




Fiber in Metal Tubes for Umbilicals

Steel Tube with or without armoring and sheathing

General Datasheet

-  Distributed Temperature Sensing
-  Distributed Acoustic Sensing
-  FBG based point 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 tube is filled with an thixotropic gel, with or without hydrogen absorbing additives, and fully complies with 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.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)

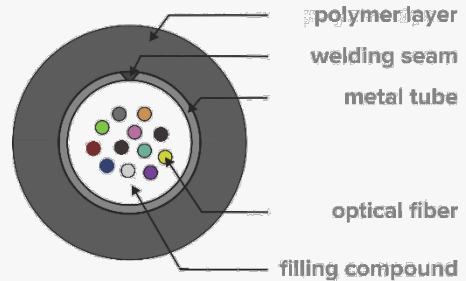
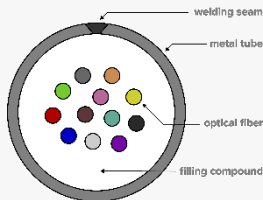
Available Polymer Material

- PA
- PE (LD, HD, XL)
- PVC
- FRNC
- TPE

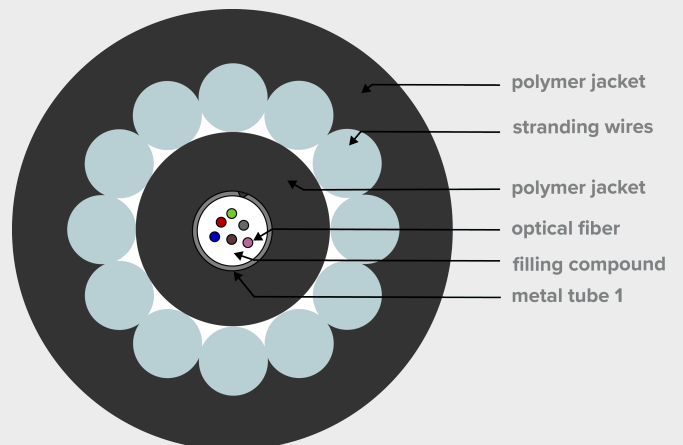
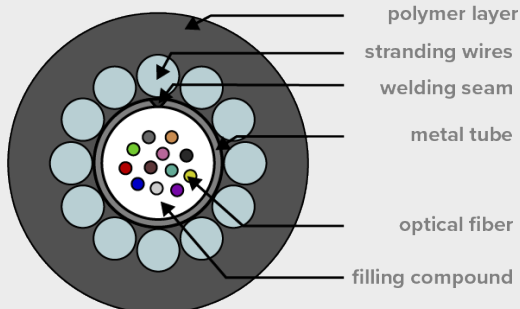
Common Steel Material for Stranding Wires

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

Unarmoured



Armoured



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)					●

Coloring and bundling 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.

Packaging and produced length

Standard packaging with wooden reels fixed on pallet. Optionally, machine spools from customer can be used. Produced single lengths are based on customer request.

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