

TKF

Fibre Optic Cables



Broadband

- Indoor fibre optic cables
- Outdoor fibre optic cables
- Aerial cables
- Universal fibre optic cables
- Miniaturised cables and Fibre units
- Single mode & Multimode Fibres



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About TKF

BV Twentsche Kabelfabriek (TKF) was founded in 1930 and has grown from a local Dutch cable manufacturer to an international leader in cable technology, servicing customers all around the globe.



production in 1986 and has acquired a leading position in the international broadband market, providing single



an internationally operating group of companies, focusing on development and delivery of innovative Telecom, Building and Industrial Solutions. The building blocks forming these innovative solutions are technologies,



TKF has dedicated itself to efficient and reliable cable solutions, matching specific customer requirements – looking for longterm relationships – building bridges between a growing number of professional partners. TKF started optical fibre cable

mode and multimode fibre cables to various European operators, installers and end-customers.

TKF is a full member of TKH Group,

know-how, products, and value added services such as consulting, development, assembly and logistic support. TKH strategy is aimed at offering solutions, and strives for a high return on investment for her clients.

Benefit from our expertise

TKF offers its customers a broad technology portfolio ranging from optical fibre cables for long-haul to short-haul applications.

TKF is a ISO-9001 “overall organisation” company as well as ISO-4001 “environmental” certified company and is regularly audited and approved by the Dutch Electrical Board (KEMA), allowing TKF to bear the KCQ hallmark on its products (KEMA Certified Quality).

TKF Technology Portfolio							
Application / Technology	LTC	CTC	LTCM	CTMC	MUC	EPFU	OPGW
OF-cables for long-haul applications	v						v
OF-cables for short-haul applications	v	v	v	v	v	v	
Broadband Networks							
Telecom	v	v	v	v	v	v	
CATV	v	v	v	v	v	v	
FTTX	v	v	v	v	v	v	
LAN/WAN	v	v					
Security	v	v					
Industry Networks							
Proces Industry	v	v					
Rail	v	v					
Marine & Offshore	v	v					
Energy Distribution	v						v

Single mode optical fibres

TKF single mode fibres are manufactured using VAD manufactured preforms, currently considered the best process for manufacturing of single mode optical fibres. With these fibres TKF offers an excellent telecommunication medium, not only for long-haul applications but also for expanding access networks. TKF offers 3 qualities

that all meet the requirements of the ITU-T G.652.D standard. The WideBand fibre designed for 10 and 40 Gbit/s systems has excellent bending properties and is equipped for CWDM, operating in the full wavelength range from 1285 to 1625 nm. The Premium WideBand adds a reduced water peak and enhanced

geometrical properties for lower connection losses. Our advanced and unique solution is the **Premium WideBand Plus**, a “no water peak fibre” with the best geometrical and optical properties for the lowest connector losses.

Dimensions single mode fibre		Units	Matched cladding single mode optical fibres			
Standard / Available quality		-	Requirements (ITU-T G.652.D & IEC 60793, type B1.3)	WideBand	Premium WideBand	Premium WideBand Plus
Core/cladding concentricity		µm	≤ 0.6	≤ 0.6	≤ 0.5	≤ 0.4
Cladding diameter		µm	125.0 ± 1	125.0 ± 0.7	125.0 ± 0.6	125.0 ± 0.5
Cladding non-circularity		%	≤ 1.0	≤ 1.0	≤ 0.8	≤ 0.6
Coating diameter		µm	245 ± 10	245 ± 5	245 ± 5	245 ± 5
Coating/cladding concentricity		µm	≤ 12.5	≤ 12	≤ 10	≤ 8

Optical Properties single mode fibre		Units	Requirements (ITU-T G.652.D & IEC 60793, type B1.3)	WideBand	Premium WideBand	Premium WideBand Plus
Mode field diameter	1310 nm	µm	8.6 - 9.5 tolerance ± 0.6	9.2 ± 0.5	9.2 ± 0.4	9.2 ± 0.3
	1550nm	µm	-	10.4 ± 0.6	10.4 ± 0.5	10.4 ± 0.4
Cut-Off Wavelength	Cabled fibre	nm	≤ 1260	≤ 1260	≤ 1260	≤ 1260
Zero dispersion Wavelength		nm	1300 - 1324	1300 - 1322	1300 - 1322	1300 - 1322
Zero dispersion slope		ps/nm ² .km	≤ 0.092	≤ 0.092	≤ 0.091	≤ 0.090
Dispersion coefficient	1285-1330nm	ps/nm.km	-	≤ 3.4	≤ 3.2	≤ 3.0
	1550nm	ps/nm.km	-	≤ 18	≤ 17.0	≤ 16.5
	1625nm	ps/nm.km	-	≤ 22	≤ 21.0	≤ 20.5
PMD ₀ coefficient	Cabled fibre	ps/√km	≤ 0.20	≤ 0.20	≤ 0.20	≤ 0.20
Effective Group Refractive Index	1310/1550/1625nm	-	-	1.465	1.465	1.465
Attenuation ¹	1310nm (α ₁₃₁₀)	dB/km	≤ 0.40	≤ 0.35	≤ 0.33	≤ 0.32
	1383nm (α ₁₃₈₃)	dB/km	≤ α ₁₃₁₀₋₁₆₂₅ ²	≤ 0.34	≤ 0.32	≤ 0.29
	1550nm (α ₁₅₅₀)	dB/km	≤ 0.30	≤ 0.21	≤ 0.20	≤ 0.19
	1625nm (α ₁₆₂₅)	dB/km	≤ 0.40	≤ 0.23	≤ 0.22	≤ 0.21

Mechanical Properties single mode fibre		Units	Requirements (ITU-T G.652.D & IEC 60793, type B1.3)	WideBand	Premium WideBand	Premium WideBand Plus
Proof test	Fibre strain	%	-	≥ 1	≥ 1	≥ 1
	Fibre stress	GPa	≥ 0.69	≥ 0.7	≥ 0.7	≥ 0.7
Dynamic stress corrosion susceptibility factor n _d	Unaged		-	≥ 20	≥ 20	≥ 20
	Aged		-	≥ 20	≥ 20	≥ 20
Bending sensitivity 100 turns Ø50mm	1550nm	dB	-	≤ 0.05	≤ 0.05	≤ 0.05
Bending sensitivity 100 turns Ø60mm	1625nm	dB	≤ 0.1	≤ 0.05	≤ 0.05	≤ 0.05
Coating strip force	Average	N	≥ 1 & ≤ 5	3	3	3
	Maximum	N	≥ 1.0 & ≤ 8.9	1.3 - 8.9	1.3 - 8.9	1.3 - 8.9
Fibre Curl	Minimum radius	m	≥ 2	4	4	4

¹ Prior to cabling

² Post hydrogen ageing performance

Multimode optical fibres

TKF multimode fibres are produced with the MCVD process enabling low loss and high bandwidth to serve in most advanced data communication systems. The specially designed primary coating provides a low level of microbending sensitivity.

