ZUOYEAL



OPTICAL FIBER CABLE · ALL-DIELECTRIC SELF-SUPPORTING

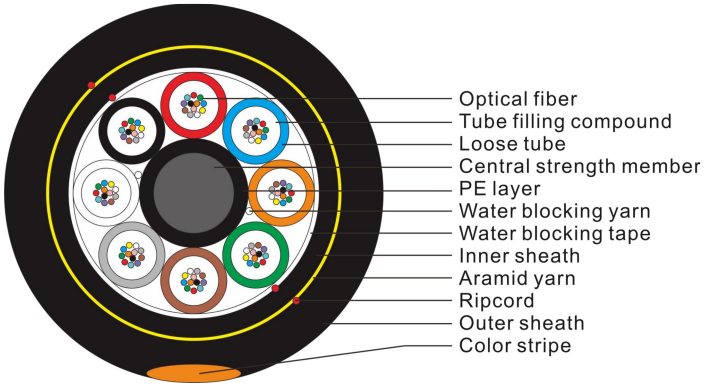
# 96F

## ADSS AERIAL

MODEL **ADSS-96F**

All-dielectric self-supporting aerial cable, 96 fibres, aramid yarn strength member and no metallic parts.

| FIBER COUNT | FIBER TYPE |
|---|---|
| **96** | **G.652D** |
| WEIGHT | SPAN |
| **206 kg/km** | **200 m** |



01 OVERVIEW

# Scope & cable cross-section

This specification covers the design requirements and performance standard for the supply of all-dielectric self-supporting (ADSS) optical fibre cable for aerial installation along electrical power lines. ZUOYEAL ensures a stable quality control system for our cable products through several programs including ISO 9001, ISO 14001 and ROHS.

The ADSS 96C is designed for aerial installation along power lines and follows the construction below.

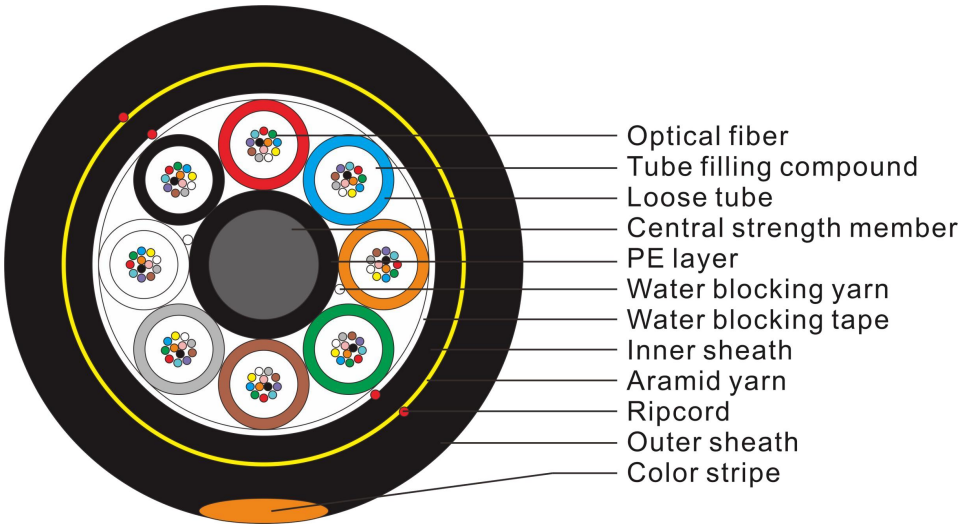



FIG. 1 Cable cross-section (not to scale)

- Optical fibres are housed in PBT loose tubes filled with waterproof compound.
- Loose tubes and polyester fill yarns are stranded around a PE-jacketed FRP central strength member.
- Water blocking yarn and tape prevent water ingress through the cable core.
- A layer of aramid yarns carries the mechanical load, so the cable contains no metal parts.
- PE inner sheath, two ripcords and the orange stripe sit under the black PE outer sheath.

