CF – Air Blown MicroCables (G.652.D)

Overview

Connect Fiber's MicroCable Technology is an all-dielectric loose tube cable designed for microduct applications and features industry-leading fiber density. The innovative technology improves cable handling and reduces the installation time while lowering risk of cable and fiber damage. The MicroCable design reduces the cable diameter by up to 50 percent (versus traditional loose tube cables) which improves fiber density for duct applications and also enables new applications which can reduce total install cost. This MicroCable also combines industry-leading attenuation and improved macrobend performance in one fiber. These MicroCables are ITU-T recommended G.652.D compliant suitable for air blown cable in micro-duct installation.

Features

- ITU-T G.652.D rated fiber with improved attenuation and bend performance as well as compatibility with standard single-mode.
- Small cable OD enables higher density and lower deployment cost.
- Innovative cable design that reduces cable installation time and lowers the risk of inadvertent fiber damage.
- Capable of installation distances greater than 2000 m (6560 ft) at speeds up to 150 m/min (490 ft/min).
- Meets the Telcordia GR-20 and RDUP/RUS requirements.

Ordering Information

Fiber Count	Part Number	Description
12	CF-ABF-MC-012-SM	12 Fiber Air Blown Microcable, 5.4mm, Black PE UV Resistant Jacket, 250um Single Mode, G.652D
24	CF-ABF-MC-024-SM	24 Fiber Air Blown Microcable, 5.4mm, Black PE UV Resistant Jacket, 250um Single Mode, G.652D
48	CF-ABF-MC-048-SM	48 Fiber Air Blown Microcable, 5.4mm, Black PE UV Resistant Jacket, 250um Single Mode, G.652D
72	CF-ABF-MC-072-SM	72 Fiber Air Blown Microcable, 5.4mm, Black PE UV Resistant Jacket, 250um Single Mode, G.652D
96	CF-ABF-MC-096-SM	96 Fiber Air Blown Microcable, 6.1mm, Black PE UV Resistant Jacket, 250um Single Mode, G.652D
144	CF-ABF-MC-144-SM	144 Fiber Air Blown Microcable, 7.9mm, Black PE UV Resistant Jacket, 250um Single Mode, G.652D
192	CF-ABF-MC-192-SM	192 Fiber Air Blown Microcable, 7.9mm, Black PE UV Resistant Jacket, 250um Single Mode, G.652D
216	CF-ABF-MC-216-SM	216 Fiber Air Blown Microcable, 7.9mm, Black PE UV Resistant Jacket, 250um Single Mode, G.652D
288	CF-ABF-MC-288-SM	288 Fiber Air Blown Microcable, 9.3mm, Black PE UV Resistant Jacket, 250um Single Mode, G.652D
432	CF-ABF-MC-432-SM	432 Fiber Air Blown Microcable, 11.4mm, Black PE UV Resistant Jacket, 250um Single Mode, G.652D
576	CF-ABF-MC-576-SM	576 Fiber Air Blown Microcable, 13.4mm, Black PE UV Resistant Jacket, 250um Single Mode, G.652DD

Standards

Cable Description

- G.652D SM-fibers: 12/24/36/48/72/96/144/192/216/288/432/576
- Loose tubes SZ-stranded.
- Suitable for blowing in micro-duct installation.

Design and Test Criteria

Optical fibers are housed in loose tubes that are made of high-modulus plastic and filled with waterproof compounds. FRP is applied as central strength member and l loose tubes are SZ-stranded around the strength member. Water blocking yarns are used in and over the cable core to prevent it from water ingress. Polyethylene sheath is applied over the cable core as the outer sheath.

- ITU-T G.652D Characteristics of a single-mode optical fiber
- IEC 60794-1-1 Optical fiber cables- part1-1-Generic specification-General
- IEC 60794-1-2 Optical fiber cables- part1-2-Generic specification-Basic optical cable test procedure
- IEC 60794-3 Optical fiber cables- part3-Sectional specification- Outdoor cables
- IEC 60794-5 Optical fiber cables- part5-Sectional specification- Microduct cabling for installation by blowing

Working Conditions

- Transportation and storage temperature:-40 °C to 70 °C
- Installation temperature: -10 °C to 50 °C
- Operation temperature: -40 °C to 70 °C

Minimum Allowable Bending Radius

- Static: 10D (D: is the out diameter of the cable)
- Dynamic: 20D (D: is the out diameter of the cable)

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Specifications

Optical properties of the SM fiber are achieved through a germanium doped silica based core with a pure silica cladding which meets ITU-T G652D, UV curable acrylate protective coating is applied over the glass cladding to provide the necessary maximum fiber lifetime. Geometrical, optical, and mechanical characteristics of fiber in cable as the following table:

