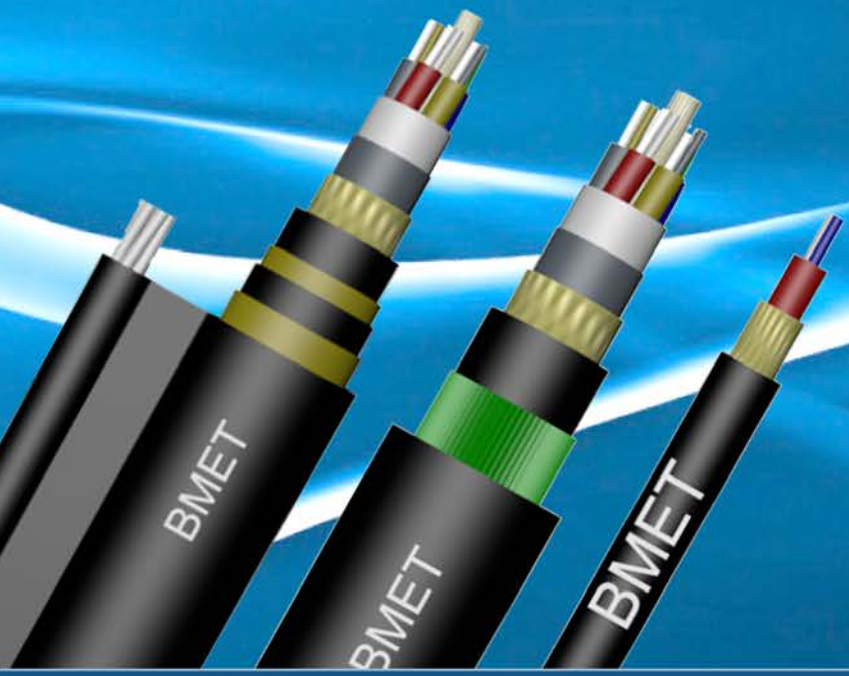
BMET® Energy & Telecom



Fiber Optic Cables

BMET Energy Telecom Industry and Trade LLC

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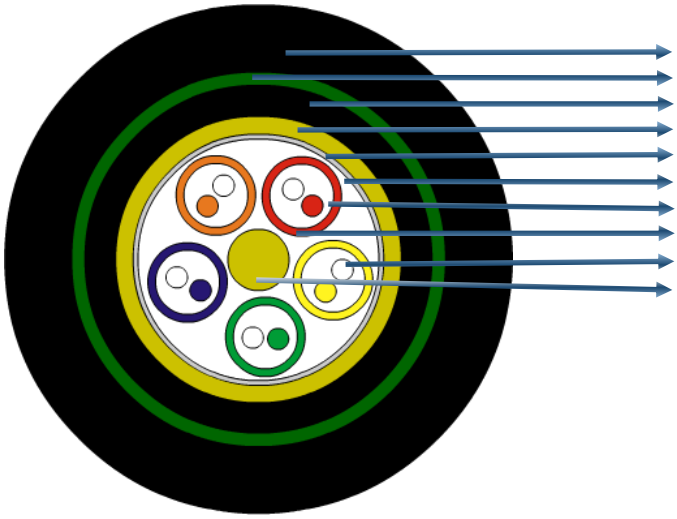
CORRUGATED STEEL TAPE ARMORED FIBER OPTIC CABLE



1. Outer PE Sheath
2. Corrugated Steel Tape
3. Inner PE Sheath
4. Yarns
5. Core Wrappings
6. Petroleum Jelly
7. Thixotropic Jelly
8. Loose Buffer Tube (Colored)
9. Optical Fiber (Colored)
10. Central Strength Member (FRP or Steel)

- All MM and SM Fiber Types Available
- Outdoor type
- Multitube structure
- Corrugated steel tape armored
- Jelly filled core
- Dry Core Option
- In compliance with IEC Specs

INSTALLATION

Outdoor fiber optic cable for direct burial and duct installation where protection against rodents and moisture is required.

APPLICATION

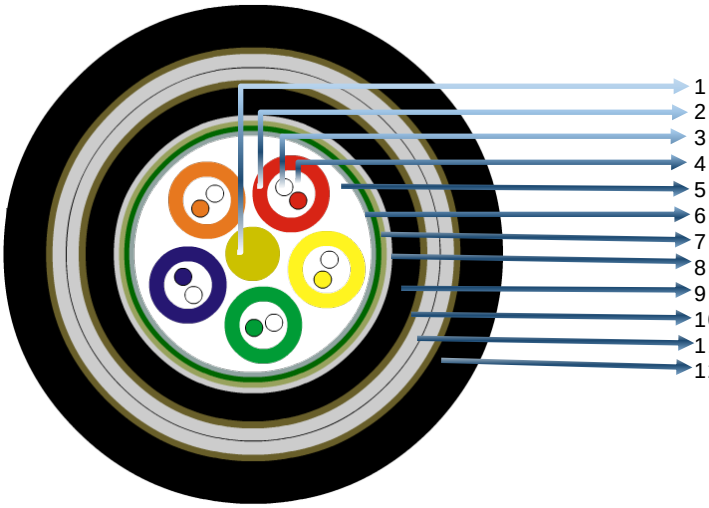
Telecommunication, Video, Data Transmission, CATV, Long Distance, Backbone, Local Area Network

TECHNICAL DATA

No of fibers	: 1...144
Number of Buffer tubes	: 1...12
Number of fiber/buffer tubes	: 1...12
Nominal cable diameter (mm)	: 15...23
Nominal weight (kg/km)	: 440...750
Min. Pulling Tension (Nt)	: 2500
Min. Crush Strength(Nt/100 mm)	: 3500
Permissible Bending Radius (mm)	
During/After Installation	: 320/160
Temperature Range	
Operation	: -40 °C to + 70 °C
Installation	: -20 °C to + 70 °C

Note: Special designs upto 672 fibers capacity are available upon request.

STEEL TAPE ARMORED FIBER OPTIC CABLE



- All MM and SM Fiber Types Available
- Outdoor type
- Multitube structure
- Double PE Jacket
- Two layers of galvanized steel tape armoring
- Jelly filled core with Moisture Barrier
- Dry Core Option
- In compliance with IEC Specs

INSTALLATION

Outdoor fiber optic cable for direct burial and duct installation for heavy duty applications and where rodent protection is required.

APPLICATION

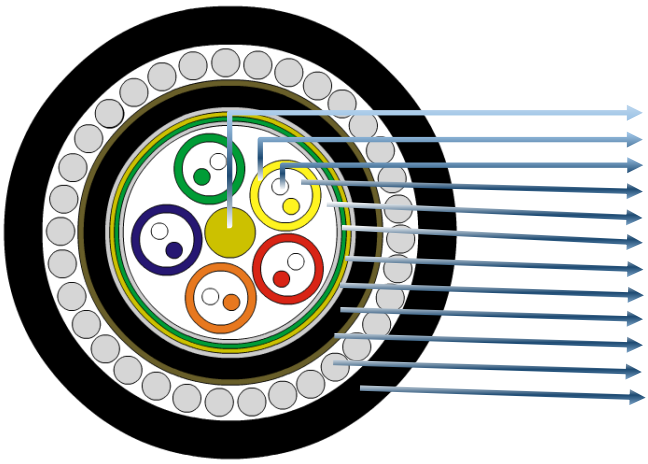
Telecommunication, Video, Data Transmission, CATV, Long Distance, Backbone, Local Area Network

TECHNICAL DATA

No of fibers	: 1...144
Number of Buffer tubes	: 1...12
Number of fiber/buffer tubes	: 1...12
Nominal cable diameter (mm)	: 17...24
Nominal weight (kg/km)	: 330...580
Min. Pulling Tension (Nt)	: 3000
Min. Crush Strength(Nt/100 mm)	: 4000
Permissible Bending Radius (mm)	
During/After Installation	: 360/180
Temperature Range	
Operation	: -40 °C to + 70 °C
Installation	: -20 °C to + 70 °C

Note: Special designs upto 672 fibers capacity are available upon request.

STEEL WIRE ARMORED FIBER OPTIC CABLE



- All MM and SM Fiber Types Available
- Outdoor type
- Multitube structure
- Double PE Jacket
- Steel Wire Armored
- Jelly filled core with Moisture Barrier
- In compliance with IEC Specs

INSTALLATION

Outdoor fiber optic cable for direct burial and duct installation. These type of cables are used for heavy duty applications, river crossings and where rodent protections is required.

