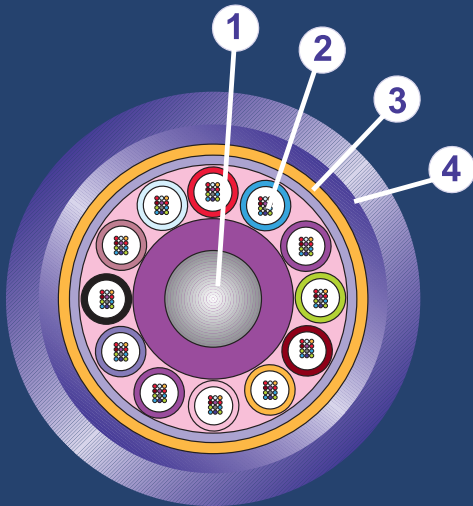


Cable type A-DQ(ZN)2Y 12x12

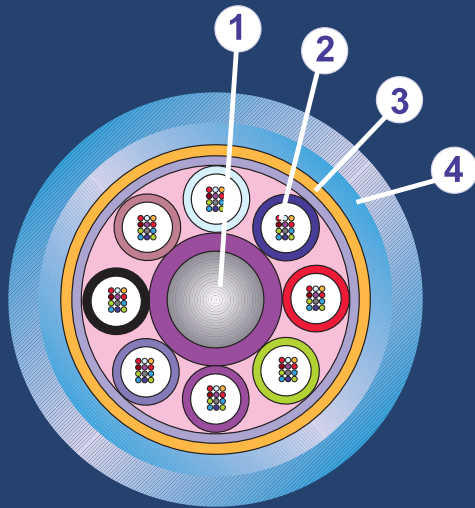


- 1. Central strength member :**
glass FRP – Ø 3.3mm in PE sheath with outer diameter of 7.6mm; the sheath of the central strength member is wrapped with two water-blocking threads with left and right stranding
- 2. Buffer tubes:** 12 PBT buffer tubes Ø 2.6mm filled with hydrophobic compound, type TFC 1219 (MWO company), contain twelve single-mode fibers, type SM.10/125.04UV (Fujikura Ltd.), with S-Z stranding around the central strength member. The tubes are wrapped with fixing and water-blocking tapes
- 3. Peripheral strength member:** Tvaron aramid yarn, type 1055, 8050 dtex, 4 pieces.
- 4. Black PE outer sheath** 1,5 + 0,3 mm thick, a rip-cord is inside the sheath

Cable technical parameters

Cable tests	Standard	Specified value	Permissible Variations
Permissible tensile force	IEC 794-I-E1	2500 N	$\Delta \alpha \leq 0.05\text{dB}/100\text{m}$
Permissible crush force	IEC 794-I-E3	1500 N/ 10cm, 1min	$\Delta \alpha \leq 0.1\text{dB}$
Shock	IEC 794-I-E4	10 Nm, 3 shocks	$\Delta \alpha$ reversible
Bending	IEC 794-I-E6	15 x cables diameter	$\Delta \alpha \leq 0.05 \text{ dB}/\text{km}$
Temperature cycling	IEC 794-I-F1	-30°C x+70°C	$\Delta \alpha \leq 0.1 \text{ dB}/\text{km}$
Water penetration	IEC 794-I-F5	Cable 3m long, water 1 m deep, 72 hours	No leakage
Cable outer diameter, mm	16,6 +/- 0.3/0.1	Transportation and storage	-30°C to +70°C
Cable mass, kg/km	207+/- 2/1	Cable laying	-10°C to +50°C
Cable production length, m	4000 + 2%	Min. radius of bending	20 x cable outer diameter

