PBN

All Dielectric Self Support Single Mode Cable (ADSS-SM)

H1-000

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1. General

1.1. Scope

This specification covers the design and performance standards of the All dielectric self support Cable (ADSS) withsingle-mode fiber (G652 D). In the following, the Optical, constructional, and mechanical properties of the cable are discussed. All properties are completely compatible with the last edition of TCI technical specifications.

1.2. Cable description

PBN ADSS-SM is an all-dielectric self support aerial optical fiber cable, which is capable of being used in aerial optical networks, constructed with single mode fiber according to ITU/TIA G652D. The cable is UV-resistant due to using black high-density polyethylene (HDPE). This cable is well suited to use in backbone applications, applicable with 2-144 optical fiber cores.

1.3. Features

- Water-proof
- UV-resistant
- Full rodent protection
- Conduit cable
- Single Jacket
- Single-mode fiber

2. Optical Fiber:

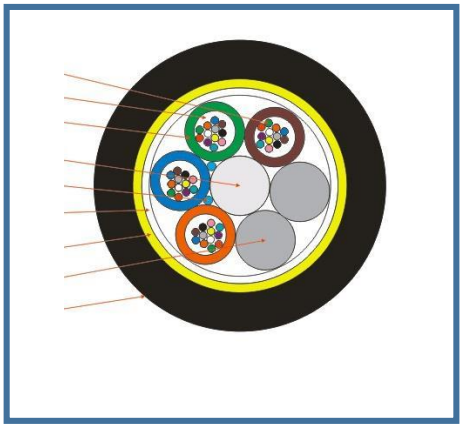
The fibers are single-mode fibers according to ITU-T G652D and contain the following parameters:

Optical characteristics		
Fiber attenuation:	@ 1310 nm	≤ 0.34 dB/Km
	@ 1550 nm	≤ 0.22 dB/km
	@ 1625 nm	≤ 0.24 dB/km
Effective area:		≥ 72 µm
Mode field diameter (MFD):	@ 1310 nm	9.2 ± 0.4 um
	@ 1550 nm	10.4 ±0.8 um
Cable cut-off (λ_{cc}):		≤ 1260 nm
PMD @ 1550 nm:		≤ 0.2 $ps/\sqrt{km}$

Physical characteristics	
Core diameter	Typ 9 µm
Core non-circularity	≤ 6%
Core-clad offset	≤ 0.5 µm
Clad diameter	125 ±0.7 µm
Clad non-circularity	≤ 7%
Coating diameter	245 ± 5 µm

3. Construction:

- Optical Fiber
- Central strength member
- Loose tube
- Filler (if applicable)
- Swellable yarn and Tape for waterproofness
- Outer Jacket



3.1. Central Strength member

Fiber-reinforced polymer (FRP) with 2.5 µm diameter is used as a central strength member. The young modulus of FRP is 50,000 N/mm^2 and water absorption of a maximum 0.1%. FRP may be coated with PE layers for compatibility of diameters.

3.2. Loose tube

The loose tubes are made of Polybutene terephthalate (PBT) with a minimum thickness of 0.4 mm. Fibers are helically placed in the loose tube to be capable of expansion and contraction of fibers. In order to prevent water penetration, the loose tubes are filled with Thixotropic Jelly.

3.3. Cable Core

Loose tubes and fillers (if applicable) will be stranded over thecentral strength member. Fillers are PE rods that are used for the roundness of the cable core if needed. A water-swellable yarn is wounded around the central strength member for waterproofness purposes. In the end, a binder yarn is wounded helically around them to keep the core straight.

3.4.Swellable Tape

For waterproofness of the cable, the core is wrapped by swellable tape. The swellable tape also consists of corrosion inhibitors.

3.5. Intermediate Strength Member

A layer of Aramid yarn will be applied over the wrapping for additional pulling force.

3.6 Ripcord:

Under the outer jacket, two Ripcords are placed to help the operator in stripping the jacket.

3.7 Outer Jacket:

Black HDPE (High-density polyethylene) according to ASTM-1248 standard covers the whole cable as an outer jacket with the thickness of 2mm.

4. PHYSICAL AND DIMENSIONAL PARAMETERS:

Number of cores	12
Configuration	(2x6)
Number of Loose tubes	2
Number of fillers	4
Number of cores per use tube	6
Installation Tensile (N)	7600
Operation Tensile (N)	10000
Outer diameter (mm)	12.3
Cable weight per meter (Kg/Km)	90

*. The diameters, weight and tensions are intended to be typical values.

5. TEST REPORTS:

ITEM	REFERENCE	CONDITION
TWIST / Torsion	EIA/TIA 455-85	2m, 2 cycle, ±2π
COMPRESSION / Crush	EIA/TIA 455-41	220 N/cm
FLEXING	EIA/TIA 455-104	25 cycles
IMPACT	EIA/TIA 455-25	2 Impact at 3 locations, 4.5 kg
LOW OR HIGH TEMPERATURE BEND	EIA/TIA 455-37	-30°c, +60°c, 4 turns
TEMPERATURE CYCLING	IEC ٢٠794-I-F1	10 cycles, -40°c to +85°c
Water penetration	FOTP-82	1m height, 1m length, 1 hour Retest: 1m height, 3m length, 24 hours