

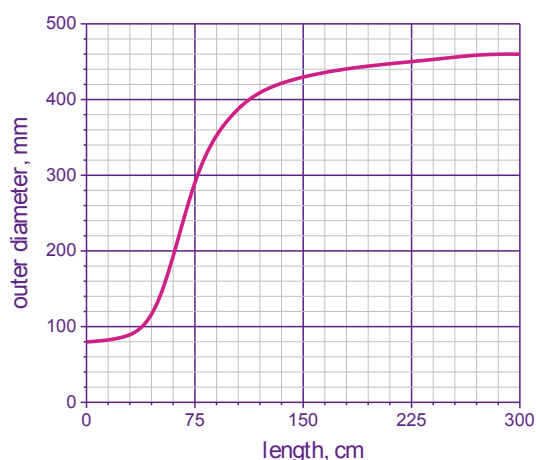
SPECIALTY FIBER LMA YTTERBIUM TAPERED FIBER

PHOTODARKENING FREE
Yb-DOPED DOUBLE CLAD
POLARIZATION-MAINTAINING
TAPERED FIBER

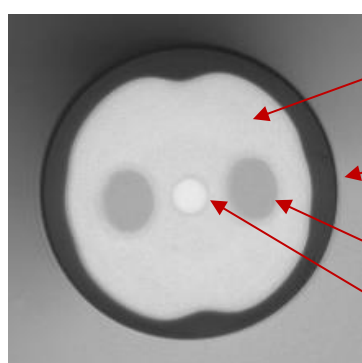
ARTICLE YDF-DC-40/400-PM-TPR-2.5-A

LMA Ytterbium doped tapered fiber YDF-DC-40/400-PM-TPR-2.5-A series is designed for operation without any power degradation in extremely high-peak-power cladding-pumped amplifiers. The new tapered fiber design has a single-mode end (typical dimension is 8/80 μm) for signal input and a very-large-mode-area end (typical dimension is 40/400 μm) for signal output and pump input. The all-glass double-clad fiber design (based on highly F-doped second cladding with typical NA=0.26) allow simple polishing of the thick 400 μm fiber end. Due to a high Yb concentration and a short tapered fiber length amplifiers based on this fiber has the highest threshold of nonlinear effects over the market (up to 0.5 MW) together with the diffraction limited beam quality at the output.

Distribution of the outer fiber diameter along the fiber length



Typical fiber cross-section



- Pure silica cladding (OD=300 \div 400 μm)
- F-doped silica cladding (OD=350 \div 450 μm , NA=0.26)
- B-doped stress rods
- Yb-doped core (D > 40 μm , NA=0.08, 2wt.% of Yb₂O₃)

FIBER SPECIFICATIONS	YDF-DC-40/400-PM-TPR-2.5-A	
End type	Signal input end	Signal output / Pump input end
Core diameter, μm	9 \pm 1	> 40
Clad diameter, μm	90 \pm 10	400 \pm 50
Cutoff wavelength, μm	< 1.0	-
MFD	10.0 \pm 2.0	> 24 (25 \div 30 typical)
Clad shape	PANDA with F-doped second cladding	
Core NA	0.09 \pm 0.01	
Clad NA	> 0.26	
Length, m	2.5 \pm 0.5	
Clad absorption (915 nm), dB/m	> 4	
Clad absorption (976 nm), dB/m	> 15	
Core background loss (1150 nm), dB/km	< 50	
Photodarkening resistance	> 20 times better compare to the Al ₂ O ₃ -SiO ₂ Yb-doped fiber	