PERSIAN FIBER COMMUNICATION CO.

TECHNICAL SPECIFICTION FOR DATA CABLE

SALE ENGINEERING DEPARTMENT

FIBER

OFC-CST

SM MM | 12 Core | LOOSE TUBE | DOUBEL JACKET | DIRECT BURIED

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SPECIFICATION FOR DATA CABLE

FIBER

CT-CST

Outdoor

1- GENERAL

This specification covers in detail the optical, physical and mechanical characteristics of optical cables used in direct buried application.

2- OPTICAL FIBER

2-1 – Optical Characteristics

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

PARAMETERS (Maximum Individual)		UNIT	VALUE
Fiber Attenuation	1310nm	dB/km	<0.35
	1550nm	dB/km	<0.25
Temperature Variation Attenuation	-	dB/km	≤0.05
Point Discontinuities	1310/1550nm	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	≤0.5
	1wrap/32mmdia	dB	≤0.05
Zero Dispersion Wavelength	-	nm	1300-1324
Maximum Dispersion	1310nm	Ps/nm.Km	≤3.2
	1550nm	Ps/nm.Km	≤18.0
Zero Dispersion Slope	-	Ps/nm2.Km	≤0.092
Nominal Mode Field Diameter	1310nm	µm	9.2±0.4
	1550nm	µm	10.4±0.8
Cable Fiber Cut-off Wavelength	(λcc)	nm	<1260
Polarization Mode Dispersion	1310nm	Ps/√Km	<0.2
	1550nm	Ps/√Km	<0.2

The fibers will be MM Fiber 50/125 have the following properties table (2).
TABLE (2)

Item	Parameters		Unit	Value
2.1. OPTICAL CHARACTERISTICS				
2.1.1	Attenuation	@ 850 nm	dB/km	Max 2.4
		@ 1300 nm	dB/km	Max 0.6
2.1.2	Bandwidth	850 nm	MHz-km	Max 1500
		1300 nm@	MHz-km	Max 500
2.1.3	Point Discontinuity		dB	Max 0.1
2.1.4	Numerical Aperture		-	0.200 ± 0.015
2.2. DIMENSIONAL SPECIFICATION				
2.2.1	Core Diameter		µm	50 ± 2.5
2.2.2	Cladding Diameter		µm	125.0 ± 1.0
2.2.3	Coating Diameter		µm	245 ± 7
2.2.4	Core Non-Circularity		%	Max 5
2.2.5	Cladding Non-Circularity		%	Max 0.6
2.2.6	Core/Cladding Eccentricity		µm	Max 1
2.2.7	Coating/Cladding Eccentricity		µm	Max 10

2-2– Fiber and loose tube identification

Fibersineachloosetubeandthetubeswillbeidentifiedwiththefollowingtable(3).

Fiber/Tube No.	Color	Fiber/Tube 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 constructions are in accordance with the following table (4) and FIG. (1)

Subject	Description
3-1- Optical fiber	Single Mode fiber 9/125, Multimode fiber 50/125. The fibers are color coded and properly operate at a wide range of temperature from -40 ºC up to +80 ºC.
3-2- Buffer	Loose tubes of PBT materials, color coded, 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- Water swell able yarn	The water swell able yarn will be wound helically around the Strength member.
3-4- Core	Loose tubes will be stranded around central strength member by SZ stranding method. For adapting the loose tubes to central element the fillers of HDPE may be used in cable construction.
3-5- Water swell able tape	layer of water swellable tape with a sufficient thickness applied longitudinally over loose tubes.
3-6- Rip cord	2 Diametrically opposed rip cords will be placed over the swell able tape under the inner jacket and 2 rip cords over the steal tape under the outer jacket. The rip cord must be strong and flexible enough to be able to strip or the jackets easily.
3-7- First jacket	A black LDPE jacket in accordance. The nominal thickness of the jacket is 1.4 mm.
3-8- Armor	A corrugated steel tape will be applied on inner jacket. This layer act as anti rodent. The overlap shall not be less than 3mm.
3-9- Outer jacket	A black HDPE with 2±0.1 thickness

