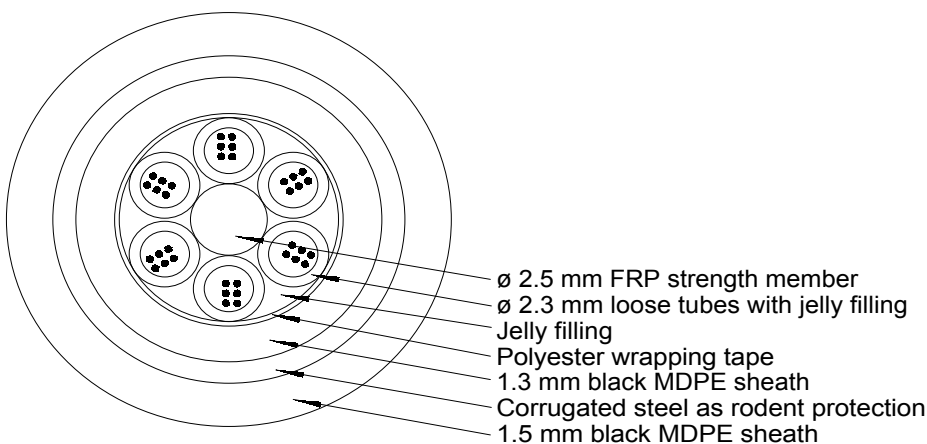




## 6 - 96 fibres optical cable for direct burial, 6 - 96 fibres optical cable for direct burial, Inner MDPE sheath, corrugated steel tape armouring, outer MDPE sheath



- Outdoor data communication connections
- Telecom trunk lines
- Telecom access net connections
- CATV trunk lines

The main application for these cables is for direct burial under difficult laying conditions.

The armouring layer of a 0.155 mm thick steel tape bonded to the outer sheath provides a safe rodent protection.

### GENERAL

This specification covers armoured optical cables with 6 - 96 optical fibres of loose tube construction.

The cables fulfil the requirements of:

- EN 187 000
- IEC60794

The cables have the following type designation according to DIN/VDE:

A- DF 2Y B 2Y n x (6, 8 or 12)  
..... LG;

n is 1 to 8. The number of fibres in the tubes is 6, 8 or 12 depending on the total number of tubes in the cable.

### CABLE CONSTRUCTION

#### OPTICAL FIBRES

The cable can be supplied with any Draka Denmark optical fibre. For optical fibre properties and performance please see the appropriate fibre specification.

The fibres are individually coloured for identification. Colours are according to IEC 60304. See General Information B07 for fibre colour code.

### CABLE CORE

The cable has a ø 2.5 mm glass fibre rod (FRP) as central strength member. For cables with more than 6 tubes, the rod is covered with a black MDPE sheath in order to increase the diameter.

The fibres are contained in jelly filled loose tubes. The loose tubes have a nominal outer diameter of 2.3 mm.

There are 6, 8 or 12 fibres in each of the loose tubes.

6 or 8 loose tubes or dummies are stranded around the central strength member. The lay-up of the cables is given in Tables 3, 4 and 5.

The cable core is water blocked using jelly.

The jellies for filling of the cables fulfil the requirements of IEC 811-5-1.



The cable core is protected by a layer of non-hydroscopic tape.

**SHEATHS**

The cables have a 1.3 mm thick black MDPE inner sheath.

On top of the armouring the cables have a 1.5 mm thick black MDPE outer sheath.

The black MDPE contains 2.5 ± 0.5 % carbon black and fulfils the requirements of IEC 811.

**ARMOURING**

The armouring consists of a corrugated steel tape with thickness 0.155 mm +0.02 mm -0.01 mm.

The steel is electrolytic chromium/chromium oxide coated steel (ECCS): Low carbon mild steel treated to produce a duplex film of metallic chromium on both surfaces adjacent to the steel substrate with a top layer of hydrated chromium oxide or hydroxide.

The amount of chromium and chromium oxide and the tests carried out are in agreement with ASTM A 657 - 87 and EN 10 202: 1989. (Cold reduced electrolytic chromium/chromium oxide coated steel).

The steel tape is coated on both sides with an adherent ethylene copolymer or low density polyethylene. The coating thickness is 0.055 mm ± 0.006 mm.

**CABLE PROPERTIES**

The physical properties of the cables are given in Table 1 and Table 2 below

**Table 1: Physical properties**

| Property                     | Reference according to IEC 794-1 | Reference according to EN 187 000 | Value   |
|------------------------------|----------------------------------|-----------------------------------|---|
| Tensile strength (dynamic)   | E1                               | 501                               | 1800 N  |
| Tensile strength (permanent) | E1                               | 501                               | 1200 N  |
| Compressive strength (crush) | E3                               | 504                               | 3000N   |
| Impact                       | E4                               | 505                               | 20 Nm   |
| Reverse bending              | E6                               | 507                               | 30 reversed bends; R = 300 mm;  |
| Torsion                      | E7                               | 508                               | 5 cycles ±1 turn  |
| Kink                         | E10                              | 511                               | No kink at 12x cable diameter   |
| Temperature range            | F1                               | 601                               | The cables can bear temperature cycling between -40°C to +60°C.<br>The cables will operate without any temperature interval attenuation variation (≤ 0.05 dB) in the -10°C to +60°C.<br>The cables will operate with a maximum attenuation variation of 0.1db/km in the temperature interval - 40°C to +60°C. |
| Water penetration            | F5B                              | 605                               | No water on free end  |



