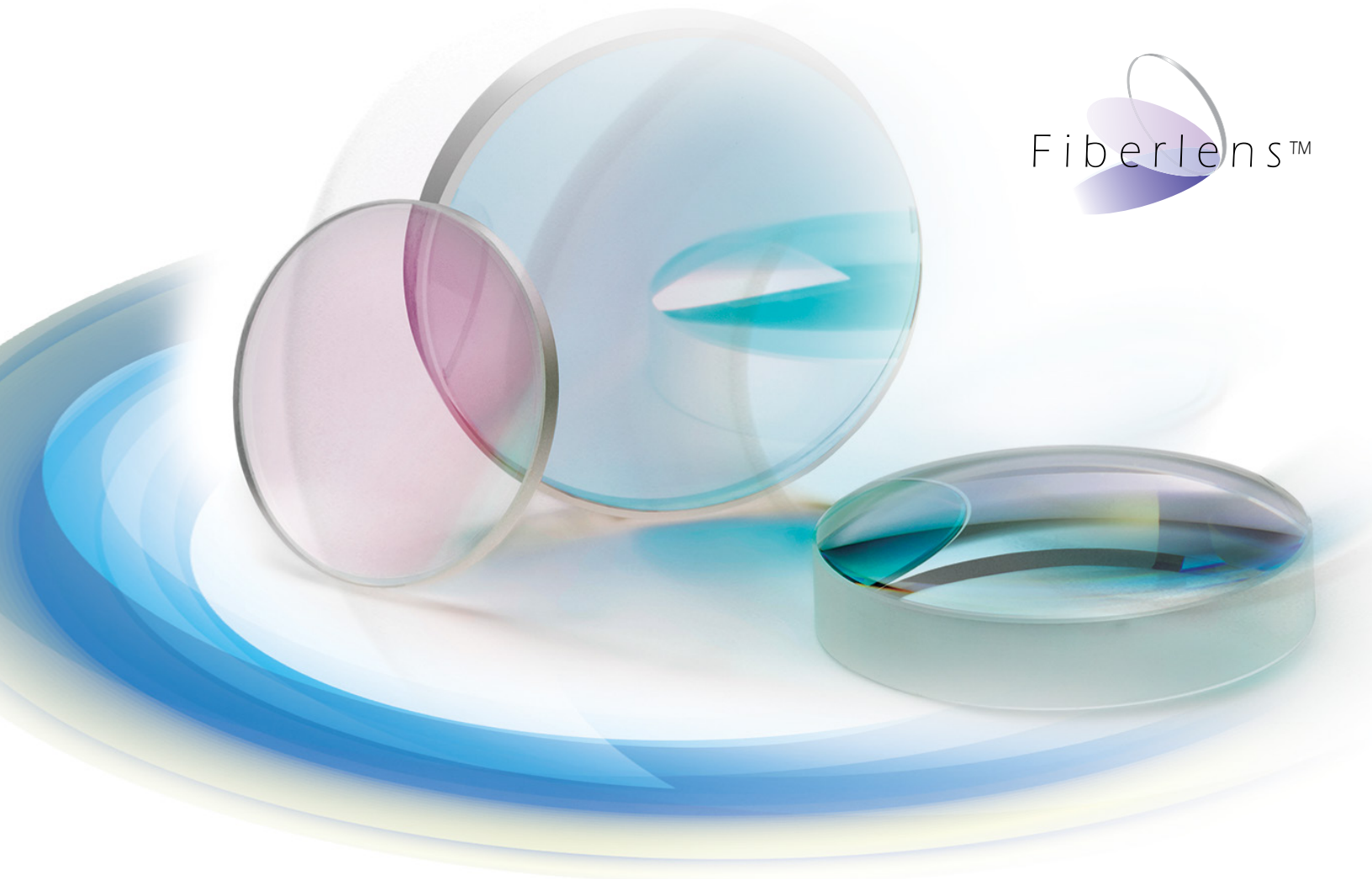


High Performance Optics For Industrial Fiber Lasers



Fiberlens™



Best performance



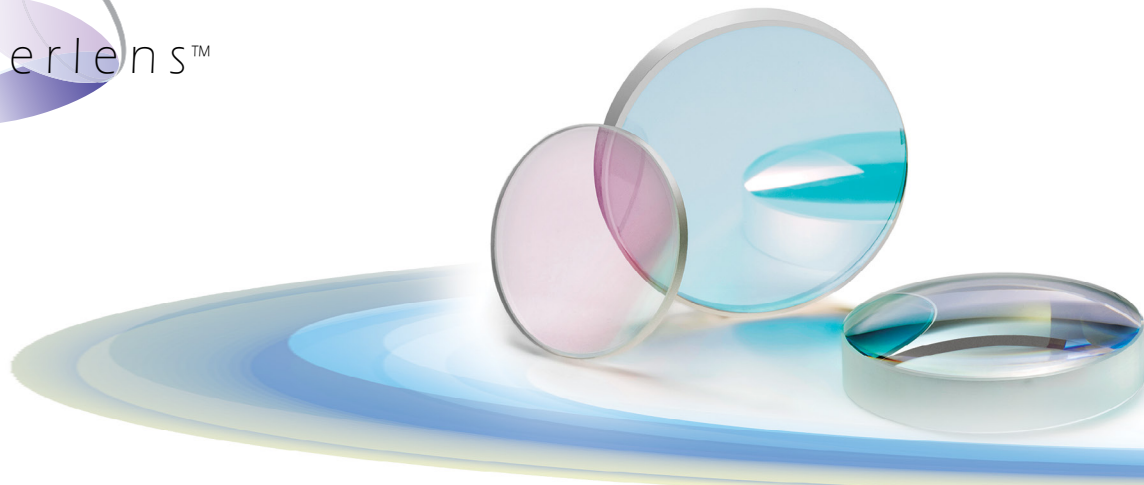
Superior coating



Approved and used by leading OEMs



Best cost-benefit ratio



Ophir optics for 1 μ m high power fiber lasers

With decades of knowledge and experience in the optical industry, using cutting-edge measurement equipment, Ophir offers a wide array of first-class optical coatings for high power fiber lasers in the 1 μ m wavelength range, including:

- Protective windows
- Spheric & aspheric lenses
- Optical collimation and focusing assemblies (doublets and singlets)

High power lasers are a growing industry with numerous applications. As technology advances, and lasers become more sophisticated, the optics used in such systems must provide increasingly superior levels of performance. Here's where Ophir steps in. With the 1 μ m high power laser optics range, Ophir guarantees maximum focus stability and minimum aberrations, by using advanced manufacturing technologies, for high optical performance.

Capabilities

- High LIDT (laser induced damage threshold) coatings 20J/ cm²
- Low absorption 10-50ppm
- High quality fused silica substrates

Typical coating features

AOI	0°-15°
%R	@1030-1090 < 0.1%-0.2%
