ZUOYEAL

OPTICAL FIBER CABLE · ALL-DIELECTRIC SELF-SUPPORTING

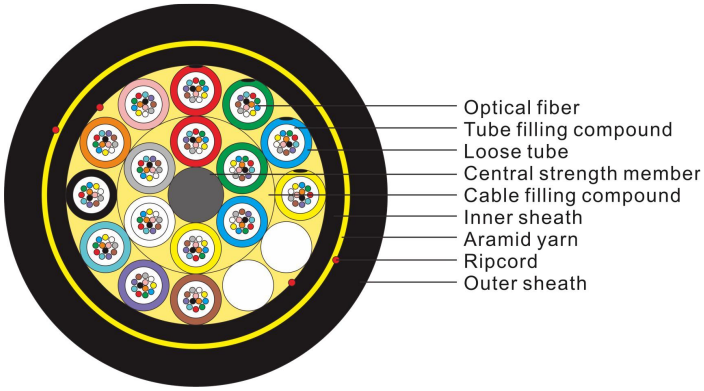
24-192C

ADSS AERIAL

MODEL **ADSS**

All-dielectric self-supporting aerial cable from 24 to 192 fibres, aramid yarn strength member, no metallic parts.

FIBER COUNT	FIBER TYPE
24-192	**G.652D**
WEIGHT	SPAN
114-229 kg/km	**100 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 series covers 24, 48, 96 and 192 fibres on a common construction and follows the build-up below.

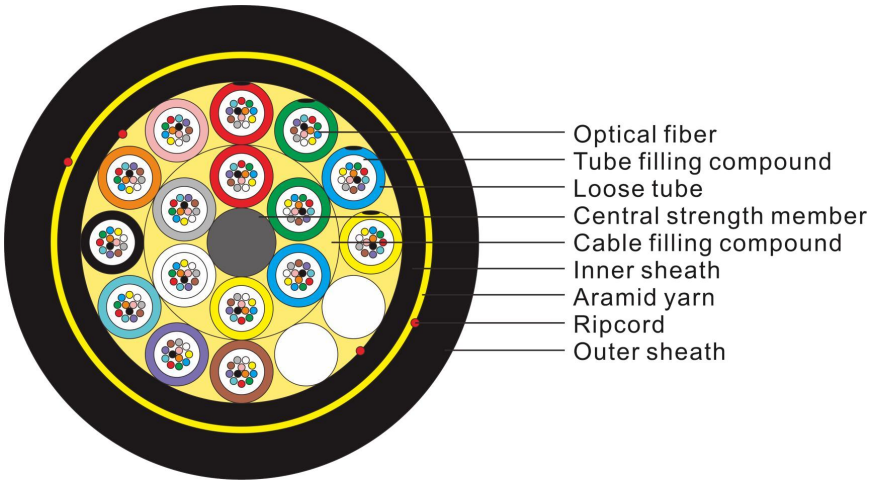


FIG. 1 Cable cross-section (not to scale)

- 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 compound 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 black PE outer sheath complete the cable.

AT A GLANCE

ITEM	VALUE	ITEM	VALUE
Fibre counts	24 · 48 · 96 · 192	Fiber type	G.652D
Cable diameter	11.5 - 16.5 mm	Cable weight	114 - 229 kg/km

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
24	LT	LT	LT	LT	LT	LT						
48/96	LT	LT	LT	LT	LT	LT	LT	LT				
192	LT	LT	LT	LT	LT	LT						
	LT	LT	LT	LT	LT	LT	LT+BS	LT+BS	LT+BS	LT+BS	FR	FR

LT = loose tube, FR = filler rod, BS = black stripe. No filler rods are used below 192 fibres.

