Passive Components
Collimation Packages
FiberBench
Optical Switches
Rackbox Systems
Connectors/ Termination Tools
Single Mode Fiber
Rare Earth Doped
Polarization Maintaining Fiber
Photonic Crystal Fiber
Multimode Fiber: Graded Index
Multimode Fiber: Step Index
Plastic Optical Fiber

Ytterbium Doped Fibers for 1.04-1.1µm Lasers and Amplifiers

The YB1200 family of highly doped ytterbium fibers is designed for fiber lasers and continuous wave (CW) and pulsed fiber amplifiers that operate in the 1µm wavelength range with output powers from mW to >100W. These fibers feature high pump absorption, good beam quality, high resistance to photodarkening and excellent usability. The double cladding fibers feature low-index fluoroacrylate coating with >0.46 NA. Fluorosilicate coated all-glass variants are available for demanding high-power applications.

Passive Double Cladding Fibers

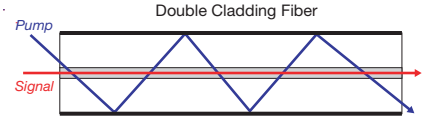
Liekki's matched passive fibers are designed and manufactured to match to commercially available large-mode-area (LMA) active fibers, such as Liekki's YB1200 family of LMA fibers. They will maintain excellent beam quality when incorported into fiber lasers or amplifiers.

Features and Benefits

- Matching With Industry Standard Active Fiber Geometries 125, 250, and 400µm
- Designed to "Fit-in" Octagonal Active Fibers
- Low Signal and Pump Coupling Losses From Passive to Active Fiber
- Low-Index Fluoroacrylate Coating With >0.46 NA
- Excellent Beam Quality and Matching to LMA Fibers

See Page 1072

The Working Principle of Double Cladding Fiber



– High numerical aperture pump propagates in the cladding and is absorbed by the core
– Low numerical aperture signal propagates in the core and is amplified

Why double cladding fiber?

- Low-Cost and High-Power Stripe and Bar Pump Lasers can be Used to Reach kW Level Pump Powers
- Operates as Brightness Converter - Diffraction-Limited Output With >80% Optical-to-Optical Efficiencies
- All Configurations Possible: CW Lasers, Pulsed Lasers, CW Amplifiers, Pulsed Amplifiers, and MOPAs.

Optical and Mechanical Parameters

	PARAMETERS	CORE PUMPED SM FIBER	DOUBLE CLADDING SM & MM FIBERS				
		YB1200-4/125	YB1200-6/125DC	YB1200-10/125DC	YB1200-20/125DC	YB1200-20/400DC	YB1200-25/250DC
Optical	MFD	4.4 ± 0.8µm	6.0 ± 0.8µm	—	—	—	
	Peak Absorption @ 976nm[1]	1200dB/m Nom	2.6dB/m Nom.	6.5dB/m Nom	29dB/m Nom	3.0dB/m Nom	10.8dB/m Nom
	Absorption @ 920nm[2]	280 ± 50dB/m	0.6 ± 0.2dB/m	1.5 ± 0.4dB/m	6.8 ± 1.7dB/m	0.7 ± 0.2dB/m	2.5 ± 0.7dB/m
	Core NA	0.2 Nom	0.15 ± 0.01	0.08 ± 0.01	0.07 ± 0.01	0.07 ± 0.01	0.07 ± 0.01
	Cladding NA	—	>0.46	>0.46	>0.46	>0.46	>0.46
	Cutoff Wavelength	1010 ± 70nm	—	—	—	—	—
Mechanical	Cladding Dia.	125 ± 2µm	125 ± 2µm[3]	125 ± 2µm[3]	125 ± 2µm[3]	400 ± 15µm	250 ± 15µm[3]
	Cladding Geometry	Round	Octagonal	Octagonal	Octagonal	Octagonal	Octagonal
	Coating Dia.	245 ± 15µm	245 ± 15µm	245 ± 15µm	245 ± 15µm	500 ± 15µm	350 ± 15µm
	Coating Material	High Index Acrylate	Low Index Acrylate	Low Index Acrylate	Low Index Acrylate	Low Index Acrylate	Low Index Acrylate
	Core Dia.	—	5.5 ± 0.5µm	10 ± 1µm	20 ± 2µm	20 ± 2µm	25 ± 2.5µm
	Core Concentricity Error	<0.7µm	<1.5µm	<1.5µm	<1.5µm	<1.5µm	< 1.5µm
	Proof Test	>100kpsi	>100kpsi	>100kpsi	>100kpsi	>50kpsi	>50kpsi

1) Peak Core Absorption for core-pumped fibers; Peak Cladding Absorption for double cladding fibers
2) Core Absorption for core-pumped fibers; Cladding Absorption for double cladding fibers
3) Flat to flat