%T	@650-670 > 60%-95% (2 sides)
%T @1030nm	T > 99.6%
%T@1064nm	T > 99.7%
%T@1070-1080nm	T > 99.6%
S/D	10-5

Thermal properties

Specific heat	0.770 J/(gK)
Thermal conductivity	1.38W/(mK)
Thermal diffusivity	0.0075 cm ² /s
Thermal expansion	0.57x10 ⁻⁶ ppm/°C

Quality assured

- Chosen by top-tier laser OEM manufacturers
- Extensively tested and utilized in laser applications above 8kW

Mechanical properties

Elastic (Young's) modulus	73GPa
Poisson's ratio	0.16
Density	2.20g/cm ³
Knoop hardness (100g load)	522kg/mm ²

Refractive index and dispersion

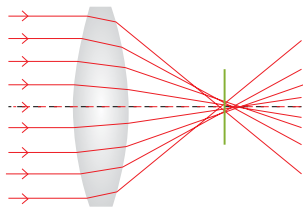
Thermal coefficient	$\Delta n/\Delta T$ 9.6 ppm/°C
Wavelength	1064nm



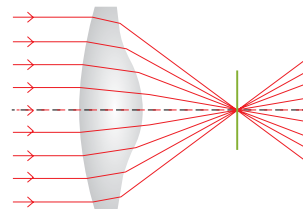
Ophir aspherical lenses




Aspherical surfaces on collimating and focusing lenses provide improved performance over conventional, spherical surfaces in high-power industrial fiber laser and direct diode laser systems. The aspherical shape of the optics reduces spherical aberration resulting in a smaller spot size, a uniform spot shape and greater depth of focus.

Spherical lens



Aspherical lens



Legend
 Light rays
 Optical axis
 Best focus point

Ophir Fiberlens™ aspheric lenses are available in custom configurations for all high-power industrial fiber laser and direct diode laser systems.

