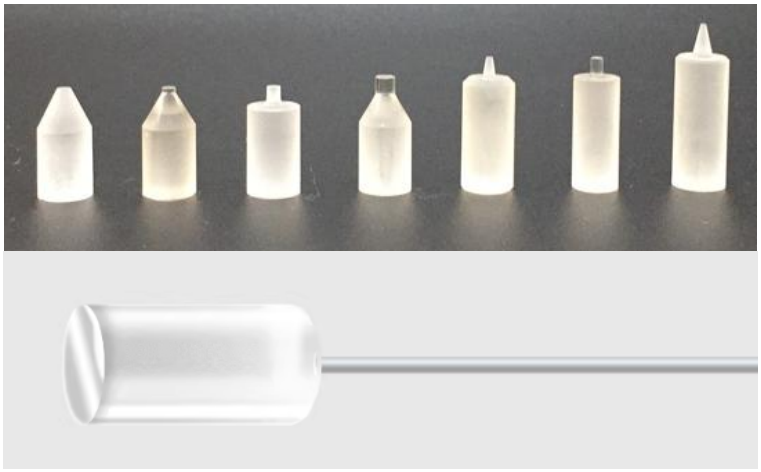
Fiber End Cap



Features

- Material: Fused Silica
- Customized dimensions and shapes
- Diameter of fiber core from 10 to 800 um
- Clear aperture: Central 90% of diameter
- Surface quality: 10-5 S/D,even up to 0-0 S/D
- Parallelism: < 15"
- Standard and customized AR coating options available
- High laser damage threshold

Fiber end caps are core optical components in QBH fiber laser output heads, which ensure stable fiber laser output and effectively eliminate back reflections during industrial processing.

GEZHI Photonics can customize and manufacture fused silica end caps in various specifications using Corning, Schott, fused silica materials or other customer-specified materials according to product application requirements. We can also deposit anti-reflection coatings on the output surface, with coating processes including IAD (Ion Assisted Deposition) and IBS (Ion Beam Sputtering), providing ideal, safe and stable solutions for customer fiber laser applications ranging from low power to high power.

Fiber End Cap Parameter

Parameters	Unit	Value
Diameter of fiber core	um	10~800
Numerical Aperture	NA	0.06/0.46
Size	mm	2x4 or 8x20
Angle	deg	0±0.5 or 8±0.5
Output beam	M^2	≤1.5
Fiber Length	M	1~20
Operating Wavelength	nm	400~2200 according to the Fiber
Max. Holding power	W	50~10000
Insertion Loss	dB	≤0.3
Return Loss	dB	≥50
OperatingTemperature	℃	-5~+70
Storage Temperature	℃	-40~+85

Fiber End Cap Patchcord Parameter

Wavelength	400~2200nm On request
Fiber Type	On request
AR Coating	On request
Inerstion Loss	<0.3dB (Typ. ≤0.1dB)
End Cap Diameter	2~50 mm (Ask for customized size and shape)
End Cap Length	4~20mm

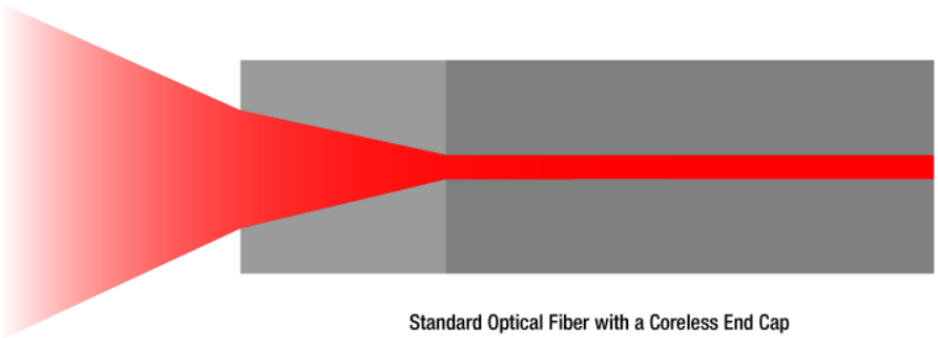
All listed parameters are typical values specified at room temperature. Specifications are subject to change without notice.

