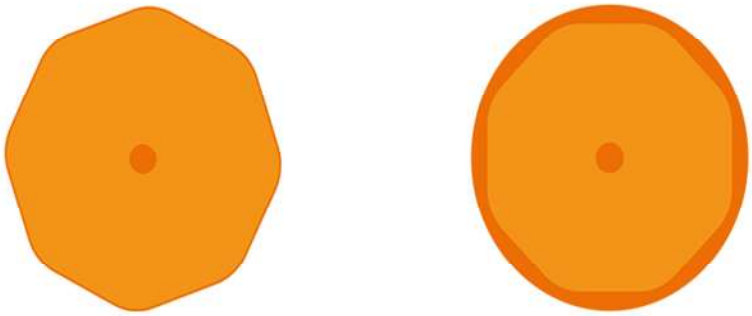
Ytterbium-Doped Single-Mode Low-TMI Fibers

Drawing of fiber cross section:



Description:

The Ytterbium (Yb) doped single-mode double- and triple-clad fiber family is optimized for high-power fiber lasers and amplifiers, delivering diffraction-limited beam quality, exceptional efficiency, and minimal photodarkening. The fibers employ an innovative proprietary glass matrix and precise refractive index control, enabling a high threshold for transverse mode instability (TMI), making them ideal for the most demanding applications.

Key Features:

High Power Handling:	Specialized coating materials constructing pump waveguide ensure reliability at elevated power levels.
Exceptional Beam Quality:	Maintains superior single-mode output for precise and consistent processing with diffraction-limited beam quality.
Optimized Coiling Performance:	Engineered for a specific coiling diameter to minimize fundamental mode loss while effectively suppressing unwanted higher-order modes.
High Efficiency:	Advanced Yb-doping provides high efficiency and mitigates photodarkening for long-term stable operation.
Customization:	Core NA, geometry, and absorption levels can be tailored to specific application needs.

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The manufacturer reserves the right to make alterations to the technical data described above.

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General Information:					
Product Name		**YB-25/400-CA0.95-SMDCF-LTMI**	**YB-25/400-CA0.55-SMDCF-LTMI**	**YB-20/440/500-CA0.6-SMTCF-LTMI**	**YB-23/440/500-CA0.6-SMTCF-LTMI**
Mode Properties		Single Mode			
Core Material		Yb-Doped fused silica			
Inner Cladding Material		Pure fused silica			
Outer Cladding Material		-		Fluorine-Doped fused silica	
Coating Type		High-temp low RI primary and high-temp protective secondary			
Typical Application		High power Single Mode CW lasers			
Performance Properties					
Parameter	**Unit**	**Specification**			
Opt. Efficiency (typ. pump @ 976 nm)	%	> 75			
Max tested power (TMI threshold)	kW	5			
Optimal Coiling Diameter	cm	15	10	28	28
Optical Properties					
Mode Field Diameter @ 1070 nm	µm	21 ± 1		18.5 ± 1	21 ± 1
Core Attenuation @ 1200 nm	dB/km	< 15			
Inner Cladding Absorption @ 920 nm	dB/m	0.95 ± 0.1	0.55 ± 0.05	0.6 ± 0.1	
Inner Cladding NA	-	-		0.23	
Outer Cladding NA	-	0.48			
Geometrical Properties					
Pump Cladding Diameter (circular to flat)	µm	400 ± 15		440 ± 10	
Outer Cladding Diameter	µm	-		500 ± 5	
Secondary Coating Diameter	µm	550 ± 15		630 ± 15	

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