

# 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 ± 1 µm
Coating Diameter	245 ± 10 µm
Insertion Loss	±0.2 dB (typical across batch)
Consistency	
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.