APPLICATION

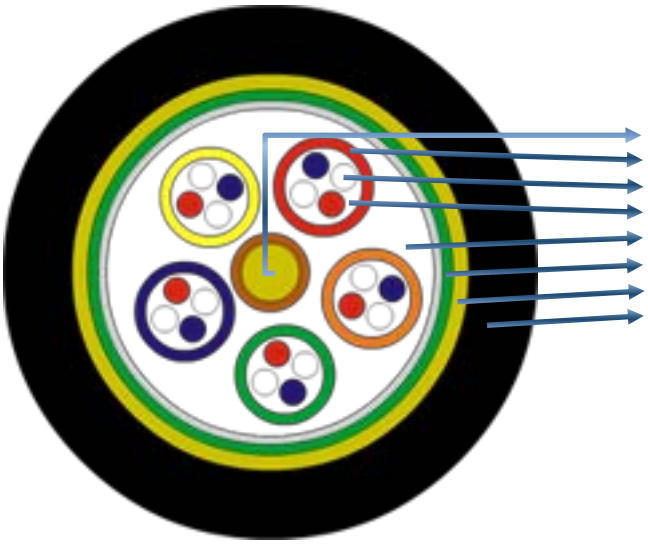
Telecommunication, Video, Data Transmission, CATV, Long Distance, Backbone, Local Area Network

TECHNICAL DATA

No of fibers	: 1...144
Number of Buffer tubes	: 1...12
Number of fiber/buffer tubes	: 1...12
Nominal cable diameter (mm)	: 18...25
Nominal weight (kg/km)	: 600...900
Min. Pulling Tension (Nt)	: 5000
Min. Crush Strength(Nt/100 mm)	: 6000
Permissible Bending Radius (mm)	
During/After Installation	: 360/180
Temperature Range	
Operation	: -40 ^{o}C to + 80 ^{o}C
Installation	: -20 ^{o}C to + 70 ^{o}C

Note: Special designs upto 288 fibers capacity are available upon request.

LIGHT WEIGHT NON-METALLIC FIBER OPTIC CABLE



1. Central Strength Member (FRP)
2. Loose Buffer Tube (Colored)
3. Optical Fiber (Colored)
4. Thixotropic Jelly
5. Petroleum Jelly
6. Core Wrappings
7. Aramid Yarns
8. Outer PE Sheath

- All MM and SM Fiber Types Available
- Outdoor type
- Light weight
- Multitube structure
- Single PE Jacket
- Jelly filled core
- Non-metallic strength members
- Dry Core Option
- In compliance with IEC Specs

INSTALLATION

Outdoor fiber optic cable for duct installation and indoor use. Light and flexible for easy handling. This cable is mainly preferable for long distance networks to be installed by blowing method inside HDPE pipes for fast installation.

APPLICATION

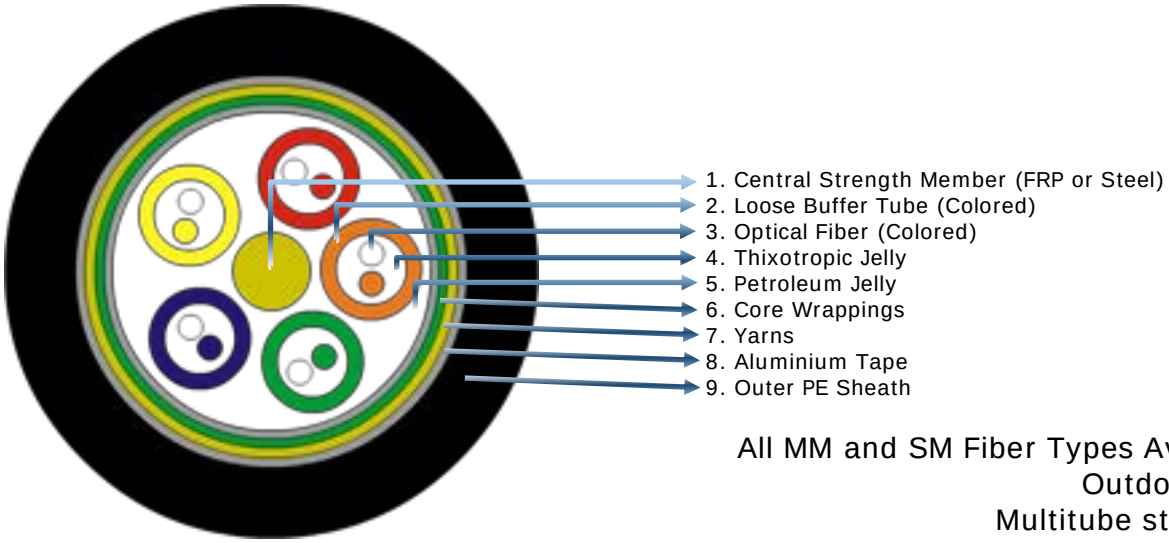
Telecommunication, Video, Data Transmission, CATV, Long Distance, Backbone, Local Area Network

TECHNICAL DATA

No of fibers	: 1...144
Number of Buffer tubes	: 1...12
Number of fiber/buffer tubes	: 1...12
Nominal cable diameter (mm)	: 11...16
Nominal weight (kg/km)	: 110...220
Min. Pulling Tension (Nt)	: 1000
Min. Crush Strength(Nt/100 mm)	: 2000
Permissible Bending Radius (mm)	
During/After Installation	: 220/120
Temperature Range	
Operation	: -40 °C to + 70 °C
Installation	: -20 °C to + 70 °C

Note: Instead of aramid yarns, glass yarns can be applied to increase the resistivity of cables against rodent attacks. Special designs upto 672 fibers capacity are available upon request.

LIGHT WEIGHT DUCT TYPE FIBER OPTIC CABLE



- All MM and SM Fiber Types Available
- Outdoor type
- Multitube structure
- Single PE Jacket
- Jelly filled core with moisture barrier
- Dry Core Option
- In compliance with IEC Specs

INSTALLATION

Outdoor fiber optic cable for duct and HDPE pipe installation and indoor use for easy handling and quick installation.

APPLICATION

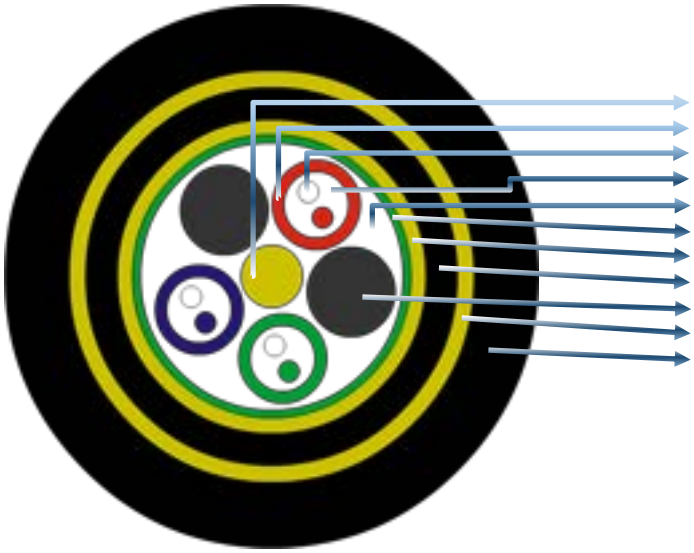
Telecommunication, Video, Data Transmission, CATV, Long Distance, Backbone, Local Area Network

TECHNICAL DATA

No of fibers	: 1...144
Number of Buffer tubes	: 1...12
Number of fiber/buffer tubes	: 1...12
Nominal cable diameter (mm)	: 11...17
Nominal weight (kg/km)	: 120...230
Min. Pulling Tension (Nt)	: 1500
Min. Crush Strength(Nt/100 mm)	: 2200
Permissible Bending Radius (mm)	
During/After Installation	: 220/120
Temperature Range	
Operation	: -40 °C to + 70 °C
Installation	: -20 °C to + 70 °C

Note: Instead of aluminium tape, corrugated steel tape can be applied to increase the crush resistance and also resistivity of the cables against rodent attacks. Special designs upto 672 fibers capacity are available upon request.

NON-METALLIC FIBER OPTIC CABLE



- All MM and SM Fiber Types Available
- Outdoor type
- Fully non-metallic
- Multitube structure
- Double PE Jacket
- Non-metallic strength members
- Jelly filled core
- Dry Core Option
- In compliance with IEC Specs

INSTALLATION

Outdoor fiber optic cable for plastic duct and HDPE pipe installation. This cable is mainly preferable for blowing type installation methods. These cables are used for fast installation.

