

FIBERS SUMMARY

YTTERBIUM DOPED FIBERS (PHOTODARKENING FREE)

Fiber ID	Core NA	MFD @ 1064nm [μm]	Absorption [dB/m]			Cutoff [nm]	PD resistance compare to the Al ₂ O ₃ -SiO ₂ doped fiber
			915 nm	976 nm	1150 nm (grey loss)		
YDF-SM-6/125	0.16±0.02	5.5±0.5	160±20 (core abs.)	800±100 (core abs.)	<0.04	1030±20	20 x better
YDF-DC-6/125	0.16±0.02	5.5±0.5	0.35±0.05 (clad abs.)	~ 2 (clad abs.)	<0.04	1030±20	20 x better
YDF-DC-10/125	0.085±0.01	10±1	>1.9 (clad abs.)	~ 5 (clad abs.)	<0.05	1030±20	20 x better

Application notes:

YDF-SM-6/125 series is designed for operation without power degradation in core-pumped laser and amplifier schemes.

YDF-DC-6/125 series is specially designed for highly efficient high-reliability CW lasers operating in the 1.03-1.08 μm spectral range.

YDF-SM-10/125 series is designed for operation without power degradation in a high-peak-power cladding pumped amplifiers.

ERBIUM DOPED FIBERS

Fiber ID	Core NA	MFD @ 1550nm [μm]	Absorption [dB/m]				Cutoff [nm]
			980nm	1480nm	1530nm	1100nm (grey loss)	
EDF-4/125-10	0.22±0.04	6.5±1	6±1	4.5±1	10±3	<0.01	<980
EDF-4/125-25	0.24±0.04	6±1	14±2	11±2	25±5	<0.02	<980
EDF-4/125-50	0.28±0.02	5.5±1	30±5	20±5	50±15	<0.03	<980
EDF-14/125-35	0.09±0.02	15±2	15±3	12±3	35±10	<0.02	~1300

Application notes:

EDF-4/125-10 is specially designed to achieve the highest efficiency of telecommunication amplifiers.

EDF-4/125-25 is designed to minimize the amplifier length without pump-to-signal conversion efficiency degradation.

EDF-4/125-50 is designed for amplification of ultra-short pulses, when high efficiency, a short amplifier length and a high negative dispersion (-30..-50 ps/nm/km) are required.

EDF-14/125-35 is designed for low-nonlinearity amplifiers and high pulse energy amplifiers.

Non-standard EDF, including very LMA (MFD~25 μm) highly Er-doped fibers for ultra-low nonlinearity amplifiers, as well as double-clad fibers for highly efficient (up to 40%) high-power amplifiers (sub 100W) are available on request.

THULIUM - YTTERBIUM DOPED FIBERS

Fiber ID	Core NA	MFD @ 1900 nm [μm]	Absorption [dB/m]				Cutoff [nm]
			790 nm	915 nm	976 nm	1550 nm	
TYDF-DC-7/125	0.22±0.02	8±1.5	1.2±0.1 (clad abs.)	1±0.05 (clad abs.)	~ 5 (clad abs.)	90±10 (core abs.)	1900±50

Application notes:

TYDF-DC-7/125 series is specially designed for highly efficient pumping with MM pump sources at 915/975nm. Pumping with conventional sources near 790 nm is also possible, as well as core pumping with EDFL operating at 1550-1600nm.

PHOSPHOROUS DOPED FIBERS

Fiber ID	Core NA	MFD @ 1550nm [μm]	Optical loss [dB/km]			Cutoff [nm]	Raman gain [dB/km·W]
			1064 nm	1310 nm	1550 nm		
P-SM-5	0.19±0.01	4±0.5	<2.0	<1.3	<1.3	950±50	>5.5

Application notes:

P-SM - 5 series is specially designed for highly efficient Raman lasers and amplifiers operating in the 1.1-1.6 μm spectral range. The main advantage of phosphorous-doped fiber is a three times higher value of the Raman shift as compared to germanium-doped fibers. This feature allows one to strongly simplify the Raman fiber laser and amplifier design. For example, to construct a high-power laser @ 1480nm required for pumping Er-doped fibers, only two cascades of Raman wavelength transformation are necessary, whereas six cascades are necessary in the case of Ge-doped fibers.

HIGHLY NONLINEAR FIBERS (GERMANIUM-DOPED)

Fiber ID	Core NA	MFD @ 1550nm [μm]	Optical loss [dB/km]			Cutoff [nm]	Zero dispersion wavelength [nm]
			1064nm	1310nm	1550nm		
HNLF	0.32±0.02	4±0.5	<6	<2.5	<2	~1000	~2400
HNLF DS	0.32±0.02	4±0.5	<6	<2.5	<2	~1500	1480-1565

Application notes:

HNLF series is designed to maximize fiber nonlinearity and minimize optical loss, which makes such fibers optimal for constructing highly efficient Raman lasers and amplifiers, dispersion compensators (i.e. for the 2 μm spectral region required for Tm-doped fibers) and various non-linear devices.

HNLF DS series is designed for applications requiring a shift of the zero dispersion wavelength to the 1550 nm spectral region: supercontinuum generation, parametric conversion and etc.

Non-standard HNLF, including fibers with the core NA>0.6 (pure GeO₂-doped fiber core) are available on request.

HIGHLY NONLINEAR MICROSTRUCTURED FIBERS

Fiber ID	MFD [μm]	ZDW [nm]	Nonlinear coefficient (near ZDW) [1/W·km]	Optical loss (800-1600nm), [dB/km]	Cutoff [nm]
HN_PCF-800	2.0±0.3	800	~ 90	<20	<650
HN-PCF-1040	4.5±0.3	1040	~ 10	<20	<1000

Application notes:

HN_PCF-800 series is specially designed for supercontinuum generation using Ti-Sa ultra-fast lasers.

HN_PCF-1040 series is specially designed for supercontinuum generation using Yb-doped ultra-fast fiber lasers.

METAL-COATED SILICA FIBERS (Excellent long life fibers for harsh environmental applications)

Fiber ID	Coating material	Numerical Aperture NA	Core material	Clad material	Min temp., °C	Max temp., °C
OK-150/165/230Al	Al	0.22 ± 0.02	pure synthetic silica (low OH or high OH)	doped silica	-196	400
OK-150/165/230Cu	Cu	0.22 ± 0.02	pure synthetic silica (low OH or high OH)	doped silica	-196	600