04 CONSTRUCTION

Cable assembly & dimensions

ITEM	CONTENT	24	48	96	192
Loose tube	Number	6	8	8	6+10
Loose tube	Outer diameter (mm)	2.0 ± 0.1	2.0 ± 0.1	2.2 ± 0.1	2.2 ± 0.1
Loose tube	Thickness (mm)	0.3 ± 0.05			
Loose tube	Material	PBT			
Loose tube	Water blocking	Tube filling compound			
Filler	Number	0	0	0	0+2
Filler	Material	PP			
Max. fiber counts per tube	G.652D	4	6	12	12
Central strength member	Material	FRP			
Central strength member	Diameter (mm)	2.2 ± 0.1	2.4 ± 0.1	2.4 ± 0.1	2.4 ± 0.1
Central strength member	PE layer diameter (mm)	–	3.4 ± 0.2	3.8 ± 0.2	–
Cable core	Water blocking	Cable filling compound			
Ripcord	Number	2			
Inner sheath	Material / colour	PE / black			
Inner sheath	Thickness (mm)	Nominal 0.8, minimum 0.6			
Strength member	Material	Aramid yarns			
Ripcord (outer)	Number	2			
Outer sheath	Material / colour	PE / black			
Outer sheath	Thickness (mm)	1.7 / 1.7 / 1.8 / 1.6 nominal, minimum 1.5			
Cable diameter	Approx. (±5%)	11.5	12.8	14.1	16.5
Cable weight	Approx. (±10%)	114	140	168	229
Maximum allowable tension	MAT	5.0 kN			
Span	Design span	100 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	≤ 0.36 dB/km
Attenuation coefficient	1550 nm	≤ 0.22 dB/km
Cable cut-off wavelength		≤ 1260 nm
Zero-dispersion wavelength		1300 - 1324 nm
Zero-dispersion slope		≤ 0.092 ps/(nm²·km)
Micro bending loss	1550 nm, 100 turns Ø60 mm	≤ 0.05 dB
Chromatic dispersion	1288 - 1339 nm	≤ 3.5 ps/(nm·km)
Chromatic dispersion	1550 nm	≤ 18 ps/(nm·km)
PMD		≤ 0.2 ps/√km
Mode field diameter	1310 nm	9.3 ± 0.5 μm
Mode field diameter	1550 nm	10.4 ± 0.8 μm
Core / cladding concentricity error		≤ 0.5 μm
Coating / cladding concentricity error		≤ 12 μm
Cladding diameter		125.0 ± 2.0 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	12.5 × cable diameter (static) · 25 × cable diameter (dynamic)
Operating temperature	−40 °C to +70 °C
Storage / transport temperature	−40 °C to +70 °C
Installation temperature	−10 °C to +60 °C

07 TESTING

Mechanical & environmental performance

S/N	ITEM	TEST METHOD	ACCEPTANCE
1	Tensile strength IEC 60794-1-21-E1	Load: MAT · 50 m · ≥ 1 min	Δ loss ≤ 0.1 dB @1550 nm Fibre strain ≤ 0.33 % No fibre break, no sheath damage
2	Crush test IEC 60794-1-21-E3	2,200 N/100 mm · ≥ 1 min	Δ loss ≤ 0.1 dB @1550 nm No fibre break, no sheath damage
3	Impact resistance IEC 60794-1-21-E4	5 points · 1 impact each · 5 J Radius 300 mm	Δ loss ≤ 0.1 dB @1550 nm No fibre break, no sheath damage
4	Repeated bending IEC 60794-1-21-E6	20 × cable diameter · 25 cycles	Δ loss ≤ 0.1 dB @1550 nm No fibre break, no sheath damage
5	Torsion IEC 60794-1-21-E7	2 m · ±180° · 30 cycles	Δ loss ≤ 0.1 dB @1550 nm No fibre break, no sheath damage
6	Bend IEC 60794-1-21-E11A	Mandrel 20 × D · 4 turns · 3 cycles	Δ loss ≤ 0.1 dB @1550 nm No fibre break, no sheath damage
7	Compound flow IEC 60794-1-21-E14	30 cm · 70 ± 2 °C · 24 h	No compound flow
8	Water penetration IEC 60794-1-22-F5B	1 m head · 3 m · 24 h	No water at the leaktight end
9	Temperature cycling IEC 60794-1-22-F1	−30 / +70 °C · 12 h per step · 2 cycles	Δ loss ≤ 0.15 dB/km @1550 nm No fibre break, no sheath damage

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

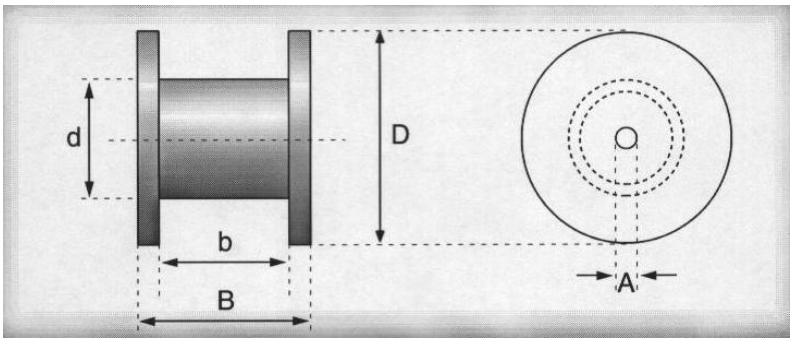


FIG. 2 Drum dimensions — D contains the seal dimension

CABLE TYPE	DRUM LENGTH (m)	D (mm)	d (mm)	B (mm)	b (mm)
ADSS 24C	4,000	1,438	700	720	610
ADSS 48C	4,000	1,538	700	720	610
ADSS 96C	4,000	1,438	760	1,100	1,000
ADSS 192C	4,000	1,638	760	1,100	970

The value "D" contains the seal dimension.

ZUOYEAL

ZUOYEAL TECHNOLOGY

Connecting More, With Fiber

This datasheet describes the ADSS 24-192C all-dielectric self-supporting aerial cable series at the time of publication. Dimensions and configurations may change without notice; confirm current values with ZUOYEAL before ordering.

24-192C · G.652D · ADSS

Connecting More, With Fiber