Ordering Information

FEC	Size	Optical Power	Face Angle	Coating	Fiber Type	Fiber Length	Cable Type	Connector
FEC	1=φ2x4mm 2= φ 8x20mm S=Specify	01=1W 05=5W 20=20W 50=50W S=Specify	0=0° 8=8° S=Specify	0=No Coating 1=with Coating S=Specify	SM9=SMF-28e MM5=50/125 MM6=62.5/125 SM450 SM600 Hi780 HI980 Hi1060 SM1950 PM980 PM1310 PM1550 S=Specify	10=1 meter 30=3 meter 50=5 meter S=Specify	00=Bare Fiber 09=0.9mm tube 20P=2.0mm PVC 30P=3.0mm PVC 20A=2.0mm Amor 30A=2.0m Amor S=Specify	00=None FA=FC/APC FP=FC/UPC LA=LC/APC LP=LC/UPC STA=ST/APC STP=ST/UPC SMAA=SMA/APC SMAP=SMA/UPC S=Specify

Coupling Light into and Out of Standard Fiber vs. End-Capped Fiber

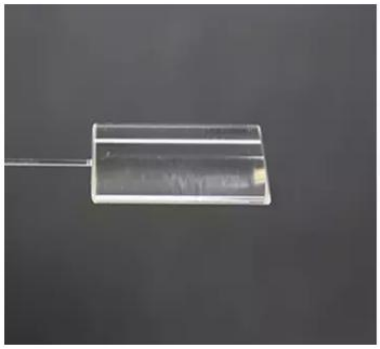
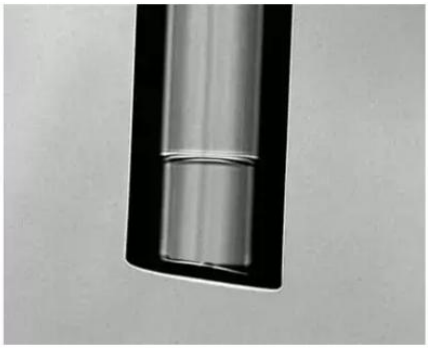
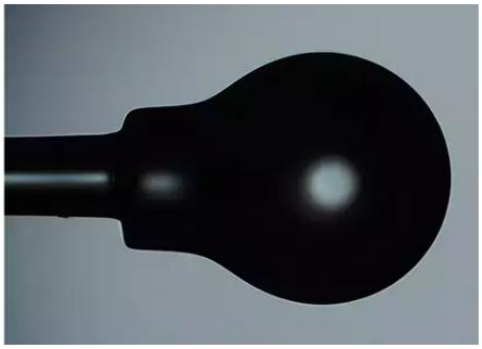
Standard Optical Fiber



Standard Optical Fiber with a Coreless End Cap

Fiber end caps from GEZHI Photonics deliver optimum performance, created by fusion splicing or laser fusing short lengths of material to the fiber end face.

Fiber End Caps involves splicing or fusing coreless fiber to single-mode (SM), multimode (MM), or gain-transmitting fiber. This design lowers power density (J/cm²) and effectively raises the laser damage threshold of optical components.
The end capping process faces three key technical challenges: cleaving large-diameter fibers of 200–600μm, achieving reliable fusion splicing between fiber and end cap, and performing precise end cap cleavage aligned with the splice point.
Controlled cleave angles are essential to suppress back-reflection; for PM fibers, the stress rods must be accurately oriented relative to the cleave angle.

Laser processing enables precision cleaving of large-core fibers before splicing, eliminating hackles and chipping that typically occur with mechanical scribing methods.
After fusion splicing, Fiber end caps can be laser-cleaved to meet precise specifications on final protrusion length, end angle and angular orientation — including accurate alignment of stress rods for PM fibers.
Laser cleaving is also well-suited for high-power laser applications, avoiding thermal buildup caused by strong light absorption from residual polishing compounds used in conventional mechanical polishing.