Category	Description	Specification	
		Before cable	After cable
Geometrical Characteristics	Cladding diameter	125.0 ± 1 μm	
	Cladding non-circularity	≤1.0 %	
	Core concentricity error	≤ 0.6μm	
	Coating diameter	245± 10 μm (Before Color Coating) 250± 15 μm (Colored)	
	Coating/cladding concentricity error	≤12μm	
Optical Characteristics	Mode field diameter at 1310 nm	9.2 ± 0.4 μm	
	Point discontinuity	≤ 0.05dB	
	Attenuation at 1310 nm	≤0.34 dB/km	≤ 0.35 dB/km
	Attenuation at 1383 nm	≤0.34 dB/km	≤ 0.34 dB/km
	Attenuation at 1550 nm	≤ 0.21 dB/km	≤ 0.22dB/km
	Attenuation at 1625 nm	≤ 0.21 dB/km	≤ 0.22dB/km
	Dispersion in 1288 – 1339 nm	≤ 3.5 ps/(nm·km)	
	Dispersion in 1271 – 1360 nm	≤5.3 ps/(nm·km)	
	Dispersion at 1550 nm	≤ 18 ps/(nm·km)	
	Zero dispersion wavelength	1300 – 1324 nm	
	Zero dispersion slope	≤ 0.092 ps/(nm²·km)	
	Cable cut-off wavelength	≤ 1260 nm	
	Polarization mode dispersion individual fiber	≤ 0.2 ps/√km	
	Polarization mode dispersion design link value (M=20, Q=0.01%)	≤ 0.1 ps/√km	
	Macro-bend loss (100 turns, 30mm radius, 1550/1625nm)	≤ 0.1 dB	
Mechanical Specification	Proof stress level	≥100kpsi (0.69 GPa)	
	Coating strip force(peak value)	1.3~8.9N	
	Fiber curl (Radius)	≥ 4 m	

Dimensions and Descriptions of Cable Construction

Item	Details	Fiber Count										
		12F	24F	48F	72F	96F	144F	192F	216F	288F	432F	576F
Fiber Colour Coding		ANSI/TIA/EIA-598 Telcordia Compliant										
Fiber counts per tube (G652D)		12 Fibers									24 Fibers	
Cable diameter (±0.2mm)		5.4				6.1	7.9			9.3	11.4	13.4
Cable weight(kg/km) Approx.		26				36	52			80	105	140
Central Strength member	Material	FRP										
	Diameter (mm)	1.6				2.4		1.6		2.8	2.25	2.8
Outer sheath	Material	HDPE Outdoor Rated Material ASTM D 1248, TYPE III, CLASS C（WEATHER RESISTANCE）, CATEGORY 4, GRADE J4, E8, E9, W8,9										
	Color	Black										
	Thickness (mm)	Approx. 0.5										
Blowing Distance		Greater than 2000 meters										

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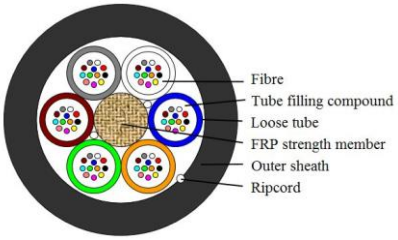
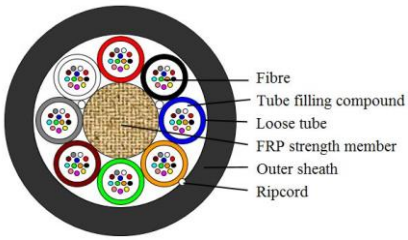
Cable Construction