APPLICATION

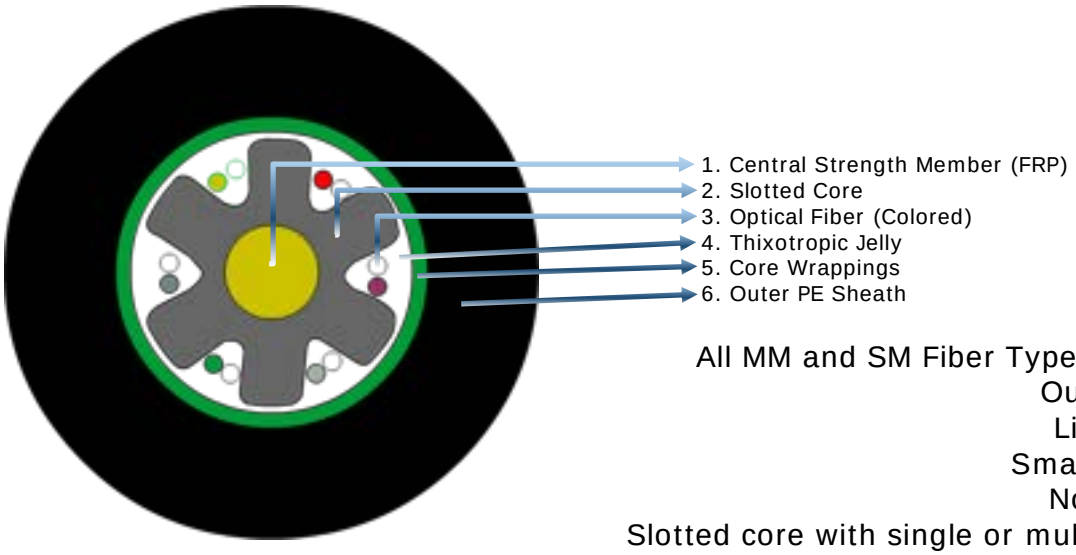
Telecommunication, Video, Data Transmission, CATV, Long Distance, Backbone, Local Area Network

TECHNICAL DATA

No of fibers	: 1...144
Number of Buffer tubes	: 1...12
Number of fiber/buffer tubes	: 1...12
Nominal cable diameter (mm)	: 14...21
Nominal weight (kg/km)	: 170...280
Min. Pulling Tension (Nt)	: 1500
Min. Crush Strength(Nt/100 mm)	: 2800
Permissible Bending Radius (mm)	
During/After Installation	: 280/140
Temperature Range	
Operation	: -40 oC to + 70 oC
Installation	: -20 oC to + 70 oC

Note: Special designs upto 672 fibers capacity are available upon request.

SLOTTED CORE FIBER OPTIC CABLE



- All MM and SM Fiber Types Available
- Outdoor type
- Light weight
- Small diameter
- Non-metallic
- Slotted core with single or multiple fibers
- Jelly filled core
- In compliance with IEC Specs

INSTALLATION

Outdoor fiber optic cable for duct installation and also suitable for indoor applications. Easy handling and quick installation.

APPLICATION

Telecommunication, Video, Data Transmission, CATV, Long Distance, Backbone, Local Area Network

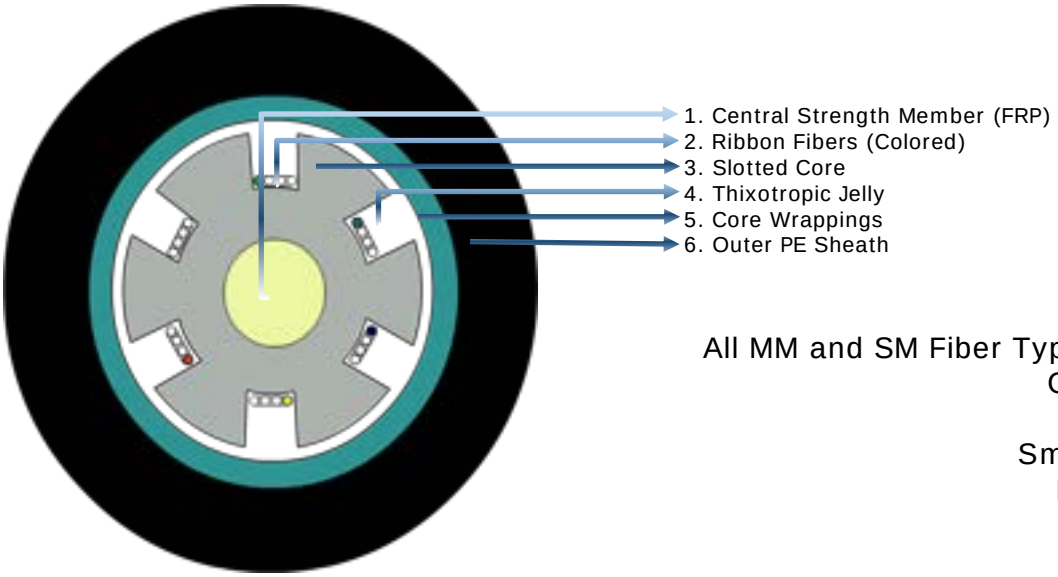
TECHNICAL DATA

No of fibers	: 1...48
Number of Slots	: 6...12
Number of Fiber/Slots	: 1...8
Nominal cable diameter (mm)	: 12...18
Nominal weight (kg/km)	: 105...130
Min. Pulling Tension (Nt)	: 1100
Min. Crush Strength(Nt/100 mm)	: 3000
Permissible Bending Radius (mm)	
During/After Installation	: 220/110
Temperature Range	
Operation	: -40 oC to + 70 oC
Installation	: -20 oC to + 70 oC

Optional Constructions

1. Steel Wire Armored
2. Steel Tape Armored
3. Light Weight Duct
4. Light Weight Non-metallic
5. Non-metallic Duct
6. Corrugated Steel Tape Armored
7. Light Duty Aerial
8. Non-metallic Aerial (ADSS)
9. Indoor

SLOTTED CORE RIBBON FIBER OPTIC CABLE



- All MM and SM Fiber Types Available
- Outdoor type
- Light weight
- Small diameter
- Non-metallic
- Slotted core
- Jelly filled
- Ribbon Fibers
- In compliance with IEC Specs

INSTALLATION

Outdoor fiber optic cable for duct installation in long distance and local area where high fiber counts are required, also suitable for indoor applications. Easy handling and quick installation. Time saving when splicing with mass fusion splicers.

APPLICATION

Telecommunication, Video, Data Transmission, CATV, Long Distance, Backbone, Local Area Network

TECHNICAL DATA

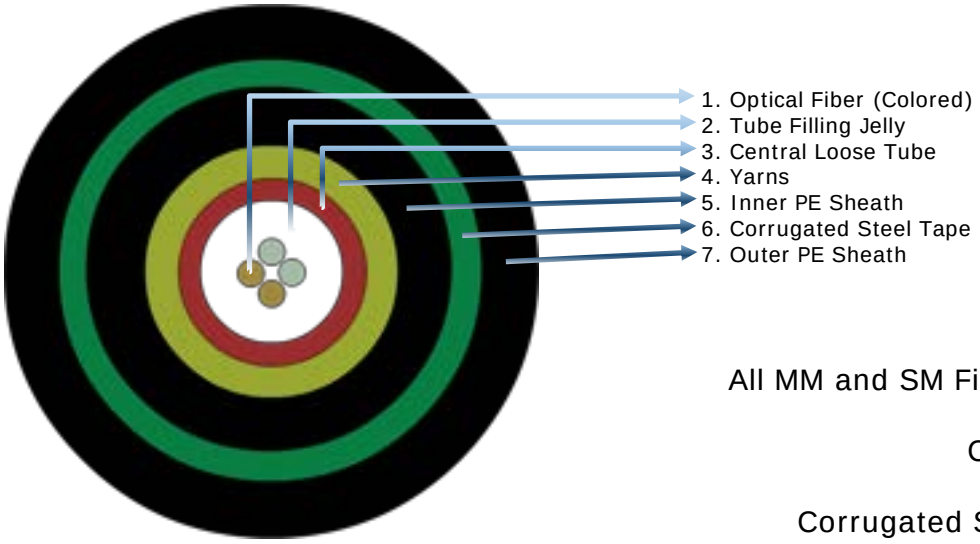
No of fibers	: 4...576
Number of Slots	: 6...12
Number of Fiber/Ribbon	: 4 or 8
Number of Ribbon/Slots	: 1...6
Nominal cable diameter (mm)	: 13...28
Nominal weight (kg/km)	: 110...600
Min. Pulling Tension (Nt)	: 1100
Min. Crush Strength(Nt/100 mm)	: 3000
Permissible Bending Radius (mm)	
During/After Installation	: 260/140
Temperature Range	
Operation	: -40 °C to + 70 °C
Installation	: -20 °C to + 70 °C

Optional Constructions

1. Steel Wire Armored
2. Steel Tape Armored
3. Light Weight Duct
4. Light Weight Non-metallic
5. Non-metallic Duct
6. Corrugated Steel Tape Armored
7. Light Duty Aerial
8. Non-metallic Aerial (ADSS)
9. Indoor

Note: Special designs upto 960 fibers capacity are available upon request.

