm	≤ 5 @ 1064 nm	≤ 7 @ 1550 nm
Physical/Material Parameters				
Fibre Material	Air Core surrounded by Pure Silica			
Core Diameter (µm)	38 +/- 3	40 +/- 3	33 +/- 3	46 +/- 3
Fibre Diameter (µm)	242 +/- 5	240 +/- 5	160 +/- 5	239 +/- 5
Coating Outside Diameter (µm)	398 +/- 10	398 +/- 10	325 +/- 10	395 +/- 10
Coating Type	Dual coat high index coating acrylate			
Proof- Testing (kpsi)	> 20			

(1) Calculated typical value from simulation

Typical measured attenuation and dispersion for ARF-45-240



Measured fundamental mode shape of the ARF-45-240@1.55µm



Multiple options and configurations are available. Please contact Photonics Bretagne to find the best fit.
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All our optical fibres and components are manufactured according to our ISO certified quality management system, which places the needs and values of customers and partners at the heart of our organization. Throughout the manufacturing process, our components and systems are subjected to rigorous tests and inspections, which guarantees their robustness and reliability in the most demanding environments.