Finolex

Communications
for the new age.

Optic Fibre Cables

Selected
Superbrand
INDIA
2006-07
Consumer Validated

FINOLEX CABLES LIMITED

FINOLEX is the pioneer in manufacturing cables in India. An ISO 9001 certified company, it has five cable manufacturing plants spread over different locations. Out of these, two plants specialise in the manufacture of optic fibre cables.

- The first plant was established near Pune (150 kms south of Mumbai) in the year 1994 in joint venture with Lucent Technology for the manufacturing of their patented LXE designed (central tube) cables. Today this plant is a division of Finolex Cables Limited, with continued technology support from Lucent. The plant has been designed, built, equipped and staffed to meet with worldwide standards. The plant has a capacity to manufacture 30,000 kms of cable length and upto 96 fibre count and is **ISO 9001 certified.**

  Central tube design offers several advantages such as compact and light weight cable, high fibre packing density, easy fibre access and mid-span entry.

- Second plant set up at Goa (550 kms south of Mumbai) in year 2001 specialises in manufacturing of loose tube (multi-tube design) cable. This plant has a capacity to manufacture 30,000 kms cable length upto 96 fibre count. This plant is **ISO 9001 certified.**

Both these plants have been recently awarded the IS/ISO 14001 certification.

With these two plants, **FINOLEX** is committed to provide its customers world's best and most innovative communication system products, technologies and customer support.

All the above plants consist of latest equipment from Europe and USA.

QUALITY ASSURANCE

Finolex cables Limted has been successfully implementing the quality management system requirements with a complete commitment to satisfy the customer needs. Our experienced and highly skilled engineers and technicians carry out strict quality checks at every stage of manufacturing, right from, raw material inspection, in process quality to the final product to verify compliance to the requirements after every process. Finished cables are again tested as per the customer specifications. These tests are carried out according to various international standards like ITU, Bell Core etc.

Manufacturing capability to International Specifications :

Sr. No.	Company	Country
1	Bharat Sanchar Nigam Ltd (Former : Dept of Telecom)	India
2	Telecommunications Co. of Iran	Iran
3	Jordan Telecommunications	Jordan
4	Saudi Telecom Co.	K. S.A
5	Kuwait Communications	Kuwait
6	Oman Telecommunications	Oman
7	Qatar Telecommunications	Qatar
8	Sri Lanka Telecom	Sri Lanka
9	Sudan Telecom Co.	Sudan
10	Public Telecom Co.	Yemen

DNV Accredited by the RvA ICS JAS-ANZ

FINOLEX SINGLE MODE OPTIC FIBRE

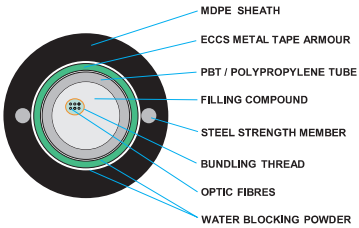
FINOLEX has also set up state-of-the-art manufacturing facility to produce **Optic Fibre.** The annual capacity at present is 1 million fibre kms which will be increased to 2 million fibre km in the coming years.

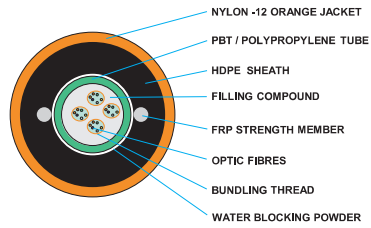
Typical Specifications of Finolex Single Mode Optic Fibre:

Sr. No.	Parameter	Unit	Specification
1	Attenuation (Cabled) At 1310 nm At 1550 nm At 1285 – 1330 nm	 dB/km	 0.36 0.25 0.40
2	Cladding Diameter	µm	125.0 ± 1.0
3	Cladding Non-Circularity	%	≤ 1.0%
4	Coated Fibre Diameter	µm	245 ± 10
4	Core/Cladding Concentricity Error	µm	≤ 0.8
5	Mode Field Diameter	µm	9.3 ± 0.5 @ 1310 nm
6	Coating/cladding concentricity error	µm	≤ 12
7	Fibre Curl	m	≥ 4
8	Zero-Dispersion Wavelength	nm	1300 to 1322
9	Zero-Dispersion Slope	ps/nm^2.km	≤ 0.092
10	Polarisation Mode Dispersion Coefficient	ps/√km	≤ 0.2 @ 1310 nm & 1550 nm
11	Cut-off Wavelength (Cables)	nm	≤ 1260
12	Fibre Macrobend : (100 turns. 75 mm dia. @1550 nm) (1 turn, 32 mm dia @ 1550 nm)	 dB	 ≤ 0.05 ≤ 0.5
13	Coating Strip Force	N	1.3 ≤ F ≤ 8.9
14	Minimum Proof Strength	GPa	0.70 (100 kpsi)
	Strain	%	1

