SHAHID GHANDI COMMUNICATION CABLE CO.

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TECHNICAL SPECIFICTION FOR
OPTICAL FIBER CABLE – NON METAL
(ODC - SM)

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SPECIFICATION FOR
OPTICAL FIBER CABLE – NON METAL
(ODC - SM)

1 - GENERAL

This specification covers the constructional, optical and mechanical properties of up to 72 cores single mode outdoor optical drop cables used in FTTX.

2 – OPTICAL FIBER

2-1 – Optical Characteristics

The fibers may be standard single mode (ITU-G652) and have the following table (1).

TABLE (1)

PARAMETERS (Maximum Individual)		UNIT	VALUE
Fiber Attenuation	1310 nm	dB/km	0.35
	1550 nm	dB/km	0.25
Temperature Variation Attenuation		dB/km	=0.05
Point Discontinuities	1310/1550 nm	dB	=0.10
Water Peak Attenuation	1383±3	dB/km	See note
Attenuation Change vs. Wavelength	1285-1310	dB/km	=0.10
	1525-1575	dB/km	=0.05
Attenuation Change vs. Bending	100wraps/50mmdia	dB	=0.05
	1wrap/32mmdia	dB	=0.5
Zero Dispersion Wavelength		nm	1300-1324
Maximum Dispersion	1310 nm	Ps/nm.Km	=3.2
	1550 nm	Ps/nm.Km	=18.0
Zero Dispersion Slope		Ps/nm2.Km	=0.092
Nominal Mode Field Diameter	1310 nm	µm	9.2±0.4
	1550 nm	µm	10.4±0.8
Cable Fiber Cut-off Wavelength	(?cc)	nm	<1260
Polarization Mode Dispersion	1310 nm	Ps/vKm	<0.2
	1550 nm	Ps/vKm	<0.2

NOTE: For ITU-T G652 D the attenuation at 1383 will be < 0.31 dB/Km

2-2 - Fiber Dimensions

The fiber dimensions will be as following table (2).

TABLE (2)

PARAMETERS	UNIT	VALUE
Cladding diameter	µm	125±2
Core cladding concentricity error	µm	Max 1
Core non circularity error	%	Max 6
Cladding non circularity error	%	Max 2
Diameter of the coated fiber	µm	250±15
Coating concentricity error	µm	15
Coating non circularity error	%	10

2-3 – Fiber identification

Fibers in loose tube will be identified with the following table (3).

TABLE (3)

Fiber No.	Color	Fiber No.	Color
1	White	7	Brown
2	Red	8	Violet
3	Green	9	Orange
4	Blue	10	Pink
5	Yellow	11	Grey
6	Black	12	Natural

Note: For less than 12 core optical cables there should be first colors.

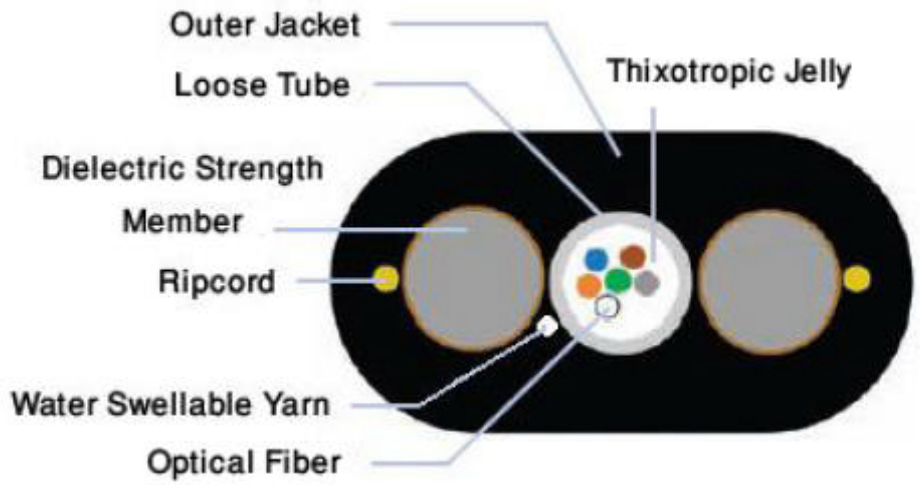
3 - CABLE CONSTRUCTION

Cable construction is in accordance with the following table (4).