TKF multimode fibres comply with ISO 11801, IEC 60793 A1a and A1b standards and can be used in various applications like:

- OM1 and OM2 grades of 50/125 µm fibre and enhanced versions
- GigaBand 150, GigaBand 300 (OM3) and GigaBand 500 fibre, laser optimised 50/125 µm types for 10 Gbit/s transmission at 850 nm over 150, 300 and 500 metres
- OM1 and OM2 grades of 62.5/125 µm fibre and enhanced versions
- GigaBand 300 and GigaBand 500 fibre, laser optimised 62.5/125 µm types for 1 Gbit/s transmission at 850 nm over 300 and 500 metres

Dimensions multimode fibre	Units	Graded index 50/125µm		Graded Index 62.5/125 µm	
Standard / Available quality	-	IEC 60793-2-10 requirements	All available grades	IEC 60793-2-10 requirements	All available grades
Fibre type	-	A1a	A1a	A1b	A1b
Core diameter	µm	50 ± 3	50 ± 2.5	62.5 ± 3	62.5 ± 2.5
Core non-circularity	%	≤ 6	≤ 6.0	≤ 6	≤ 6.0
Core/cladding concentricity	µm	≤ 3	≤ 1.5	≤ 3	≤ 1.5
Cladding diameter	µm	125 ± 2	125 ± 1.0	125 ± 2	125 ± 1.0
Cladding non-circularity	%	≤ 2.0	≤ 1.0	≤ 2.0	≤ 1.0
Coating diameter	µm	245 ± 10	245 ± 5	245 ± 10	245 ± 5
Coating/cladding concentricity	µm	≤ 12.5	≤ 12	≤ 12.5	≤ 12

Optical properties multimode fibre 50/125 µm	Launching conditions	IEC-type	ISO type	Attenuation ³		OFL-BW ⁴		EMB ⁵	Transmission distance @ 850 nm		Numerical Aperture
				dB/km		MHz.km			m		
				850nm	1300nm	850nm	1300nm	850nm	GbE ⁶	10-GbE ⁷	-
Standard grade	LED ⁸ / LD	A1a.1	> OM2	2.4 - 2.5	0.5 - 0.7	600	600	-	-	-	0.200 ± 0.015
Premium Grade	LED / LD ⁹	A1a.1	> OM2	2.4 - 2.5	0.5 - 0.7	600	1200	-	-	-	0.200 ± 0.015
GigaBand 150	LASER	A1a.1	< OM3	2.5	0.7	700	500	950	750	150	0.200 ± 0.015
GigaBand 300	LASER	A1a.2	OM3	2.5	0.7	1500	500	2000	1000	300	0.200 ± 0.015
GigaBand 500	LASER	A1a.2	> OM3	2.5	0.7	3000	500	4000	-	500	0.200 ± 0.015

Optical properties multimode fibre 62.5/125 µm	Launching conditions	IEC-type	ISO type	Attenuation ³		OFL-BW		Transmission distance GbE		Numerical Aperture
				dB/km		MHz.km		m		
				850nm	1300nm	850nm	1300nm	850nm	1300nm	-
Premium Grade	LED	A1b	OM1	2.7 - 3.0	0.6 - 0.8	200	500	-	-	0.275 ± 0.015
GigaBand 300	LASER	A1b	-	2.7 - 3.0	0.6 - 0.8	-	-	300	500	0.275 ± 0.015
GigaBand 500	LASER	A1b	-	2.7 - 3.0	0.6 - 0.8	-	-	500	1000	0.275 ± 0.015

Mechanical Properties multimode fibre		units	Requirements	All types of 50/125 µm	All types 62.5/125 µm
Proof test	Fibre strain	%	-	≥ 1	≥ 1
	Fibre stress	GPa	≥ 0.69	≥ 0.7	≥ 0.7
Dynamic stress corrosion susceptibility factor n _d	Unaged		-	≥ 20	≥ 20
	Aged		-	≥ 20	≥ 20
Bending sensitivity 100 turns Ø75mm	850 & 1300 nm	dB	-	≤ 0.5	≤ 0.5
Coating strip force	Typical average	N	≥ 1 & ≤ 5	3	3
	Maximum	N	≥ 1.0 & ≤ 8.9	1.3 - 8.9	1.3 - 8.9

³ Prior to cabling

⁴ OFL-BW - Overfilled Launch Bandwidth

⁵ EMB - Effective Modal Bandwidth

⁶ GbE - Gigabit Ethernet

⁷ 10-GbE - 10-Gigabit Ethernet

⁸ LED - Light Emitting Diode

⁹ LD - Laser Diode

Symbols



Rodent protected

The cable is designed to protect the core from damage caused by rodents.



Radial water blocking

The outer sheath of the cable is designed and well tested to prevent water entering into the cable. The cable is provided with a moisture barrier that prevents radial ingress of water.



Rodent resistant

The cable is provided with a corrugated steel tape underneath the outer sheath.



Longitudinal water blocking

Due to the cable construction and the materials used, water inside the core cannot spread through the cable longitudinally.



Flame-retardant, halogen-free outer sheath

The outer sheath of the cable is made of a flame-retardant and selfextinguishing material. The material is non-toxic and non-corrosive.

Fibre colours and tube colours

Colours of Fibres inside tubes

#	Group 1	#	Group 2
1	Red	13	Red +t ¹¹
2	Green	14	Green +t
3	Blue	15	Blue +t
4	Yellow	16	Yellow +t
5	White	17	White +t
6	Grey	18	Grey +t
7	Brown	19	Brown +t
8	Violet	20	Violet +t
9	Turquoise	21	Turquoise +t
10	Black	22	Natural
11	Orange	23	Orange +t
12	Pink	24	Pink +t

Colours of Fibres inside EPFU

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

Colours of stranded Loose Tubes

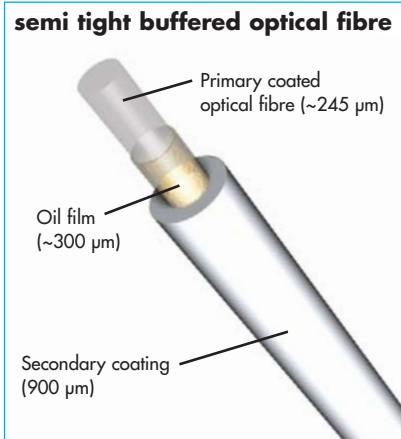
#	1 st layer	#	2 nd layer	#	3 th layer
1	Red	1	Red	1	Red
2	Green	2	Green	2	Green
3	Blue	3	Blue	3	Blue
4	Yellow	4	Yellow	4	Yellow
5	White	5	White	5	White
6	Grey	6	Grey	6	Grey
7	Brown	7	Brown	7	Brown
8	Violet	8	Violet	8	Violet
9	Turquoise	9	Turquoise	9	Turquoise
10	Black	10	Black	10	Black
11	Orange	11	Orange	11	Orange
12	Pink	12	Pink	12	Pink
		13	Red	13	Red
		14	Green	14	Green
		15	Blue	15	Blue
		16	Yellow	16	Yellow

¹¹ Indicating a single black tracer

Materials and constructions

Types of secondary coating

The following technologies are available for protecting single fibres:



- 900µm Tight Buffered Coating (GTC) offering approximately 20mm strippability (stripping down to the fibre’s cladding).
- 900µm Easy Strip Coating (ESTC) with a strippability of approximately 100mm (leaving the fibre’s primary coating intact).
- 900µm oil-filled Semi-tight Coating (SiTC) that provides a strippability of one metre.

Direct connector assembly is possible with all the above technologies. In addition the semi-tight coating offers the possibility of fibre storage inside closures.

Multiple fibres are protected with a loosely fitted gel-filled tube that provides longitudinal water blocking. The dimensions of the tubes depend on the number of fibres and the cable construction.

For miniaturised cable concepts and for fibre units, a new technology was adopted for layer build-up. By encapsulating the fibres inside a UV-cured resin (much like the resin of

the fibre’s primary coating), adequate protection is offered together with an “easy peel feature”. This concept offers a completely dry solution that saves installation time and costs.