- The fibres are as per international standards ***ITU G 652.*** *Fibre of customised specifications can be provided on request.*

OPTIC FIBRE CABLES – CENTRAL TUBE DESIGN
METALLIC & NON – METALLIC CABLES





Sr. No.	Features	Applications
1	Simple access to all fibres	Long Haul
2	Lighter & compact	Trunking
3	High packing Density	Distribution Feeder

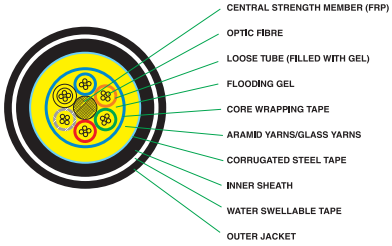
CONSTRUCTION

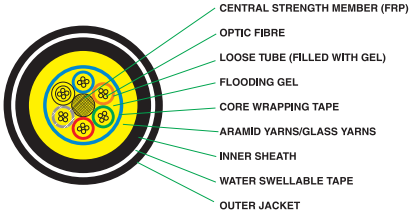
Sr. No.	Parameter	Specifications	
		Metallic Cables	Non Metallic Cables
1	Fibre Count	2 – 96	
2	Armour	Electrolytic Chromium Coated Steel (ECCS) Tape *	
3	Moisture Barrier	Water Blocking Tape / Water Blocking Powder / APL Tape	
4	Sheathing	Black MDPE / Black HDPE	
5	Strength Member	2 steel rods	2 FRP rods additional impregnated semi – rigid rods / rovings can be provided
6	Rip Cords	Aramid & Polyester ripcords can be provided	
7	Fibre per bundle	6: for fibre count upto 36 12 : for fibre count above 36	
8	Fibre Specifications	Finolex's Single mode Fibre conform to ITU G 652, EIA/TIA & Bellcore standards	
9	Operating temperature	- 40^0 C to + 70^0 C	

- * Available with SS tape armour on request.
- Additional Nylon Outer Jacket can also be provided.
- Alternatively, black MDPE /HDPE sheathing with anti – termite additives can also be provided.

The diagrams shown above are typical cross sectional diagrams of Metallic & Non metallic Optic Fibre Cable with central tube design. The details may change according to additional features incorporated.

OPTIC FIBRE CABLES – LOOSE TUBE DESIGN
METALLIC & NON – METALLIC CABLES





Sr. No.	Features	Applications
1	Protection against mechanical damage & moisture	High speed voice & data communications
2	No stress on fibres during installation	Long haul links
3	Specially designed jackets for aggressive environments	Telemetry & SCADA links for oil companies

CONSTRUCTION

Sr. No.	Parameter	Specifications	
		Metallic Cables	**Non Metallic Cables**
1	Fibre Count	2 – 144	
2	Armour	Electrolytic Chromium Coated Steel (ECCS) Tape *	
3	Moisture Barrier	Water Blocking Tape / Flooding Gel / APL Tape	
4	Sheathing	Black MDPE / Black HDPE	
5	Strength Member	**FRP Central Strength Member / Peripheral Strength Member**	
6	Rip Cords	Aramid & Polyester ripcords can be provided	
7	Fibre per tube	2-24	
8	Fibre Specifications	Finolex's Single mode Fibre conform to ITU G 652, EIA/TIA & Bellcore standards	
9	Operating temperature	- 40^0 C to + 70^0 C	

- * Available with SS tape armour on request.
- Additional Nylon Outer Jacket can also be provided.
- Alternatively, black MDPE /HDPE sheathing with anti – termite additives can also be provided.

The diagrams shown above are typical cross sectional diagrams of Metallic & Non metallic Optic Fibre Cable with loose tube design. The details may change according to additional features incorporated.

TIGHT BUFFERED OPTIC FIBRE CABLES : SIMPLEX CABLES

FEATURES
- Can be easily installed in a conduit or duct
- Fibres shall be either Single mode or Multi mode
- Light, flexible & easy connection
- Easier to use as patch cords

APPLICATIONS
- Local Area Networks
- For patch cords & pigtails
- For CCTV networks

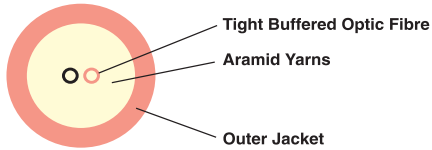
CONSTRUCTION (As shown in the diagram)