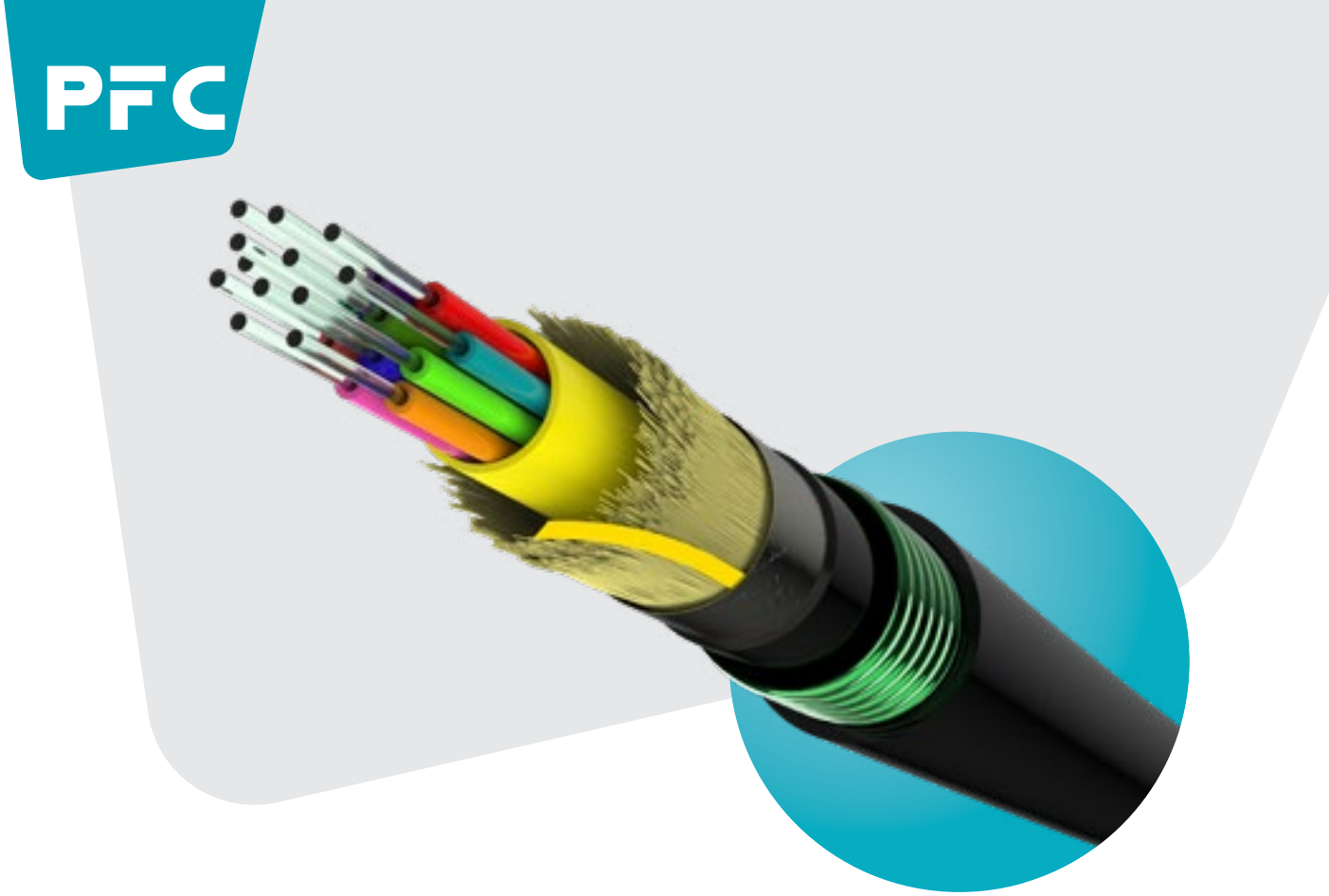
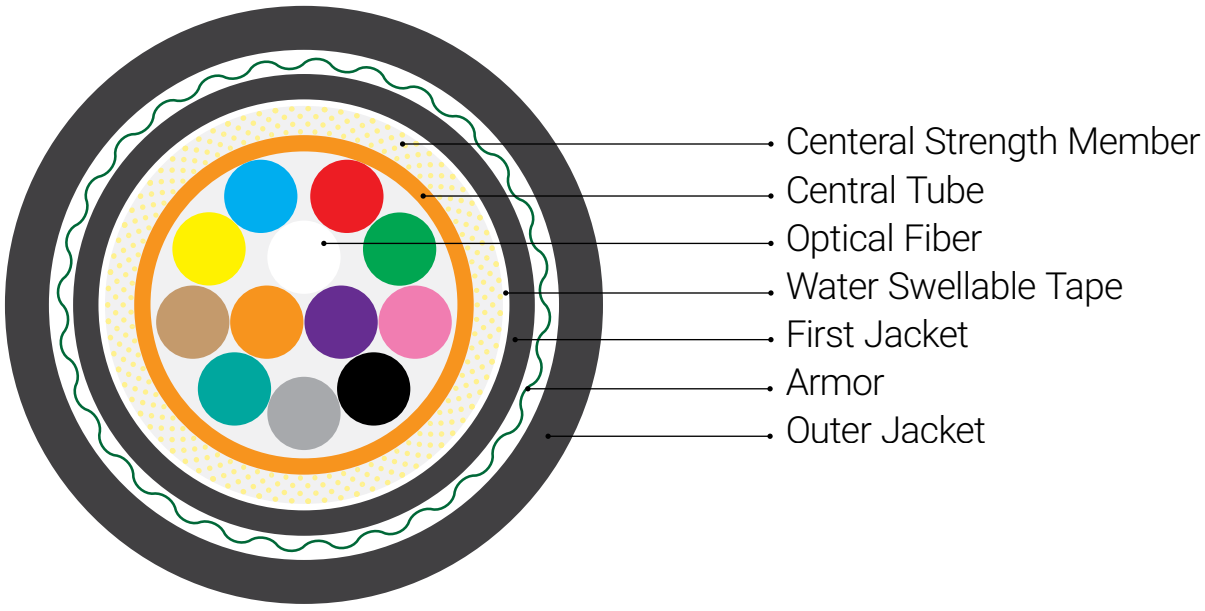


