

## Optical Cables for Indoor / Outdoor Installation (TKT)

### Cable Design

IEC/EN 60794



128 fo cable- not to scale -

- **Central Strength Member (CSM):** glass fibre reinforced plastic rod (FRP), with plastic oversheathing when needed.
- **Loose Tube:** thermoplastic material, containing fibres and filled with a suitable water tightness compound.
- **Filler Elements:** thermoplastic rods, where needed.
- **Stranding:** loose tubes (and fillers), SZ stranded around the CSM.
- **Longitudinal Water Tightness:** dry core with water swellable elements.
- **Inner Sheath:** HFFR, 2 ripcords beneath.
- **Peripheral Strength Elements:** aramid yarns.
- **Outer Sheath:** HFFR, 2 ripcords beneath.

### Technical data

No. of Fibres		8	16	24	32	48	64	80	96	128	144	192	256
No. tubes x fibres/tube		2x4	4x4	6x4	4x8	6x8	8x8	10x8	12x8	(4+12)x8	(6+12)x8	(9+15)x8	(13+19)x8
Loose Tube / Filler - Ø	mm	2.0	2.0	2.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
CSM - Ø	mm	2.1	2.1	2.1	2.4	2.4	2.6	3.0	3.0	2.4	2.4	3.0	3.5
CSM-Oversheathing-Ø	mm	-	-	-	-	-	3.9	5.4	6.9	-	-	4.8	7.8
Inner Sheath Thickness	mm	0.8											
Outer Sheath Thickness	mm	1.4											
Cable Diameter	mm	10.7	10.7	10.7	11.6	11.6	13.1	14.6	16.1	16.2	16.2	18.6	21.6
Cable Weight	kg/km	115	115	115	130	135	165	200	240	240	240	315	415
Minimum Bending Radius	mm	Without Tension 15 x Cable-Ø						Under Maximum Tension 20 x Cable-Ø					
Temperature Range	°C	Installation -10 to +50				Transport & Storage -40 to +70				Operation -20 to +70			

Please refer to our General Installation, Safety & Handling recommendations before handling.

### Main characteristics

Test	Test Standard	Specified Value	Acceptance Criteria
Max. Installation Tension	IEC 60794-1-2-E1	2500 N	$\Delta\alpha$ reversible, fibre strain $\leq 0.33\%$
Crush	IEC 60794-1-2-E3	2000 N / 100 mm max. 15 min	$\Delta\alpha \leq 0.05$ dB, no damage
Impact	IEC 60794-1-2-E4	5 Nm, 3 impacts, R= 10 mm	$\Delta\alpha \leq 0.05$ dB
Torsion	IEC 60794-1-2-E7	50N, +/- 180°, 5 cycles	$\Delta\alpha \leq 0.05$ dB, no damage
Cable Bend	IEC 60794-1-2-E11	R=15 x D, 3 turns, 3 cycles	$\Delta\alpha \leq 0.05$ dB
Temperature Cycling	IEC 60794-1-2-F1	-20°C to +70°C	$\Delta\alpha \leq 0.05$ dB/km
Water Penetration	IEC 60794-1-2-F5B	sample=1m, water column=1m, 24h	no water leakage under first sheath

All optical measurements at 1550 nm

### Optical Characteristics

See the attached cabled optical fibre data sheet.

### Fire Performance

Test	Test Standard	Specified Value	Acceptance Criteria
Flame non-propagation	IEC 60332-1	unburnt cable length	> 50 mm
Halogen Content	IEC 60754-1	halogen content	< 0.5 %
Corrosivity of Smoke Gases	IEC 60754-2	pH-value	$\geq 4.3$
Conductivity of Smoke Gases	IEC 60754-2	conductivity	$\leq 10$ $\mu$ S/mm

## Identification

### Fibre Colours

No.	1	2	3	4	5	6	7	8
Colour	green	red	blue	yellow	grey	violet	brown	orange

### Buffer Tube Colours

N° tubes in layer	Position of tubes and fillers in layer																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
2	white	filler	filler	red	filler	filler													
4	white	red	filler	blue	green	filler													
6	white	white	red	red	blue	blue													
8	white	white	red	red	blue	blue	green	green											
9	white	white	white	red	red	red	blue	blue	blue										
10	white	white	white	red	red	red	blue	blue	green	green									
12	white	white	white	red	red	red	blue	blue	blue	green	green	green							
13	white	white	white	white	red	red	red	red	blue	blue	blue	blue	green						
15	white	white	white	white	red	red	red	red	blue	blue	blue	blue	green	green	green				
19	white	white	white	white	white	red	red	red	red	red	blue	blue	blue	blue	blue	green	green	green	green

All filler elements are black.

### Sheath Colour

Inner and outer sheath colour is black.

### Sheath Marking

The outer sheath is marked in 1 meter intervals as follows:

**<customer name> <manufacturer> <year of manufacture> TKT <no. and type of fibre>  
<length marking in meter>**

## Logistic

### Packing

Wooden drums with protection.

### Delivery Length

Standard delivery length is 4 km with a tolerance of -1% / +3%

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