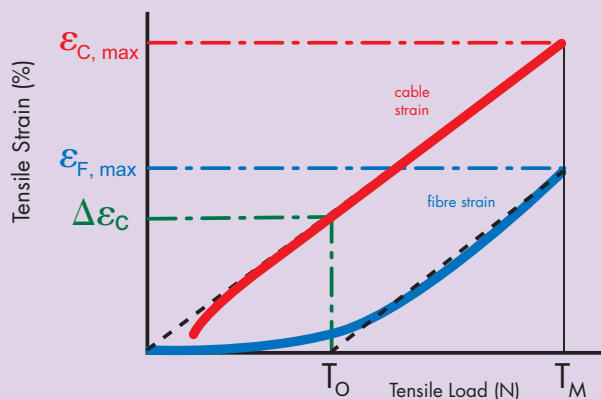
Stress and Strain of fibre-optic cables and fibre units

TKF takes great care in testing and selecting the best materials for Fibre Optic Cables and Fibre Units. All the optical fibres supplied have been tested for mechanical strength in a manner that ensures a long lifetime of these elements. TKF design and manufacturing policy is directed towards ensuring long-term transmission of information across Fibre Optic Cables and Fibre Units. In practise the design and manufacture revolve around the permissible fibre strain. Given the excellent mechanical quality of the optical fibres of today, strain levels up to 0.3% are admissible for a period of several hours. This time frame is regarded to be sufficient for the installing of most cables. Next, permissible strain levels of cable composing elements and materials are important as well and are expressed as cable strain. Non-metallic strength members are limited to a strain of 0.8%, steel components are best kept

below 0.5% strain. The tensile loads in this brochure are based on these strain levels. For aerial applications such as ADSS, fibre strain levels are best kept at 0% throughout the operational life of the cable.

Indoor, Outdoor or Universal?

All indoor cables are designed to provide a high level of safety to people and equipment. These cables are equipped with halogen-free and flame-retardant outer sheaths. TKF outdoor cables are constructed to withstand all kinds of environmental influences including humidity. In addition several solutions with respect to rodent protection are available. Our universal cables are suitable for both indoor and outdoor applications resulting in a reduction of installation time and costs since there is no need to splice cables when entering or leaving a building. The range of outdoor and universal cables (not including the aerial cables) are primarily intended for sub-soil ducted installation. Direct burial of these cables can be considered with the use of special backfill but is however not recommended. Fibre Optic Cables for direct burial are available on request.

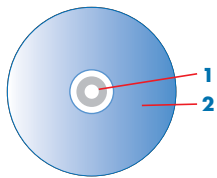




Indoor cables

The TKF optical fibre cable range for indoor use fulfils modern building requirements perfectly. The cables are used for establishing a fast and reliable building backbone that horizontally connects different groups of users and vertically connects different floors of the building.

Pigtail Cables

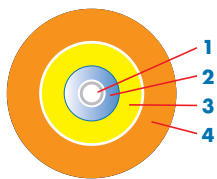


Construction	
1 Fibres	Single mode 9/125 µm, multimode 50/125 µm, multimode 62.5/125 µm
2 Secondary coating	Oil-filled semi-tight tube

Temperature Range	Transport and storage	Installation	In use
	-25 °C to +60 °C	-5 °C to +50 °C	-25 °C to +70 °C

Mechanical Properties		Units	
Outer diameter		mm	0.9
Mass		kg/km	0.8
Min. bend radius	Static	mm	30
	Dynamic	mm	30
Max tensile load		N	2
Crush resistance		N/10cm	300

Simplex Cables



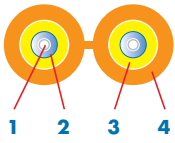
I-VH 1

Construction	
1 Fibres	Single mode 9/125 µm, multimode 50/125 µm, multimode 62.5/125 µm
2 Secondary coating	Semi-tight buffering
3 Strength members	Aramide yarns
4 Outer sheath	LSZH

Temp. Range	Transport and storage	Installation	In use
SIM 1.8	-25 °C to +60 °C	-5 °C to +50 °C	-40 °C to +70 °C
SIM 2.0	-25 °C to +60 °C	-5 °C to +50 °C	-40 °C to +70 °C
SIM 2.4	-25 °C to +60 °C	-5 °C to +50 °C	-40 °C to +70 °C
SIM 2.8	-25 °C to +60 °C	-5 °C to +50 °C	-25 °C to +70 °C
SIM 3.0	-25 °C to +60 °C	-5 °C to +50 °C	-25 °C to +70 °C

Mechanical Properties		Units	SIM 1.8	SIM 2.0	SIM 2.4	SIM 2.8	SIM 3.0
Outer diameter		mm	1.8	2.0	2.4	2.8	3.0
Mass		kg/km	3	3.5	5	7.5	8.5
Min. bend radius	Static	mm	30	30	30	30	30
	Dynamic	mm	30	30	36	42	45
Max tensile load		N	70	110	160	160	220
Crush resistance		N/10cm	400	400	500	500	500

Duplex Cables



Zip Twin

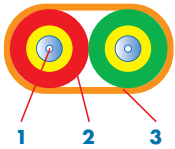
I-VH 2x1

Construction	
1	Fibres
2	Sub-units
3	Strength members
4	Outer sheath

Temperature Range	Transport and storage	Installation	In use
	-25 °C to +60 °C	-5 °C to +50 °C	-25 °C to +70 °C

Mechanical Properties		Units	ZT 2	ZT 2.8
Outer diameter		mm	2.0 x 4.3	2.8 x 5.8
Mass		kg/km	7	15
Min. bend radius	Static	mm	30	30
	Dynamic	mm	30	42
Max tensile load		N	220	330
Crush resistance		N/10cm	400	500

I-VHH 2



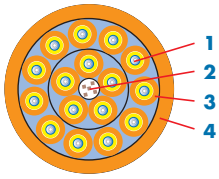
Construction	
1	Fibres
2	Sub-units
3	Outer sheath

Temperature Range	Transport and storage	Installation	In use
	-25 °C to +60 °C	-5 °C to +50 °C	-10 °C to +50 °C

Flat Twin

Mechanical Properties		Units	FT 2	FT 2.8
Outer diameter		mm	3.0 x 5.0	3.8 x 6.6
Mass		kg/km	16	26
Min. bend radius	Static	mm	30	30
	Dynamic	mm	45	57
Max tensile load		N	140	200
Crush resistance		N/10cm	400	500

Break-out Cables



I-VHH n

Construction	
1	Fibres: Single mode 9/125 µm, multimode 50/125 µm, multimode 62.5/125 µm
2	Centre support member: Glass fibre reinforced polymer (FRP)
3	Sub-units: Semi-tight buffered simplex cables
4	Outer sheath: LSZH

Temperature Range	Transport and storage	Installation	In use
	-30 °C to +60 °C	-5 °C to +50 °C	-20 °C to +60 °C

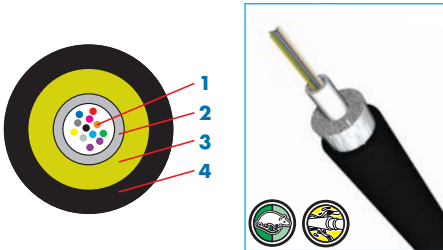
Mechanical Properties							
Diameter of simplex cable sub-unit	Fibre count	Outer diameter	Mass	Minimum bend radius		Max. tensile load	Crush resistance
				static	dynamic		
mm	-	mm	kg/km	mm	mm	N	N/10cm
2	4	8.6	70	130	170	800	800
	6	8.6	70	130	170	1000	800
	8	10.1	95	150	200	1300	800
	12	12.6	145	190	250	1700	800
	16	12.4	130	190	250	750	800
	24	15.0	195	225	300	1400	800
2.4	4	10.3	100	150	200	1200	1000
	6	10.3	105	150	200	1500	1000
	8	11.9	135	180	240	1700	1000
	12	15.1	205	225	300	2700	1000
	16	14.6	185	225	300	1000	1000
	24	17.8	280	270	360	2000	1000
2.8	4	11.5	125	170	230	1300	1000
	6	11.5	130	170	230	1600	1000
	8	13.4	170	200	270	2000	1000
	12	17.0	260	250	340	2700	1000
	16	16.9	260	250	340	1100	1000
	24	20.2	365	300	400	2200	1000

Outdoor cables

TKF outdoor cables cover most application areas. Many types of loose tube cables (LTC) with ducted installation based designs are available for long-haul solutions. The multi-layer LTC offers up to 912 fibres, providing point-to-point fibre connections for dense fibre applications (FTTx). The CTC offers an attractive low fibre count solution in LAN as “campus cable” between buildings. The high level of protection, flexibility and relative low weight of TKF outdoor cables enable efficient installation.