FIG (1)
The figure normally shows the general structure



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).

PARAMETERS		Description
Number of tubes		1
Fiber per tubes		12
Number of fibers		12
Central Strength Member(mm)		2.5
Pulling Tension (N)	Operation	2200
	Installation	3200
Overall diameter (mm)		12
Weight (Kg/km)		240

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- Transmission Distance Comparison

Data Rate	Interface Type	Fiber Mode	Wavelength	Maximum Distance
1G	1000BASE	SM	1310nm	10km
		OM2	1300nm	550m
		OM3	1300nm	550m
10G	10GBASE	SM	1310nm	10km
		OM2	1300nm	220m
		OM3	1300nm	220m
40G	40GBASE	SM	1310nm	10km
		OM2	-	-
		OM3	850nm	100m
100G	100GBASE	SM	1310nm	10km
		OM2	-	-
		OM3	850nm	70m

6- Total specification

PARAMETERS	Description
Attenuation at 1550nm	Max 0.25
Attenuation at 1310nm	Max 0.35
Attenuation at 850nm	Max 2.4
Attenuation at 1300nm	Max 0.6
Number of tubes	1
Fiber per tubes	12
Number of fibers	12
Fiber Grade	SM: G.652.D MM: Bend Insensitive
Tube Diameter (mm)	2.4
Overall diameter (mm)	12
Fiber Type	SM/ MM
Structure	Loose Tube
Number of Jacket	Double Jacket
Inner Jacket	LDPE-1.2mm
Middle Layer	Corrugated Steel Tape (CST)
Strength member	Aramid Yarn
Outer Jacket	HDPE-2mm
Jacket Color	SM/ MM :Black
Application	Outdoor(Anti UV- Direct Buried)
Marker Height (mm)	3.0 ± 0.3
Distance Marker(m)	1
Color Marker	White
Packaging	Wooden Reel

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