



Fixed Attenuation Optical Fiber for 5G and FTTH – ATF Series (SC-22.5/LC-15.4/SC-21.0) with Precision Power Control

Product Overview

Unlike standard SMF, the ATF fiber incorporates tailored dopants into the silica core to achieve stable, wavelength-dependent optical loss without significant back reflection or nonlinear effects. This enables precise optical power leveling—critical for preventing receiver saturation in high-power 5G fronthaul links and ensuring uniform signal distribution in passive optical networks (PONs).

Available in multiple attenuation grades corresponding to standard fixed attenuator form factors (LC-15.4mm-ATF, SC-21.0mm-ATF, SC-22.5mm-ATF), the fiber maintains compatibility with conventional fusion splicing and connectorization processes. Its low insertion loss variation and high return loss (>55 dB) ensure minimal signal degradation and excellent system stability.

Technical Characteristics

Brand Name	Winner
Product Series	ATF Attenuating Fiber (for Fixed Optical Attenuators)
Base Fiber Type	Doped Single-Mode Fiber (ITU-T G.652.D compatible)



Operating Wavelength	1260–1650 nm (optimized for 1310/1490/1550 nm)
Attenuation Level	Customizable (e.g., 1 dB, 5 dB, 10 dB, 15 dB per specified length)
Cladding Diameter	$125 \pm 1 \mu\text{m}$
Coating Diameter	$245 \pm 10 \mu\text{m}$
Insertion Loss Consistency	± 0.2 dB (typical across batch)
Return Loss	>55 dB
Tension Screening	≥ 100 kpsi
Key Advantages	Precise and stable attenuation over temperature (-40°C to +85°C) Low polarization-dependent loss (PDL < 0.05 dB) Excellent compatibility with standard SMF splicing Ideal for mass production of FOAs for 5G and FTTH

Applications

- Core raw material for fixed optical attenuators in 5G base station RF-over-Fiber links



- Power equalization in GPON/XGS-PON OLT and ONT interfaces (FTTH "last mile")
- Optical power management in data center transceivers and patch panels
- Protection of sensitive receivers in DWDM and CATV systems
- Calibration standards in optical test and measurement equipment

Integration Notes

The ATF fiber is supplied as bare fiber on spools and is intended for integration into fixed attenuator subassemblies during manufacturing. Attenuation values are calibrated per customer-specified lengths corresponding to industry-standard package dimensions (e.g., 22.5 mm for SC-type FOAs). For optimal performance, use standard cleaving and splicing procedures; no special handling beyond typical single-mode fiber precautions is required.