CENTRAL TUBE OUTDOOR FIBER OPTIC CABLE



- All MM and SM Fiber Types Available
- Outdoor type
- Central Tube Design
- Double PE Jacket
- Corrugated Steel Tape Armored
- Jelly filled Central Tube
- In compliance with IEC Specs

INSTALLATION

Outdoor fiber optic cable with central tube design to be used specially in local area networks and inside the campus areas. These type of cables are used for duct applications.

APPLICATION

Telecommunication, Video, Data Transmission, CATV Local Area Network (LAN)

TECHNICAL DATA

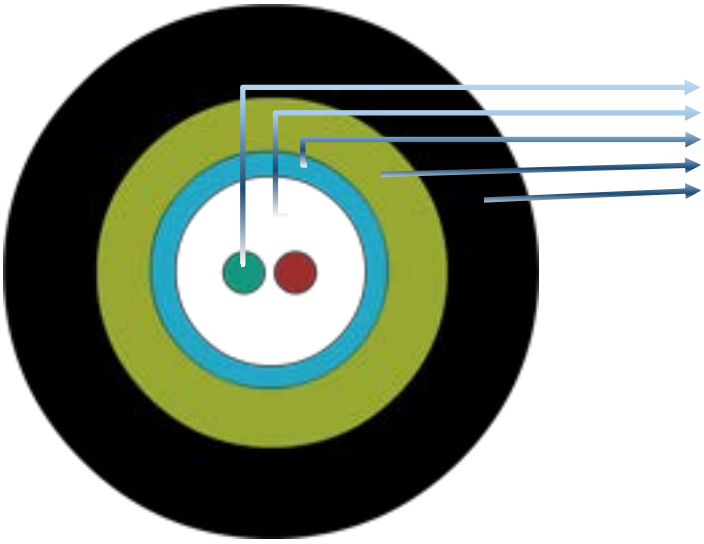
No of fibers	: 1...12
Nominal cable diameter (mm)	: 10
Nominal weight (kg/km)	: 80
Min. Pulling Tension (Nt)	: 1100
Min. Crush Strength(Nt/100 mm)	: 1500
Permissible Bending Radius (mm)	
During/After Installation	: 250/130
Temperature Range	
Operation	: -40 ^{o}C to + 80 ^{o}C
Installation	: -20 ^{o}C to + 70 ^{o}C

Optional Constructions

1. Single Sheathed Corrugated Steel Tape Armored
2. Single or Double Sheathed Non-Metallic
3. Steel Wire Armored
4. HFFR PE or PVC Sheath

Note: Special designs upto 24 fibers capacity are available upon request. Single mode, Multi Mode, Tight Coated fibers can be used in these design, as per Customer's requirements.

CENTRAL TUBE INDOOR FIBER OPTIC CABLE



- All MM and SM Fiber Types Available
- Indoor type
- Central Tube Design
- Single PE, HFFR PE or PVC Jacket
- Jelly Filled Tube
- In compliance with IEC Specs

INSTALLATION

Indoor fiber optic cable with central tube design and Flame Retardant/Halogen Free (HFFR) outer sheaths or PVC Sheath to be used specially inside the buildings.

APPLICATION

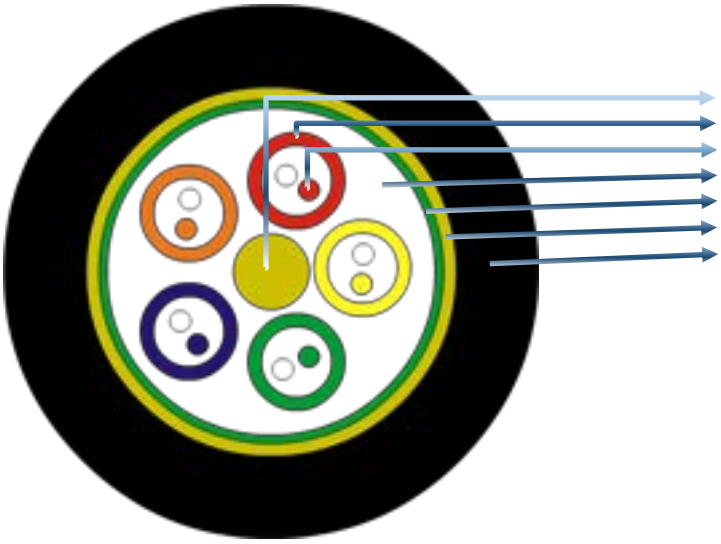
Telecommunication, Video, Data Transmission, CATV Local Area Network (LAN)

TECHNICAL DATA

No of fibers	: 1...12
Nominal cable diameter (mm)	: 8
Nominal weight (kg/km)	: 50
Min. Pulling Tension (Nt)	: 800
Min. Crush Strength(Nt/100 mm)	: 1000
Permissible Bending Radius (mm)	
During/After Installation	: 160/80
Temperature Range	
Operation	: -40 ^{o}C to + 80 ^{o}C
Installation	: -20 ^{o}C to + 70 ^{o}C

Note: Special designs upto 24 fibers capacity are available upon request. Single mode, Multi Mode, Tight Coated fibers can be used in these designs, as per Customer's requirements.

INDOOR FIBER OPTIC CABLE



- All MM and SM Fiber Types Available
- Indoor type
- Multitube Structure
- Small Size, Light Weight
- Single PE, HFFR PE or PVC Jacket
- Jelly Filled Core Option
- In compliance with IEC Specs

INSTALLATION

Indoor fiber optic cable with special Flame Retardant/Halogen Free (HFFR) or PVC outer sheaths for indoor use inside the buildings and/or tunnels.

APPLICATION

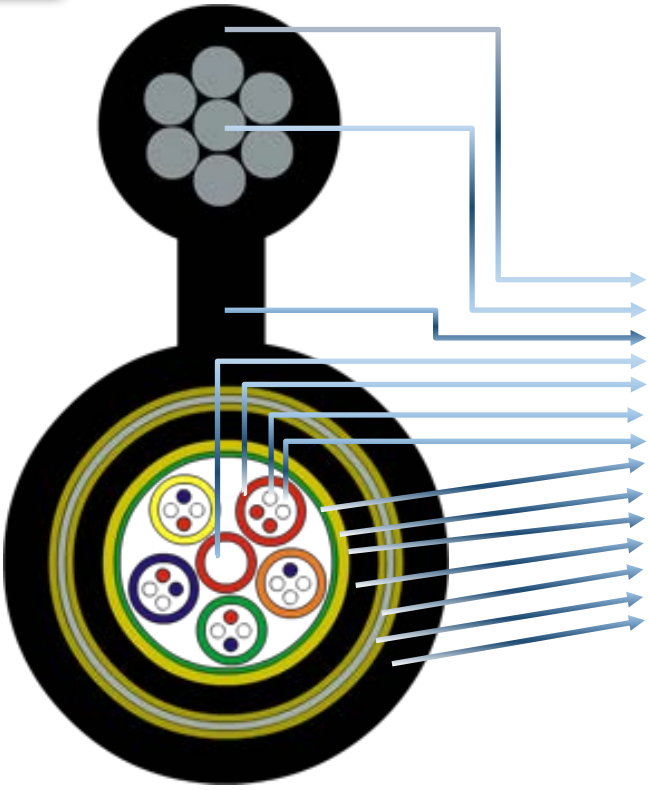
Telecommunication, Video, Data Transmission, CATV, Long Distance, Backbone, Local Area Network

TECHNICAL DATA

No of fibers	: 1...144
Number of Buffer tubes	: 1...12
Number of fiber/buffer tubes	: 1...12
Nominal cable diameter (mm)	: 10...16
Nominal weight (kg/km)	: 90...170
Min. Pulling Tension (Nt)	: 1000
Min. Crush Strength(Nt/100 mm)	: 1500
Permissible Bending Radius (mm)	
During/After Installation	: 200/100
Temperature Range	
Operation	: -40 ^{o}C to + 70 ^{o}C
Installation	: -20 ^{o}C to + 70 ^{o}C

Note: Special designs upto 672 fibers capacity are available upon request.

STEEL TAPE ARMORED AERIAL FIBER OPTIC CABLE



- All MM and SM Fiber Types Available
- Outdoor type
- Multitube Structure
- Double PE Jacket
- Two Layers of Galvanized Steel Type Armoring
- Moisture barrier
- Jelly Filled Core Option
- Steel Wired Stranded Supporting Rope
- In compliance with IEC Specs

INSTALLATION

Outdoor fiber optic cable for aerial installation with heavy duty applications and where ballistic protection is also required. Special designs are available for pole span lengths more than 60 meters.

