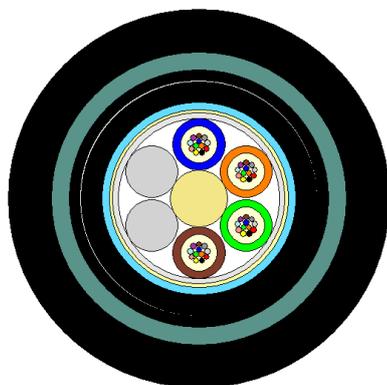


Steel Armoured Flame Retardant ALPA[®] Optical Cable

Cable Design

IEC/EN 60794



- not to scale -

- **Central Strength Member (CSM):** glass fibre reinforced plastic rod (FRP), with plastic oversheathing when needed.
- **Loose Tube:** thermoplastic material, containing optical 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.
- **Core Wrapping:** cable core is wrapped with synthetic tape.
- **Peripheral Strength Members:** aramid yarns (if necessary).
- **Inner Sheath:** Multi-layer ALPA[®] sheath, two ripcords beneath.
- **Armour:** both sides copolymer coated corrugated steel tape with overlap. Steel thickness: 0.15 mm. Two ripcords beneath.
- **Outer Sheath:** UV resistant HFFR compound.

Cable especially designed for harsh environments. Multi-layer inner sheath ALPA[®] is highly resistant to aggressive chemical constituents and fluids that might occur on (petro) chemical plants. ALPA[®] design together with steel tape armour make the cable rodent and termite proof. Outer sheath is resistant to UV, heat & oil. The cable is low smoke, halogen free and flame retardant, being suitable for installation under and above ground.

Technical data

No. of Fibres		4	8	12	24	48	48	72	96	144	
Design		1 x 4	1 x 8	1 x 12	2 x 12	6 x 8	4 x 12	6 x 12	8 x 12	12 x 12	
Cable Diameter	mm					18				19	22
Cable Weight	kg/km					315				365	485
Minimum Bending Radius	mm	Without Tension				Under Maximum Tension					
		15 x Cable-Ø				25 x Cable-Ø					
Temperature Range	°C	Installation			Transport & Storage			Operation			
		-10 to +50			-40 to +70			-40 to +85			

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	3200 N	$\Delta\alpha$ reversible, fibre strain $\leq 0.33\%$
Max. Operation Tension	IEC 60794-1-2-E1	2200 N	$\Delta\alpha \leq 0.05$ dB, no fibre strain
Crush	IEC 60794-1-2-E3	2000 N / 100 mm, max. 15 min	$\Delta\alpha \leq 0.1$ dB, no damage
Impact	IEC 60794-1-2-E4	15 Nm, 3 impacts, R= 300 mm	$\Delta\alpha \leq 0.1$ dB, no damage
Repeated Bending	IEC 60794-1-2-E6	R=20x D, 100 N, 35 cycles	$\Delta\alpha \leq 0.1$ dB, no damage
Cable Bend	IEC 60794-1-2-E11	R=20x D, 4 turns, 3 cycles	$\Delta\alpha \leq 0.1$ dB, no damage
Torsion	IEC 60794-1-2-E7	100N, +/- 180°, 10 cycles	$\Delta\alpha \leq 0.1$ dB, no damage
Temperature Cycling	IEC 60794-1-2-F1	-40°C to +85°C	$\Delta\alpha \leq 0.1$ dB/km
Water Penetration	IEC 60794-1-2-F5B	sample=3m, water column=1m, 24h	no water leakage under inner sheath

All optical measurements at 1550 nm.

Optical Characteristics

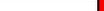
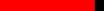
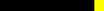
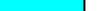
See the attached cabled optical fibre data sheet.

Fire and Environmental Performance

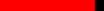
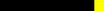
Test	Test Standard	Specified Value	Acceptance Criteria
Flame Non-propagation (single cable)	IEC 60332-1	unburnt cable length	> 50 mm
Smoke Density	IEC 61034-2	transmission of light	> 50 %
Halogen Content	IEC 60754-1	halogen content	< 0.5 %
UV resistance	IEC 60068-2-5	In IEC	In IEC
Heat & oil resistance	IEC 60811-2-1	IRM902, 4h, 70°C	In IEC

Identification

Fibre Colours

No.	1	2	3	4	5	6	7	8	9	10	11	12
Color	blue	orange	green	brown	grey	white	red	black	yellow	violet	pink	aqua
												

Buffer Tube Colours

No.	1	2	3	4	5	6	7	8	9	10	11	12
Color	blue	orange	green	brown	grey	white	red	black	yellow	violet	pink	aqua
												

All filler elements are uncoloured (natural).

Sheath Colour:

Outer sheath colour is black.

Sheath Marking:

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

<Manufacturer> <year of manufacture> <no. and type of fibre> <length marking in meter>

Logistic

Packing:

Wooden drums with protection.

Delivery Lengths:

Standard delivery lengths are 4 km with a tolerance of -1% / +3%

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