## AT A GLANCE

| ITEM | VALUE | ITEM | VALUE |
|---|---|---|---|
| Fibre count | 96 (G.652D) | Loose tubes | 8 × 12F |
| Cable diameter | 16.0 ± 0.5 mm | Cable weight | 206 ± 15% |

02 STANDARDS

# Reference standards

| STANDARD | SCOPE |
|---|---|
| ITU-T G.652 | Characteristics of a single-mode optical fibre |
| IEC 60794-1-1 | Optical fibre cables — part 1-1: generic specification, general |
| IEC 60794-1-2 | Optical fibre cables — part 1-2: basic optical cable test procedure |
| IEC 60794-3 | Optical fibre cables — part 3: sectional specification, outdoor cables |
| IEC 60794-4-20 | Aerial optical cables along electrical power lines — family specification for ADSS cables |

03 IDENTIFICATION

# Cable identification

## 3.1 FIBER COLOR CODE

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Red | Green | Blue | Yellow | White | Grey | Brown | Violet | Aqua | Black | Orange | Pink |

## 3.2 LOOSE TUBE (LT) & FILLER ROD (FR) COLOR CODE

| FIBRE COUNT | ELEMENT NO. | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 96 | LT | LT | LT | LT | LT | LT | LT | LT | | | | |

LT = loose tube, FR = filler rod. No filler rods are used in this construction.

04 CONSTRUCTION

# Cable assembly & dimensions

| ITEM | CONTENT | VALUE 96F |
|---|---|---|
| Loose tube | Number | 8 |
| Loose tube | Outer diameter (mm) | 2.8 ± 0.1 |
| Loose tube | Thickness (mm) | 0.35 ± 0.05 |
| Loose tube | Material | PBT |
| Loose tube | Water blocking | Tube filling compound |
| Filler | Number / material | 0 / PP |
| Max. fibres per tube | G.652D | 12 |
| Central strength member | Material | FRP |
| Central strength member | Diameter (mm) | 3.4 ± 0.1 |
| Central strength member | PE layer diameter (mm) | 4.6 ± 0.2 |
| Cable core | Water blocking | Water blocking yarn & tape |
| Ripcord | Number | 2 |
| Inner sheath | Material / colour | PE / black |
| Inner sheath | Thickness (mm) | Nominal 0.8, minimum 0.6 |
| Strength member | Material | Aramid yarns |
| Fill member | Material | Polyester yarn |
| Ripcord (outer) | Number | 2 |
| Stripe | Colour | Orange |
| Outer sheath | Material / colour | PE / black |
| Outer sheath | Thickness (mm) | Nominal 1.95, minimum 1.7 |
| Cable diameter | Approx. | 16.0 ± 0.5 mm |
| Cable weight | Approx. | 206 ± 15% kg/km |
| Maximum allowable tension | MAT | 5.0 kN |
| Span | Design span | 200 m |

05 OPTICAL

# Performance of cabled optical fiber

The performance of cabled optical fiber (ITU-T Rec. G.652D).

| ITEM | CONDITION | SPECIFICATION |
|---|---|---|
| Fiber type | | Single mode |
| Fiber material | | Doped silica |
| Attenuation coefficient | 1310 nm | ≤ 0.40 dB/km |
| Attenuation coefficient | 1550 nm | ≤ 0.30 dB/km |
| Cable cut-off wavelength | | ≤ 1260 nm |
| Zero-dispersion wavelength | | 1300 - 1324 nm |
| Zero-dispersion slope | | ≤ 0.092 ps/(nm²·km) |
| PMD | | ≤ 0.2 ps/√km |
| Mode field diameter | 1310 nm | 9.2 ± 0.4 μm |
| Core / cladding concentricity error | | ≤ 0.6 μm |
| Coating / cladding concentricity error | | ≤ 12.5 μm |
| Cladding diameter | | 125.0 ± 1.0 μm |
| Cladding non-circularity | | ≤ 2.0 % |
| Primary coating diameter | | 245 ± 10 μm |
| Proof stress level | | ≥ 100 kpsi |

06 PERFORMANCE

# Performance of optical fiber cable

| ITEM | SPECIFICATION |
|---|---|
| Bending radius | 10 × cable diameter (static) · 20 × cable diameter (dynamic) |
| Operating temperature | −20 °C to +60 °C |
| Storage / transport temperature | −20 °C to +60 °C |
| Installation temperature | −10 °C to +50 °C |