Ytterbium Doped Fibers – Call For Quantities Over 250m

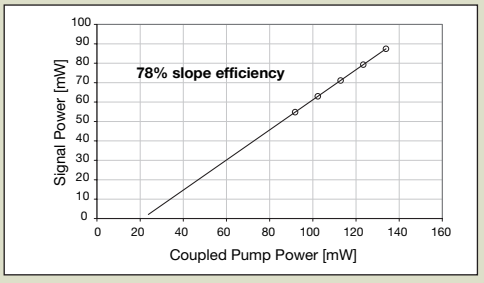
ITEM#	PRICE/m	$	£	€	RMB
YB1200-4/125	1 to 9m	$ 98.00	£ 61.75	€ 91,15	¥ 935.90
	10 to 49m	$ 76.10	£ 47.95	€ 70,75	¥ 726.75
	50 to 249m	$ 63.40	£ 39.95	€ 58,95	¥ 605.45
YB1200-6/125DC	1 to 9m	$ 90.00	£ 56.70	€ 83,70	¥ 859.50
	10 to 49m	$ 71.10	£ 44.80	€ 66,10	¥ 679.00
	50 to 249m	$ 59.10	£ 37.25	€ 54,95	¥ 564.40
YB1200-10/125DC	1 to 9m	$ 158.75	£ 100.00	€ 147,65	¥ 1,516.05
	10 to 49m	$ 126.50	£ 79.70	€ 117,65	¥ 1,208.05
	50 to 249m	$ 105.41	£ 66.40	€ 98,05	¥ 1,006.70
YB1200-20/125DC	1 to 9m	$ 694.00	£ 437.20	€ 645,40	¥ 6,627.70
	10 to 49m	$ 554.95	£ 349.60	€ 516,10	¥ 5,299.75
	50 to 249m	$ 462.40	£ 291.30	€ 430,05	¥ 4,415.90
YB1200-20/400DC	1 to 9m	$ 242.00	£ 152.45	€ 225,05	¥ 2,311.10
	10 to 49m	$ 193.95	£ 122.20	€ 180,35	¥ 1,852.20
	50 to 249m	$ 161.50	£ 101.75	€ 150,20	¥ 1,542.35
YB1200-25/250DC	1 to 9m	$ 285.00	£ 179.55	€ 265,05	¥ 2,721.75
	10 to 49m	$ 227.35	£ 143.25	€ 211,45	¥ 2,171.20
	50 to 249m	$ 181.90	£ 114.60	€ 169,15	¥ 1,737.15

Ytterbium Doped Fibers for 1.04-1.1µm Lasers and Amplifiers

Core-Pumped Single Mode Fiber

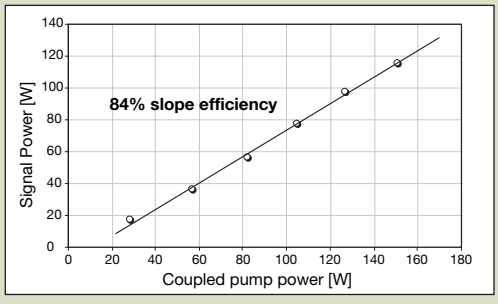
YB1200-4/125
Liekki YB1200-4/125 is a highly doped ytterbium fiber for low noise, low nonlinearity preamplifiers and lasers. The fiber is compatible with low-cost pump diodes and standard single mode passive fibers.

Typical Efficiency Plot



Double Cladding, Single Mode, and Multimode Large-Mode-Area (LMA) Fibers

Typical Efficiency Plot

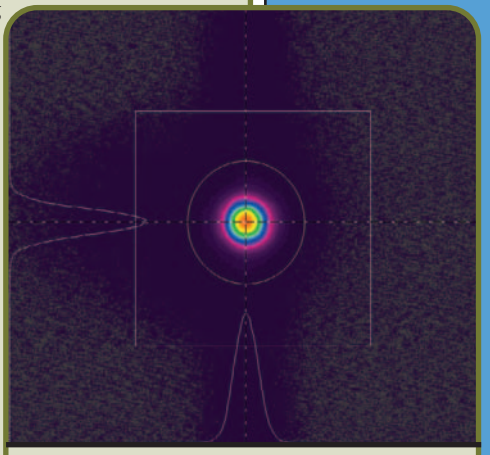


YB1200-6/125DC
Liekki YB1200-6/125DC is a highly doped, single mode, double cladding fiber for medium-power fiber laser and amplifier applications. The fiber is compatible with many fiber-based components such as fiber gratings and combiners. See page 1068 for the PM version (YB1200-6/125DC-PM).

YB1200-10/125DC
Liekki YB1200-10/125DC is a highly doped, double cladding fiber for medium-to-high-power fiber laser and amplifier applications. The combination of high cladding absorption with a single mode core makes the fiber ideal for compact fiber-based power amplifiers. See page 1068 for the PM version (YB1200-10/125DC-PM).

YB1200-20/125DC
Liekki YB1200-20/125DC is a highly doped, double cladding fiber ideally suited for compact, high-average-power, pulsed amplifier applications where large-mode-area and short fiber length are critical for suppression of nonlinear effects. The combination of a highly doped core, a large core-to-cladding ratio, and an efficient octagonal cladding shape provide very high cladding absorption.

YB1200-20/400DC
Liekki YB1200-20/400DC is a highly doped, double cladding fiber for high-power fiber lasers and amplifiers. The fiber combines a large core with excellent beam quality and a 400µm cladding that is compatible with industry standard high-power pump lasers and delivery fibers. See page 1068 for the PM version (YB1200-20/400DC-PM).



Typical Beam Quality for YB1200-20/400DC (M^2 = 1.1)

YB1200-25/250DC
(30/250 Available Upon Request)
Liekki YB1200-25/250DC is a highly doped, double cladding fiber featuring very high cladding absorption, high efficiency per application length, and excellent beam quality. The fiber is ideal for high-average-power pulsed fiber amplifiers. See page 1068 for the PM version (YB1200-25/250DC-PM).