OT- 10132746- Ed.10 – EE4955J

RAILWAY ARMOURED FIBER OPTIC CABLE
FVPSP SHEATH FOR DUCT & GROUND INSTALATIONS


Optic Fiber


UV resistant


Water blocked


Rodent Resistant


Good mechancial performance

ROHS Compliant

1.STANDARDS

Fibre: *ITU-T G.652D*

Mechanical and environmental testing methods : IEC 60794-1

2.DESCRIPTION AND APPLICATION

Outdoor Loose tube single mode optical cables of 24 or 48 fibers, with a double black PE sheath. SZ-stranded around the dielectric central strength member with swellable yarns and tapes to avoid the ingress of water, and armoured with a copolymer coated corrugated steel tape for mechanical and rodent's protection. These cables may be pulled or blown into ducts or directly buried.

3.CONSTRUCTION

- ***Central reinforcing element***: Dielectric fibreglass (FRP) with a diameter of 2,6 mm.
- ***Loose tubes***: PBT loose tubes with an outside diameter of 2,5 mm and a wall thickness of 0,4 mm, filled with thixotropic compound and containing 4 or 8 optical fibres according to ITU-T G.652D. Colour coding of tubes and fibres according to tables 1 and 2.
- ***Core formation***: Loose tubes stranded in SZ. Swellable yarns over the central element and a longitudinally placed swellable tape with 10% overlap over the core to prevent the entrance of water.
- ***Inner sheath:*** Black MDPE sheath with a nominal thickness of 0,64 mm, two treated water blocking aramid rip cords are included beneath the sheath to facilitate access to the fibres.
- **Mechanical reinforcement:** Water blocking glass yarns as traction resistant elements are applied between the inner sheath and the steel tape armouring. A swelling tape will be applied in addition to the glass yarns.
- ***Armouring***: Corrugated steel tape 0,15 mm thick, covered on both faces with a copolymer 0,05 mm thick, longitudinally applied over the inner sheath.
- ***Outer sheath:*** Black MDPE sheath with a nominal thickness of 1,27 mm. Four treated water blocking aramid rip cords are included beneath the steel tape and opposite to the overlap to facilitate access to the fibres.
- ***Sheath marking***: The cable sheath will be marked with white ink at intervals of 1 metre with the following information :
    - *CABLESCOM / F.O CABLE / #fibres TT/ Month-year / PROPERTY OF ISRAEL RAILWAYS + Length markings*
    - *Additional customer marking available under request*

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CABLESCOM SPAIN
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4.OPTICAL FIBER CHARACTERISTICS

The parameters of the optical fibers are compliant with the ITU-T G.652D recommendation, Parameters below are the only ones that may be modified after fiber is cabled. In this case, the values indicated here precede the ones on the datasheet.

Optical transmission characteristics of cabled fibre :

Attenuation coefficient:

Individual maximum at 1310 nm ≤ 0,37 dB/km

Individual maximum at 1550 nm ≤ 0,24 dB/km

PMD ≤ 0,20 ps/km$^{1/2}$

TABLE 1: LOOSE TUBES COLOUR CODE AND CABLE CONFIGURATION

	Fibres in cable	
Tube	**24**	**48**
1	Blue	Blue
2	Orange	Orange
3	Green	Green
4	Brown	Brown
5	Slate	Slate
6	White	White
Fibres per tube	4	8

TABLE 2: OPTICAL FIBERS COLOUR CODE

Fibra	1	2	3	4	5	6	7	8	9	10	11	12
Color	Blue	Orange	Green	Brown	Grey	White	Red	Black	Yellow	Violet	Rose	Turquoise
Abrev.	Bl	Or	Gr	Br	Gy	Wh	Rd	Bk	Ye	Vi	Rs	Tu

5.MECHANICAL AND ENVIRONMENTAL CHARACTERISTICS

Maximum pulling strength (Δεf<0,33% and Δα reversible)	IEC 60794-1-E1	2.700 N
Maximum operating load (Δα<0,1 dB/km av., Δα<0,2 indiv.)		1.700 N
Crush Resistance (Δα<0,1 dB/km av., Δα<0,2 indiv.)	IEC 60794-1-E3	2.500 N
Impact Test (Δα<0,1 dB/km av., Δα<0,2 indiv.)	IEC 60794-1-E4	5 Nm. (r = 300mm)
Curvature (Δα<0,1 dB/km av., Δα<0,2 indiv.)	IEC 60794-1-E11	r = 20 x Ø
Repeated bendings (Δα<0,1 dB/km av., Δα<0,2 indiv.)	IEC 60794-1-2 E6	r = 15 x Ø, 5 cycles
Torsion Test (Δα<0,1 dB/km av., Δα<0,2 indiv. No sheath damage)	IEC 60794-1-E7	±180º
Temperature cycling (Δα<0,1 dB/km av., Δα<0,2 indiv.)	IEC 60794-1-F1	-20ºC /+60ºC
Water penetration	IEC 60794-1-F5C	L_{Pwater} ≤ 3 m (24 hours)

All measurements to be made at 1550 nm

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6.DIMENSIONS AND WEIGHT

# fibres	Diameter (mm)	Nominal Weight (kg/km)
24	13,8	168
48	14,2	180

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