07 TESTING

# Mechanical & environmental performance

| S/N | ITEM | TEST METHOD | ACCEPTANCE |
|---|---|---|---|
| 1 | Tensile strength<br>IEC 60794-1-21-E1 | Load: MAT · 50 m · ≥ 1 min | Δ loss ≤ 0.1 dB @1550 nm<br>Fibre strain ≤ 0.6 %<br>No fibre break, no sheath damage |
| 2 | Crush test<br>IEC 60794-1-21-E3 | 3,000 N/100 mm · ≥ 1 min | Δ loss ≤ 0.1 dB @1550 nm<br>No fibre break, no sheath damage |
| 3 | Impact resistance<br>IEC 60794-1-21-E4 | 5 points · 1 impact each · 4.5 N·m | Δ loss ≤ 0.1 dB @1550 nm<br>No fibre break, no sheath damage |
| 4 | Repeated bending<br>IEC 60794-1-21-E6 | 20 × cable diameter · 25 cycles | Δ loss ≤ 0.1 dB @1550 nm<br>No fibre break, no sheath damage |
| 5 | Torsion<br>IEC 60794-1-21-E7 | 1 m · ±180° · 10 cycles | Δ loss ≤ 0.1 dB @1550 nm<br>No fibre break, no sheath damage |
| 6 | Water penetration<br>IEC 60794-1-22-F5B | 1 m head · 3 m · 24 h | No water at the leaktight end |
| 7 | Temperature cycling<br>IEC 60794-1-22-F1 | −20 / +60 °C · 12 h per step · 2 cycles | Δ loss ≤ 0.1 dB/km @1550 nm<br>No fibre break, no sheath damage |
| 8 | Compound flow<br>IEC 60794-1-21-E14 | 30 cm · 70 ± 2 °C · 24 h | No compound flow |

08 PACKING

# Packing & delivery

| | |
|---|---|
| **DRUM** | Each single cable length is wound on an iron stand-wooden composite or pure wooden drum. |
| **STANDARD LENGTH** | 2,000 / 3,000 / 4,000 / 5,000 m per drum, ±2%. |
| **PROTECTION** | Covered by a plastic buffer sheet and sealed with strong wooden battens. |
| **TEST ALLOWANCE** | At least 3 m of the cable inner end is reserved for testing. |

## DRUM DIMENSIONS

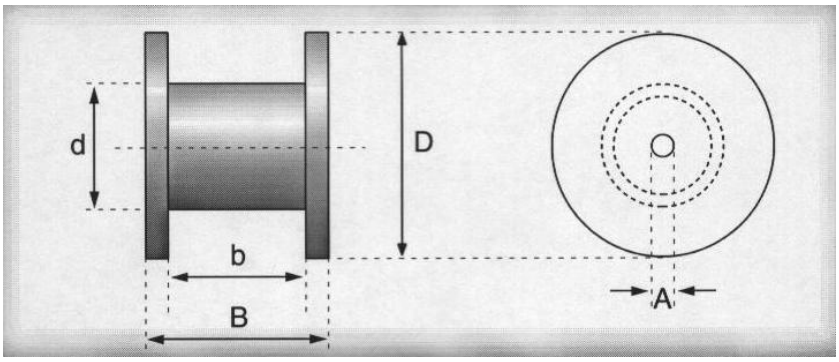



FIG. 2 Drum dimensions — D contains the seal dimension

| CABLE TYPE | DRUM LENGTH (m) | D (mm) | d (mm) | B (mm) | b (mm) |
|---|---|---|---|---|---|
| ADSS 96C | 4,000 | 1,638 | 650 | 1,000 | 870 |

The value "D" contains the seal dimension.

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# ZUOYEAL TECHNOLOGY

*Connecting More, With Fiber*

This datasheet describes the ADSS 96C all-dielectric self-supporting aerial cable at the time of publication. Dimensions and configurations may change without notice; confirm current values with ZUOYEAL before ordering.

**96F · G.652D · ADSS**

Connecting More, With Fiber