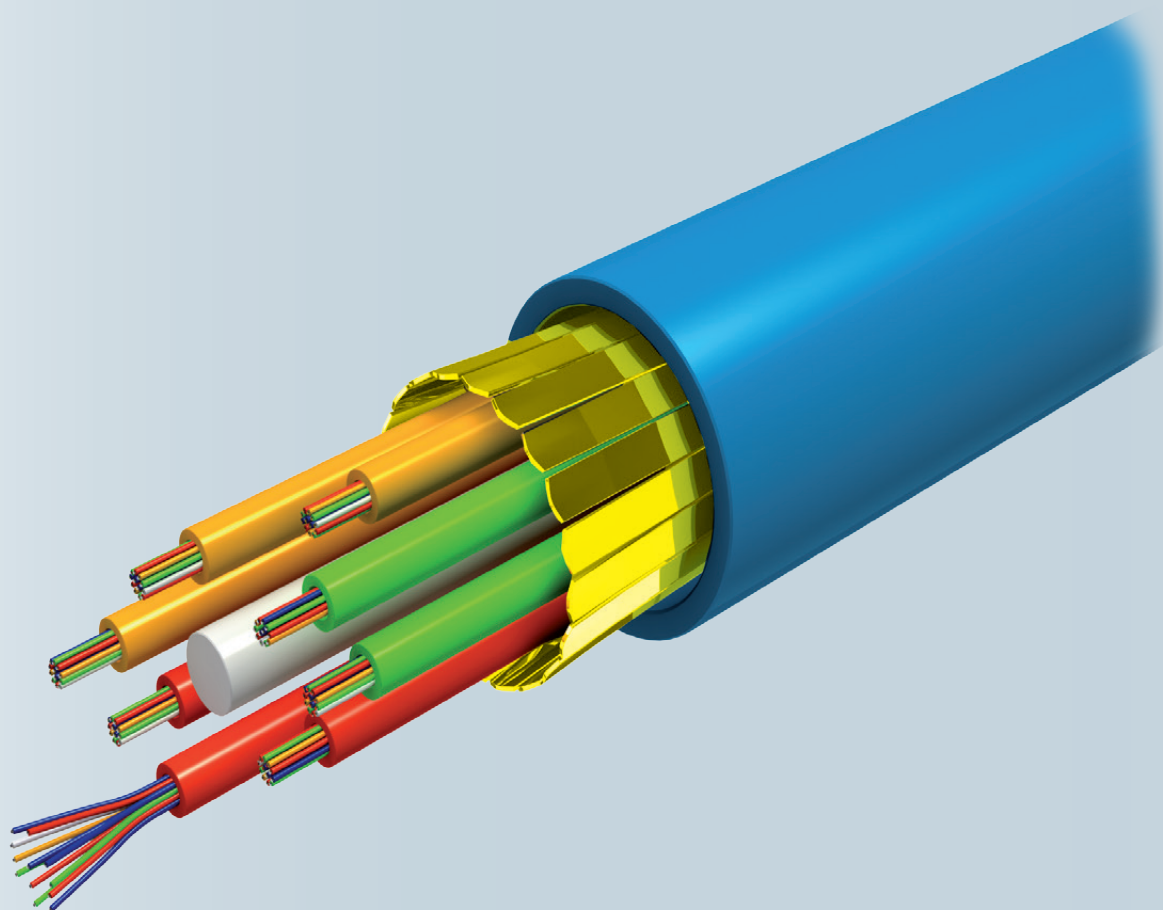


6

Fiber Optic Cable



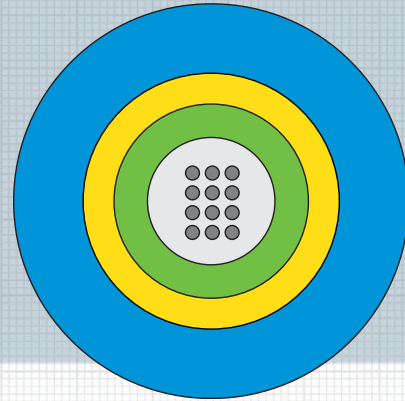
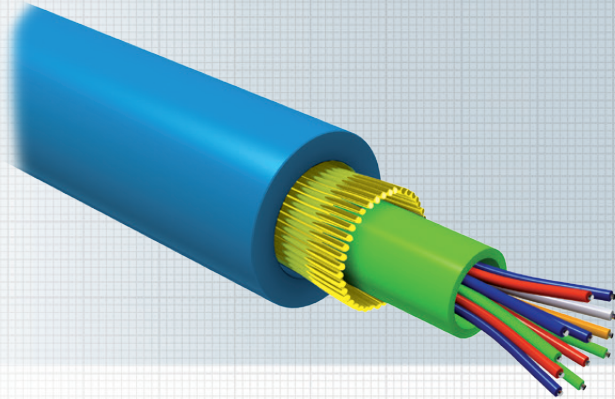
06 Fiber Optic Cable Contents

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Fiber Optic- Cable

Universal Central Tube Cable

2 - 24 fibres



This cable can be used for LAN and WAN backbones, tele-com access lines, fibre to business and fibre to the building drop connections as well as fibre to the home drop and access connections. With its FireBur® LSHF sheathing this cable is ideal for mixed indoor and outdoor installation. This cable features a high tensile strength and a degree of rodent protection, effective in many cases. It is equally suited for installation in ducts and on trays. The cable may be used for direct burial with proper sand back filling.

Standards:

ISO 11801 2nd edition, EN 50173-1:2002, IEC 60794-1

Flame resistance:

LSHF (LSOH): IEC 60332-1-2; IEC 60754-1; IEC 60754-2; IEC 61034-2;
