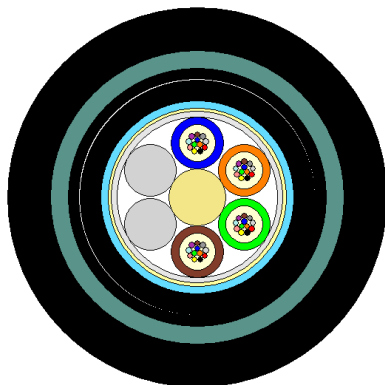


## Steel Armoured Flame Retardant ALPA® Optical Cable

### 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 15 x Cable-Ø				Under Maximum Tension 25 x Cable-Ø				
Temperature Range	°C	Installation -10 to +50		Transport & Storage -40 to +70			Operation -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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