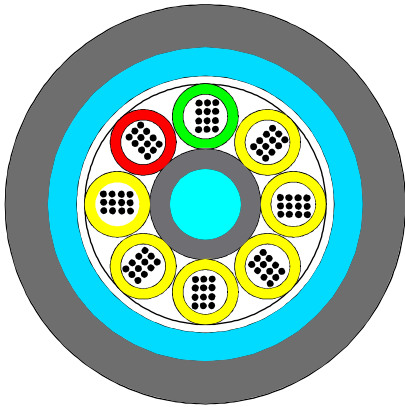


## N03: GARPE<sup>®</sup> 3 FR plus, reinforced indoor cable

6 – 96 Optical fibres: 6, 8 or 12 fibres per  $\varnothing$  2.3 mm tube, rodent protection, FireRes<sup>®</sup> sheath, IEC 60332-3-24

EN 50 173-1

IEC 60794-2-21



### Application

Tunnels  
 Metro lines  
 Installation: Indoor and in ducts outdoor

### Standards

EN 187 000  
 IEC 60794-2  
 IEC 60794-2-20  
 IEC 60794-2-21  
 ISO 11801 2<sup>nd</sup> edition  
 EN 50 173-1

### Construction

Central strength member	$\varnothing$ 2.5 mm FRP rod
Loose tube	$\varnothing$ 2.3 mm jelly filled loose tubes, with 2 – 12 fibres each, up to 22 tubes in two layers, for lay-up refer to B04
Water blocking	The core is waterblocked using swellable tape and tread
Wrapping	Polyester nonwoven
Reinforcement	Heavy layer of glass fibre yarns as reinforcement and rodent protection, effective in most cases.
Ripcord	Polyester ripcord for easy slitting of the sheath
Sheath	1.5 mm FireRes <sup>®</sup> , standard colour: Grey, UV stabilized, EN 50290-2-27



## N03: GARPE<sup>®</sup> 3 FR plus, reinforced indoor cable

### Fire rating

IEC 60332-1-2	Single vertical wire test,
IEC 60332-3-24 = IEC 332-3C	Vertically-mounted bunched wires and cables
IEC 60754-1	No halogens
IEC 60754-2	No acid matters
IEC 61034-2	No dense smoke

### Heat of combustion

Fibre count; 6 fibre/tube	Fibre count; 8 fibre/tube	Fibre count; 12 fibre/tube		
6-36	8-48	12-72	2000 MJ/km	0.56 kWh/m
42-48	56-64	84-96	2600 MJ/km	0.72 kWh/m

### Physical properties

IEC 60974-1-2

Tensile strength (dynamic)	E1	6000 N
Tensile strength (permanent)	E1	4000 N
Compressive strength (crush)	E3	3000N
Impact	E4	25 Nm
Torsion	E7	5 cycles $\pm$ 1 turn
Kink	E10	The cables do not form a kink when a loop is drawn together to a diameter 12 times the cable nominal diameter
Temperature range	F1	The cables can bear temperature cycling between -40 °C to +70 °C. The cables will operate without any attenuation variation ( $\leq$ 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.
Water penetration	F5	No water on free end

### Mechanical properties

Fibre count; 6 fibre/tube	Fibre count; 8 fibre/tube	Fibre count; 12 fibre/tube	Nominal diameter	Nominal cable weight	Minimum bending radius
6-36	8-48	12-72	13 mm	160 kg/km	160 mm
42-48	56-64	84-96	14.5 mm	210 kg/km	175 mm

### Transmission characteristics

IEC 60793-2

Refer to the fibre data sheets

### Type designation cross reference

DIN/VDE	I/A- D Q (ZN) B H n x (6, 8 or 12)... LG; n is 1 to 8
Draka Denmark	LTnnnmm-73-xxx; nnn is the fibre count, mm the fibre type