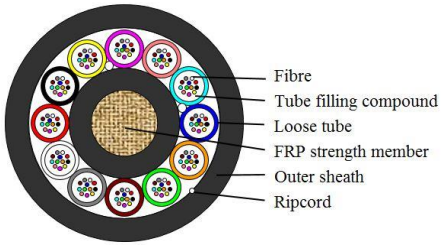
Cross Section Views



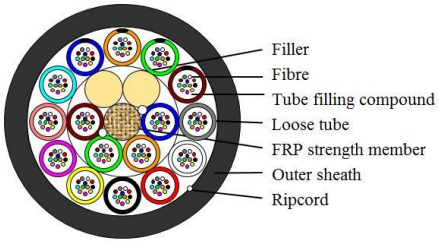
12F to 72F



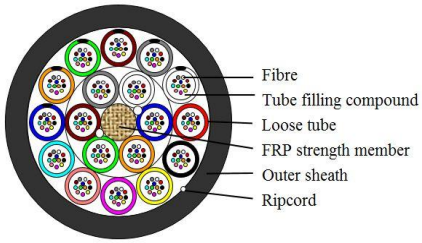
96F



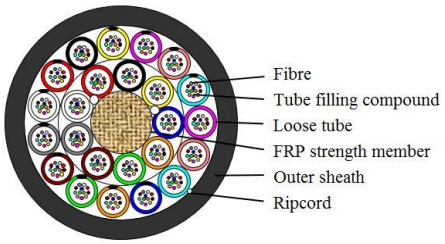
144F



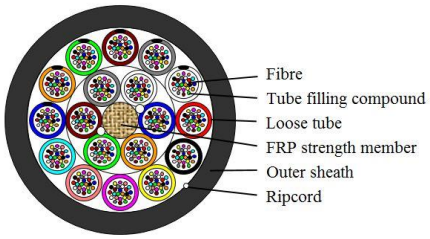
192F



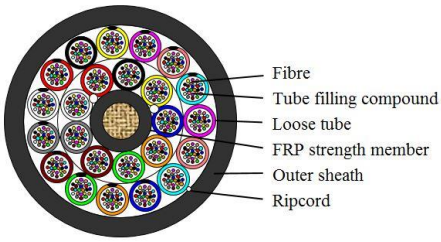
216F



288F



432F



576F

Colour Coding of the Fiber Jackets

Individual Fiber Jackets

Each individual fiber can be identifiable throughout the length of the cable in accordance with the following colour sequence. Fiber colour in each tube starts from Fiber #1 which is Blue. Fibers counts 13 to 24 all have the black ring with the exception of fiber #20 which is a natural colour.

Fiber jacket colour coding: 12F to 288F have 12 fibers per buffer tube and 432F to 576F have 24 fibers per buffer tube	1	2	3	4	5	6
	Blue	Orange	Green	Brown	Slate	White
	7	8	9	10	11	12
	Red	Black	Yellow	Purple	Pink	Aqua
	13	14	15	16	17	18
	Blue with black ring	Orange with black ring	Green with black ring	Brown with black ring	Slate with black ring	White with black ring
	19	20	21	22	23	24
	Red with black ring	Natural	Yellow with black ring	Purple with black ring	Pink with black ring	Aqua with black ring

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Fiber Buffer Tube Jackets

Each fiber buffer bundle can be identifiable throughout the length of the cable in accordance with the following colour sequence. Fiber colour in each tube starts from No. 1 Blue.

Fiber Cables with 1 to 12 Buffer tubes (12F to 144F)	1	2	3	4	5	6
	Blue	Orange	Green	Brown	Slate	White
	7	8	9	10	11	12
	Red	Black	Yellow	Purple	Pink	Aqua

Fiber Cables with 16 Buffer Tubes and 2 Fillers (192F)	Inner1	Inner 2	Inner 3	Inner 4	Inner 5	Inner 6
	Blue	Orange	Green	Brown	Filler	Filler
	Outer 1	Outer 2	Outer 3	Outer 4	Outer 5	Outer 6
	Slate	White	Red	Black	Yellow	Purple
	Outer 7	Outer 8	Outer 9	Outer 10	Outer 11	Outer12
	Pink	Aqua	**Blue with yellow Stripe**	Orange with black Stripe	Green with black Stripe	Brown with black Stripe

Fiber Cables with 18 Buffer Tubes (216F & 432F)	Inner1	Inner 2	Inner 3	Inner 4	Inner 5	Inner 6
	Blue	Orange	Green	Brown	Slate	White
	Outer 1	Outer 2	Outer 3	Outer 4	Outer 5	Outer 6
	Red	Black	Yellow	Purple	Pink	Aqua
	Outer 7	Outer 8	Outer 9	Outer 10	Outer 11	Outer 12
	Blue with yellow Stripe	Orange with black Stripe	Green with black Stripe	Brown with black Stripe	Slate with black Stripe	White with black Stripe

Fiber Cables with 24 Buffer Tubes (288f & 576F)	Inner1	Inner 2	Inner 3	Inner 4	Inner 5	Inner 6
	Blue	Orange	Green	Brown	Slate	White
	Inner 7	Inner 8	Inner 9	Outer 1	Outer 2	Outer 3
	Red	Black	Yellow	Purple	Pink	Aqua
	Outer 4	Outer 5	Outer 6	Outer 7	Outer 8	Outer 9
	Blue with yellow Stripe	Orange with black Stripe	Green with black Stripe	Brown with black Stripe	Slate with black Stripe	White with black Stripe
	Outer 10	Outer 11	Outer12	Outer 13	Outer 14	Outer 15
	Red with black Stripe	**Black with yellow Stripe**	Yellow with black Stripe	Purple with black Stripe	Pink with black Stripe	Aqua with black Stripe

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