

## Fiber in Metal Tubes for HV/MV Cables

### Steel Tube with or without armoring and sheathing

General Datasheet

 Distributed Temperature Sensing

 Distributed Acoustic Sensing

Fiber in Metal Tubes (FIMT) are designed as loose tube construction and protect the integrated optical fibers against mechanical stress, hydrogen and other environmental influence in order to provide maximum optical lifetime for their application. The high density, tubular design creates excellent crush resistance while enabling small bending radii. The FIMT is filled with a thixotropic gel, with or without hydrogen absorbing additives, and fully complies to EN60794-2-22 method F5. Single and multi-mode fibers can be combined to allow combined data transmission and sensing. Common fiber types used for this construction include ITU-T G.652.D, ITU-T G.654.C, ITU-T G.657.A1 / A2 / B3, ITU-T G651.1 (OM1-OM5) or based on customer request.

#### Available Steel Material for FIMT

- EN 1.4301 (304)
- EN 1.4306 (304L)
- EN 1.4303 (305)
- EN 1.4404 (316L)
- EN 2.4858 (825)
- EN 2.4856 (625)

#### Available Polymer Material

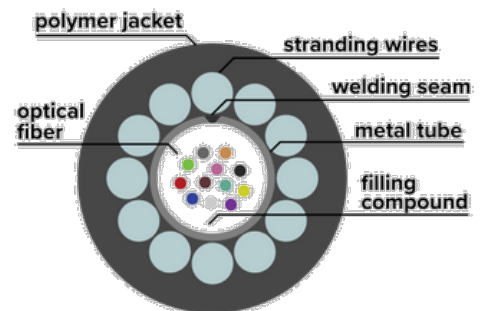
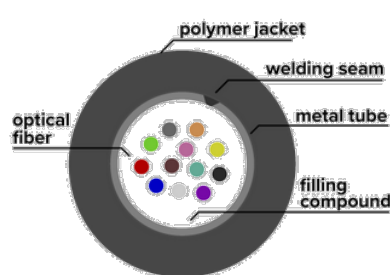
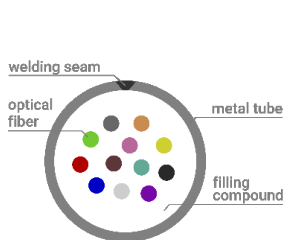
- PA
- LD/HD/XLPE
- PVC
- FRNC
- TPE

#### Available Steel Material for Stranding wires

- EN 1.4301 (304)
- EN 1.4306 (304L)
- EN 1.4303 (305)
- EN 1.4404 (316L)
- Galv. steel wires (GIPS / GEIPS)  
(acc. to EN10264-2)

#### Typical cable integration

- Small sized FIMT with up to 4 fibers (SM & MM) from 1.3-2.0 mm in the shield layer for monoconductor designs
- High fiber count FIMT in between the conductors in trefoil configuration



### Stainless Steel Tube Dimensions and Fiber Count

Table shows the minimum diameter for certain number of fibers. Outer diameter in steps of 0.05/0.10mm available. Other dimensions available on request!

OD FIMT mm (inch)	max. amount of fibers 250µm (200µm)	Single Tube Wall Thickness in mm (inch)				
		0.125 (.0049)	0.15 (0.0059)	0.20 (.0079)	0.25 (.0098)	0.30 (.0118)
1.10 (0.043)	2 (2)	●	●			
1.25 (0.049)	4 (4)	●	●	○		
1.70 (0.067)	6 (8)		●	●		
1.80 (0.071)	8 (12)		●	●		
2.20 (0.087)	16 (24)		●	●	○	
2.40 (0.094)	24 (36)		●	●	●	
2.90 (0.114)	36 (48)		●	●	●	○
3.30 (0.130)	48 (64)		●	●	●	●
3.60 (0.142)	56 (72)		●	●	●	●
4.00 (0.157)	64 (80)		○	●	●	●
4.50 (0.177)	80 (96)					●
5.30 (0.209)	144 (192)					●

#### Packaging and produced length

Standard packaging with wooden reels in standing position fixed on pallet. Layers protected with bubble foil and flexible cardboard. Optionally, machine spools from customer can be used. Produced single lengths are based on customer request.

#### Coloring, bundling and marking options

Fiber coloring done based on EIA/TIA-598-C, DIN VDE V 0888, DIN IEC 60304 or on customer request. Bundling with colored yarns, ring marking on fiber and outer tube marking (meter marking, ring code) can be chosen for identification. Various jacketing colors can be chosen for the inner and outer sheath, optionally with custom made cable marking.

#### Certificate of Conformity

Test report according to EN 10204 / 2.2 physically attached on every spool and digital available including:

- Actual product length
- Actual product diameter
- Welding depth
- Excess Fiber Length
- Optical Attenuation
- Water penetration test