

HFCL Limited



# TECHNICAL SPECIFICATIONS

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## MICROCABLES

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## **48/96/144/192F 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 and over the core. This core is then covered with a black HDPE jacket. A ripcord is provided under the jacket for ease of entry.

### *Applications*

- Micro duct & existing duct
- Trunk, Distribution, Feeder
- Local loop, Metro & Long Haul

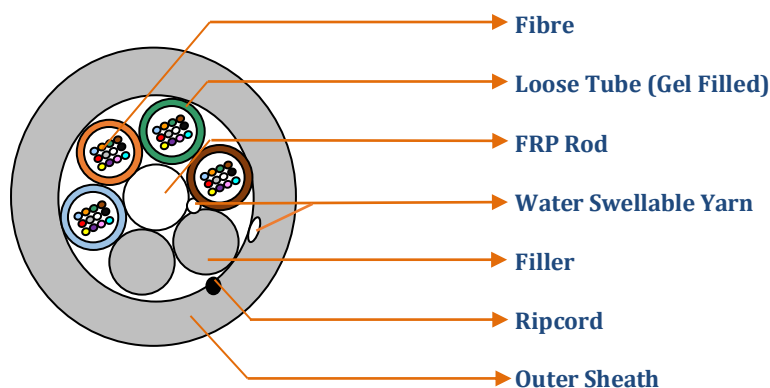
### *Features*

- Multiple network applications





## Cross Section



## Construction

Parameter	Dimensions/Layout				Type
Fibre Count	48	96	144	192	
Number of fibres per tube	12				Glass Fibre
Number of Loose Tubes	4	8	12	Layer I - 6 Layer II - 10	PBTP
Number Of Fillers	2	0		Layer II - 2	HDPE - Black
Central Strength Member	1.5 ± 0.1 mm	2.4 ± 0.1 mm	2.4 mm upcoated to 4.2 mm	1.6 ± 0.1 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	5.3 ± 0.3 mm	6.3 ± 0.3 mm	8.0 ± 0.3 mm	9.0 ± 0.3 mm	
Cable Weight/km	25.0 ± 10 kg/km	35.0 ± 10 kg/km	50.0 ± 10 kg/km	60.0 ± 10 kg/km	





### 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

Tube 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

### Cable Characteristics

Mechanical Characteristics		
Tensile Strength	48F : 500 N 192F : 600 N 96/144F : 1000 N	IEC 60794-1-21-E1
Crush Resistance	500 N/100 x 100 mm	IEC 60794-1-21-E3
Impact Strength	1 N.m	IEC 60794-1-21-E4
Torsion	± 180 °	IEC 60794-1-21-E7
Minimum Bend Radius	15 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.657A1	
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 <sub>cc</sub>			≤ 1260 nm	
Zero Dispersion Wavelength				1300 – 1324 nm	
Zero Dispersion Slope				≤ 0.092 ps/nm² x km	
Polarization mode dispersion				≤ 0.2 ps / km	
Mechanical					
Bending induced attenuation	10 turns	φ 30 mm	1550 nm	≤ 0.05 dB	
			1625 nm	≤ 0.30 dB	
	1 turn	φ 20 mm	1550 nm	≤ 0.50 dB	
			1625 nm	≤ 1.5 dB	
100 turns	φ 50 mm	1310,1550,1625 nm	≤ 0.01 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				240 ± 5 μm	
Primary Coating Material		(Uncolored)		UV Cured Acrylate	
Fibre Curl		Radius		≥ 4 m	





**HFCL Limited**

(formerly Himachal Futuristic Communications Ltd.)

*Optical Fibre Cables  
for futuristic communication needs*

### *Marking on Cable*

HFCL GOA, 48/96/144/192F LT SM G.657A1 MICROCABLE, *Year of manufacture, Length Code, Meter Marking*

*Or*

*As per customer requirement.*

### *Packing Details*

The cable is available in standard drums of 1.0/2.0 Km  $\pm$  5 %. 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