**Table 2a: Cables with 6 fibres/tube. Diameter, weight and minimum bending radius**

| Number of fibres in the cable | Cable nominal outer diameter [mm] | Cable nominal weight [kg/km] | Cable minimum bending radius [mm] according to IEC 794-1 E11 or EN 187 000 511 |
|-------------------------------|-----------------------------------|------------------------------|--|
| 6-36                          | 14.5                              | 215                          | 290  |
| 42-48                         | 16                                | 255                          | 320  |

**Table 2b: Cables with 8 fibres/tube. Diameter, weight and minimum bending radius**

| Number of fibres in the cable | Cable nominal outer diameter [mm] | Cable nominal weight [kg/km] | Cable minimum bending radius [mm] according to IEC 794-1 E11 or EN 187 000 511 |
|-------------------------------|-----------------------------------|------------------------------|--|
| 8-48                          | 14.5                              | 215                          | 290  |
| 56-64                         | 16                                | 255                          | 320  |

**Table 2c: Cables with 12 fibres/tube. Diameter, weight and minimum bending radius**

| Number of fibres in the cable | Cable nominal outer diameter [mm] | Cable nominal weight [kg/km] | Cable minimum bending radius [mm] according to IEC 794-1 E11 or EN 187 000 511 |
|-------------------------------|-----------------------------------|------------------------------|--|
| 8-72                          | 14.5                              | 215                          | 290  |
| 84-96                         | 16                                | 255                          | 320  |

**Table 3: Cables with 6 fibres/tube. Lay-up of cables with 6 - 48 fibres.**

| Number of fibres in the cable | Number of elements (tubes + dummies) | Number of green tubes | Number of white or yellow tubes | Number of red tubes | Number of dummies |
|-------------------------------|--------------------------------------|-----------------------|---------------------------------|---------------------|-------------------|
| 6                             | 6                                    | 1                     | 0                               | 0                   | 5                 |
| 12                            | 6                                    | 1                     | 0                               | 1                   | 4                 |
| 18                            | 6                                    | 1                     | 1                               | 1                   | 3                 |
| 24                            | 6                                    | 1                     | 2                               | 1                   | 2                 |
| 30                            | 6                                    | 1                     | 3                               | 1                   | 1                 |
| 36                            | 6                                    | 1                     | 4                               | 1                   | 0                 |
| 42                            | 8                                    | 1                     | 5                               | 1                   | 1                 |
| 48                            | 8                                    | 1                     | 6                               | 1                   | 0                 |

Note: Cables containing single mode fibres come with yellow tubes.  
 Cables containing multi mode fibres come with white tubes.



**Table 4: Cables with 8 fibres/tube. Lay-up of cables with 8 - 64 fibres**

| Number of fibres in the cable | Number of elements (tubes + dummies) | Number of green tubes | Number of white or yellow tubes | Number of red tubes | Number of dummies |
|-------------------------------|--------------------------------------|-----------------------|---------------------------------|---------------------|-------------------|
| 8                             | 6                                    | 1                     | 0                               | 0                   | 5                 |
| 16                            | 6                                    | 1                     | 0                               | 1                   | 4                 |
| 24                            | 6                                    | 1                     | 1                               | 1                   | 3                 |
| 32                            | 6                                    | 1                     | 2                               | 1                   | 2                 |
| 40                            | 6                                    | 1                     | 3                               | 1                   | 1                 |
| 48                            | 6                                    | 1                     | 4                               | 1                   | 0                 |
| 56                            | 8                                    | 1                     | 5                               | 1                   | 1                 |
| 64                            | 8                                    | 1                     | 6                               | 1                   | 0                 |

Note: Cables containing single mode fibres come with yellow tubes.  
Cables containing multi mode fibres come with white tubes.

**Table 5: Cables with 12 fibres/tube. Lay-up of cables with 12 - 96 fibres**

| Number of fibres in the cable | Number of elements (tubes + dummies) | Number of green tubes | Number of white or yellow tubes | Number of red tubes | Number of dummies |
|-------------------------------|--------------------------------------|-----------------------|---------------------------------|---------------------|-------------------|
| 12                            | 6                                    | 1                     | 0                               | 0                   | 5                 |
| 24                            | 6                                    | 1                     | 0                               | 1                   | 4                 |
| 36                            | 6                                    | 1                     | 1                               | 1                   | 3                 |
| 48                            | 6                                    | 1                     | 2                               | 1                   | 2                 |
| 60                            | 6                                    | 1                     | 3                               | 1                   | 1                 |
| 72                            | 6                                    | 1                     | 4                               | 1                   | 0                 |
| 84                            | 8                                    | 1                     | 5                               | 1                   | 1                 |
| 96                            | 8                                    | 1                     | 6                               | 1                   | 0                 |

Note: Cables containing single mode fibres come with yellow tubes.  
Cables containing multi mode fibres come with white tubes.