Cable type A-DF(ZN)2Y 8x12

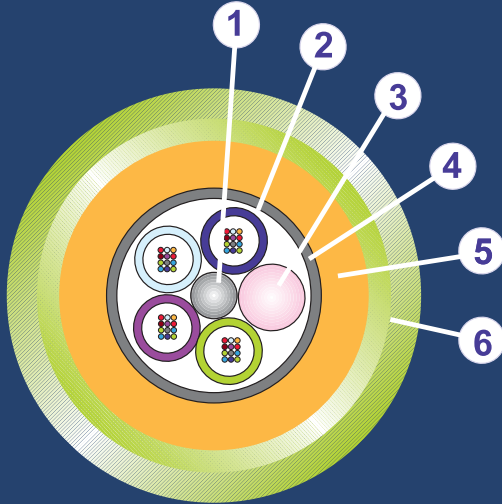


- 1. Central strength member :**
glass FRP – Ø 2.6 mm PE sheath Ø 4.3 mm
- 2. Buffer tubes:** 8 buffer PBT tubes (Du Pont “Crastin CE 1085”) Ø 2.6 +/- $^{0.1}_{0.1}$ mm filled with TFC 1219 compound (MWO company), each tube contains twelve single-mode fibers, type SM.10/125.04UV (Fujikura company), the tubes are S-Z stranded around the central strength member and wrapped with “Lenzing” three fixing tapes; the space between the tubes is filled with Naptel 851 (BP company) hydrophobic compound
- 3. Peripheral strength member:** aramid yarn or Glass Rovings
- 4. Black HDPE (low pressure) outer sheath,** sheath thickness: 1.5 + 0.3 mm

Cable technical parameters

Cable tests	Standard	Specified value	Permissible Variations
Permissible tensile force	TU 16.	2700 N	$\Delta \alpha \leq 0.05$ dB
Permissible tensile force	TU 16.	1500 N/10 cm	$\Delta \alpha \leq 0.05$ dB
Temperature cycling	TU 16.	-20°C to + 60°C	$\Delta \alpha \leq 0.05$ dB
Water penetration	GOST PMЭ K	Cable 3m long, water 1 m deep, 24 hours	No leakage
Cable outer diameter, mm	13,4 +/- $^{0.3}_{0.1}$	Transportation and storage	-25°C to +70°C
Cable production length, m	4000 +/- 80	Min. radius of bending	20 x cable outer diameter

Cable type A-DQ(ZN)2Y 4(5)x12



1. Central strength member :

glass FRP – Ø 2.1 mm wrapped with two water-blocking threads with left and right stranding

2. Buffer tubes: 4 PBT buffer tubes Ø 2.8^{+/- 0.1} mm filled with hydrophobic compound, type TFC 1219 (MWO company); each tube contains twelve single-mode optical fibers, type SM.10/125.04UV (Fujikura Ltd.); the tubes and a dummy tube are stranded S-Z stranding around the central strength member; wrapped with “Lenzing” fixing tapes; a water-blocking tape is applied on the tube stranding

3. PE dummy tube Ø 2.8^{+/- 0.1} mm – 1 piece

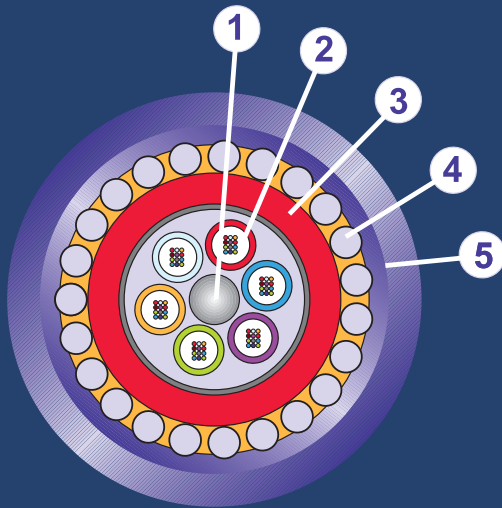
4. Water-blocking tape, type 3E1101, 32 mm wide

5. Peripheral strength member: E-Glass Roving 600 tex-01, 24 pieces

Cable technical parameters

Cable tests	Standard	Specified value	Permissible Variations
Permissible tensile force	EN 187000,501	2700 N	$\Delta \alpha \leq 0.5 \text{ dB}/100\text{m}$
Permissible crush force	EN 187000,504	1500 N/ 100mm	$\Delta \alpha \leq 0.01 \text{ dB}$
Shock	EN 187000,505	25 Nm, r=300mm, 3 shocks	$\Delta \alpha$ reversible
Bending	EN 187000,507	20 x cables diameter	$\Delta \alpha \leq 0.05 \text{ dB}/\text{km}$
Temperature cycling	EN 187000,601	-20°C to +60°C	$\Delta \alpha \leq 0.01 \text{ dB}/\text{km}$
Water penetration	EN 187000,605	Cable 3m long, water 1 m deep, 72 hours	No leakage
Cable outer diameter, mm	12,7 +/- $\begin{smallmatrix} 0.3 \\ 0.1 \end{smallmatrix}$	Transportation and storage	-25°C to +70°C
Cable mass, kg/km	139 +/- $\begin{smallmatrix} 2 \\ 1 \end{smallmatrix}$	Cable laying	-5°C to +50°C
Cable production length, m	4000 + 80	Min. radius of bending	20 x cable outer diameter