APPLICATION

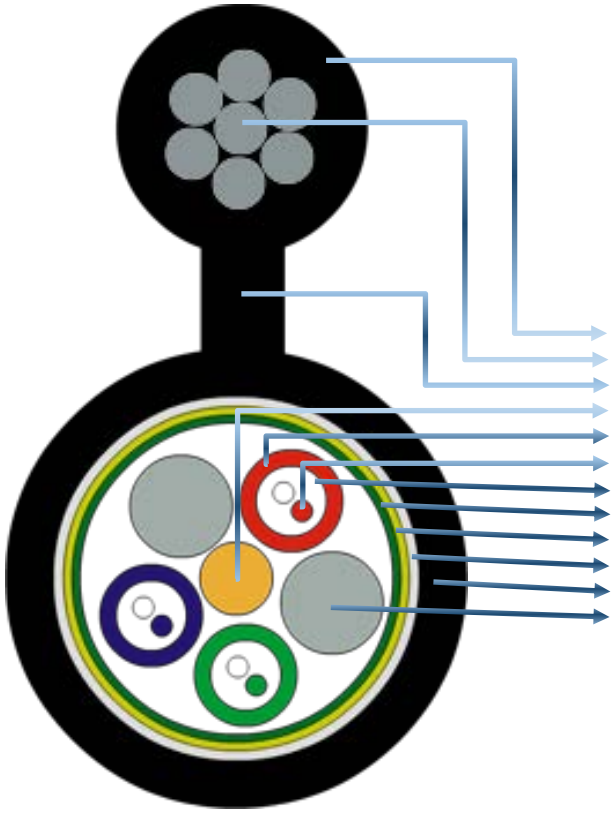
Telecommunication, Video, Data Transmission, CATV, Long Distance, Backbone, Local Area Network

TECHNICAL DATA

No of fibers	: 1...144
Number of Buffer tubes	: 1...12
Number of fiber/buffer tubes	: 1...12
Nominal cable diameter (mm)	: 15...23
Nominal weight (kg/km)	: 440...750
Min. Pulling Tension (Nt)	: 6000
Min. Crush Strength(Nt/100 mm)	: 4000
Permissible Bending Radius (mm)	
During/After Installation	: 320/160
Temperature Range	
Operation	: -40 °C to + 70 °C
Installation	: -20 °C to + 70 °C

Note: Special designs upto 288 fibers capacity are available upon request.

LIGHT DUTY AERIAL FIBER OPTIC CABLE



- All MM and SM Fiber Types Available
- Outdoor type
- Light Weight
- Multitube Structure
- Single PE Jacket
- Moisture Barrier
- Jelly Filled Core Option
- Steel Wired Stranded Supporting Rope
- In compliance with IEC Specs

INSTALLATION

Outdoor fiber optic cable for aerial installations where ballistic protection is not required. Special designs are available for pole span lengths more than 60 meters.

APPLICATION

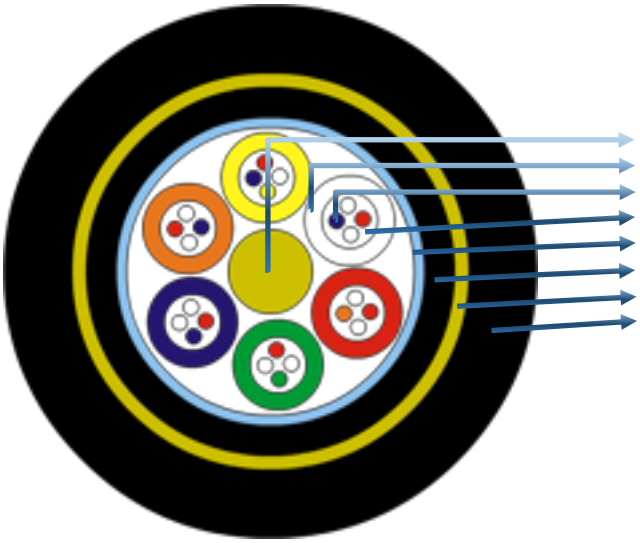
Telecommunication, Video, Data Transmission, CATV, Long Distance, Backbone, Local Area Network

TECHNICAL DATA

No of fibers	: 1...144
Number of Buffer tubes	: 1...12
Number of fiber/buffer tubes	: 1...12
Nominal cable diameter (mm)	: 12...20
Nominal weight (kg/km)	: 250...460
Min. Pulling Tension (Nt)	: 6000
Min. Crush Strength(Nt/100 mm)	: 3000
Permissible Bending Radius (mm)	
During/After Installation	: 250/130
Temperature Range	
Operation	: -40 °C to + 70 °C
Installation	: -20 °C to + 70 °C

Note: Special designs upto 288 fibers capacity are available upon request.

NON-METALLIC AERIAL FIBER OPTIC CABLE (ADSS)



- All MM and SM Fiber Types Available
- Outdoor type
- Fully non-metallic
- Multitube structure
- Double PE jacket
- Non-metallic strength members
- In compliance with IEC Specs

INSTALLATION

Outdoor fiber optic cable for aerial installations upto 60 meters span length. Flexible light weight design where electro-magnetic and high voltage protections and high voltage protections are required. Special designs are available for longer span lengths upto 500 meters.

APPLICATION

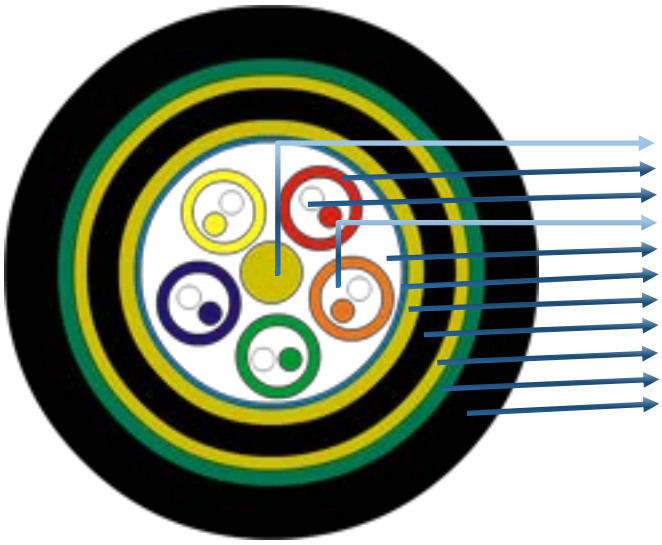
Telecommunication, Video, Data Transmission, CATV, Long Distance, Backbone, Local Area Network

TECHNICAL DATA

No of fibers	: 1...144
Number of Buffer tubes	: 1...12
Number of fiber/buffer tubes	: 1...12
Nominal cable diameter (mm)	: 14...22
Nominal weight (kg/km)	: 160...370
Min. Pulling Tension (Nt)	: 5000
Min. Crush Strength(Nt/100 mm)	: 3500
Permissible Bending Radius (mm)	
During/After Installation	: 320/160
Temperature Range	
Operation	: -40 °C to + 70 °C
Installation	: -20 °C to + 70 °C

Note: Special designs upto 288 fibers capacity are available upon request.
Spiral type installation materials can also be supplied upon requirest.

SELF SUPPORTING BALLISTIC PROTECTED AERIAL FIBER OPTIC CABLE



- All MM and SM Fiber Types Available
- Outdoor Aerial type
- Multitube structure
- Corrugated steel tape armored
- Ballistic Protected
- Dry Core Option
- In compliance with IEC Specs

INSTALLATION

Outdoor fiber optic cable for aerial installation where ballistic protection is required.

APPLICATION

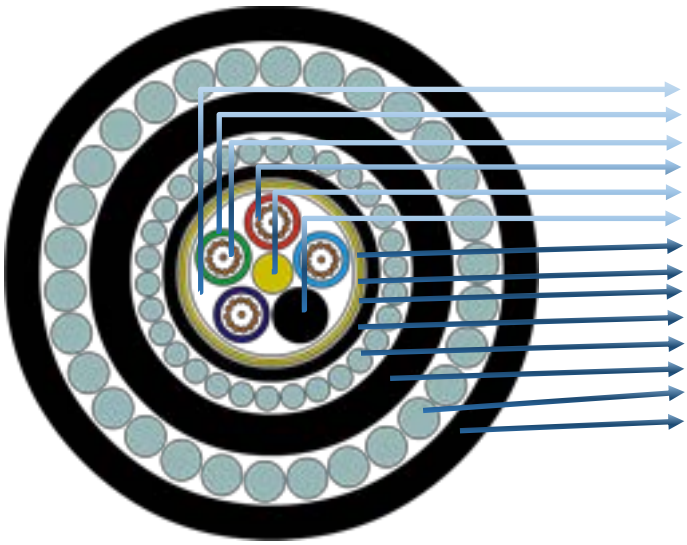
Telecommunication, Video, Data Transmission, CATV, Long Distance, Backbone, Local Area Network

TECHNICAL DATA

No of fibers	: 1...144
Number of Buffer tubes	: 1...12
Number of fiber/buffer tubes	: 1...12
Nominal cable diameter (mm)	: 17...21
Nominal weight (kg/km)	: 290...480
Min. Pulling Tension (Nt)	: 5000
Min. Crush Strength(Nt/100 mm)	: 4000
Permissible Bending Radius (mm)	
During/After Installation	: 420/210
Temperature Range	
Operation	: -40 ^{o}C to + 70 ^{o}C
Installation	: -20 ^{o}C to + 70 ^{o}C

Note: Special designs upto 288 fibers capacity are available upon request.

