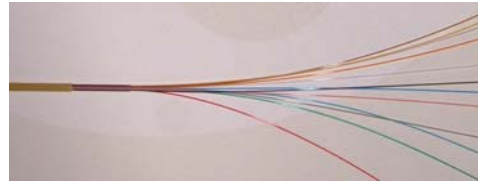


fibreflow™ Blown Fibre
MM Fibre Units

 OM1, OM2, OM3 and OM4¹

Product Description

Various multi mode fibres (50µm and / or 62.5µm) to specification MHT 1403, set in a buffer layer providing excellent dimensional and thermal stability. The outer thermoplastic layer provides a high level of protection and excellent installation properties. The unit 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.

Plenum Rating: see below.

Common Data

Bend Radius: See Individual Property Table.
 Keep FU in supplied containers until deployment.
 Note the MBR of deployed fibre units requires that they are stored as circular coils, or deployed inside Emtelle-approved carrier tube, or tube with fibre inside can be wound around a smooth former of suitable material and diameter.

Temperatures: Storage: -20°C to +70°C
 Installation: -5°C to +50°C
 Lifetime: -20°C to +50°C

Fibre colours: blue, orange, green, red, grey, yellow, brown, violet, black, aqua, pink, white.

Breakout: 1. Remove sheath with Emtelle tool #7299 using a rotary motion. 2. Gently crush the end to separate fibres. 3. Pull apart the fibres in groups. This finally leaves 12 loose fibres that require no cleaning with solvent. 4. Use Miller strippers (Emtelle #7335) to strip fibres. Document MHT 1337 describes this process in more detail.

Individual Data

Fibre Count	2	4	8	12	
Fibre Colours	*blue and orange	1 st 4 colours	1 st 8 colours	all 12 colours	
	standard and plenum**			standard	plenum**
Outer diameter (nom)	1.1mm	1.1mm	1.5mm	1.6mm	1.6mm
Mass 'w' (nom)	1.0 g/m	1.0 g/m	1.8 g/m	2.2 g/m	2.0g/m
Min bend radius (MBR) during handling	50mm	50mm	80mm	80mm	80mm

* contains 2 'mechanical' fibres for breakout purposes

** OFNP RATED (USA): The 2, 4, 8 and 12 fibre units described here are UL approved for use in plenum zones when deployed inside plenum-rated tube bundles to Emtelle specification MHT 1748.

This document is intended as a guide only. Whilst the information it contains is believed to be correct, Emtelle can take no responsibility for actions taken based on the information contained in this document. Emtelle reserves the right to make changes to this document without notice. All sales of product are subject to Emtelle's terms and conditions of sale only, which can be found on Emtelle's website.

This document is protected by copyright (c) Emtelle UK Limited [2009]. The products depicted are protected by intellectual property rights. Any unauthorized copying of this document or of our products is prohibited and Emtelle UK Limited will take action to prevent any infringement of its rights and to claim damages for the loss that it suffers.

www.emtelle.com

Attenuation

Fibre Class	Maximum Attenuation at 20°C (dB/km)	
	850nm	1300nm
62.5/125 Fibres: OM1 and OM1 HBW	3.5	1.0
50/125 Fibres: OM2, OM2 HBW, OM3 and OM4	2.6	0.8

Standards

Emtelle Class	Fibre Core/Cladding (microns)	ISO/IEC 11801	IEC 60793-2-10	TIA/EIA
OM1 and OM1 HBW	62.5/125	type OM1	type A1b	492AAAA-A
OM2 and OM2 HBW	50/125	type OM2	type A1a.1	492AAAB
OM3	50/125	type OM3	type A1a.2	492AAAC-A
OM4	50/125	type OM4	TBA	492AAAD

Bandwidth and Transmission Capacity

Fibre Class	Bandwidth (MHz.km)				*1000Base-SX Gigabit Ethernet Reach (m) at 850nm	**10GBase-SR 10 Gigabit Ethernet Reach (m) at 850nm
	Legacy LED Based OFL ^a		Laser Based RML ^b EMB ^c			
	850nm	1300nm	850nm	850nm		
OM1	200	500	220	-	300	-
OM1 HBW	200	600	220	-	300	-
OM2	500	500	-	510	600	-
OM2 HBW	600	1200	-	-	600 ^{850nm & 1300nm}	-
OM3	1500	500	-	2000	1000	300
OM4	3500	500	-	4700	1100 ^d	550 ^d