Non-metallic Central Tube Cables



Construction			
1	Fibres	Single mode 9/125 µm, multimode 50/125 µm, multimode 62.5/125 µm	
2	Central tube	Gel-filled loose tube	
3	Strength members	Waterblocking E-glass yarns	
4	Outer sheath	Polyethylene	
Temperature Range	Transport and storage		In use
	-30 °C to +70 °C		-30 °C to +70 °C

CTC 0.7kN

A-DQ(ZN)2Y n

Mechanical Properties		Units	4 fibres	6 fibres	8 fibres	12 fibres	16 fibres	24 fibres
Outer diameter		mm	6.4	6.4	6.4	6.4	7.1	7.1
Mass		kg/km	40	40	40	40	45	45
Min. bend radius	Static	mm	95	95	95	95	105	105
	Dynamic	mm	130	130	130	130	140	140
Max tensile load		N	700	700	700	700	700	700
Crush resistance		N/10cm	1500	1500	1500	1500	1500	1500

CTC 1.2kN

A-DQ(ZN)B2Y n

Mechanical Properties		Units	4 fibres	6 fibres	8 fibres	12 fibres	16 fibres	24 fibres
Outer diameter		mm	6.8	6.8	6.8	6.8	7.4	7.4
Mass		kg/km	45	45	45	45	50	50
Min. bend radius	Static	mm	100	100	100	100	110	110
	Dynamic	mm	135	135	135	135	150	150
Max tensile load		N	1200	1200	1200	1200	1200	1200
Crush resistance		N/10cm	1500	1500	1500	1500	1500	1500

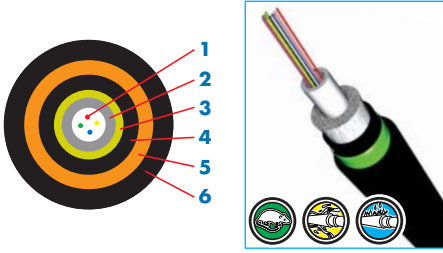
CTC 2.5kN

A-DQ(ZN)B2Y n

Mechanical Properties		Units	4 fibres	6 fibres	8 fibres	12 fibres	16 fibres	24 fibres
Outer diameter		mm	7.7	7.7	7.7	7.7	8.3	8.3
Mass		kg/km	60	60	60	60	70	70
Min. bend radius	Static	mm	115	115	115	115	125	125
	Dynamic	mm	155	155	155	155	165	165
Max tensile load		N	2500	2500	2500	2500	2500	2500
Crush resistance		N/10cm	1500	1500	1500	1500	1500	1500



Rodent resistant Central Tube Cables



Construction	
1	Fibres Single mode 9/125 μm, multimode 50/125 μm, multimode 62.5/125 μm
2	Central tube Gel-filled loose tube
3	Strength members Waterblocking E-glass yarns
4	Inner sheath Polyethylene
5	Rodent Protection & Moisture Barrier Corrugated steel tape
6	Outer sheath Polyethylene

Temperature Range	Transport and storage	Installation	In use
	-30 °C to +70 °C	-5 °C to +50 °C	-30 °C to +70 °C

CTC CS 1.2kN

A-DQ(ZN)B2Y(SR)2Y n

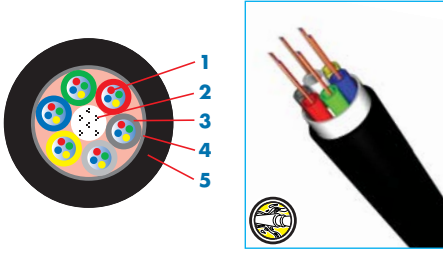
Mechanical Properties		Units	4 fibres	6 fibres	8 fibres	12 fibres	16 fibres	24 fibres
Outer diameter		mm	12.1	12.1	12.1	12.1	12.7	12.7
Mass		kg/km	140	140	140	140	150	150
Min. bend radius	Static	mm	180	180	180	180	190	190
	Dynamic	mm	240	240	240	240	255	255
Max tensile load		N	1200	1200	1200	1200	1200	1200
Crush resistance		N/10cm	2000	2000	2000	2000	2000	2000

CTC CS 2.5kN

A-DQ(ZN)B2Y(SR)2Y n

Mechanical Properties		Units	4 fibres	6 fibres	8 fibres	12 fibres	16 fibres	24 fibres
Outer diameter		mm	13.0	13.0	13.0	13.0	13.6	13.6
Mass		kg/km	165	165	165	165	175	175
Min. bend radius	Static	mm	195	195	195	195	205	205
	Dynamic	mm	260	260	260	260	270	270
Max tensile load		N	2500	2500	2500	2500	2500	2500
Crush resistance		N/10cm	2000	2000	2000	2000	2000	2000

Non-metallic stranded Loose Tube Cables



Construction	
1 Fibres	Single mode 9/125 μm , multimode 50/125 μm , multimode 62.5/125 μm
2 Centre support member	Glass fibre reinforced polymer (FRP)
3 Sub-units	Gel-filled loose tubes
4 Interstitial waterblock	Swelling materials
5 Outer sheath	Polyethylene

Temperature Range	Transport and storage	Installation	In use
	-30 $^{\circ}\text{C}$ to +70 $^{\circ}\text{C}$	-5 $^{\circ}\text{C}$ to +50 $^{\circ}\text{C}$	-30 $^{\circ}\text{C}$ to +70 $^{\circ}\text{C}$

LTC

A-DQ(ZN)2Y n x m

Concentric single layer configurations

Mechanical Properties							Outer diameter	Mass	Minimum bend radius		Max. tensile load	Crush resistance
Fibre count	Configuration								static	dynamic		
4	$m^2=2$						10.0	72	150	200	2000	N/10cm
6	3×2						10.0	73	150	200		
8	4×2						10.0	74	150	200		
12	6×2						10.0	76	150	200		
24		3×4					10.0	76	150	200		
24		6×4	4×6				10.9	86	165	220		
36			6×6	3×8	2×12		10.0	77	150	200		
36					3×12		10.9	87	165	220		
48			8×6				11.4	98	175	230		
48				6×8	4×12		10.9	91	165	220		
60					5×12		10.9	89	165	220		
72				9×8			13.5	145	200	270		
72					6×12		10.9	91	165	220		
84					7×12		11.7	103	175	235		
96				12×8			16.1	193	240	320		
96					8×12		12.5	117	190	250		
120					10×12		14.1	151	210	280		
144					12×12		15.9	188	240	320		
144						6×24	13.0	130	195	260		
192						8×24	15.2	170	230	305		
240						10×24	17.2	220	260	345		
288						12×24	19.5	280	290	390		

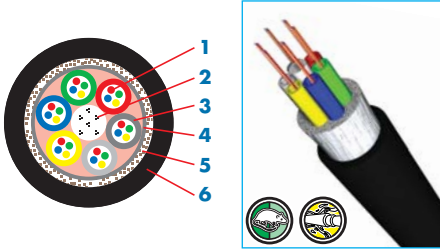
Concentric double and triple layer configurations

