

GRP Series Technical Information

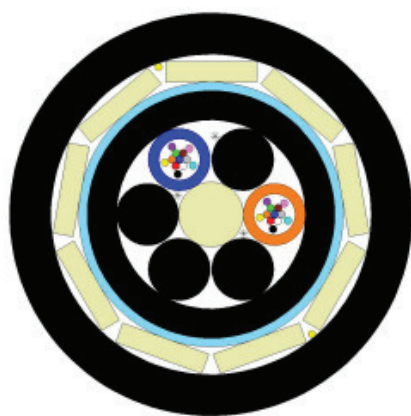
Glass Reinforced Plastic Rodent Proof external underground Loose tube

All Dielectric Rodent Proof Optical Cable

Design IEC 60794-3 ACMA - AS/CA S008

Cable Design

ACMA - AS/CA S008



- Drawing not to scale -

- **Multi-loose tube construction** – Single layer 2 to 144 fibres
- **Central strength member (CSM):** Glass fibre reinforced plastic material (GRP) with or without over-sheathing
- **Tube:** Thermoplastic material, containing up to 12 optical fibres filled with a low viscosity, thixotropic, non-melting gel fully compatible with fibre coating and tube material
- **Stranding:** The required numbers of elements (tubes and fillers) are SZ stranded around the central strength member
- **Longitudinal water tightness:** Water swellable elements (dry-core)
- **Inner sheath:** Polyethylene in compliance with AS 1049
- **Hard Jacket:** UV stabilised polyamide (Nylon) in compliance with AS 1049 integrally bonded to PE inner sheath
- **Armour:** Flat GRP Rods
- **Outer sheath:** UV stabilised polyethylene in compliance with AS 1049. Two ripcords provided beneath the sheath for easy removal

This loose tube dielectric optical cable is designed for external underground installations in ducts or by direct burial. GRP armour provides rodent protection and polyamide provides anti-termite protection.

Technical data

Number of Fibres		2 to 72	84 – 96	108 – 120	132 – 144
Number of elements		6	8	10	12
Tube / Filler diameter	mm	2.1			
Cable nominal diameter	mm	13.8	15.5	17.4	18.4
Cable nominal weight	kg/km	165	210	265	300
Max. installation tension	kN	4.0		5.0	6.0
Max. crush resistance	kN/100mm	4.0 (Short term) / 2.0 (Long term)			
Min. bending radius	mm	At full load 30 x Cable OD At no load 15 x Cable OD			
Temperature range	°C	Installation -0 -> +50	Transport & Storage -20 -> +70		Operation -20 -> +70

Optical Characteristics

See the attached cabled optical fibre data sheet.

Identification

Fibre and Buffer Tube Colours

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

Fillers are either natural (opaque) or black, jelly filled tubes (with no fibres) are also used.

Main mechanical characteristics

Parameter	Test method	Test conditions	Acceptance criteria*
Tensile strength	IEC 60794-1-21-E1	Load: As per cable maximum installation tension in technical data table above	Fibre strain $\leq 0.6\%$. No physical damage and no change in attenuation after test.
Crush	IEC 60794-1-21-E3	Load: As per maximum crush resistance in technical data table above Duration: 10 min (short-term) / 120 min (long-term)	No physical damage. No change in attenuation after test (short-term) or during test (long-term).
Impact	IEC 60794-1-21-E4	Impact energy: 20 J Anvil radius: 300 mm	No physical damage. No change in attenuation after test.
Torsion	IEC 60794-1-21-E7	Sample length: 1 m Rotation: ± 180 degree, 10 cycles	No physical damage. No change in attenuation after test.
Bend	IEC 60794-1-21-E11	Mandrel radius: As per Min. bending radius at no load in technical data table above No. of turns/helix: 4, No. of cycles: 3	No physical damage. No change in attenuation after test.
Bend under tension	Concurrent to tensile test	Mandrel radius: As per Min. bending radius at full load in technical data table above Bend: 360° , 1 turn	No physical damage. No change in attenuation after test.
Temperature cycling	IEC 60794-1-22-F1	Sample length: 1000 m (minimum) Temperature range: As per Operation temperature range in technical data table above	No change in attenuation between 10°C & 30°C . Max. change in attenuation $\leq 0.15\text{dB/km}$ between Min. & Max. operation temperatures.
Cable aging	IEC 60794-1-22-F9	85°C for 168 h followed by Temperature cycling	Max. change in attenuation $\leq 0.10\text{dB/km}$ after test
Water penetration	IEC 60794-1-22-F5C	Sample length=3m, Water height=1m	No water leakage after 24 hours

* All optical measurements for singlemode fibres performed at 1550 nm.

Logistic

Packing:

Timber drums generally to AS/NZS 2857 with flexible cable wrap protection. Steel drums can also be provided upon request.

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