Class E_{ca}

Construction:

| Loose tube | Ø 2.8 mm gel-filled loose tube with 2-16 fibres | Ø 3.5 mm gel-filled loose tube with 24 fibres |
|-------------------|---|---|
| Fibre colour code | 1 Red | 13 Yellow w/mark per 70 mm |
| | 2 Green | 14 White w/mark per 70 mm |
| | 3 Blue | 15 Grey w/mark per 70 mm |
| | 4 Yellow | 16 Turquoise w/mark per 70 mm |
| | 5 White | 17 Orange w/mark per 70 mm |
| | 6 Grey | 18 Pink w/mark per 70 mm |
| | 7 Brown | 19 Yellow w/mark every 35 mm |
| | 8 Violet | 20 White w/mark every 35 mm |
| | 9 Turquoise | 21 Grey w/mark every 35 mm |
| | 10 Black | 22 Turquoise w/mark every 35 mm |
| | 11 Orange | 23 Orange w/mark every 35 mm |
| | 12 Pink | 24 Pink w/mark every 35 mm |
| Strength member | Water-blocked E-Glass fibre elements | |
| Sheath | 1.5mm blue FireBur® sheath, UV stabilized, IEC 50290-2-27 | |

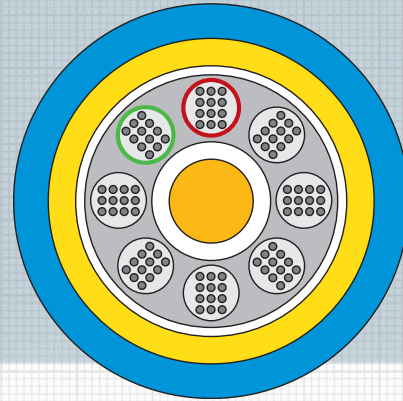
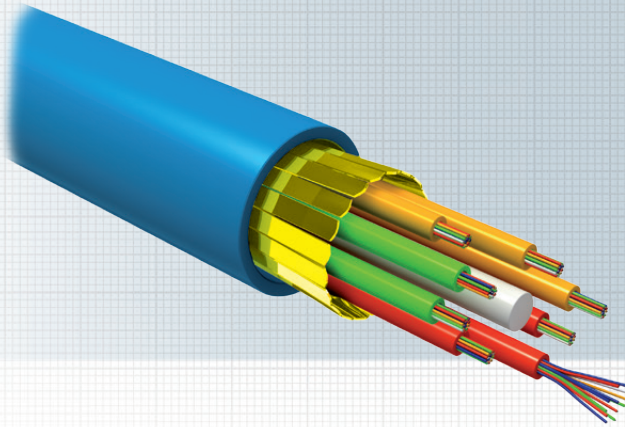


