

## Enhanced High Strength Underground Optical Cable OSA-FSM(2-144)HSE

OSA Enhanced High Strength cable is engineered to feature high shear and compression resistance specially designed and tested for direct burial in black, expansive soils. Qualified using enhanced Axial Compression Resistance (ACR) test method.



### CABLE DESIGN

- **Multi-loose tube construction**
- **Central strength member (CSM):** Glass fibre reinforced plastic material (GRP) with or without over-sheathing
- **Tube:** Thermoplastic material, containing up to 12 optical fibres filed with a low viscosity, thixotropic, non-melting gelfully 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 swelable system
- **Sheath:** UV stabilised polyethylene in compliance with AS 1049. Two ripcords provided beneath the sheath for easy removal
- **Outdoor Jacket:** UV stabilised polyamide (Nylon) in compliance with AS 1049 integrally bonded to PE sheath

### Technical Specifications

Number of Fibres		2 to 72	96	144
Number of elements		6	8	12
Cable nominal diameter	mm	14.8	17.4	23.0
Cable nominal weight	kg/km	175	240	395
Max. tensile strength	kN	> 4.0		
Max. crush resistance	kN/100mm	> 6.0 (Short term) / 3.0 (Long term)		
Min. bending radius	MM	At full load		30x Cable OD
		At no load		15x Cable OD
Temperature range	°C	Operation -10 -> +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

#### Sheath Colour:

The outer sheath colour is blue.

#### Sheath Marking:

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

### Main Mechanical Characteristics

Parameter	Test method	Test conditions	Acceptance criteria*
Tube kinking	IEC 60794-1-2-G7	Bend diameter (minimum): 80mm Number of cycles: 5 Number of samples: 10	No kink occurs at the minimum bend diameter and no attenuation increase greater than 0.1 dB occurs
Tensile strength	IEC 60794-1-2-E1 Figure 2	Load: As per cable maximum. Tensile strength in table above.	After 30 minutes the maximum strain on the fibre should not exceed 0.6% and no attenuation increase greater than 0.1 dB occurs

Crush	IEC 60794-1-2-E3	Short time: 10 min Long time: 120 min Load: As per max. crush resistance in table above Number of positions: 3 adjacent sections (ensuring one over tube and one over lay reversal)	No damage to the sheath or to the core structure and no attenuation increase greater than 0.1 dB occurs
Impact	IEC 60794-1-2-E4	Weight: 1.5 kg Height: 0.1 m Anvil radius: 12.5 mm Impacts: 1	After 5 minutes no fibre breaks, no damage to the sheath or to the core structure and no attenuation increase greater than 0.1 dB occurs
Torsion	IEC 60794-1-2-E7	Sample length: 1 m Rotation: a) 180° clockwise, b) return to starting position, c) 180° anticlockwise, d) return to starting position. Four movements constitute one cycle). Complete 10 cycles (a to d) in one minute maximum	During the final tenth cycle at a), c) and after completion (no rotation) check transmitting fibres. No fibre breaks, no damage to the sheath or to the core structure and no attenuation increase greater than 0.1 dB occurs
Bend	IEC 60794-1-2-E11	Mandrel diameter: 30 x Cable OD Bend: 360° (1turn)	No attenuation increase greater than 0.1 dB occurs
Bend under tension	Concurrent to tensile test IEC 60794-1-2-E18A	Mandrel diameter: 60 x Cable OD Bend: 360° (1turn)	After 1minute no fibre breaks, no damage to the sheath or to the core structure and no attenuation increase greater than 0.1 dB occurs from no load to full load
Temperature cycling	IEC 60794-1-2-F1	Sample length: 1000 m (minimum) Temperature range: From – 10 °C to +70 °C	There should be no average attenuation increase at the temperature extremes when compared to the attenuation at ambient temperature. No individual fibre should measure an attenuation greater than 0.15 dB/km
Compression & Shear resistance (Harbour Bridge)	Prysmian internal test method	Sample length: 3m	After the test is completed no damage to the sheath or to the core structure and no attenuation increase greater than 0.1 dB occurs from no load to full load
Water penetration	IEC 60794-1-2-F5B	Sample length = 3m, Water height = 1m	No water leakage after 24 hour
Axial Compression Resistance (ACR)	Prysmian internal test method	Sample length: > 3m Load: 4kN Compression: > 0/1% Lateral deviation: < 0.03 x Cable OD	No attenuation increase greater than 0.1 dB occurs. After the test is completed no damage to the sheath or to the core structure

\* All optical measurements above are performed at 1550 nm except ACR test that is measured at 1625 nm.

## Logistic

### Packing:

Timber Steel drums with NOLCO-FLEX protection

### Delivery Lengths:

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

#### NSW - Silverwater

Unit 4, 52 Holker Street  
Silverwater NSW 2128

E: [sales@opticalsolutions.com.au](mailto:sales@opticalsolutions.com.au)

P: +61 2 9395 1400

F: +61 2 9647 0014

#### NSW - Sydney City

Unit 10, 10 Bradford Street  
Alexandria NSW 2015

E: [sydcity@opticalsolutions.com.au](mailto:sydcity@opticalsolutions.com.au)

P: +61 2 9304 4555

F: +61 2 9700 8055

#### VIC

Unit 3 / 1 Rocklea Drive Port  
Melbourne VIC 3207

E: [vicsales@opticalsolutions.com.au](mailto:vicsales@opticalsolutions.com.au)

P: +61 3 9646 4166

F: +61 3 9646 4155

#### QLD

Unit 2/ 40 Borthwick Ave  
Murarrie QLD 4172

E: [qldsals@opticalsolutions.com.au](mailto:qldsals@opticalsolutions.com.au)

P: +61 7 3399 5280

F: +61 7 3399 9805

#### ACT

22 Isa Street  
Fyshwick ACT 2609

E: [actsales@opticalsolutions.com.au](mailto:actsales@opticalsolutions.com.au)

P: +61 2 6162 4600

F: +61 2 6162 4605

#### WA

28a Teddington Rd  
Burswood WA 6100

E: [wasales@opticalsolutions.com.au](mailto:wasales@opticalsolutions.com.au)

P: +61 8 9361 7000

F: +61 8 9361 7011