LUMENTUM

Ytterbium-Doped Triple-Clad Fibers for High-Power Applications

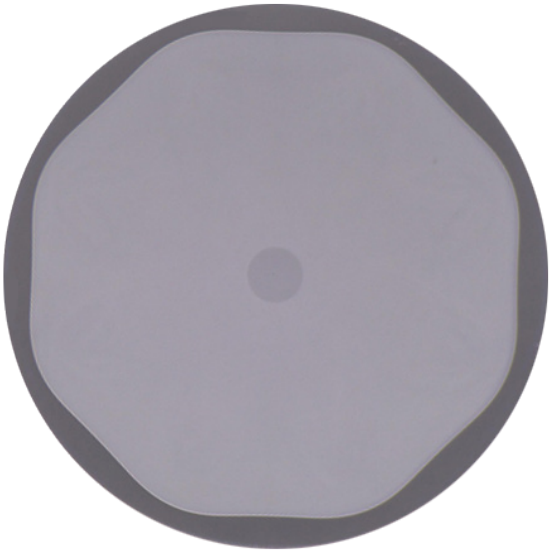
Lumentum Advanced Specialty Optical Fiber Family

Key Features

- Exceptional Beam Quality: Engineered for a low beam parameter product (BPP) and a high threshold for nonlinear effects
- Reliable Pump Guidance: An all-silica inner cladding combined with high-power-compatible outer coating ensures optimal pump transmission at elevated power levels
- Advanced Ytterbium Doping: Precisely balanced Ytterbium doping sustains stable output over extended lifetimes while delivering optimal efficiency and a high margin against nonlinear effects
- Stringent Quality Checks: 100% inspection for glass and coating imperfections guarantees consistency and long-term stability.
- Customization: Core NA, geometry, and absorption levels can be tailored to specific application needs

Lumentum's Ytterbium-doped triple-clad fibers are specifically engineered for high-power laser and amplifier systems, offering outstanding performance and reliability at output powers up to 15 kW and beyond. Utilizing our proprietary vapor-phase technology, we tightly control dopant levels within the core glass matrix, minimizing photodarkening and maximizing efficiency. The triple-clad construction integrates an all-silica inner cladding with a robust, high-power-compatible outer coating, ensuring efficient pump guidance and effective thermal management under demanding conditions. Each fiber undergoes comprehensive screening for coating and glass imperfections, resulting in superior long-term reliability.

For specialized requirements, Lumentum offers custom fiber designs tailored to specific absorption levels, core numerical apertures (NAs), and geometric properties, enabling seamless integration across a wide range of industrial, scientific, and research applications.



GENERAL INFORMATION	
Mode properties	Single mode, few mode, multimode
Core material	Yb doped fused silica
1st cladding material	Pure fused silica
2nd cladding material	Fluorine doped fused silica
Coating type	Primary: high temperature and low RI; secondary: high-temperature protective acrylate
Typ. application	CW lasers

PERFORMANCE CHARACTERISTICS		
Parameter	***Unit***	***Typical value***
Optical efficiency (typical pump at 920 nm)	%	> 70
Core attenuation @ 1200 nm	dB/km	< 10
Maximum power	kW	up to 15
BPP	mm*mrad	Typical 0.4 – 2, depending on core geometry

OPTICAL CHARACTERISTICS		
Parameter	***Unit***	***Product range***
Inner cladding absorption @ 915 nm	dB/m	0.1 - 2
Core numerical aperture	-	0.055 - 0.090
1st cladding numerical aperture	-	0.21 - 0.28
2nd cladding numerical aperture	-	0.48 or 0.51

PHYSICAL CHARACTERISTICS		
Parameter	***Unit***	***Product range***
Core diameter	µm	Typical 12 – 70 (optionally up to 420)
Pump cladding diameter (circular or flat- to -flat)	µm	435 - 625
Outer cladding diameter	µm	500 - 700
Secondary coating diameter	µm	615 - 820

Ordering Information

For more information on this or other products and their availability, please contact your local Lumentum account manager or Lumentum directly at customer.service@lumentum.com.

Yb - ___ / ___ / ___ - NA ___ - CA ___ - TCF

1 2 3 4 5

1	Dopant: Ytterbium
2	Dimensions in µm: Core / Inner Cladding / Outer cladding
3	NA of the core (/ optionally also NA of the 1st a 2nd cladding)
4	Cladding absorption in @920 nm dB/m
5	Additional info: TCF – triple clad fiber

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North America
Toll Free: 844 810 LITE (5483)

Outside North America
Toll Free: 800 000 LITE (5483)

China
Toll Free: 400 120 LITE (5483)