Physical Properties

| Attribute | IEC 60794-1-2 Method | Limits |
|---------------------------------------|----------------------|--|
| Nominal outer diameter | | 2-16 fibres: 7.5 mm 24 fibres: 8.0 mm |
| Nominal weight | | 2-16 fibres: 55 kg/km 24 fibres: 60 kg/km |
| Maximum installation tensile strength | E1 | 1500 N (fibre strain less than 1/2 of proof test level) |
| Short term tensile strength | E1 | 1000 N (fibre strain less than 1/3 of proof test level) |
| Permanent tensile strength | E1 | 700 N (no attenuation change, fibre strain less than 1/4 of proof test level) |
| Compressive strength (crush) | E3 | 2000 N / 100m |
| Impact | E4 | 20 Nm (no attenuation change, no broken cable elements) |
| Torsion | E7 | 5 cycles ± 1 turns |
| Kink | E10 | The cables do not form a kink when a loop is drawn together to a diameter of 200 mm |
| Min. bending radius, unloaded | E11 | R = 60 mm |
| Min. bending radius,loaded | | R = 100 mm |
| Temperature range | F1 | Storage: -40°C to +60°C (short term up to 70°C) Installation: -15°C to +40°C Operation: -30°C to +70°C |
| Water penetration | F5B | no water on free end |
| Heath of combustion | | 2-16 fibres: 1100 MJ/km = 0.31 kWh/m 24 fibres: 1300 MJ/km = 0.36 kWh/m |

Universal Stranded Loose Tube Cable

48 - 144 fibers



- Universal indoor/outdoor cable for LAN, MAN and WAN backbones
- Directly installation in the ground
- Degree of rodent protection, effective in many cases

Specifications:

| | |
|-------------------------|--|
| Standards | ISO 11801 2 nd edition, IEC 60794-2, EN 50 173-1, |
| Flame Resistance | LSHF (FRNC): IEC 60332-1-2; IEC 60754-2; IEC 61034; Class E _{ca} |
| Central strength member | ø2.5 mm FRP rod |
| Loose tube | ø2.3 mm gel-filled loose tubes, with 12 fibres each, up to 18 tubes in two layers, for lay-up refer to B04 |
| Water blocking | The core is water blocked using swell able tape and tread |
| Wrapping | Polyester nonwoven |
| Reinforcement | Layer of glass fibre yarns as reinforcement and rodent protection |
| Ripcord | Polyester ripcord for easy slitting of the sheath |
| Sheath | 1.5 mm FireBur [®] sheath, standard colour blue, halogen free, flame retardant, thermoplastic sheathing compound acc. to EN 50290-2-27, UV stabilised |



Physical Properties

| Attribute | IEC 60794-1-2 Method | Werte | | | | |
|---|----------------------|---|------|------|------|-----|
| Fibre count | | 48 | 72 | 96 | 120 | 144 |
| Nominal diameter [mm] | | | 11.0 | 13.0 | 14.0 | |
| Nominal weight [kg/km] | | | 130 | 165 | 200 | |
| Short term tensile strength (some days) [N] | E1 | > 5000 | | | | |
| Permanent tensile strength [N] | E1 | > 3500 | | | | |
| Crush (compressive strength) [N/100] | E3 | 3000 | | | | |
| Impact [J] | E4 | 20 | | | | |
| Torsion | E7 | 5 cycles ± 1 turns | | | | |
| Kink | E10 | The cables do not form a kink when a loop is drawn together to a diameter 12 times the cable nominal diameter | | | | |
| Minimum bending radius, [mm] | E11 | | 150 | 180 | 200 | |
| Temperature range | F1 | Installation: -40°C to +70°C Operation *): -40°C to +70°C Storage: -40°C to +70°C | | | | |
| Water penetration | F5 | no water on free end | | | | |
| Heath of combustion [MJ/km] [kWh/m] | | | 2000 | 2700 | 3500 | |
| | | | 0.56 | 0.75 | 0.97 | |

*) The cables will operate without any attenuation variation (≤ 0.05 dB) in the temperature interval -30°C to +60°C.
The cables will operate with a maximum attenuation variation of 0.1 dB/km in the temperature interval -40°C to +70°C.