

DC-70/11-PM-Yb

Single-mode polarization-maintaining double clad Ytterbium fiber



Rare Earth Doped



Single Mode



Polarization Maintaining

- Truly single mode
- Polarization-maintaining
- High absorption
- High numerical aperture pump core
- Circular pump core



Schematic of the fiber geometry showing the bow-tie configured stress elements and the step index core.

The DC-70/11-PM-Yb is an all-solid step-index fiber. The 11 μm polarization-maintaining core is strictly single-mode and does not rely on coiling to obtain its excellent beam quality.

The multimode pump light is guided by our proven airclad technology, ensuring low loss, high damage threshold and a large numerical aperture (NA). The large NA relaxes tolerances on coupling optics and facilitates the use of lower brightness diodes.

The fiber can be used in stand-alone power amplifiers or as a pre-amplifier fiber for our larger fibers like the DC-200/40-PZ-Yb or the DC-150/30-PM-Yb.

A pump absorption of 12 dB/m at 976 nm enables very short amplifiers capable of handling very high power levels.

Applications

- High pulse energy fiber amplifiers
- Fiber lasers

Optical properties	
Signal core	
Mode properties	Single mode
M^2 @ 1060 nm	< 1.2
Mode field diameter	$12 \pm 1 \mu\text{m}$
Mode field area	$110 \pm 20 \mu\text{m}^2$
NA @ 1060 nm	0.08 ± 0.005

Multimode pump core

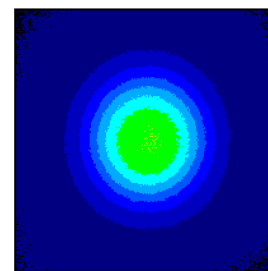
Numerical aperture @ 950 nm	0.63 ± 0.03
Pump absorption @ 920 nm	$\sim 4 \text{ dB/m}$
Pump absorption @ 976 nm	$\sim 12 \text{ dB/m}$

Polarization Parameters

Birefringence Δn	$> 1.0 \cdot 10^{-4}$
Polarization Extinction Ratio	$> 17 \text{ dB}$

Physical properties

Signal core diameter	$11 \pm 1 \mu\text{m}$
Inner cladding diameter, ID	$70 \pm 3 \mu\text{m}$
Outer cladding diameter, OD	$170 \pm 5 \mu\text{m}$
Coating diameter	$300 \pm 20 \mu\text{m}$
Outer and inner cladding material	Pure silica
Coating material, single layer	HT acrylate



Near field measured at 1060 nm.

The single-mode advantage

All our double-clad fibers in the Crystal Fibre range are strictly single-mode leading to several advantages compared to standard multimode LMA fibers:

- Better output stability
- Highest possible beam quality
- No requirements on tight coiling
- No coiling-induced mode area compression