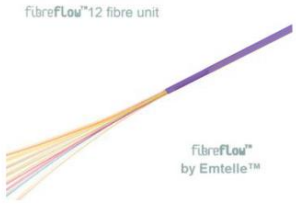
fibreflow™ Blown Fibre
XC Fibre Units, G657A2

Emtelle FibreFlow blown fibre bundle in general is the subject of United Kingdom patents GB2409908C & GB2409909C. Protection outside the UK is by European patents EP1600801B1 & EP3073305B1, European patent application EP3270203A1 and corresponding patents in other countries.



Product Description

Fibre Unit (FU) with up to twelve fibres set in an encapsulating layer providing excellent dimensional and thermal stability. An outer thermoplastic layer provides a high level of protection and excellent installation properties. The FU is designed for blowing into fibreflow™ microducts and tube bundles. The fibres are dry, not coated with gel, thus permitting fast and contamination free connections.

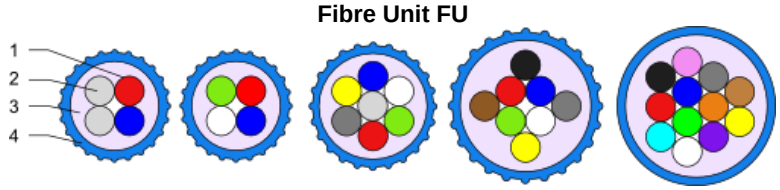
The FU contain bend insensitive 'low water peak' single mode fibres meeting the ITU-T recommendation G.657A2.

Note: All G657A2 fibres comply with G652D requirements as detailed in our specification and ITU-T G657 standard.

Features

- Designed to be installed by blowing
- Low weight
- Small diameter
- All dielectric design
- Ultra low friction sheath
- Best in class blowing performance
- Low coil set

Fibre Unit Properties

Construction 1: Optical Fibre 2: Filler (mechanical fibre) 3: Encapsulation 4: Low shrink sheath	**Fibre Unit FU** 				
	2f	**4f**	**6f**	**8f**	**12f**
Outer diameter (nominal)	1.1 mm	1.1 mm	1.3 mm	1.5 mm	1.6 mm
Mass (nominal)	1.0 g/m	1.0 g/m	1.6 g/m	1.8 g/m	2.2 g/m
Min bend radius (temporarily and during install)	15 mm	15 mm	20 mm	30 mm	30 mm
Min bend radius (permanent)	20 mm	20 mm	25 mm	35 mm	35 mm
Fibre type	Singlemode (9/125um nominal) compliant with G657A2 (ITU-T) and MHT 2050				
Temperatures Storage Installation Lifetime	-40°C to +65°C -10°C to +50°C -40°C to +65°C				
Attenuation at 20ºC (dB/km)	0.35 dB/km max at 1310nm to 1625nm 0.25 dB/km max at 1550nm 0.34 dB/km max at 1383nm waterpeak				
PMD_Q (M= 20, Q=0.01%)	≤0.2 ps / $(km)^{0.5}$				
Macrobending Performance (individual stripped out fibres)	15 mm radius (10 turns) ≤ 0.03 dB at 1550 nm and ≤ 0.1 dB at 1625 nm 10 mm radius (1 turn) ≤ 0.1 dB at 1550 nm and ≤ 0.2 dB at 1625 nm 7.5 mm radius (1 turn) ≤ 0.5 dB at 1550 nm and ≤ 1.0 dB at 1625 nm				

Mechanical Performance (all optical measurements at 1550 nm)

Test	Test Method	Test Parameters	Product Specification
Tensile Performance	EN 187000 A1/ 501 IEC60 794-12-E1	Load is 1km mass (1W) Duration 10 min	Fibre strain ≤0.4% at max. force Attenuation increment ≤0.05dB and fibre strain ≤0.05% after test.
Tensile Service Load		Maximum W/3 Duration of product lifetime	Given tensile performance above, product lifetime loading as per industry best practice.
Flexing	IEC 60794-1-2-E11A Change @ 1550nm	Diam 40mm x 3 turns 5 cycles at 20°C	Attenuation ≤0.05dB increment after test.
Crush I	IEC 60794-1-2-E3 Change @ 1550nm	100 mm plate, 100N, 1 min, 3 tests at different places	≤0.05dB increment after test.
Crush II	IEC 60794-1-2-E3 Change @ 1550nm	100 mm plate, 500N, 15 min, 3 tests at different places	No fibres broken.

Environmental Performance (all optical measurements at 1310nm and 1550nm)

Test	Test Method	Test Parameters	Product Specification
Water Soak	IEC 60794-5	1000 hours in water, 18°C/22°C	Test after temp cycle ≤0.07 dB/km change during and after test
Temperature Cycle	IEC 60794-1-2-F1 (3 cycles)	+20°C, –40°C, +60°C	Attenuation to be ≤0.3dB/km during test ≤0.05dB/km change during and after test
Damp Heat Cycle	IEC 60068-2-38 (10 cycles)	25°C, 65°C, 25°C, 65°C, 25°C, -10°C, 25°C	Attenuation to be ≤0.3dB/km during test ≤0.05dB/km change during and after test

Identification

Sheath Colour:	Blue with black print every 1 metre
Fibre colours:	red, blue, white, green, yellow, grey, brown, black, violet, orange, aqua, pink
Fillers:	natural (mechanical fibre)

Installation and Handling

Store FUs in supplied containers under dry and damp free conditions, until time of deployment.

Designed for installation into microducts, internal diameter from 3.0mm upwards (2.1mm upwards for 2 and 4 fibre counts). Standard installation equipment may be used (eg Emtelle Fusion, Plummett EM25, PRM-196, and BT 2A).

Breakout: remove outer sheath using a tool with pre-set blade depth to suit (eg. Microcable FU Stripper (code 9719). Remove a short length of inner sheath using a stripping tool (eg. 7562) to enable removal of fibres by peeling apart in groups.

Follow up-to-date installation and handling recommendations as defined in MHT2380 (a copy is provided with every pan of fibre).