MECHANICAL & ENVIRONMENTAL SPECIFICATIONS
- Maximum Pulling Load : 300 - 500 N
- Minimum Bend Radius
  No Load : 10 x Cable Dia
  Full Load (installation) : 20 x Cable Dia
- Maximum Crush Resistance : 500N
- Temperature Range (Operational) : -10^{0}C to + 70^{0}C

TIGHT BUFFERED OPTIC FIBRE CABLES : DUPLEX CABLES (ROUND)

FEATURES
- Can be easily installed in a conduit or duct
- Fibres shall be either Single mode or Multi mode
- Light, flexible & easy connection

APPLICATIONS
- Local Area Networks
- For CCTV networks
- Can be used as drop cable

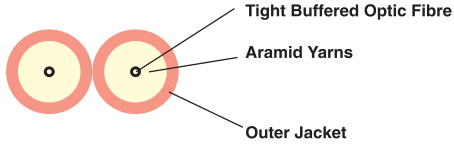


CONSTRUCTION (As shown in the diagram)

TIGHT BUFFERED OPTIC FIBRE CABLES : DUPLEX CABLES (ZIPCORD)

FEATURES
- Can be easily installed in a conduit or duct
- Fibres shall be either Single mode or Multi mode
- Light, flexible & easy connection
- Easier to use as patch cords

APPLICATIONS
- Local Area Networks
- For CCTV networks
- For patch cords & Pigtails



CONSTRUCTION (As shown in the diagram)

STORAGE, TRANSPORTATION, HANDLING & INSTALLATION PROCEDURE

DOS & DON'TS

TRANSPORTATION:

1. The cable drum should be tied tightly with chain or belt and wooden blocks are to be kept in between flanges of each drum to avoid any jerks / movement during transportation.
2. During transportation do not place the cable drums in flat position as it will damage the lower cable and may cause fibre break.
3. Do not drop the cable drums while unloading. Use forklift for unloading.

HANDLING:

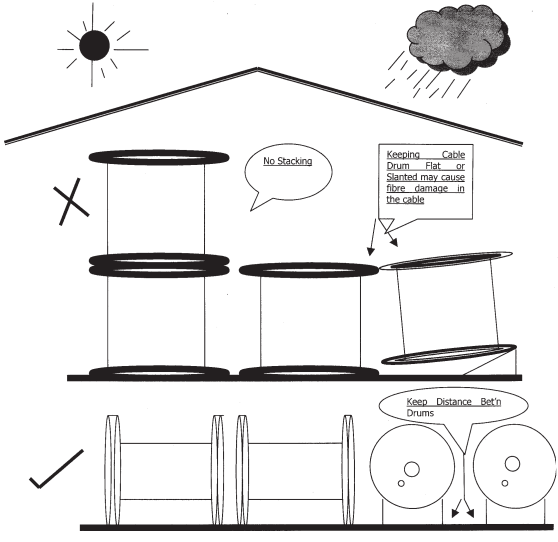
1. While lifting the drum make sure that the flanges of the drum should sit properly between the forks.
2. Rolling of the drum should be in the direction as indicated on the drum.
3. Use proper tools and method to open the cable drum.
4. Cable Drum should not be lifted in flat position.
5. Don't lift the cable drum by inserting forks in between the flanges. This may cause fibre break in the cable.

INSTALLATION:

1. Never pull the cable without a pulling eye.
2. Before pulling the cable make sure that the ducts are clean.
3. The Diameter of the PVC duct should be minimum 100 mm.
4. Maintain proper direction as marked on the drum for rolling/unwinding the cable drum.
5. Continuously monitor the pulling tension while pulling the cable.
6. Use Swivel tool in between pulling eye and pulling rope to avoid cable twisting.
7. Don't allow to exceed the pulling tension beyond specified limit given by the manufacturer.
8. Do not bend the cable beyond recommended limits.
9. Avoid longer pulls. (Maximum 1 km at a time).

STORAGE:

1. The Storage area should be clean and dust free.
2. The warehouse should have temperature and humidity controls.
3. The storage temperature of the cable should conform to the temperature range specified by manufacturer.
4. If stored for longer duration the exposure to the direct sunlight and rainwater to the cable should be avoided.



TOTAL COMMUNICATION SOLUTIONS

For Voice, Data & Video Applications

Finolex Cables Ltd. offers total cable solution to your communication requirements through

- Optic Fibre Cables
- Copper Jelly Filled Telecom Cables
- Branch & Drop Co-axial Cables and CATV Trunk & Distribution Co-axial Cables
- CAT 5E, 5E+, CAT 6 and CAT 6+ UTP LAN Cables and Structured Cabling Solutions from Optinet