High Performance Optics For Industrial Fiber Lasers

Elemente optice de inalta performanta pentru masini FIBER LASER

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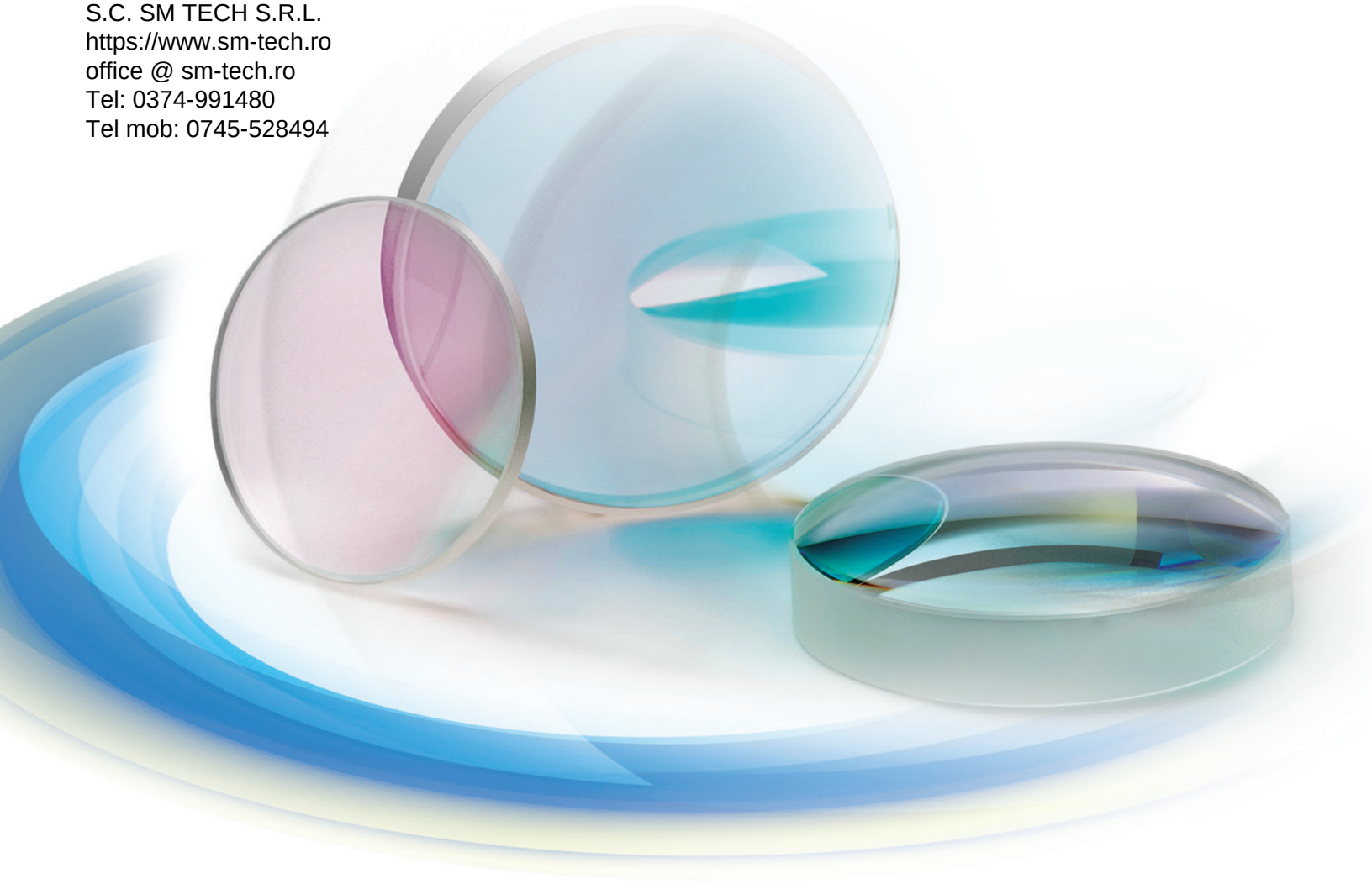


Best performance

Superior coating

Approved and used by leading OEMs

Best cost-benefit ratio

Ophir optics for 1 micron 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 micron 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 micron 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/ cm^2
- Low absorption 10-50ppm
- High quality fused silica substrates

Quality assured

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

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

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

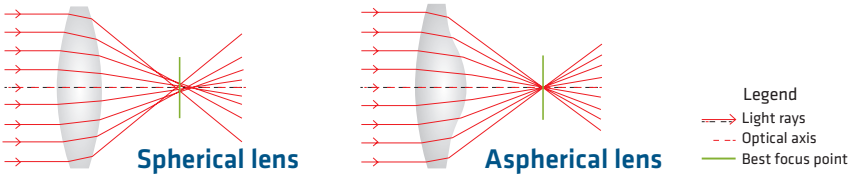
Thermal properties	
Specific heat	0.770 J/(gK)
Thermal conductivity	1.38W/(mK)
Thermal diffusivity	0.0075 cm^2/s
Thermal expansion	0.57x10^{-6} ppm/°C

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.

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
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

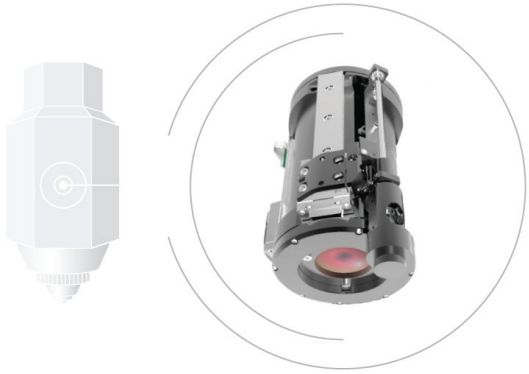
Optical collimation and focusing assemblies

Our line of replacement focusing and collimation assemblies is available off-the-shelf and is compatible with leading OEM laser brands.
Standard products offered for 100mm, 125mm, 150mm, 200mm focal length. Design and manufacture, according to customer needs, is available upon request.

Customized motorized zoom lens for laser cutting head

Typical features:

- Magnification range X1-X4
- Continuous zoom
- Total transmission >97%
- Focus range -15mm to +20mm
- Focus time 0.5sec for full range
- OEM custom designs are available upon request



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About Ophir Optronics

Established in 1976, Ophir Optics 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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