

HFCL Limited



TECHNICAL SPECIFICATIONS

MICROCABLES

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192F MULTITUBE MICROCABLE

Cable Description

Micro cables offer flexibility of upgrading a network that can quickly grow and change. Micro cables are designed for use in micro ducts by blowing. Its small outer diameter provides the required rigidity for blowing/pushing through ducts offers lower minimum bending radius. In this cable, optical fibres and water-blocking gel is placed inside buffer tubes. The core is constructed by stranding the buffer tubes around FRP rod, the central strength member. Water swellable yarn is provided over the FRP Rod. This core is then covered with a black HDPE jacket. A ripcord is provided under the jacket for ease of entry.

Applications

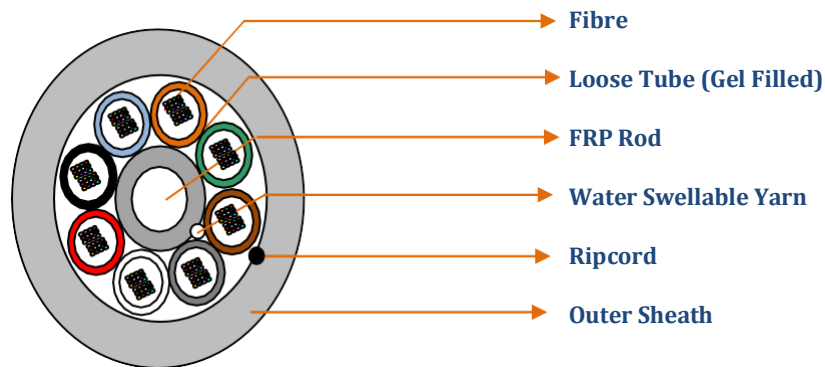
- Microduct, Existing Duct
- Trunk, Distribution, Feeder
- Local loop, Metro & Long Haul

Features

- Multiple network applications
- Wet core option available



Cross Section



Construction

Parameter	Dimensions/Layout	Type
Fibre Count	192	
Number of Fibres per tube	24	Glass Fiber
Number of Loose Tubes	8	PBTP
Central Strength Member	2.5 mm PE Upcoated to 3.5 mm	FRP Rod
Moisture Barrier	Over FRP Rod + Core	Water Swellable Yarn
Outer Sheath	0.5 mm (Nominal)	HDPE – Black
Number of Ripcords	1	Polyester
Cable Diameter	8.8 ± 0.3 mm	
Cable Weight	70.0 ± 10 kg/km	

**HFCL Limited**

(formerly Himachal Futuristic Communications Ltd.)

*Optical Fibre Cables
for futuristic communication needs*

Color Coding

Fiber Color	1	2	3	4	5	6	7	8	9	10	11	12
EIA/TIA 598	Bl	Or	Gr	Br	Sl	Wh	Rd	Bk	Yl	Vi	Pk	Aq
	13	14	15	16	17	18	19	20	21	22	23	24
	Bl	Or	Gr	Br	Sl	Wh	Rd	Nt	Yl	Vi	Pk	Aq

* Fibres 13-24 shall be ring marked every 50 mm

Tube Color	1	2	3	4	5	6	7	8
EIA/TIA 598	Bl	Or	Gr	Br	Sl	Wh	Rd	Bk

Cable Characteristics

Mechanical Characteristics		
Tensile Strength	1000 N	IEC 60794-1-21-E1
Crush Resistance	1000 N	IEC 60794-1-21-E3
Impact Strength	1 Nm	IEC 60794-1-21-E4
Torsion	± 360 °	IEC 60794-1-21-E7
Kink	10 x D	IEC 60794-1-21-E10
Minimum Bend Radius	20 x D	IEC 60794-1-21-E11

Environmental Characteristics		
Installation	- 20 ° C to + 70°C	IEC 60794-1-22-F1
Operation	- 30 ° C to + 70°C	
Storage	- 30 ° C to + 70°C	



Fiber Characteristics

Fiber Type				ITU-T G.652D	
Optical					
Attenuation	1310 nm			≤ 0.36 dB/km	
	1550 nm			≤ 0.23 dB/km	
Chromatic Dispersion	1285 – 1330 nm			≤ 3.5 ps/nm.km	
	1550 nm			≤ 18.0 ps/nm.km	
Cable cut-off wavelength	λ _{cc}			≤ 1260 nm	
Zero Dispersion Wavelength				1300 – 1324 nm	
Zero Dispersion Slope				≤ 0.092 ps/nm ² x km	
Polarization mode dispersion	Fibre			≤ 0.10 ps / km	
	Link Design Value			≤ 0.08 ps / km	
Mechanical					
Bending induced attenuation	1 turn	φ 32 mm	1550 nm	≤ 0.05 dB	
	100 turns	φ 50 mm	1310 nm	≤ 0.05 dB	
			1550 nm	≤ 0.05 dB	
	100 turn	φ 60 mm	1625 nm	≤ 0.05 dB	
Proof Stress Level				1.0 % (100 kpsi)	
Geometrical					
Mode Field Diameter	1310 nm			9.2 ± 0.4 μm	
	1550 nm			10.4 ± 0.5 μm	
Core – Cladding Concentricity Error				≤ 0.5 μm	
Cladding Diameter				125 ± 0.7 μm	
Cladding Non – Circularity				≤ 0.7 %	
Coating – Cladding Concentricity Error				≤ 12 μm	
Primary Coating Diameter				245 ± 5 μm	
Primary Coating Material		(Uncolored)		UV Cured Acrylate	
Fibre Curl		Radius		≥ 4 m	



Marking on Cable

HFCL GOA 192F SM G.652D MICRO Year of Manufacture Length Code Meter Marking

Or

As per customer requirement.

Packing Details

The cable is available in standard drums of 2.0 km \pm 10 %. It shall be provided on wooden drums or spools. Both the cable ends shall be sealed & readily accessible. Each drum shall be permanently labelled on both sides of the flange with information required by the customer in addition to the following standard marking:

- Drum Number
- User Name
- HFCL GOA
- Fiber Count
- Cable Length
- Year of Manufacture
- Net Weight
- Gross Weight
- India