Specification	Value / Range	Tolerance
Diameter (range)	12.0 – 300.0 mm	+ 0 / - 0.10 mm
Effective focal length (EFL)	20.0 – 500.0 mm	< 0.1%
Lens types	Aspherical – plano Aspherical – spherical Aspherical – aspherical	
Clear aperture	> 90% of diameter	
Asphere power	< 2.0 fringe at 632.8 nm Radius of curvature	
Asphere irregularity	< 0.5 fringe at 632.8 nm (P-V)	
Scratch - dig	20-10 or better	
Surface roughness	< 2 nm RMS	
Substrate material	High-purity, UV-grade fused silica	
Focal length	≤0.1%	
ETV	≤10µm	

Lenses for high power fiber lasers

Ophir P/N	Diameter (inch/mm)	F.L. (inch/mm)	E.T. (mm)
Focusing Doublet			
633859-117	1.18/ 30.0	4.92/ 125.00	Assembly #680339-001
633860-117	1.18/ 30.0	4.92/ 125.00	
633910-117	1.46/ 37.0	5.91/ 150.00	Assembly #680337-001
633911-117	1.46/ 37.0	5.91/ 150.00	
633771-117	1.18/ 30.0	5.91/ 150.00	
633772-117	1.18/ 30.0	5.91/ 150.00	
Collimating Doublet			
633861-117	1.18/ 30.0	3.94/ 100.00	Assembly #680340-001
633862-117	1.18/ 30.0	3.94/ 100.00	
634132-117	1.46/ 37.0	3.94/ 100.00	Assembly #680355-001
634133-117	1.46/ 37.0	3.94/ 100.00	
Single Lens			
632284-117	1.50/ 38.1	7.50/ 190.50	7.00
631669-117	1.50/ 38.1	5.00/ 127.00	7.00
632291-117	1.50/ 38.1	7.09/ 180.00	3.00
632292-117	1.50/ 38.1	8.66/ 220.0	3.30
632294-117	2.00/ 50.8	5.91/ 150.00	11.60
633112-117	2.00/ 50.8	7.50/ 190.00	11.45
632331-117	1.18/ 30.0	7.87/ 200.00	2.45
632754-117	1.00/ 25.4	8.00/ ~200.00	6.00
633842-117	1.00/ 25.4	4.43/ 112.5	2.40
633214-117	1.00/ 25.4	3.94/ 100.00	2.00
631521-117	1.38/ 35.0	5.91/ 150.00	9.00
633841-117	1.00/ 25.4	8.86/ 229.00	3.20
633415-117	1.50/ 38.1	8.27/ 210.00	6.38
633120-117	1.97/ 50.0	8.66/ 220.00	2.80
633230-117	1.57/ 40.0	5.91/ 150.00	5.00

Protective windows for high power fiber lasers

Ophir P/N	Diameter (inch/mm)	E.T. (mm)
633267-117	0.85/ 21.5	2.00
632252-117	0.88/ 22.4	4.00
632445-117	1/ 25.4	3.00
633723-117	1/ 25.4	5.00
633481-117	1/ 25.4	4.00
632830-117	1.18/ 30.0	5.00
632240-117	1.18/ 30.0	1.50
632755-117	1.26/ 32.0	6.35
632595-117	1.31/ 33.3	1.50
632251-117	1.34/ 34.0	5.00

Ophir P/N	Diameter (inch/mm)	E.T. (mm)
632851-117	1.42/ 36.0	5.00
633411-117	1.46/ 37.0	7.00
632958-117	1.5/ 38.1	5.00
633347-117	1.5/ 38.1	1.50
632933-117	1.65/ 42.0	9.00
632498-117	1.97/ 50.0	2.00
632346-117	2/ 50.8	6.35
632713-117	2.17/ 55.0	1.50
633824-117	1.38/ 35.0	1.50

About Ophir Optonics

Established in 1976, Ophir Optonics is a global leader in the High Power Laser Optics industry, and a reputable OEM supplier.

We leverage our vast experience, expertise and technologies, to develop and manufacture superior optics for the industrial lasers industry.

Visit www.ophiropt.com/laser-optics

to find out more about additional related products:

- Protective windows
- Spheric & aspheric lenses
- Assembled mechanics & optics doublet and singlet



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