Ytterbium-Doped Ultra Large Core Fibers

Drawing of fiber cross section:

Description:

This specialty fiber represents a class of Ytterbium-doped optical fibers designed with ultra-large cores, ideally suited for high pulse energy applications in the nanosecond, picosecond, and femtosecond regime.
The very large core enables operation at high energies, while mitigating nonlinear effects.

Key Features:

Ultra-Large Mode Area:	Core sizes exceeding 400 µm enable the generation of exceptionally high pulse energies while effectively minimizing nonlinear effects.
High Efficiency Low Photo-darkening:	Advanced Ytterbium doping ensures high efficiency and zero photodarkening at high-power operation.
High Beam Quality:	Confined doping preferentially amplifies lower order modes, preserving good brightness while minimizing non-linear effects.
Customization Options:	Core numerical aperture, absorption levels, geometry, and coatings can be tailored to meet specific customer requirements.
High Quality Manufacturing:	Our fibers are manufactured under rigorous quality standards, delivering consistently exceptional performance and reliability.

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General Information:				
Product Name		**YB-415/500-NA0.22-CA5-ULC**	**YB-400/500-NA0.22-CA35-ULC**	**Custom**
Mode Properties		Multimode		
Core Material		Yb-doped fused silica (RI matched to pure silica) + pure fused silica		
Cladding Material		Fluorine doped fused silica		
Coating Type		High-temp low RI primary and high temp protective secondary		
Typical Application		Pulse lasers for very high pulse energies		
Performance Properties				
Parameter	**Unit**	**Specification**		
Demonstrated Pulse Energies	mJ	> 110	TBD	TBD
Demonstrated Average Power	kW	> 2	TBD	TBD
Beam Parameter Product (BPP)	mm · mrad	< 22	TBD	TBD
Optical Properties				
Core Absorption @ 915 nm	dB/m	5 ± 1	35 ± 5	up to 50 dB/m
Core Attenuation @ 1200 nm	dB/km	> 2	TBD	TBD
Core NA	-	0.22		0.05 - 0.25
Cladding NA	-	0.48		0.48 or 0.51
Geometrical Properties				
Core Diameter	µm	415 ± 10	400 ± 10	up to 600 µm
Core Shape	-	Octagonal		Round, Octagonal
Cladding Diameter	µm	500 ± 10		up to 700 µm
Secondary Coating Diameter	µm	630 ± 15		TBD

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