Mechanical Properties			Outer diameter	Mass	Minimum bend radius		Max. tensile load	Crush resistance
Fibre count	Configuration				static	dynamic		
	$m=12$	$m=24$	mm	kg/km	mm	mm	N	N/10cm
192	$[5 + 11]^{13} \times 12$		15.3	169	230	305	1750	1500
216	$[6 + 12] \times 12$		16.1	191	240	320	2800	
288	$[9 + 15] \times 12$		18.5	252	280	370	3200	
384		$[5 + 11] \times 24$	18.6	248	280	370	2200	
432		$[6 + 12] \times 24$	19.5	278	295	390	3400	
576		$[9 + 15] \times 24$	22.8	378	340	455	3500	
624		$[10 + 16] \times 24$	24.0	421	360	480	3500	
720		$[5 + 11 + 14] \times 24$	25.4	420	380	510	4700	
768		$[5 + 11 + 16] \times 24$	25.4	420	380	510	4800	
864		$[6 + 12 + 18] \times 24$	26.4	465	395	530	6800	
912		$[7 + 13 + 18] \times 24$	27.5	495	410	550	7100	

¹² m: indicating the number of fibres inside each tube

¹³ $[n_1 + n_2 + n_3]$ indicating the number of tubes in the inner (n_1), the middle (n_2) and the outer layer (n_3)

Non-metallic, rodent protected stranded Loose Tube Cables



Construction	
1 Fibres	Single mode 9/125 μm , multimode 50/125 μm , multimode 62.5/125 μm
2 Centre support member	Glass fibre reinforced polymer (FRP)
3 Sub-units	Gel-filled loose tubes
4 Interstitial waterblock	Swelling materials
5 Strength members	Waterblocking E-glass yarns
6 Outer sheath	Polyethylene

Temperature Range	Transport and storage	Installation	In use
	-30 $^{\circ}\text{C}$ to +70 $^{\circ}\text{C}$	-5 $^{\circ}\text{C}$ to +50 $^{\circ}\text{C}$	-30 $^{\circ}\text{C}$ to +70 $^{\circ}\text{C}$

LTC RP

A-DQ(ZN)B2Y n x m

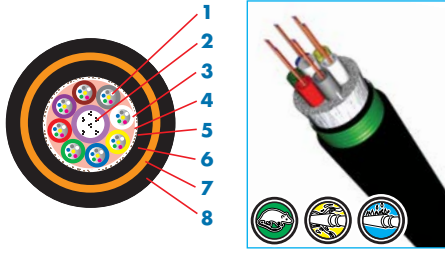
Concentric single layer configurations

Mechanical Properties					Outer diameter	Mass	Minimum bend radius		Max. tensile load	Crush resistance	
Fibre count	Configuration						static	dynamic			
	$m^1=2$	$m=4$	$m=6$	$m=8$	$m=12$	mm	kg/km	mm	mm	N	N/10cm
4	2 x 2					10.6	90	160	210	4000	1500
6	3 x 2										
8	4 x 2	2 x 4									
12	6 x 2	3 x 4	2 x 6								
16		4 x 4									
16				2 x 8		11.5	105	170	230		
24		6 x 4	4 x 6			10.6	90	160	210		
24				3 x 8	2 x 12	11.5	105	170	230		
36			6 x 6			10.6	90	160	210		
36					3 x 12	11.5	105	170	230		
48			8 x 6			11.9	110	180	240		
48				6 x 8	4 x 12	11.5	105	170	230		
60					5 x 12						
64				8 x 8		13.1	130	200	265		
72				9 x 8		13.7	145	205	275		
72					6 x 12	11.5	105	170	230		
84					7 x 12	12.2	120	185	245		
96				12 x 8		16.2	200	245	325		
96					8 x 12	13.1	135	195	260		
108					9 x 12	13.7	145	205	275		
120					10 x 12	14.6	165	220	290		
132					11 x 12	15.5	185	235	310		
144					12 x 12	16.3	205	245	325		

Concentric double and triple layer configurations

Mechanical Properties			Outer diameter	Mass	Minimum bend radius		Max. tensile load	Crush resistance
Fibre count	Configuration				static	dynamic		
	$m=12$	$m=24$	mm	kg/km	mm	mm	N	N/10cm
192	$[5 + 11]^{15} \times 12$		15.9	180	240	320	4000	1500
216	$[6 + 12] \times 12$		16.7	210	250	335	5000	
288	$[9 + 15] \times 12$		19.1	270	285	380	5000	
384		$[5 + 11] \times 24$	19.1	275	290	380	5000	
432		$[6 + 12] \times 24$	19.9	300	300	400	5000	
576		$[9 + 15] \times 24$	23.2	395	350	465	5000	
624		$[10 + 16] \times 24$	24.4	440	365	490	5000	
720		$[5 + 11 + 14] \times 24$	25.6	430	385	510	6900	
768		$[5 + 11 + 16] \times 24$	25.6	430	385	510	6900	
864		$[6 + 12 + 18] \times 24$	26.6	480	400	530	9000	
912		$[7 + 13 + 18] \times 24$	27.6	510	415	550	9400	

Rodent resistant stranded Loose Tube Cables



Construction		
1	Fibres	Single mode 9/125 µm, multimode 50/125 µm, multimode 62.5/125 µm
2	Centre support member	Glass fibre reinforced polymer (FRP)
3	Sub-units	Gel-filled loose tubes
4	Interstitial waterblock	Swelling materials
5	Strength members	Waterblocking E-glass yarns
6	Inner sheath	Polyethylene
7	Rodent protection / Moisture barrier	Corrugated steel tape
8	Outer sheath	Polyethylene

Temperature Range	Transport and storage	Installation	In use
	-30 °C to +70 °C	-5 °C to +50 °C	-30 °C to +70 °C

LTC CS

A-DQ(ZN)B2Y(SR)2Y n x m

Mechanical Properties					Outer diameter	Mass	Minimum bend radius		Max. tensile load	Crush resistance
Fibre count	Configuration						static	dynamic		
	m=2	m=4	m=6	m=8	m=12	mm	mm	N	N/10cm	
4	2 x 2					15.9	220	210	320	4800
6	3 x 2									
8	4 x 2	2 x 4								
12	6 x 2	3 x 4	2 x 6							
16		4 x 4				16.8	240	250	335	5300
16			2 x 8							
24		6 x 4	4 x 6			15.9	220	240	320	4800
24				3 x 8	2 x 12	16.8	240	250	335	5200
36			6 x 6			15.9	220	240	320	4900
36					3 x 12	16.8	240	250	335	5200
48			8 x 6			17.2	255	260	345	5200
48				6 x 8	4 x 12	16.8	240	250	335	5300
60					5 x 12					
64				8 x 8		18.4	290	275	370	5800
72				9 x 8		19.1	305	285	380	6000
72					6 x 12	16.8	240	250	335	5400
84					7 x 12	17.5	265	265	350	5600
96				12 x 8		21.6	380	325	430	6500
96					8 x 12	18.4	290	275	370	5800
108					9 x 12	19.1	305	285	380	6000
120					10 x 12	19.9	335	300	400	6800
132					11 x 12	20.8	365	310	415	7000
144					12 x 12	21.6	385	385	430	7200

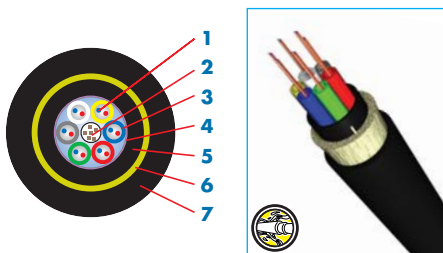
Aerial Cables

For long-haul aerial applications TKF offers the ADSS range. An attractive solution for installation on existing infrastructures.

For short span applications figure eight designs are available.

OPGW can provide an economical solution for newly built installations.

