CABLE CONSTRUCTION FOR CORRUGATED STEEL TAPE ARMOURED SINGLE SHEATHED TYPE FIBER OPTIC CABLE (IEC 60794-3-12)

1. Fiber Type: A-DF (ZN) (SR) 2Y **mxn…2.700N LG**

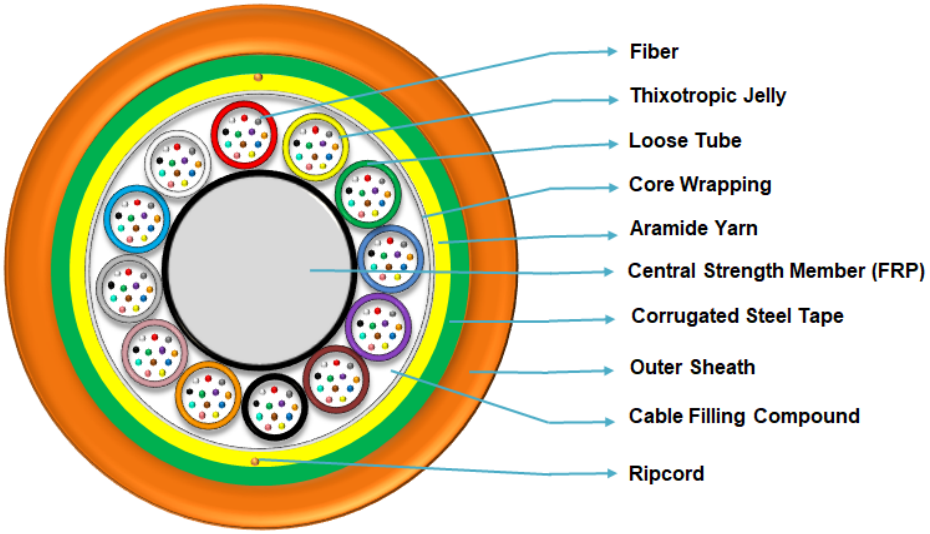
Fiber Type	SM 9/125 (G.652 d)
Attenuation at 1310 nm	Max .0,36 dB/km
Attenuation at 1550 nm.	Max. 0,22 dB/km

Core Size		***4 SM***	***6 SM***	***8 SM***	***12 SM***	***24 SM***	***36 SM***	***48 SM***	***60 SM***	***72 SM***	***96 SM***	***144 SM***
Tube Diameter	mm±0,07	2,15						2,30				
Tube inner diameter	mm±0,07	1,30						1,40				
FRP Diameter	mm±0,07	2,20						2,50				
FRP Coated Diameter		NA	NA	NA	NA	NA	NA	NA	NA	NA	3,80	6,80
Number of tube	Pieces	2	3	4	6	6	6	4	5	6	8	12
Number of dummy tube	Pieces	4	3	2	0	0	0	2	1	0	0	0
Number of fiber per tube	Fiber/tube	02	02	02	02	04	06	12	12	12	12	12
Nominal Outer Diameter of cable	mm±0,5	12,0						12,5			13,5	16,5
Nominal Cable Weight	Kg/km	160						170			200	250

Loose Buffer Tube	PBT (polybutylene terephthalate)
Filling Compound in Loose Tube	Thixotropic Jelly Compound
Water Blocking Material	Cable Filling Compound
Central Strength Member	FRP
Core Wrapping Tape	Polyester Tape
Auxiliary Strength Member	Aramid yarn
Corrugated Steel Tape Thickness	0,155 ± 0,015 mm
Copolymer Thickness	0,055 ± 0,0015 mm
Ripcord	2 pieces
Outer Sheath Color	Orange (RAL 2008)
Outer Sheath Material	MDPE&HDPE
Outer Sheath Thickness	Nom.1,6 ± 0,2 mm
Cable Length per Drum	2000 ± %5 mt

2. Cable Construction

2.1. Cable Construction



Note: Drawing is not scaled.

2.2. Color Code of Fibers

No of fiber	2 fiber/tube	4 fiber/tube	6 fiber/tube	12 fiber/tube
1	Red	Red	Red	Red
2	Natural	Yellow	Yellow	Yellow
3	……	Green	Green	Green
4	……	Natural	Blue	Blue
5	……	……	Violet	Violet
6	……	……	Natural	Brown
7	……	……	……	Black
8	……	……	……	Orange
9	……	……	……	Pink
10	……	……	……	Grey
11	……	……	……	Aqua
12	……	……	……	Natural

Note: Color of fiber should be natural and color of loose tube for 2 fiber per loose tube type cables(like red-natural for red lose tube and yellow-natural for yellow loose tube)

2.3. Color Code of Loose Tubes

No of tubes	4 fiber	6 fiber	8 fiber	12 fiber	24 fiber	36 fiber	48 fiber	60 fiber	72 fiber	96 fiber	144 fiber
1	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
2	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
3	……	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
4	……	……	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
5	……	……	……	Violet	Violet	Violet	……	White	Violet	Violet	Violet
6	……	……	……	White	White	White	……	……	White	Brown	Brown
7	……	……	……	……	……	……	……	……	……	Black	Black
8	……	……	……	……	……	……	……	……	……	White	Orange
9	……	……	……	……	……	……	……	……	……	……	Pink
10	……	……	……	……	……	……	……	……	……	……	Grey
11	……	……	……	……	……	……	……	……	……	……	Aqua
12	……	……	……	……	……	……	……	……	……	……	White

