Ytterbium-Doped High Power Triple Clad Fibers

Drawing of fiber cross section:

Description:

Heracle'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. Through tightly controling the dopant levels within the core glass matrix, we minimize photodarkening and maximize 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.

Key Features:

High Power Handling:	An all-silica inner cladding combined with high-power-compatible outer coating ensures optimal pump transmission and reliable pump guidance at elevated power levels.
Exceptional Beam Quality:	Engineered for a low beam parameter product (BPP) and a high threshold for nonlinear effects.
High Efficiency:	Advanced Yb-doping sustains stable output over extended lifetimes while delivering optimal efficiency and a high margin against nonlinear effects.
Customization:	Core NA, geometry, and absorption levels can be tailored to specific application needs.

heracle GmbH, Hans-Knöll-Straße 6, 07745 Jena
sales@heracle.de, Tel.: +49 3641-5277825
www.heracle.de

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General Information:		
Mode Properties		Single Mode, Few Mode, Multi 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 acrylate secondary
Typical Application		CW lasers
Performance Properties		
Parameter	**Unit**	**Specification**
Opt. Efficiency (typ. pump @ 920 nm)	%	> 70
Maximum power	kW	up to 15
Beam Parameter Product (BPP)	mm · mrad	Typical 0.4 – 2, depending on core geometry
Optical Properties		
Inner Cladding Absorption @ 915 nm	dB/m	0.1 – 2
Core Attenuation @ 1200 nm	dB/km	< 10
Core NA	-	0.055 – 0.090
Inner Cladding NA	-	0.21 – 0.28
Outer Cladding NA	-	0.48 or 0.51
Geometrical Properties		
Core Diameter	µm	Typical 12 – 70 (optionally up to 420)
Inner Cladding Diameter	µm	435 – 625 (circular or flat-to-flat)
Outer Cladding Diameter	µm	500 – 700
Secondary Coating Diameter	µm	615 – 820

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