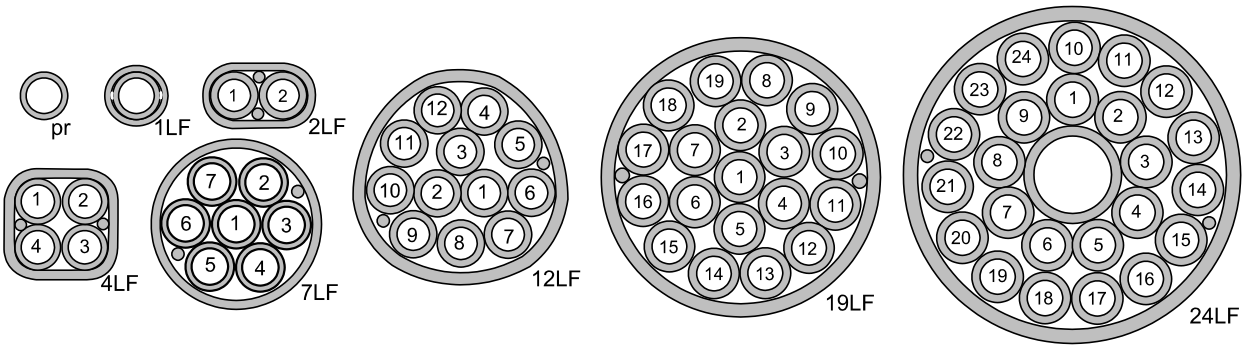
fibreflow Blown Fibre Low Fire Hazard bundles



GENERIC PRODUCT DESCRIPTION:

Assemblies of LFH microducts (m/d) as specification MHT 381 (5/3.5) or MHT 1712 (5/2.1), each with low friction performance for fibre blowing. Each assembly is surrounded with a sheath of LFH material, giving excellent performance in a fire scenario: They are a) Low flammability b) Low smoke c) Low acid/fume d) Halogen-free. These lightweight, metal-free, flexible products are intended for indoor installation, and may be pulled into suitable indoor ducts using low tensions (listed). They are not for direct burial or aerial use.

APPROPRIATE FIBRE TYPES:

Any suitable sized Emtelle fibre unit: The 5/3.5mm tube bundles will accommodate all FU counts: 2FU, 4FU, 8FU and 12FU. The 5/2.1mm m/ds will accommodate 2FU and 4FU.

GENERIC DETAILS: MICRODUCTS (20°C):

Primary m/d outer diameter, nominal	mm	**5.0**	**5.0**
Primary m/d inner diameter, nominal	mm	2.1*	3.5
Diameter of centre m/d in 24-way, nom	mm	10	10
Min bend radius of primary m/d**	mm	50	50
Mass of primary m/d	g/m	24	15
Max pull force of primary m/d	N	70	60

NB: * The 5/2.1 tube may be used without a sheath connected to an incoming 3/2.1 PE route.
** This radius relates to the tube capability only, and does not indicate a suitable radius for blowing FU.

1. Tube sizes are compatible with designated connectors, 5mm
2. Max air pressure for blowing, all tubes: 10bar.
3. Max blowing temperature 40°C
4. Storage of bundles and unprotected m/ds: Indoors and well shielded from daylight

LFH TUBES AND SHEATH:

1. Extruded from 100% virgin compound with these characteristics:
2. Tensile strength 11MPa min, and 11MPa after 7 days at 100°C
3. Elongation at break 130% minimum, and 100% min after 7 days at 100°C
4. Cold impact at -20°C, no cracks
5. Cold elongation at -20°C minimum 50%
6. No halogen content (chlorine, bromine, fluorine)
7. Oxygen Index (LOI) 30% or higher
8. Temperature Index minimum 280°C

PRODUCT-SPECIFIC DETAILS:

		5/3.5 m/ds			5/2.1 m/ds		
type	OD nom mm	Mass nom g/m	Min Bend Rad mm	Max* Pull force N	Mass nom g/m	Min Bend Rad mm	Max* Pull force N
1LF	7.2	45	100	150	54	100	160
2LF	7.2/12.2	80	150	250	98	150	280
4LF	12.2/14.3	127	150	400	163	150	480
7LF	17.2	190	220	600	253	220	750
12LF	22.9	310	300	950	408	300	1200
19LF	26.9	438	350	1300	609	350	1800
24LF	32.5	591	500	1800	807	500	2300

* After applying pulling tensions, allow time for the pulled product to relax. See Installation manual.

Each 5mm microduct can be supplied with a pre-installed pull cord with the following details

1. Pullcord shall be made from high quality polyester suitable for geophysical long-term outdoor use.
2. Pullcord shall not be 'tight' inside the tube, but shall give some 'free length' to make connections.
3. Any joints present in pullcord as-supplied shall be smooth, knot-free and withstand 100N load.
4. There shall be no more than one pullcord joint in any single tube length.
5. Pullcord shall be 'non-twisting' so that it shall not impart twist to fibre when pulled under load. At the same time it shall be very flexible so as to absorb any twist already present in pulled fibre.
6. Pullcord shall have a braid construction, to be able to slip over and grip the fibre unit, and in such case shall cause an increase in diameter of no more than 0.6mm.
7. The pullcord friction shall be very low, to Emtelle specification.

MICRODUCT AND ASSEMBLY TESTS:

1. Crush test:	test method IEC 60794-1-2-E3:	Procedure to IEC 60794-5
2. Impact test:	test method IEC 60794-1-2-E4:	Procedure to IEC 60794-5
3. Kink test:	test method IEC 60794-1-2-E10:	Procedure to IEC 60794-5
4. Flexibility test:	test method IEC 60794-1-2-E11:	Procedure to IEC 60794-5
5. Tensile test	load of xxN for 5 minutes shall cause no damage, no elongation over 7%, no m/d diameter reduction over 7%	
6. Vertical Burn	test method IEC 60332-1	
7. Vertical Rack Burn	test method IEC 60332-3	with NMV = 1.5
8. Smoke Emission	test method BS 7211 AppD,	3 assemblies Ao limit 0.9

Note 1: Diameters and thicknesses are measured to the nearest 0.1mm.
Note 2: 'nominal' data is based on middle-spec, and is for information only, not for inspection purposes.
Note 3: Sketches are for information purposes only, and should not be used for inspection.
Note 4: When interpreting performance data and installing m/ds, bundles, or fibre units, it is assumed that the user has been trained by Emtelle.
Note 5: All data is believed to be accurate but
Note 6: Users must establish the suitability of these products for their own applications.

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