4. Physical/Mechanical and Environmental Performance and Tests

No	Cable Test	Test Standard	Requirements
1.	Tensile Strength(installation)	IEC 60794-1 E1	Min 2.700N Attenuation Change (Max 0,05 dB)
2.	Tensile Strength(Operation)	IEC 60794-1 E1	Min 1.700N Attenuation Change (Max 0,05 dB)
3.	Cable Bend 20xD,	IEC 60794-1-E11	Attenuation Change (Max 0,05 dB) No Damage and breakage of the cable
4.	Impact Test 1 meter 10N	IEC 60794-1-E4	Attenuation Change (Max 0,05 dB)
5.	Crush Strength 2000N/100mm	IEC 60794-1-E3	Attenuation Change (Max 0,05 dB)
6.	Torsion Test 2 meter 10 kg ±180º 10 cycles(20 times)	IEC 60794-1-E7	Attenuation Change (Max 0,05 dB)
7.	Flexing Test 20xD,30 cycles/min	IEC 60794-1-E8	Attenuation Change (Max 0,05 dB) No Damage and breakage of the cable
8.	Kink Test 3 meter, formed in to loop Min 20xD	IEC 60794-1-E10	Attenuation Change (Max 0,05 dB)
9.	Repeated Bending Test 10 cycle, 10 kg load, L>1,5 meter, 20xD	IEC 60794-1-E6	Attenuation Change (Max 0,1 dB)
10.	Temperature Cycling (-40ºC to +80ºC) Transition from 20ºC to -40ºC : 4 hour Duration -40ºC :36 hour Transition from -40ºC to 80ºC : 4 hour Duration +80ºC :36 hour Duration of each cycle:36 hour Number of cycle: 1	IEC 60794-1-F1	Attenuation Change (Max 0,05 dB)
11.	Water penetration 1 meter, 24 hour	IEC 60794-1-E5	No Leakage at the end of the cable
12.	Filing &Flooding compound flow	IEC 60794-1-E14	No flow

5. Length marking on the cable

The following designations shall be applied in a continuous row to the outer sheath so that they are clearly legible over the entire length of the cable. The cable is printing as:

<Handset> < Drum No> Customer Name <Number and type of fiber> <Manufacturer Name> <Year of manufacturing> <Handset> <Meter>

Ex. <Handset> Customer Name 24 FO-Y_OPTIK KABLO_TURKUAZ_KABLO_2019 <Handset> <Meter>

6. Outer Sheath

Outer sheath material is MDPE&HDPE and Orange (RAL 2008) color. Outer sheath are including %2,5 ±0,5 carbon black for sunshine and UV protection in accordance ASTM D 1248 type II, Class C.

7. Packing and Marking

Shipment will be done with non-returnable wooden drums with protection.The cable drums are labelled as:

-Manufacturer Name and year of Manufacturing (TURKUAZ CABLE 2019)
-Name of Customer
-Roll of Direction
-OPTICAL FIBER CABLE
-Gross Weight …..kg
-Net Weight…….kg
-Length……meter
-Cable Type and size
-Drum Number for each drum

All mentioned information also written on the label and the label should be fastening on the drum.

8. Cable Life Time

Designed cable has a minimum 25 years' service life time, even if the cable is correctly installed.

9. Specification for Single Mode Optical Fibre (G.652 d)

Optical Specifications

Attenuation	@1310 nm:	Max.0,334 dB/km
	@1550 nm:	Max. 0,194 dB/km
	@ 1383±3 nm	Max. 0,310 dB/km
Attenuation Change		
	@1285-1330 nm	≤ 0,03 dB/km (1310 nm reference)
	@1525-1575 nm	≤ 0,02 dB/km (1550 nm reference)
Cable Cut-off Wavelength:		≤ 1260
Chromatic Dispersion	at 1285~1330 nm	≤ 3,5 (ps nm/km)
	at 1550 nm	≤ 18 (ps nm/km)
	at 1625 nm	≤ 22 (ps nm/km)
Zero Dispersion Wavelengths:		1302-1322 nm
Zero Dispersion slope		≤ 0,090 ps/(nm² .km)
Polarization Mode Dispersion Coefficient:		≤ 0,2 PS/ km

Geometrical Specifications

Mode Field Diameter at 1310 nm:	9,2µm ± 0,4
Mode Field Diameter at 1550 nm:	10,4µm ±0,5
Cladding Diameter:	125µm ±0,7µm
Core/Cladding Concentricity Error:	≤ 0,5µm
Cladding Non-Circularity:	≤ 0,7%
Coating Diameter:	250±15µm
Coating Concentricity Error:	≤ 15µm
Coating/cladding Non-Circularity Error:	≤ 12%
Fiber proof test level	≥ 100 kpsi (1,0 % strain)