

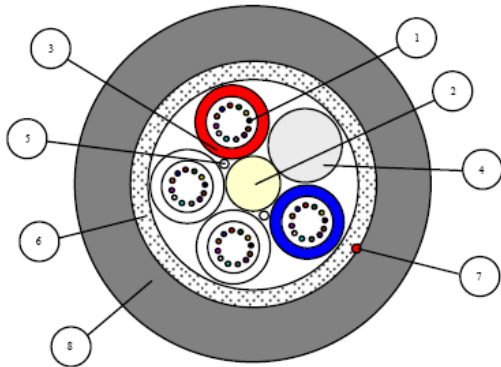
FIBER OPTIC CABLES

OUTDOOR, DIELECTRIC, LOOSE-TUBE, G.652D

CABLE DESCRIPTION – APPLICATIONS

Loose tube, indoor / outdoor, fully dielectric FO cables suitable for drawing or air-blown installation in cable ducts. They are protected against longitudinal moisture penetration through dry, swellable elements. The flame retardant, halogen free outer sheath (FR LSZH) makes them suitable for installation inside buildings or elsewhere that special precautions against fires must be taken. These cables are specially designed for fast and low-cost fiber optic deployment in trunk, urban (metropolitan) or local telecommunication networks and they can be successfully used in any FTTx infrastructure.

CABLE DESIGN



Note 1: 48-fiber cable is illustrated
Note 2: drawing is not to scale

1. **Optical fiber:** Coloured glass fiber.
2. **Central Strength Member (CSM):** Dielectric, glass fiber reinforced plastic (FRP).
3. **Loose tube:** PBT tube, filled with jelly compound.
4. **Dummy element (filler):** PE rod, if needed.
5. **Water blocking element:** Swellable, polyester yarns longitudinally applied.
6. **Reinforcing elements:** Glass yarns with water blocking coating.
7. **Ripcord:** Polyester or aramide thread of sufficient strength.
8. **Outer jacket:** Black, FR LSZH.

No. of fibers	12	16	24	36	48	60	72	96
No. of loose tubes	3	4	4	3	4	5	6	8
No. of fibers / tube	4	4	6	12	12	12	12	12
No. of filler elements	2	1	1	2	1	0	0	0
Outer sheath thickness (nominal) (mm)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Cable overall diameter (nominal) (mm)	9.0	9.0	9.0	10.0	10.0	10.0	10.5	11.5
Cable weight (nominal) (kg/km)	80	80	80	95	95	95	110	140

CABLE MECHANICAL & ENVIRONMENTAL CHARACTERISTICS

No. of fibers		12 – 24	36 – 72	96	
Parameter	Tested according	Specified value			Acceptance criteria
Tensile strength (short term – installation)	IEC 60794-1-2E1	1500 N	2000 N	2700 N	$\Delta\alpha < 0.05$ dB reversible, fiber strain < 0.33 %
Crush resistance (short term)	IEC 60794-1-2E3	2000 N/10cm			$\Delta\alpha < 0.05$ dB reversible, no damage
Impact resistance	IEC 60794-1-2E4	10 N. m, 3 impacts spaced, R= 30 mm			$\Delta\alpha < 0.05$ dB reversible, no damage
Torsion	IEC 60794-1-2E7	$\pm 180^\circ$, 5 cycles, 50 N			$\Delta\alpha < 0.05$ dB reversible, no damage
Bending (static)	IEC 60794-1-2E11	R= 10 x D, 5 turns, 3 cycles			$\Delta\alpha < 0.05$ dB reversible, no damage
Repeated bending (dynamic)	IEC 60794-1-2E6	R= 15 x D, 100 N, 30 cycles			$\Delta\alpha < 0.05$ dB reversible, no damage
Temperature cycling	IEC 60794-1-2F1	-30°C to +70°C			$\Delta\alpha < 0.05$ dB/km
Water tightness	IEC 60794-1-2F5b	3 m cable, 1 m water column, 24 h			no water detected with UV light
Flame propagation	IEC 60332-1	1m cable, 60 seconds			IEC 60332-1
Acidity of combustion gases	IEC 60754-1	0.5 g sheath, 20 minutes, 800°C			HCl < 0.5 %
Acidity of combustion gases	IEC 60754-2	1.0 g sheath, 30 minutes, 935°C			pH > 4.3 , conductivity < 10 μ S/mm.
Smoke density	IEC 61034-2	1 l alcohol			Light transmittance > 60 %

Note: all optical power measurements are at 1550nm.

IDENTIFICATION COLOUR CODING

1. Fiber colours per tube

1	2	3	4	5	6	7	8	9	10	11	12
Red	Green	Yellow	Natural	Brown	Violet	Grey	Turquoise	White	Pink	Orange	Blue

2. Loose tube colours

First	Last	All other	PE fillers
Red	Blue	White	Natural

Note: Other fiber and / or tube colour coding can be provided if requested.