TABLE (4)

Subject	Description
3-1-Optical fiber	Single mode fiber as ITU-T G.652 .The fibers are color coded and properly operate at a wide range of temperature from -40 ºC up to +80 ºC.
3-2-Buffer	Central tube of PBT materials contains up to 12 optical fibers, filled with thixo tropic jelly. The jelly is free from dirt, metallic particles and would be non toxic and present no any dermal hazards.
3-3-Dielectric strength member	Two dielectric central strength members (FRP) with nominal minimum diameter 2 mm situated on either side of the loose tube.
3-4-Water Swell able yarn	The water swellable yarn will be wound helically around the loose tube.
3-5-Rip cord	2 Diametrically opposed rip cords will be placed over the strength member under the jacket. The rip cord must be strong and flexible enough to be able to strip or the jackets easily.
3-6-Outer jacket	A black HDPE jacket in according to ASTM-D1248 will be applied over the dielectric strength members and loose tube. The nominal jacket thickness is 1mm.

FIG (1)
The figure normally shows the general structure



4 - CABLE SIZES AND GENERAL DATA'S

4-1 - CABLE SIZES AND GENERAL DATA

Cables size and general data are in accordance with the following table (5).

TABLE (5)

PARAMETERS		1×2	1×4	1×6	1×8	1×10	1×12
Number of tubes		1	1	1	1	1	1
Fiber per tubes		2	4	6	8	10	12
Number of fibers		2	4	6	8	10	12
Central Strength Member(mm)	Diameter	2	2	2	2	2	2
	Number	2	2	2	2	2	2
Pulling tension (N)	Operation	1600	1600	1600	1600	1600	1600
	Installation	2600	2600	2600	2600	2600	2600
Dimension Approx (mm)		7.8 × 3.6					
Weight Approx (Kg/km)		34	34	34	33	33	33

4-2 – IDENTIFICATION MARKING

Each length of the cable shall be permanently identified as to the manufacturer, year of manufacture, number of tubes, fiber per tubes and cable type. The marking will be printed on the outer jacket.

NOTE: Other method as request

5 – MECHANICAL AND FUNCTIONAL TESTS

Mechanical and functional tests are in accordance with the following table (6).

TABLE (6)

ITEM	CONDITIONED	REFERENCE
WATER PENETRATION	1 m Length / 1 m height / 1 hours / no drop	FOTP-82
COMPRESSION	220 N / on 10 mm section of cable	EIA/TIA 455-41
FLEXING	25 mechanical flexing / heave diameter 20 times the cable diameter	EIA/TIA 455-104
IMPACT	660 g weight / 1 m height / In 2 at 3 locations along cable	EIA/TIA 455-25
TENSILE & BENDING	Pulling force As technical spec	EIA/TIA 455-33
TWIST	2 m length / 10 cycles of mechanical twisting	EIA/TIA 455-85
LOW OR HIGH TEMPERATURE BEND	sheave diameter 20 times the cable diameter / 4 full turns / 4 hours / at temperatures -30°c & +60°c	EIA/TIA 455-37
KNOT	10 kg weight / in cross sectional diameter of the knot	EIA/TIA 455-87
TEMPERATURE CYCLING	2 hours from 0°c to -40°c / 8 hours in -40°c / 4 hours from -40°c to +85°c / 8 hours in +85°c / 2 hours from +85°c to 0°c / 5 cycles	IEC 794-1-F1

Note: The change in attenuation will not exceed 0.05 dB at 1550 nm.