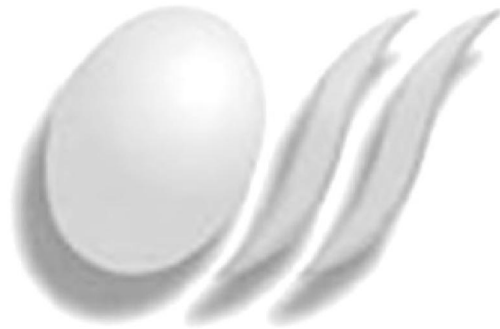


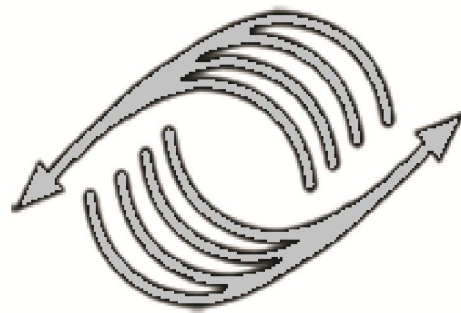
SHAHID GHANDI COMMUNICATION CABLE CO.

CODE: 0213-001

**TECHNICAL SPECIFICATION FOR
SINGLE MODE
OPTICAL FIBER CABLE
(CENTRAL TUBE)**



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SPECIFICATION FOR OPTICAL FIBER CABLE

1. GENERAL
2. OPTICAL FIBER
3. CABLE CONSTRUCTION
4. CABLE SIZES AND GENERAL DATAS
5. MECHANICAL AND FUNCTIONAL TESTS



1 - GENERAL

This specification covers in detail the optical, physical and mechanical characteristics of central tube optical fiber cable.

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	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 \pm 3		
Attenuation Change vs. Wavelength	1285-1310	dB/km	≤ 0.10
	1525-1575	dB/km	≤ 0.05
Attenuation Change vs. Bending	100wraps/50mmd ia	dB	≤ 0.05
	1wrap/32mmdia	dB	≤ 0.5
Zero Dispersion Wavelength		nm	1300-1324
Maximum Dispersion	1310nm	Ps/nm.Km	≤ 3.2
	1550nm	Ps/nm.Km	≤ 18.0
Zero Dispersion Slope		Ps/nm ² .Km	≤ 0.092
Nominal Mode Field Diameter	1310nm	μ m	9.2 \pm 0.4
	1550nm	μ m	10.4 \pm 0.8
Cable Fiber Cut-off Wavelength	(λ_{cc})	nm	<1260
Polarization Mode Dispersion	1310nm	Ps/ \sqrt Km	<0.2
	1550nm	Ps/ \sqrt Km	<0.2



2-2 - Fiber Dimensions

The fiber dimensions will be as following table (2)

TABLE (2)

PARAMETERS	UNIT	VALUE
Cladding diameter	μm	125 \pm 1
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 \pm 15
Coating concentricity error	μm	15
Coating non circularity error	%	10

2-3 – Fiber and loose tube identification

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

TABLE (3)

No.	Color	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

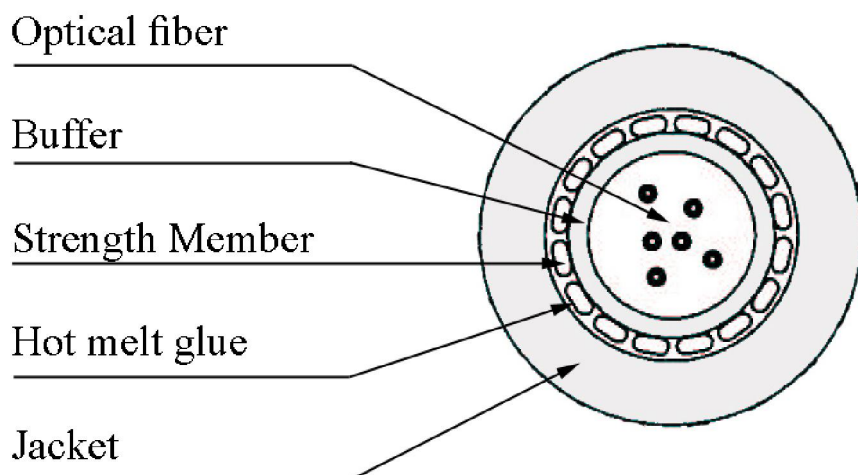
3 - CABLE CONSTRUCTION

Cable constructions are in accordance with the following table (4) and FIG. (1)

TABLE (4)

Subject	Description
3-1- Optical fiber	Single mode fiber as ITU G.652. The fibers are color coded and properly operate at a wide range of temperature from -40 °C up to +80 °C.
3-2- Buffer	Central tube of PBT materials, , contains up to 12 optical fibers, filled with thixotropic jelly. The jelly is free from dirt, metallic particles and would be non toxic and present no any dermal hazards.
3-3- Strength member	A layer of Glass yarn will be applied over the buffer. Adhesive material may be applied over glass yarns.
3-7- Outer jacket	A black HDPE jacket in according to ASTM-D1248 will be applied on glass yarns. The nominal jacket thickness is 1.2mm.

FIG. (1)



4 - CABLE SIZES AND GENERAL DATAS

4-1 - CABLE SIZES AND GENERAL DATA

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

TABLE (5)

PARAMETERS	N2 Up to N12
Number of Fibers in tube	2 up to 12
Tube Diameter(mm)	3.2
Pulling tension(Installation) (N)*	1500
Overall diameter (mm)	7.5
Weight (Kg/km)	40

* Note: The pulling tension may be increased as an option by using the messenger with higher diameter.

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	CONDITIOND	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 3000 N (As technical spec)	EIA/TIA 455-33
TWIST	2 m length / 10 cycles of mechanical twisting	EIA/TIA 455-85
LOW OR HIGH TEMPRATURE 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
TEMPRATURE 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.