MULTITUBE RIVER CROSSING FIBER OPTIC CABLE



1. Petroleum Jelly
2. Loose Buffer Tube (Colored)
3. Tube Filling Jelly
4. Optical Fiber (Colored)
5. Central Strength Member (FRP)
6. Filler
7. Core Wrappings
8. Yarns
9. Aluminium Foil
10. First PE Sheath
11. Steel wires (1st layer)
12. Second PE Sheath
13. Steel wires (2nd layer)
14. Outer PE Sheath

- All MM and SM Fiber Types Available
- River crossing type
- Multitube structure
- Multi PE Jacket
- Steel wire armored
- Jelly filled core
- Moisture Barrier
- In compliance with IEC Specs

INSTALLATION

River crossing type fiber optic cable which is used to cross the rivers and canals safely for more than 1000 meters in width.

APPLICATION

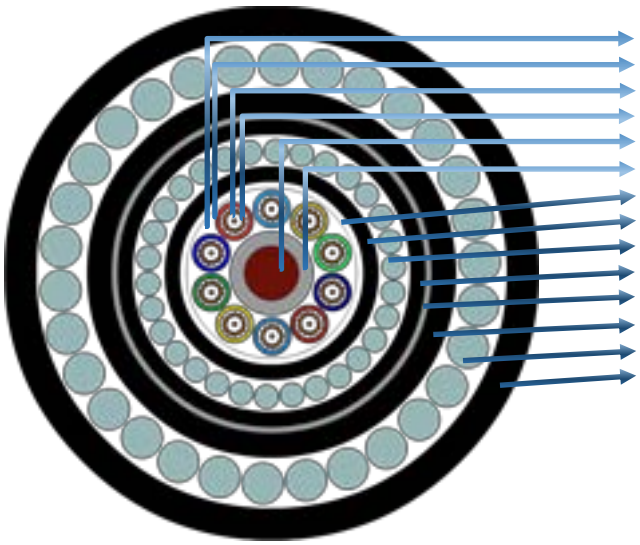
Telecommunication, Video, Data Transmission, CATV, Long Distance, Backbone, Local Area Network

TECHNICAL DATA

No of fibers	: 1...144
Number of Buffer tubes	: 1...12
Number of fiber/buffer tubes	: 1...12
Nominal cable diameter (mm)	: 21...28
Nominal weight (kg/km)	: 700...1100
Min. Pulling Tension (Nt)	: 25000
Min. Crush Strength(Nt/100 mm)	: 10000
Permissible Bending Radius (mm)	
During/After Installation	: 840/420
Temperature Range	
Operation	: -40 °C to + 80 °C
Installation	: -20 °C to + 70 °C

Note: Special designs upto 288 fibers capacity are available upon request.

MULTITUBE SUBMARINE FIBER OPTIC CABLE



1. Petroleum Jelly
2. Loose Buffer Tube (Colored)
3. Tube Filling Jelly
4. Optical Fiber (Colored)
5. Central Strength Member
6. PE Coating
7. Yarns
8. First PE Sheath
9. Steel wires (1 st layer)
10. Second PE Sheath
11. Aluminium foil
12. Third PE Sheath
13. Steel wires (2nd layer)
14. Outer PE Sheath

- All MM and SM Fiber Types Available
- Submarine type
- Multitube structure
- Multi PE Jacket
- Double Steel wire armored
- Jelly filled core
- Moisture Barrier
- In compliance with IEC Specs

INSTALLATION

Submarine fiber optic cabe to be installed at shallow (Upto 100 mt.) sea conditions. These type of cables are used in sea, where anchoring and fishing activities frequently occur.

APPLICATION

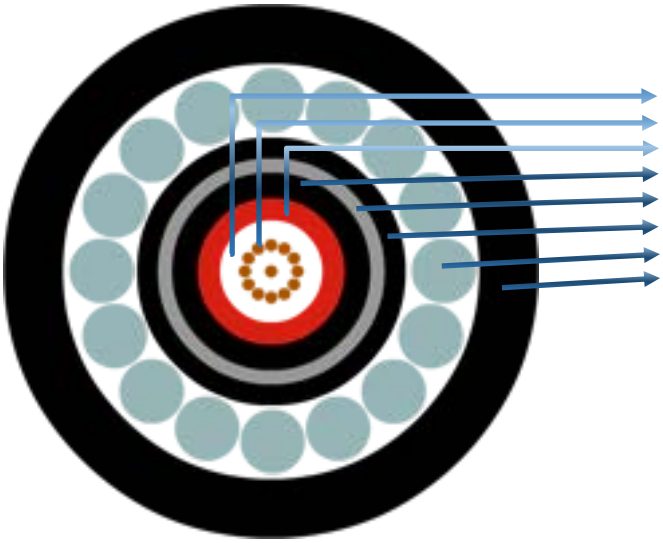
Telecommunication, Video, Data Transmission, CATV, Long Distance, Backbone, Local Area Network

TECHNICAL DATA

No of fibers	: 1...144
Number of Buffer tubes	: 1...12
Number of fiber/buffer tubes	: 1...12
Nominal cable diameter (mm)	: 25...36
Nominal weight (kg/km)	: 1350...2400
Min. Pulling Tension (Nt)	: 50000
Min. Crush Strength(Nt/100 mm)	: 15000
Permissible Bending Radius (mm)	
During/After Installation	: 900/450
Temperature Range	
Operation	: -40 ^{o}C to + 80 ^{o}C
Installation	: -20 ^{o}C to + 70 ^{o}C

Note: Special designs upto 288 fibers capacity are available upon request.

LIGHT WEIGHT(LW) TYPE SUBMARINE FIBER OPTIC CABLE



- All MM and SM Fiber Types Available
- Submarine type
- Central Tube structure
- Light Weight
- Multi PE Jacket
- Steel Wire Armored
- Moisture Barrier
- Jelly Filled Tube
- In Compliance with IEC Specs

INSTALLATION

Submarine fiber optic cabe to be installed in deep sea conditions where protection against fishing activities and anchoring is not required.

APPLICATION

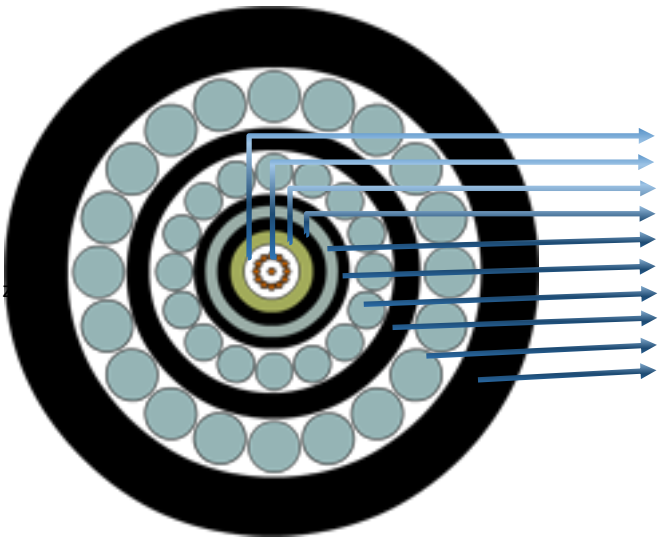
Telecommunication, Video, Data Transmission, CATV, Long Distance, Backbone, Local Area Network

TECHNICAL DATA

No of fibers	: 1...12
Nominal cable diameter (mm)	: 15
Nominal weight (kg/km)	: 450
Max. Pulling Tension (Nt)	: 35000
Min. Crush Strength(Nt/100 mm)	: 8000
Permissible Bending Radius (mm)	
During/After Installation	: 450/230
Temperature Range	
Operation	: -40 °C to + 80 °C
Installation	: -20 °C to + 70 °C

Note: Special designs upto 24 fibers capacity are available upon request.