Cable type A-DF(ZN)2YL(SR)2Y 6x8

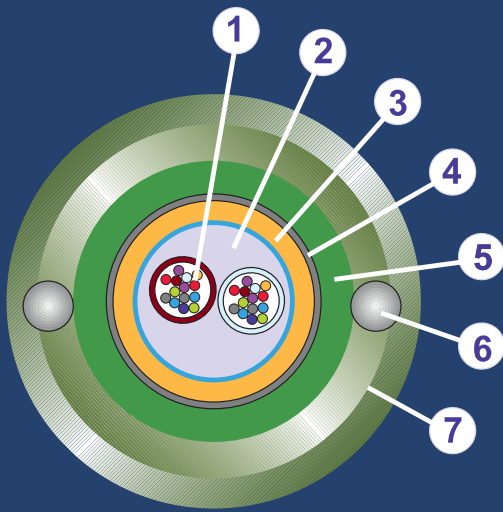


1. **Central strength member:**
glass FRP Ø 2.5 mm, “Polystal”
2. **Buffer tubes:** 6 buffer PBT tubes (Du Pont “Crastin CE 1085”) Ø 2.0 +/- 0.1 mm filled with TFC 1219 compound (MWO company); each tube contains single-mode fibers, type SM.10/125.04.UV (Fujikura Ltd.); the tubes are 0S-Z stranded around the central strength member and wrapped with “Lenzing” fixing tapes; the space between the tubes is filled with naptel 851 (BP company) hydrophobic compound
3. **PE intermediate sheath** of PE, thickness – 0.75 mm +/- 0.1mm with laminated Al-PE tape of thickness 0.2mm, outer diameter 9.6 +/- 0.3_{0.1} mm
4. **Armor** of 24 zinc-coated steel wires with diameter 1.4mm, length of twist 202 +/- 20mm
5. **Black low pressure PE outer sheath**, thickness 2.0 + 0.3 mm

Cable technical parameters

Cable tests	Standard	Specified value	Permissible Variations
Permissible tensile force	TU 16-K11-70-97	7000 N	$\Delta \alpha \leq 0.03$ dB
Permissible crush force	TU 16-K11-70-97	5000 N/ 10cm	$\Delta \alpha \leq 0.03$ dB
Temperature cycling	TU 16-K11-70-97	-40°C to +70°C	$\Delta \alpha \leq 0.05$ dB/km
Water penetration	GOST PmЭK 794	Cable 3m long, water 1m deep, 24 hours	No leakage
Cable outer diameter, mm	16,4 +/- 0.3 _{0.1}	Transportation and storage	-60°C to +70°C
Cable mass, kg/km	481 +/- 2 ₁	Cable laying	-10°C to +50°C
Cable production length, m	4000 +/- 200 ₀	Min. radius of bending	20 x cable outer diameter

Cable type A-DF(ST)(ZS)2Y



1. Optical fiber
2. Filling compound
3. Uni tube
4. Filling compound
5. Steel corrugated armor
6. Steel wire
7. Outer sheath

Cable technical parameters

Application: for laying in cable ducts, tubes, conduits, headers over bridges and in shafts

Type and number of optical fibre: single-mode standard, single-mode with non-zero shifted dispersion and multi-mode, 4-24

Outer diameter : 11.2 to 13.9 mm

Mass: 134 to 203 kg/km

Permissible tensile force: not less than 2.7 kN

Permissible compression stress: not less than 0.4 kN/cm

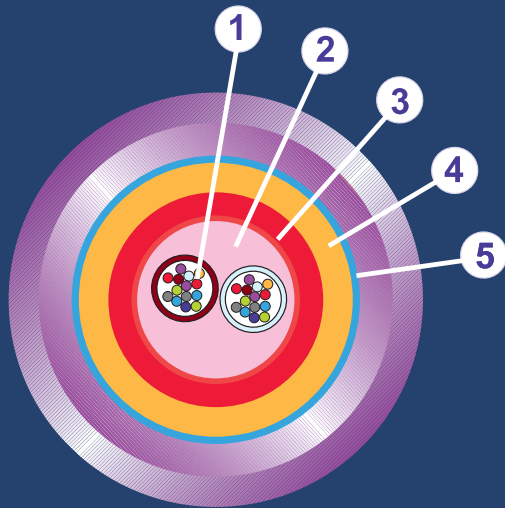
Min. bending radius: 220 to 280 mm

Operating temperature: -40 °C to + 60 °C

Production length: 6.000 m

Cable service life: not less than 25 years

Cable type A-DF(ZN)(L)2Y



1. Optical fiber
2. Filling compound
3. Uni tube
4. Aramide yarn
5. laminated aluminium-polyethelene

Cable technical parameters

Application: for laying in plastic tubes by pneumatic method

Type and number of optical fibre: single-mode standard, single-mode with non-zero shifted dispersion and multi-mode, 4-24