All-Dielectric Self-Supporting Cables



Construction	
1 Fibres	Single mode 9/125 µm, multimode 50/125 µm, multimode 62.5/125 µm
2 Centre support member	Glass fibre reinforced polymer (FRP)
3 Sub-units	Gel-filled loose tube
4 Interstitial waterblock	Jelly-filling
5 Inner sheath	Polyethylene
6 Strength members	Aramide yarns
7 Outer sheath	Polyethylene

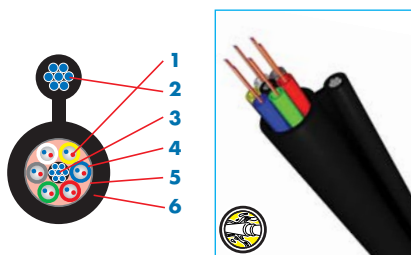
Temperature Range	Transport and storage	Installation	In use
	-30 °C to +70 °C	-5 °C to +50 °C	-30 °C to +70 °C

LTC ADSS

A-DF2Y(ZN)2Y n x m

Mechanical Properties		Units	3 x 2	6 x 2	6 x 4 ¹⁶
Outer diameter		mm	12.7	13.5	13.5
Mass		kg/km	120	145	145
Min. bend radius	Static	mm	190	200	200
	Dynamic	mm	255	270	270
Max tensile load		N	4500	5200	5200
Crush resistance		N/10cm	3000	3000	3000

Figure Eight Cables



Construction	
1 Fibres	Single mode 9/125 µm, multimode 50/125 µm, multimode 62.5/125 µm
2 Catenary wire	Stranded galvanised steel wires
3 Cable's centre support member	Glass fibre reinforced polymer (FRP)
4 Sub-units	Gel-filled loose tube
5 Interstitial waterblock	Swelling materials
6 Outer sheath	Polyethylene

Temperature Range	Transport and storage	Installation	In use
	-30 °C to +70 °C	-5 °C to +50 °C	-30 °C to +70 °C

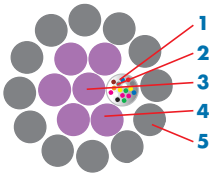
LTC Figure Eight

Tragseil A-DF(ZN)2Y n x m

Mechanical Properties		Units	3 x 2	6 x 2	6 x 4 ¹⁶
Outer diameter		mm	11 x 20	11 x 20	11 x 20
Mass		kg/km	190	190	190
Min. bend radius	Static	mm	165	165	165
	Dynamic	mm	220	220	220
Max tensile load		N	5800	5800	5800
Crush resistance		N/10cm	1500	1500	1500

¹⁶ Larger fibre counts are available on request

Optical Ground Wire



Construction		2-layer constructions		3-layer constructions
1	Stainless Steel Tube	1 x 2.7 mm	3 x 2.7 mm	1 x 2.7 mm
2	Max. fibre count	24	72	24
3	ACS ¹⁷ centre wire	2.8 mm	2.8 mm	2.8 mm
4	ACS peripheral wires	5 x 2.7 mm	3 x 2.7 mm	5 x 2.7 mm
5	AA ¹⁸ peripheral wires	12 x 2.7 mm	10 x 3.5 mm	12 x 2.7 mm + 16 x 3.1 mm

Temperature Range	Transport and storage	Installation	In use
		-40 °C to +80 °C	-10 °C to +50 °C

OPGW

Mechanical Properties		Units	2-layer constructions			3-layer constructions
Type of OPGW			24B1-105[64 ;100.2]	24B1-130[73 ;166.3]	72B1-120[58 ;143.2]	24B1-225[101 ;513.8]
Outer diameter		mm	13.6	15.2	15.2	19.8
Mass		kg/km	440	516	472	774
Min. bend diameter	Installation	mm	340	380	380	500
	Operation	mm	210	230	230	300
Rated tensile strength		kN	63.6	73	58.4	100.9
Max allowed tensile strength		kN	25.44	29.2	23.36	40.36
Every day stress		kN	15.9	18.25	14.6	25.23
Installation tension		kN	6.36	11	8.76	20.18
Cross sectional area		mm ²	103.5	131	119.5	224.2
Coefficient of linear expansion		10 ⁻⁶ /°C	17.4	18.3	19.3	17.38
Modulus of elasticity		GPa	101	94.4	88	101
Short current capacity		kA ² .s	100.2	166.2	143.2	513.8
Short current (1s, 20°C to 200°C)		kA	142	18.23	11.96	22.66
DC resistance		Ω/km	0.407	0.305	0.318	0.165

¹⁷ACS Aluminium Clad Steel

¹⁸AA Aluminium Alloy

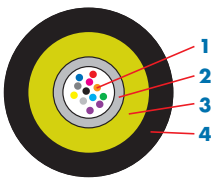


Universal cables

TKF universal cables can be used for indoor and outdoor situations. They provide an economical solution when splicing fibres and cables has to be avoided going from indoor to outdoor or vice versa.

These cables offer “the best of both worlds” combining resistance to humidity with flame retardant performance and non-halogen characteristics.

Non-metallic Central Tube Cables



Construction	
1 Fibres	Single mode 9/125 µm, multimode 50/125 µm, multimode 62.5/125 µm
2 Central tube	Gel-filled loose tube
3 Strength members	Waterblocking E-glass yarns
4 Outer sheath	Low Smoke Zero Halogen

Temperature Range	Transport and storage	Installation	In use
	-30 °C to +70 °C	-5 °C to +50 °C	-30 °C to +70 °C

CTC LSZH 0.7kN

A/I-DQ(ZN)H n

Mechanical Properties	Units	4 fibres	6 fibres	8 fibres	12 fibres	16 fibres	24 fibres
Outer diameter	mm	6.6	6.6	6.6	6.6	7.3	7.3
Mass	kg/km						
Min. bend radius	Static	mm	100	100	100	110	110
	Dynamic	mm	130	130	130	145	145
Max tensile load	N	700	700	700	700	700	700
Crush resistance	N/10cm	1500	1500	1500	1500	1500	1500

CTC LSZH 1.2kN

A/I-DQ(ZN)BH n

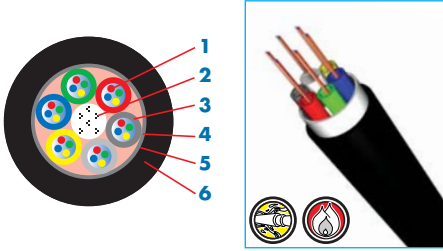
Mechanical Properties	Units	4 fibres	6 fibres	8 fibres	12 fibres	16 fibres	24 fibres
Outer diameter	mm	7.0	7.0	7.0	7.0	7.6	7.6
Mass	kg/km	50	50	50	50	60	60
Min. bend radius	Static	mm	105	105	105	115	115
	Dynamic	mm	140	140	140	150	150
Max tensile load	N	1200	1200	1200	1200	1200	1200
Crush resistance	N/10cm	1500	1500	1500	1500	1500	1500

CTC LSZH 2.5kN

A/I-DQ(ZN)BH n

Mechanical Properties	Units	4 fibres	6 fibres	8 fibres	12 fibres	16 fibres	24 fibres
Outer diameter	mm	7.9	7.9	7.9	7.9	8.5	8.5
Mass	kg/km	70	70	70	70	75	75
Min. bend radius	Static	mm	120	120	120	130	130
	Dynamic	mm	160	160	160	170	170
Max tensile load	N	2500	2500	2500	2500	2500	2500
Crush resistance	N/10cm	1500	1500	1500	1500	1500	1500

Non-metallic stranded Loose Tube Cables



Construction	
1 Fibres	Single mode 9/125 μm , multimode 50/125 μm , multimode 62.5/125 μm
2 Centre support member	Glass fibre reinforced polymer (FRP)
3 Sub-units	Gel-filled loose tubes
4 Interstitial waterblock	Swelling materials
5 Strength members	Waterblocking E-glass yarns
6 Outer sheath	Low Smoke Zero Halogen

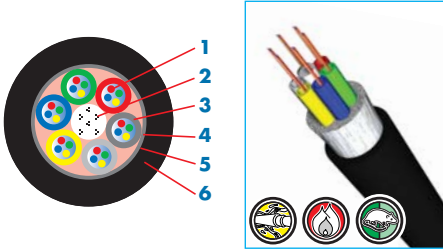
Temperature Range	Transport and storage	Installation	In use
	-30 °C to +70 °C	-5 °C to +50 °C	-30 °C to +70 °C