PROTECTED (SWP) TYPE SUBMARINE FIBER OPTIC CABLE



- All MM and SM Fiber Types Available
- Submarine Type
- Central Tube Structure
- Multi PE Jacket
- Steel Wire Armored
- Moisture Barrier
- Jelly Filled Tube
- In compliance with IEC Specs

INSTALLATION

Submarine fiber optic cabe to be installed in shallow sea conditions where heavy protection is required against fishing activities and anchoring.

APPLICATION

Telecommunication, Video, Data Transmission, CATV, Long Distance, Backbone, Local Area Network

TECHNICAL DATA

No of fibers	: 1...12
Nominal cable diameter (mm)	: 26
Nominal weight (kg/km)	: 1100
Max. Pulling Tension (Nt)	: 130000
Min. Crush Strength(Nt/100 mm)	: 12000
Permissible Bending Radius (mm)	
During/After Installation	: 650/330
Temperature Range	
Operation	: -40 °C to + 80 °C
Installation	: -20 °C to + 70 °C

Note: Special designs upto 24 fibers capacity are available upon request.

ANNEX-1: OPTICAL FIBER DATASHEETS

ITU-T G.652.B (Singlemode Fiber)

		Physical Characteristics
Cladding Diameter	125,0 ± 0,7 µm	
Cladding Non-Circularity	≤ 0,5 %	
Core/Cladding Concentricity Error	≤ 0,5 µm	
Coating Diameter (Colored/Uncolored)	250 ± 15 µm / 245 ± 10 µm	
Coating/Cladding Concentricity Error	≤ 12 µm	
Tensile Proof Test	≥ 1,0 %	
		Optical Characteristics
Attenuation (Uncabled)	at 1310 nm	≤ 0,34 dB /km
	at 1550 nm	≤ 0,21 dB /km
	Change in Attenuation vs Temperature (-60 °C to +85 °C), at 1310, 1550 and 1625 nm	≤ 0,05 dB /km
Chromatic Dispersion (CD)	at 1285-1330 nm	≤ 3,5 ps/nm•km
	at 1550 nm	≤ 18,0 ps/nm•km
	Zero Dispersion Slope (S_0)	≤ 0,092 ps/(nm^2•km)
	Zero Dispersion Wavelength (λ_0)	1300-1324 nm
Index of Refraction (IOR)	at 1310 nm	1.466
	at 1550 nm	1.467
Mode Field Diameter (MFD)	at 1310 nm	9,2 ± 0,4 µm
	at 1550 nm	10,4 ± 0,5 µm
Polarization Mode Dispersion (PMD)	Uncabled Fiber PMD Coefficient	≤ 0,20 ps/ √km
Cut-off Wavelength (λ_{cc})		≤ 1260 nm

ANNEX-1: OPTICAL FIBER DATASHEETS

652.D (Low Water Peak Singlemode Fiber)

		Physical Characteristics
Cladding Diameter	125,0 ± 0,7 µm	
Cladding Non-Circularity	≤ 0,5 %	
Core/Cladding Concentricity Error	≤ 0,5 µm	
Coating Diameter (Colored/Uncolored)	250 ± 15 µm / 245 ± 10 µm	
Coating/Cladding Concentricity Error	≤ 12 µm	
Tensile Proof Test	≥ 1,0 %	
		Optical Characteristics
Attenuation (Uncabled)	at 1310 nm	≤ 0,34 dB /km
	at 1383 nm ± 3 nm	≤ 0,33 dB /km
	at 1550 nm	≤ 0,20 dB /km
	at 1625 nm	≤ 0,23 dB /km
Chromatic Dispersion (CD)	at 1285-1330 nm	≤ 3,5 ps/nm•km
	at 1550 nm	≤ 17,0 ps/nm•km
	at 1625 nm	≤ 22,0 ps/nm•km
	Zero Dispersion Slope (S_0)	≤ 0,092 ps/nm^2•km
	Zero Dispersion Wavelength (λ_0)	1300-1324 nm
Index of Refraction (IOR)	at 1310 nm	1.466
	at 1550 nm	1.467
Mode Field Diameter (MFD)	at 1310 nm	9,2 ± 0,4 µm
	at 1550 nm	10,4 ± 0,5 µm
Polarization Mode Dispersion (PMD)	Uncabled Fiber PMD Coefficient	≤ 0,20 ps/ √km
Cut-off Wavelength (λ_{cc})		≤ 1260 nm

ITU-T G.653 (Dispersion Singlemode Fiber - DSF)

	Characteristics	**Typical Value**
Cladding Diameter		125 ± 1,0 µm
Attenuation	at 1550 nm	≤ 0,22 dB / km
Chromatic Dispersion (CD)	1525-1575 nm	≤ 3,5 ps/nm•km
	Zero Dispersion Siope	≤ 0,085 ps/nm^2•km
	Zero Dispersion wavelength	1525-1575 nm
Mode Field Diameter (MFD)	at 1550 nm	8,0 ± 0,5 µm
Polarization Mode Dispersion PMD)	Uncabled Fiber PMD Coefficient	≤ 0,20 ps/ √km
Cut-off Wavelength (λ_{cc})		≤ 1270 nm

ANNEX-1: OPTICAL FIBER DATASHEETS

ITU-T G.655 (Non-Zero Dispersion Shifted Singlemode Fiber - NZDSF)

Characteristics	**Typical Value**		
Application Bands	C-L		S-C-L
Cladding Diameter	125 ± 1,0 µm		
Coating Diameter(Colored/Uncolored)	250 ± 15 µm / 245 ± 10 µm		
Effective Area (A_{eff})	72 mm^2		95 mm^2
Attenuation	at 1550 nm	≤ 0,22 dB/km	
	at 1625 nm	≤ 0,25 dB/km	
Chromatic Dispersion	at 1530-1565 nm	2,0 ~ 6,0 ps/nm•km	6,5 ~ 13,0 ps/nm•km
	at 1565-1625 nm	4,5 ~ 11,2 ps/nm•km	
	at 1460-1625 nm		2,0 ~ 16,5 ps/nm•km
	Zero Dispersion Slope	0,09 ps/nm^2•km	0,07 ps/nm^2•km
Index of Refraction (IOR)	at 1550 nm	1470	
Mode Field Diameter	at 1550 nm	9,6 ± 0,4 µm	
Polarization Mode Dispersion (PMD)	Uncabled Fiber PMD Coefficient	≤ 0,20 ps/√km	
Cut-off-Wavelength (cc)		≤ 1450 nm	

ITU-T G.656

CWDM and DWDM throughout the region 1450-1625 nm (S-C-L Bands)

Characteristics		**Typical Value**
Cladding Diameter		125 ± 1,0 µm
Coating Diameter		250 ± 15 µm
Effective Area (A_{eff})		45 mm^2
Attenuation	at 1460 nm	≤ 0,28 dB/km
	at 1550 nm	≤ 0,22 dB/km
	at 1625 nm	≤ 0,25 dB/km
Chromatic Dispersion	1460 - 1625 nm	2.0 ~ 8,0 ps/nm•km
	1530-1565 nm	40 ~ 7,0 p s/nm•km
	Dispersion Slope at 1550 nm	0,092 ps/nm^2•km
Polarization Mode Dispersion (PMD)		≤ 0,10 dB/km
Index of Refraction (IOR)	at 1550 nm	1470
Mode Field Diameter	at 1550 nm	7,7 ± 0,4 µm
Polarization Mode Dispersion (PMD)	Uncabled Fiber PMD Coefficient	≤ 0,20 ps/ √km
Cut-off Wavelength (λ_{cc})		≤ 1450 nm

ANNEX-1: OPTICAL FIBER DATASHEETS

ITU-T G.657 A/B

		A					B					
Mode Field Diameter	Wavelength	1350 nm					1310 nm					
	Range of nominal values	8,6 ~ 9,5 µm ± 0,4 µm					6,3 ~ 9,5 µm ± 0,4 µm					
Cladding Diameter	Nomial	1250 µm ± 0,7 ± µm					125,0 µm ± 0,7 ± µm					
Core Concentricity Error	Maximum	≤ 0,5 µm					≤ 0,5 µm					
Cladding Non-Circularity	Maximum	≤ 1,0 %					≤ 1,0 %					
Cable Cut-off Wavelength	Maximum	1260 nm					1260 nm					
Uncabled Fiber Macrobending Loss		A1		A2			B2			B3		
	Radius (mm)	15	10	15	10	7,5	15	10	7,5	10	7,5	5
	Number of turns	10	1	10	1	1	10	1	1	1	1	1
	Max. At 1550nm (dB)	0,25	0,75	0,03	0,1	0,5	0,03	0,1	0,5	0,03	0,08	0.15
	Max. At 1620nm (dB)	1.0	1,5	0,1	0,2	1,0	0,1	0,2	1,0	0,1	0,25	0,45
Proof Stress	Minimum	0,69 Gpa										
Chromatic Dispersion Coefficient	λ_{0min}	1300 nm					1250 nm					
	λ_{0max}	1324 nm					1350 nm					
	S_{0max}	0,092 ps/nm^2 x km					0,11 ps/nm^2 x km					
Auttenuation Coefficient		≤ 0,4 dB/km Max. from 1310nm to 1625 nm					≤ 0,4 dB/km Max. At 1310nm					
		≤ 0,4 dB/km Max. at 1383nm ± 3nm					≤ 0,4 dB/km Max. At 1550nm					
		≤ 0,3 dB/km Max.at 1550nm					≤ 0,3 dB/km Max. At 1625nm					
Pmd Coefficient	Maximum PMD_Q	0,20 ps/√km					0,50 √km					
Index of Refraction (IOR)	at 1310 nm	1.466										
	at 1550 nm	1.467										

