

# Anti-Resonant Hollow Core Fibers

IXF-ARF

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  $2 \times 10^{-5}$ , added to the mode effective area, confers to this fibre design record material non-linearity.



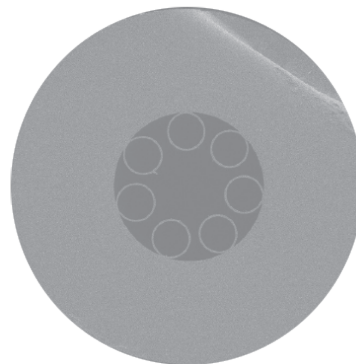
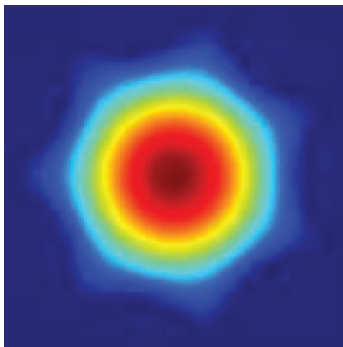
Partnership with **PHOTONICS**  
BRETAGNE  
Product line **PERFUS**

## FEATURES & BENEFITS

- 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



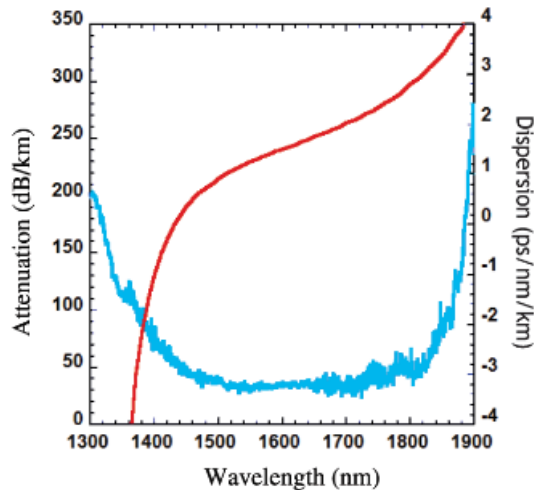
# IXF-ARF TECHNICAL SPECIFICATIONS

## Parameters

| P/N: IXF-ARF-                                | 40-240                        | 33-160         | 45-240-V1      | 40-230           | 120-400     |
|--|-------------------------------|----------------|----------------|------------------|-------------|
| Optimized for (nm)                           | 750                           | 1064           | 1550           | 2000             | 3000        |
| Material                                     | air core                      |                |                |                  |             |
| Core diameter ( $\mu\text{m}$ )              | 38 +/- 2                      | 33 +/- 2       | 46 +/- 2       | 40 +/- 2         | 119 +/- 2   |
| Cladding diameter ( $\mu\text{m}$ )          | 71 +/- 3                      | 66 +/- 3       | 99 +/- 3       | 105 +/- 3        | 233 +/- 3   |
| Fiber diameter ( $\mu\text{m}$ )             | 242 +/- 5                     | 160 +/- 5      | 239 +/- 5      | 230 +/- 5        | 404 +/- 5   |
| Coating outside diameter ( $\mu\text{m}$ )   | 398 +/- 10                    | 325 +/- 10     | 395 +/- 10     | 340 +/- 10       | 492 +/- 10  |
| Coating type                                 | dual coat high index acrylate |                |                |                  |             |
| Attenuation* (dB/km)                         | < 50                          | < 50           | < 35           | < 80             | < 70        |
| Transmission bandwidth (nm)<br>(< 100 dB/km) | 700 – 915                     | 1000 - 1350    | 1450 - 1750    | 1600 - 2200      | 2900 – 3150 |
| Mode field diameter* ( $\mu\text{m}$ )       | 29                            | 26             | 37             | 33.5             | 90          |
| Dispersion* (ps/nm/km)                       | ~ 0.8                         | ~ 2            | ~ 1            | ~ 2              | ~ 0.8       |
| Mode overlap with core (%)                   | > 99.99                       |                |                |                  |             |
| Numerical aperture                           | ~ 0.02                        | ~ 0.03         | ~ 0.03         | ~ 0.03           | ~ 0.03      |
| HOM suppression (dB)                         | N/A                           | 10 (after 3 m) | 10 (after 5 m) | > 25 (after 5 m) | N/A         |
| 3 dB Bend loss radius* (cm)                  | 4 +/- 1                       | 4 +/- 1        | 6 +/- 1        | 8 +/- 1          | 11 +/- 1    |

\* at specified optimised wavelength

*Specifications are subject to change without notice*



*Typical measured attenuation and dispersion of IXF-ARF-45-240*