LTC LSZH

A/I-DQ(ZN)H n x m

Mechanical Properties						Outer diameter	Mass	Minimum bend radius		Max. tensile load	Crush resistance
Fibre count	Configuration							static	dynamic		
	$m^1=2$	$m=4$	$m=6$	$m=8$	$m=12$	mm	kg/km	mm	mm	N	N/10cm
4	2 x 2					10.1	85	150	200	2000	1500
6	3 x 2										
8	4 x 2	2 x 4									
12	6 x 2	3 x 4	2 x 6								
16		4 x 4									
16				2 x 8	11.1	100	165	220			
24		6 x 4	4 x 6		10.1	85	150	200			
24				3 x 8	11.1	100	165	220			
36			6 x 6		10.1	85	150	200			
36					11.1	100	165	220			
48			8 x 6		11.5	110	170	230			
48				6 x 8	11.1	100	165	220			
60					11.1	100	165	220			
64				8 x 8	12.7	130	190	255			
72				9 x 8	13.5	145	200	270			
72					11.1	100	165	220			
84					11.8	115	175	235			
96				12 x 8	16.1	200	240	320			
96					12.7	130	190	255			
108					13.5	150	200	270			
120					14.3	165	215	285			
132					15.2	185	230	305			
144					16.1	205	240	320			

Non-metallic, rodent protected stranded Loose Tube Cables



Construction	
1 Fibres	Single mode 9/125 µm, multimode 50/125 µm, multimode 62.5/125 µm
2 Centre support member	Glass fibre reinforced polymer (FRP)
3 Sub-units	Gel-filled loose tubes
4 Interstitial waterblock	Swelling materials
5 Strength members	Waterblocking E-glass yarns
6 Outer sheath	Low Smoke Zero Halogen

Temperature Range	Transport and storage	Installation	In use
	-30 °C to +70 °C	-5 °C to +50 °C	-30 °C to +70 °C

LTC RP LSZH

A/I-DQ(ZN)BH n x m

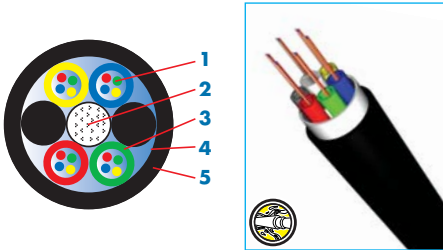
Mechanical Properties					Outer diameter	Mass	Minimum bend radius		Max. tensile load	Crush resistance	
Fibre count	Configuration						static	dynamic			
	m=2	m=4	m=6	m=8	m=12	mm	mm	N	N/10cm		
4	2 x 2					10.6	100	160	210	4000	1500
6	3 x 2										
8	4 x 2	2 x 4									
12	6 x 2	3 x 4	2 x 6								
16		4 x 4									
16			2 x 8		11.5	115	170	230			
24		6 x 4	4 x 6		10.6	100	160	210			
24			3 x 8	2 x 12	11.5	115	170	230			
36			6 x 6		10.6	100	160	210			
36				3 x 12	11.5	110	170	230			
48			8 x 6		11.9	120	180	240			
48				6 x 8	11.5	115	170	230			
60				5 x 12							
64				8 x 8	13.1	140	200	265			
72				9 x 8	13.7	155	205	275			
72				6 x 12	11.5	115	170	230			
84				7 x 12	12.2	130	185	245			
96				12 x 8	16.2	210	245	325			
96				8 x 12	13.1	145	195	260			
108				9 x 12	13.7	160	205	275			
120				10 x 12	14.6	175	220	290			
132				11 x 12	15.5	195	235	310			
144				12 x 12	16.3	215	245	325			

Miniaturised cables and Fibre units

Miniaturised cables and fibre units from TKF offer flexible network solutions with cable connection investments meeting all bandwidth requirements. Extending the network is quick and relatively easy using only light equipment. Cable and fibre unit delivery can be "just-in-time" without the need for stock and thus assuring installation of fibres according to the latest standards.



Non-metallic stranded Loose Tube Mini Cables



Construction	
1 Fibres	Single mode 9/125 μm, multimode 50/125 μm, multimode 62.5/125 μm
2 Centre support member	Glass fibre reinforced polymer (FRP)
3 Sub-units	Gel-filled loose tube
4 Interstitial waterblocked	Swellable material
5 Outer sheath	Polyethylene

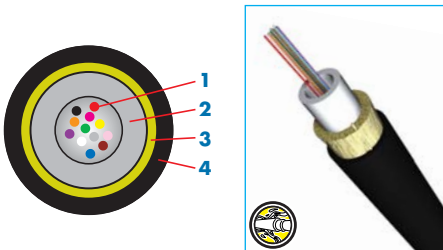
Temperature Range	Transport and storage	Installation	In use
	-30 °C to +70 °C	-5 °C to +50 °C	-30 °C to +70 °C

LTMC

A-DQ(ZN)2Y n x m

Mechanical Properties		Units	n ≤ 6; m = 6	n ≤ 6 m = 12	n = 8 m = 12
Outer diameter		mm	6.2	6.0	7.0
Mass		kg/km	30	30	37
Min. bend radius	Static	mm	125	120	140
	Dynamic	mm	95	90	105
Max tensile load		N	800	400	400
Crush resistance		N/10cm	1500	500	500

Non-metallic Central Tube Mini Cables



Construction	
1 Fibres	Single mode 9/125 μm, multimode 50/125 μm, multimode 62.5/125 μm
2 Central tube	Gel-filled loose tube
3 Strength members	Aramide yarns
4 Outer sheath	Polyethylene

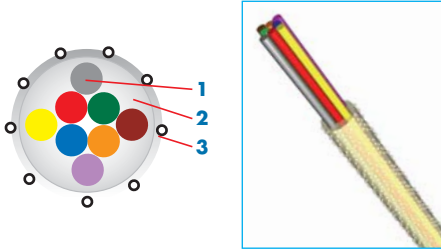
Temperature Range	Transport and storage	Installation	In use
	-30 °C to +70 °C	-5 °C to +50 °C	-30 °C to +70 °C

CTMC

A-DQ(ZN)2Y n

Mechanical Properties		Units	4 fibres	8 fibres	12 fibres	16 fibres	24 fibres
Outer diameter		mm	3.9	3.9	3.9	3.9	3.9
Mass		kg/km	12	12	12	12	12
Min. bend radius	Static	mm	60	60	60	60	60
	Dynamic	mm	80	80	80	80	80
Max tensile load		N	250	250	250	250	250
Crush resistance		N/10cm	1000	1000	1000	1000	1000

Enhanced Performance Fibre Units



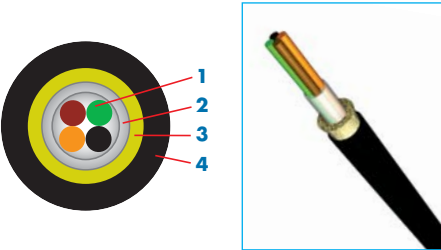
Construction	
1 Fibres	Single mode 9/125 µm
2 Encapsulation	Acrylate
3 Outer surface	Roughened with glass beads

Temperature Range	Transport and storage	Installation	In use
	-20 °C to +70 °C	-5 °C to +50 °C	-20 °C to +50 °C

EPFU

Mechanical Properties		Units	2 fibres	4 fibres	8 fibres	12 fibres
Outer diameter		mm	1.0	1.0	1.4	1.55
Mass		kg/km	0.85	0.85	1.6	2.2
Min. bend radius	Static	mm	40	40	40	80
	Dynamic	mm	40	40	40	80
Max tensile load		N	8	10	16	22
Crush resistance		N/10cm	100	100	100	100

