

## **ACTIVE FIBRES** VERY LARGE MODE AREA FIBRE 40 µm core diameter



**Applications** 

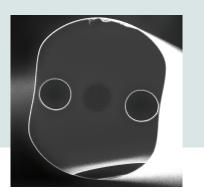
High power ultrafast pulsed

fiber lasers/amplifiers for material processing, life

science, spectroscopy or

defense applications.





The development of the new Perfos® Polarisation Maintening (PM) Ytterbium doped Very Large Mode Area (VLMA) fibre was driven by customer's demand for an easy to integrate double-clad fibre in the continuously growing ultrafast fibre laser market. The combination of robust single mode behavior in an all-solid glass form factor with 750  $\mu m^2$ fundamental mode area makes this fibre an ideal tool for high-end industrial fibre laser manufacturers. Photonics Bretagne proprietary manufacturing<sup>(1)</sup> process enables preferential fibre coiling and automatic amplifier output polarization orientation. Complementary matching GRIN fibre is available for all-fibre monolithic integration with standard LMA 10-125 PM pump combiners.

(1) Patent pending.



- Truly single mode polarization maintaining behavior
- All-solid step index based fibre design based on our all-vapor phase delivery process
- Industry standard low index polymer coating providing long term reliability & performance
- Excellent fibre lot uniformity and consistency
- Photodarkening free silica matrix

## **Fibre specifications**

| Fibre type                                    | Fibre<br>VLMA-40-235-PM-YB   |
|---|------------------------------|
| Optical parameters                            |                              |
| Background loss @ 1150 nm (dB/km)             | < 10                         |
| Cladding loss @ 1300 nm (dB/km)               | < 35                         |
| Cladding Numerical Aperture                   | ≥ 0.46                       |
| Cladding Absorption @ 915nm (dB/m)            | 2.2 +/-0.15                  |
| Predicted Cladding Absorption @ 976 nm (dB/m) | 7.7 +/- 0.5                  |
| Core Numerical Aperture (NA)                  | 0.045 +/- 0.00055            |
| LP01 MFD @ 1060 nm (µm)                       | 31 +/- 1                     |
| Effective Area Aeff @ 1060 nm (µm2)           | 750 +/- 40                   |
| Birefringence @ 1060 nm                       | ≥ 1.10 x 10 <sup>-4</sup>    |
| Typical Fiber Efficiency <sup>(1)</sup>       | ≥ <b>75</b> %                |
| Recommended coiling diameters (cm)            | 16 - 20                      |
| Physical/Material parameters                  |                              |
| Core diameter (µm)                            | 41 +/- 3                     |
| Core Concentricity Error (µm)                 | < 0.3                        |
| Fibre Outside Diameter (µm)                   | 235 +/- 10 <sup>(2)</sup>    |
| Coating Outside Diameter (µm)                 | 390 +/- 5                    |
| Coating Type                                  | Low Index                    |
| Fibre Geometry                                | Circular with opposite flats |

<sup>(1)</sup> Evaluated with 2 W 1064 nm signal in 976 nm forward pumping configuration.  $^{(2)}$  Individual fibre lots have +/- 1  $\mu$ m outer diameter tolerance.



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