Outer diameter : 10.4 to 12.6 mm

Mass: 87 to 129 kg/km

Permissible tensile force: not less than 2.7 kN

Permissible compression stress: not less than 0.4 kN /cm

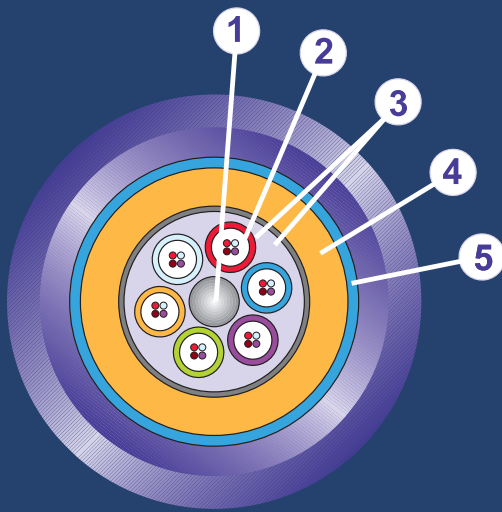
Min. bending radius: 220 to 250 mm

Operating temperature: -40 °C to + 60 °C

Production length: 6.000 m

Cable service life: not less than 25 years

Cable type A-DF(ZN)(L)2Y



- 1. Central strength member: GFRP
- 2. Tube
- 3. Filling compound
- 4. Aramide yarn
- 5. Laminated aluminium-polyethelene sheath

Cable technical parameters

Application: for laying in plastic tubes by pneumatic method

Type and number of optical fibre: single-mode standard, single-mode with non-zero shifted dispersion and multi-mode, 4-144

Outer diameter : 10.6 to 19.9 mm

Mass: 90 to 286 kg/km

Permissible tensile force: not less than 2.7 kN

Permissible compression stress: not less than 0.4 kN /cm

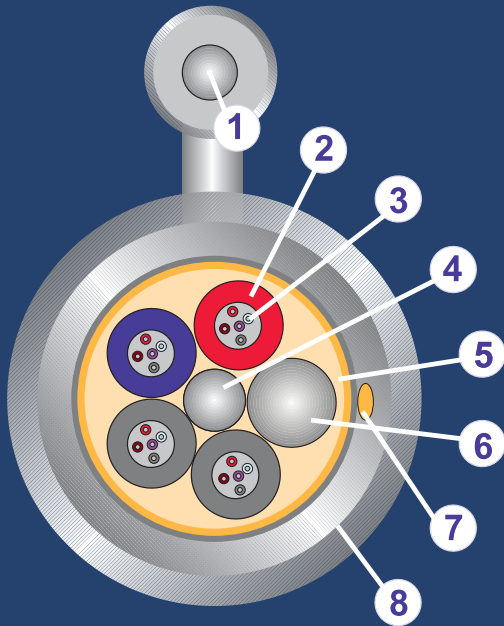
Min. bending radius: 200 to 400 mm

Operating temperature: -40 °C to + 60 °C

Production length: 6.000 m

Cable service life: not less than 25 years

Cable type DT – 07 – 2 – 5/24



1. Steel rope 4.0 mm
2. Buffer tube
3. Optic fiber
4. Central member
5. Flooding compound
6. Filler Rod
7. Ripcord
8. Outer Jacket

Cable technical parameters

Quantity of tubes	5
Fiber count per tube	6
Fiber type	SM-M
Core design	1 + 5
Outer size mm	18.3 x 11.4
Weight kg/km	210
Standard length km	4
Tensile load N	7000
Crush	N/10 sm

Mechanical Properties and Environmental Behaviour

Bending Radius	no Load	15 x D	D = cable diameter
	under Load	20 x D	
Install. Factor	Span	50	
	Install. Sag	0.5	
Temperatures	Operatio	-60°C to +70°C	
	Installation	-10°C to +50°C	
	Storage/Shipping	-60°C to +70°C	