Micro Cables



Construction	
1 Fibres	Single mode 9/125 µm
2 Encapsulation	Acrylate
3 Strength members	Non-metallic
4 Outer sheath	Polyethylene

Temperature Range	Transport and storage	Installation	In use
	-30 °C to +70 °C	-5 °C to +50 °C	-30 °C to +70 °C

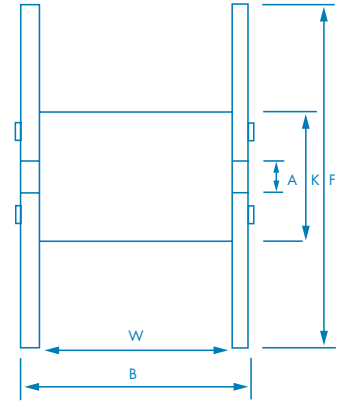
MuC

Mechanical Properties		Units	2 fibres	4 fibres	6 fibres	8 fibres	12 fibres
Outer diameter		mm	2.0	2.0	2.2	2.5	2.5
Mass		kg/km	3	3	4	5	5
Min. bend radius	Static	mm	63	63	69	78	78
	Dynamic	mm	50	50	55	63	63
Max tensile load		N	100	100	100	175	175
Crush resistance		N/10cm	400	400	400	400	400

Reel size and weight

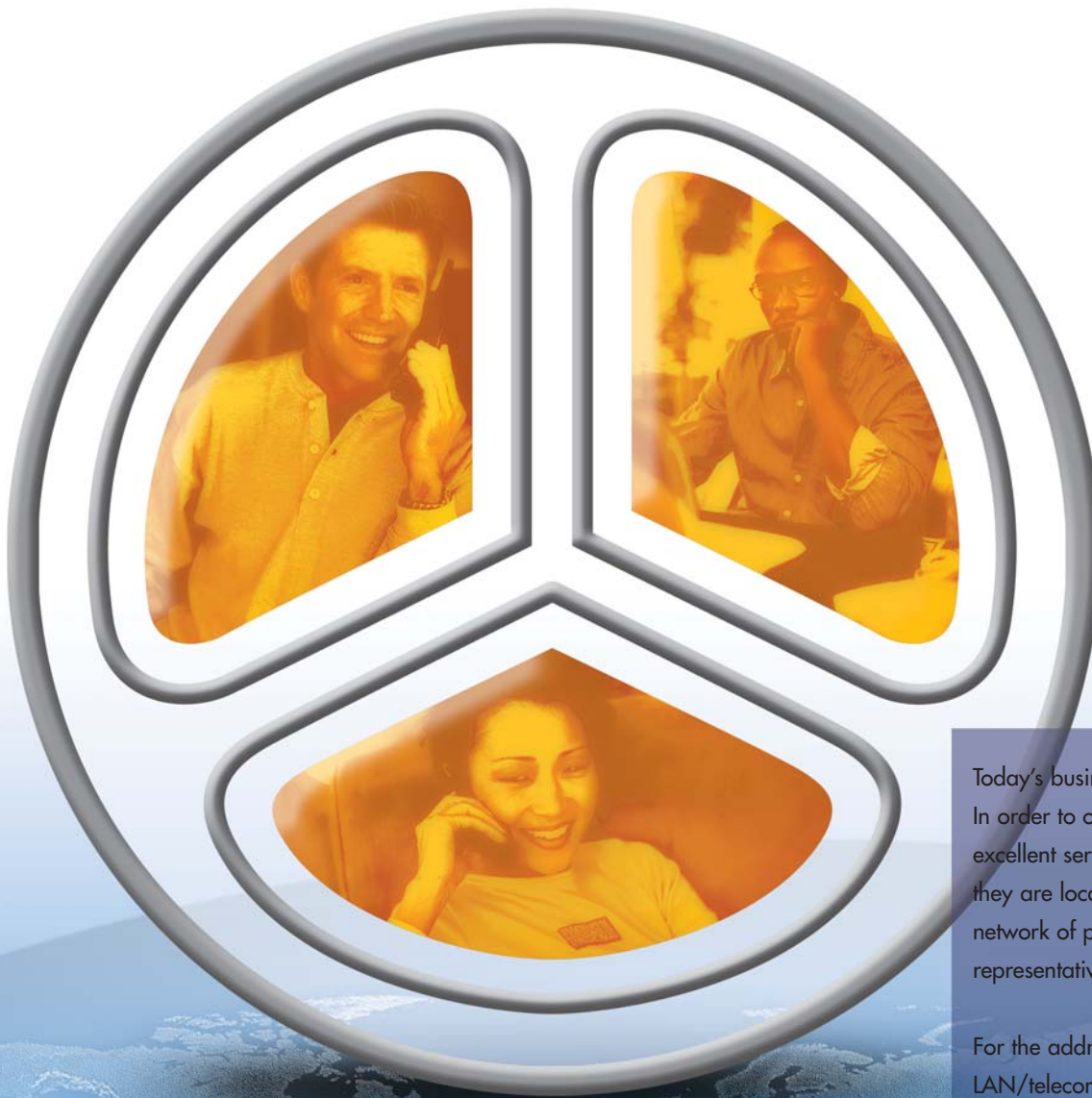
diameter flange	diameter core	diameter axle-hole	largest width	winding width	empty weight	volume
F	K	A	B	W		
mm	mm	mm	mm	mm	kg	m ³
600	315	100	420	300	16	0.2
800	400	100	560	400	40	0.4
1000	500	100	620	500	65	0.7
1200	600	100	760	600	100	1.2
1500	800	100	950	750	160	2.3
1750	1000	100	980	750	250	3.2
2000	1200	100	1080	850	325	4.5

Size and weight variances may occur



F = Diameter flange
 K = Diameter core
 A = Diameter axle-hole
 B = Largest width
 W = Winding width

Global customer support



Today's business is a global business. In order to offer customers the same excellent service, regardless of where they are located, TKF operates via a network of professional advisers and representatives.

For the address information of the TKF LAN/telecom representative for your region, please mail to:

info@tkf.nl

No rights whatsoever can be derived from the content of this brochure.

About TKF

BV Twentsche Kabelfabriek (TKF) founded in 1930, has grown from a local Dutch cable producer to a cable technology leader, servicing customers all over the world.

A broad range of cable solutions is available for various applications, but only in one quality: TKF quality!



- Single core XLPE insulated medium voltage cables 6/10 kV up to 36/50 kV
- Three core XLPE insulated medium voltage cables 6/10 kV up to 18/30 kV
- Transformer switch connection cables
- Low voltage distribution cables



- Optical fibre cables
- Copper wire telephone cables
- Data and telecommunication cables
- Coaxial cables
- Modular Cable Systems (MCS)
- Outside plant components (OSP)



- Low voltage installation cables and wires
- Signal and telecommunication cables
- Instrumentation cables
- Lead sheathed data and energy cables
- EMC motor cables



- Process industry
- Rail infrastructure
- Security
- Marine and offshore



**BV TWENTSCHE
KABELFABRIEK**

Choose TKF - Choose quality!

BV Twentsche Kabelfabriek

Spinnerstraat 15 Telephone: +31 (0)53 - 573 23 89
P.O. Box 6 Telefax: +31 (0)53 - 573 23 06
7480 AA Haaksbergen E-mail: info@tkf.nl
The Netherlands Website: www.tkf.nl



**TWENTSCHE (NANJING)
FIBRE OPTICS LTD**

Twentsche (Nanjing) Fibre Optics Ltd.

Pukou, 210061 Nanjing Telephone: +86 25 5884 4888
P.R. of China Telefax: +86 25 5884 9493
E-mail: asia@twentsche-fibre-optics.com
Website: www.twentsche-fibre-optics.com



member of the TKH Group <