Notes:

- OFL; measured by over filled launch as per IEC 60793-1-41, for legacy and LED-based systems.
 - RML; measured by restricted modal launch as per IEC 60793-1-41, for intermediate performance laser based systems.
 - EMB; Effective modal bandwidth by minEMBc in accordance with IEC 60793-1-49.
 - Extended reach requires maximum cabled attenuation 3.0dB/km and total connector loss of 1.0dB at 850nm.
- * Gigabit Ethernet: Characterised system reach is based on IEEE 802.3z Standard Reference Model in accordance with ISO/IEC 11801. System reach can be calculated using EMB.
- ** 10 Gigabit Ethernet: Characterised system reach is based on IEEE 802.3ae Standard Reference Model in accordance with ISO/IEC 11801. System reach can be calculated using EMB.

This document is intended as a guide only. Whilst the information it contains is believed to be correct, Emtelle can take no responsibility for actions taken based on the information contained in this document. Emtelle reserves the right to make changes to this document without notice. All sales of product are subject to Emtelle's terms and conditions of sale only, which can be found on Emtelle's website.

This document is protected by copyright (c) Emtelle UK Limited [2009]. The products depicted are protected by intellectual property rights. Any unauthorized copying of this document or of our products is prohibited and Emtelle UK Limited will take action to prevent any infringement of its rights and to claim damages for the loss that it suffers.

www.emtelle.com

Mechanical Performance

Test	Test Method	Test Parameters	Requirements
Tensile Performance	(EN 187000 A1/ 501 IEC60 794-12-E1)	Load is 1km mass (eg 12fu is 2.2kg) Duration 10 min	Fibre strain $\leq 0.4\%$ at max. force ¹ No Attenuation increment and fibre strain $\leq 0.05\%$ after test
Flexing	IEC 60794-1-2-E11A Change @ 1550nm	Diam 40mm x 3 turns 5 cycles at 20°C	¹ No Attenuation increment after test
Crush I	IEC 60794-1-2-E3 Change @ 1550nm	100 mm plate, 100N, 1 min, 2 tests at different places	¹ No Attenuation increment after test
Crush II	IEC 60794-1-2-E3 Change @ 1550nm	100 mm plate, 500N, 1 min, 2 tests at different places	No fibres broken

1. No attenuation increment defined as
 $\leq 0.25\text{dB/km}$ change for multimode fibre at 850nm and 1300nm.

Environmental Performance

Test	Test Method	Test Parameters	Requirements
Water Soak	IEC 60794-5	1000 hours in water, 18°C/22°C	Test after temp cycle $\leq 0.25\text{dB/km}$ change compared to start value.
Damp Heat Cycle	IEC 60068-2-38 (10 cycles)	25°C, 65°C, 25°C, 65°C, 25°C, -10°C, 25°C	Attenuation increment during and after test $\leq 0.25\text{ dB/km}$ (850nm and 1300nm)
Temperature Cycle	IEC 60794-1-2-F1 (3 cycles)	+20°C, -20°C, +60°C	Attenuation increment during and after test OM1: $\leq 0.25\text{ dB/km}$ (850nm and 1300nm) OM2,3,4: $\leq 0.40\text{dB/km}$ (850nm and 1300nm)

ⁱ Fibre designated OM3+ in the previous issue of this specification has been re-designated OM4 in line with updated international standards

This document is intended as a guide only. Whilst the information it contains is believed to be correct, Emtelle can take no responsibility for actions taken based on the information contained in this document. Emtelle reserves the right to make changes to this document without notice. All sales of product are subject to Emtelle's terms and conditions of sale only, which can be found on Emtelle's website.

This document is protected by copyright (c) Emtelle UK Limited [2009]. The products depicted are protected by intellectual property rights. Any unauthorized copying of this document or of our products is prohibited and Emtelle UK Limited will take action to prevent any infringement of its rights and to claim damages for the loss that it suffers.

www.emtelle.com