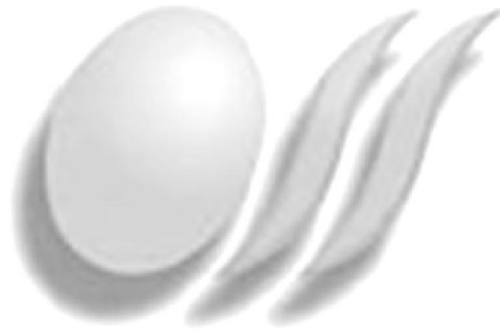


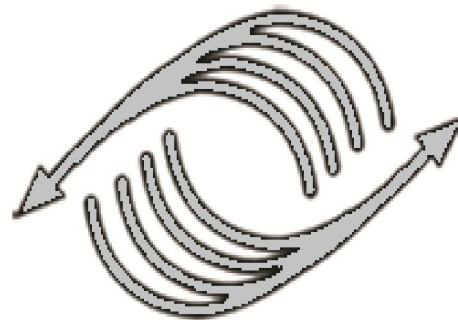
**SHAHID GHANDI COMMUNICATION CABLE CO.**

**CODE: 0204-004**

**TECHNICAL SPECIFICATION FOR  
OPTICAL CONDUIT UNFILLED CABLE  
(OCUC-MM 62.5/125)**



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## **SPECIFICATION FOR OPTICAL CONDUIT UNFILLED 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 dry optical fiber cables used in conduit applications.

## 2 - OPTICAL FIBER

### 2-1 – Optical Characteristics

The fibers will be MM Fiber 62.5/125 have the following properties:

TABLE (1)

Item	Parameters	Unit	Value	
<b>1. OPTICAL CHARACTERISTICS</b>				
1.1	Attenuation	@ 850 nm	dB/km	Max 3
		@ 1300 nm	dB/km	Max 1
1.2	Bandwidth	@850 nm	MHz-km	Min 160
		1300 nm @	MHz-km	Min 400
1.3	Point Discontinuity	dB	Max 0.1	
1.4	Numerical Aperture	---	$0.275 \pm 0.015$	
<b>2. DIMENSIONAL SPECIFICATION</b>				
2.1	Core Diameter	$\mu\text{m}$	$62.5 \pm 3.0$	
2.2	Cladding Diameter	$\mu\text{m}$	$125.0 \pm 1.0$	
2.3	Coating Diameter	$\mu\text{m}$	$245 \pm 10$	
2.4	Core Non-Circularity	%	Max 6	
2.5	Cladding Non-Circularity	%	Max 2	
2.6	Core/Cladding Eccentricity	$\mu\text{m}$	Max 3	
2.7	Coating/Cladding Eccentricity	$\mu\text{m}$	Max 12.5	

### 2-3 – Fiber and loose tube identification

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

TABLE (3)

Fiber/Tube No.	Color
1	White
2	Red
3	Green
4	Blue
5	Yellow
6	Black



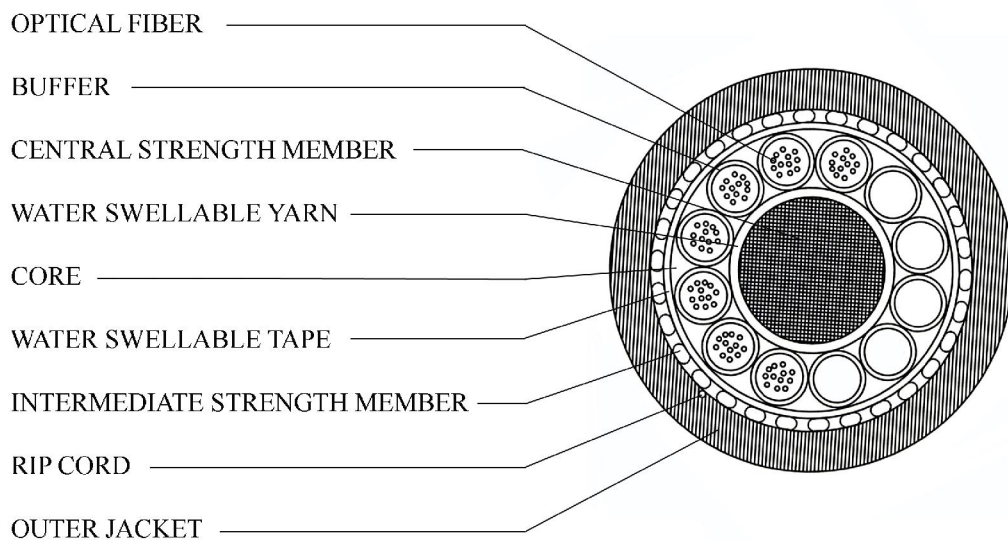
### 3 - CABLE CONSTRUCTION

Cable construction is in accordance with the following table (4) and FIG (1)

TABLE (4)

Subject	Description
3-1- Optical fiber	Multi Mode Fiber 62.5/125. The fibers are color coded and properly operate at a wide range of temperature from -40 °C up to +80 °C.
3-2- Buffer	Loose tubes of PBT materials, color coded, 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- Central strength member	Non-metal central strength member (FRP) with minimum diameter 2.5mm.
3-4- Water swellable yarn	The water swellable yarn will be wound helically around the Strength member.
3-5- 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 PP or HDPE may be used in cable construction.
3-6- Water swellable tape	A layer of water swellable tape with a sufficient thickness applied longitudinally over loose tubes. The overlap shall not be less than 3mm.
3-7- Intermediate Strength Member	A layer of Aramid yarn will be applied over the wrapping for additional pulling force.
3-8- Rip cord	2 Diametrically opposed rip cords will be placed over the intermediate strength member under the outer jacket. The rip cord must be strong and flexible enough to be able to strip or the jackets easily.
3-9- Outer jacket	A black HDPE jacket in according to ASTM-D1248 will be applied on corrugated steel tape. The nominal jacket thickness is 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)

PARAMETERS	N1x2	N1x4	N2x4	N1x6	N 2x 6	N 4x 6
Number of tubes	1	1	2	1	2	4
Fiber per tubes	2	4	4	6	6	6
Number of fibers	2	4	8	6	12	24
Central Strength Member(mm)	2.5	2.5	2.5	2.5	2.5	2.5
Pulling tension (N)*	3000	3000	3000	3000	3000	3000
Overall diameter (mm)	13	13	13	13	13	13
Weight (Kg/km)	108	108	109	108	109	112

\* Note: The pulling tension may be increased as an option by increasing the amount of aramid yarn.



#### 4-2 – IDENTIFICATION MARKING

Each length of the cable shall be permanently identified as to the manufacturer, year of manufacture, number of pairs, conductor size 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	22 kg compress / on 10 cm section of cable	EIA/TIA 455-41
FLEXING	25 cycles / 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	Up to amount of pulling force / 560 mm sheave diameter / 1 hours	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 shall not exceed 0.05 dB at 1550 nm.