ANNEX-1: OPTICAL FIBER DATASHEETS

MM62.5 (OM 1)

Parameters		**Typical Value**
Core Diameter		62,5 ± 3,0 µm
Cladding Diameter		125 ± 2,0 µm
Coating Diameter		250 ± 15 µm
Core Concentricity Error		≤ 3 µm
Cladding Non-Circularity		≤ 2 %
Numerical Aperture		0,275 ± 0,015
Attenuation	at 850 nm	≤ 3,0 dB / km
	at 1300 nm	≤ 0,7 dB / km
Bandwidth	at 850 nm	≥ 200 MHz•km
	at 1300 nm	≥ 500 MHz•km
Index of Refraction (IOR)	at 850 nm	1.496
	at 1300 nm	1.491

MM50 (OM 2)

Parameters		**Typical Value**
Core Diameter		50 ± 3.0 µm
Cladding Diameter		125 ± 2,0 µm
Coating Diameter		250 ± 15 µm
Core Concentricity Error		≤ 3 µm
Cladding Non-Circularity		≤ 2 %
Numerical Aperture		0,20 ± 0,015 µm
Attenuation	at 850 nm	≤ 2,5 dB / km
	at 1300 nm	≤ 0.7 dB / km
Bandwidth	at 850 nm	≥ 500 MHz•km
	at 1300 nm	≥ 500 MHz•km
Index of Refraction (IOR)	at 850 nm	1.483
	at 1300 nm	1.479

MM50 (OM 2+)

Parameters		**Typical Value**
Core Diameter		50 ± 3,0 µm
Cladding Diameter		125 ± 2,0 µm
Coating Diameter		250 ± 15 µm
Core Concentricity Error		≤ 3 µm
Cladding Non-Circularity		≤ 2 %
Numerical Aperture		0,20 ± 0,015 µm
Attenuation	at 850 nm	≤ 2,5 dB / km
	at 1300 nm	≤ 0,7 dB / km
Bandwidth	at 850 nm	≥ 700 MHz•km
	at 1300 nm	≥ 500 MHz•km
Effective Modal Bandwidth (EMB)	at 850 nm	≥ 950 MHz•km
	at 1300 nm	≥ 500 MHz•km
Index of Refraction (IOR)	at 850 nm	1.483
	at 1300 nm	1.479

ANNEX-1: OPTICAL FIBER DATASHEETS

MM50 (OM 3)

Parameters		**Typical Value**
Core Diameter		50 ± 3,0 µm
Cladding Diameter		125 ± 2,0 µm
Coating Diameter		250 ± 15 µm
Core Concentricity Error		≤ 3 µm
Cladding Non-Circularity		≤ 2 %
Numerical Aperture		0,20 ± 0,015 µm
Attenuation	at 850 nm	≤ 2,5 dB / km
	at 1300 nm	≤ 0,7 dB / km
Bandwidth	at 850 nm	≥ 1500 MHz•km
	at 1300 nm	≥ 500 MHz•km
Effective Modal Bandwidth (EMB)	at 850 nm	≥ 2000 MHz•km
	at 1300 nm	≥ 500 MHz•km
Index of Refraction (IOR)	at 850 nm	1.483
	at 1300 nm	1.479

MM50 (OM 4)

Parameters		**Typical Value**
Core Diameter		50 ± 3,0 µm
Cladding Diameter		125 ± 2,0 µm
Coating Diameter		250 ± 15 µm
Core Concentricity Error		≤ 3 µm
Cladding Non-Circularity		≤ 2 %
Numerical Aperture		0,20 ± 0,015 µm
Attenuation	at 850 nm	≤ 2,5 dB / km
	at 1300 nm	≤ 0,7 dB / km
Bandwidth	at 850 nm	≥ 3500 MHz•km
	at 1300 nm	≥ 500 MHz•km
Effective Modal Bandwidth (EMB)	at 850 nm	≥ 4700 MHz•km
	at 1300 nm	≥ 500 MHz•km
Index of Refraction (IOR)	at 850 nm	1.483
	at 1300 nm	1.479

ANNEX-2: COLOR CODE

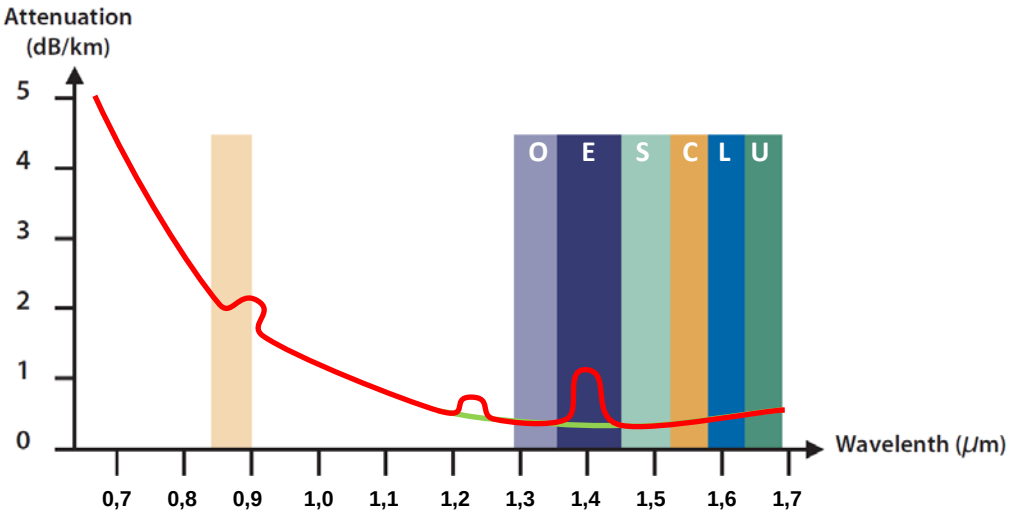
FIBER AND BUFFER TUBE COLOR CODE ACCORDING TO IEC 304

Fiber Number	Fiber Color	Ral Nr.	Buffer Number	Buffer Type	Buffer Color	Ral Nr.	Type Of Fiber
1	Red	3000	1	Counter Buffer	Red	3020	
2	Green	6018	2	Direction Buffer	Green	6018	
3	Blue	5015	3	Following Buffers	White	9016	For SM Fibres
4	Yellow	1021			Bright Green	6019	For MM 50/125
5	White	9010			Bule	5015	For MM62,5/125
6	Grey	7000		Filler	Black	9005	
7	Brown	8003					
8	Violet	4005					
9	Turquoise	6027					
10	Black	9005					
11	Orange	2008					
12	Pink	3015					

FIBER AND BUFFER TUBE COLOR CODE ACCORDING TO (ANSI / TIA / EIA598-A)

Fiber / Buffer Number	Fiber / Buffer Color	Fiber / Buffer Number	Fiber / Buffer Color and Tracer
1	Blue	13	Blue with Black Tracer
2	Orange	14	Orange with Black Tracer
3	Green	15	Green with Black Tracer
4	Brown	16	Brown with Black Tracer
5	Slate	17	Slate with Black Tracer
6	White	18	White with Black Tracer
7	Red	19	Red with Black Tracer
8	Black	20	Black with YellowTracer
9	Yellow	21	Yellow with Black Tracer
10	Violet	22	Violet with Black Tracer
11	Rose	23	Rose with Black Tracer
12	Aqua	24	Aqua with Black Tracer

ANNEX-3: OPTICAL BANDS



OPTICAL BANDS				
	BAND NAME		WAVELENGTH (µm)	WINDOW
			0,82 – 0,88	1 st
	O	Original Band	1,26 – 1,36	2 nd
	E	Extended Band	1,36 – 1,46	
	S	Short Band	1,46 – 1,53	
	C	Convensional Band	1,53 – 1,565	3 rd
	L	Long Band	1,65 – 1,625	
	U	Ultra Long Band	1,625 – 1,675	

___/___/201_