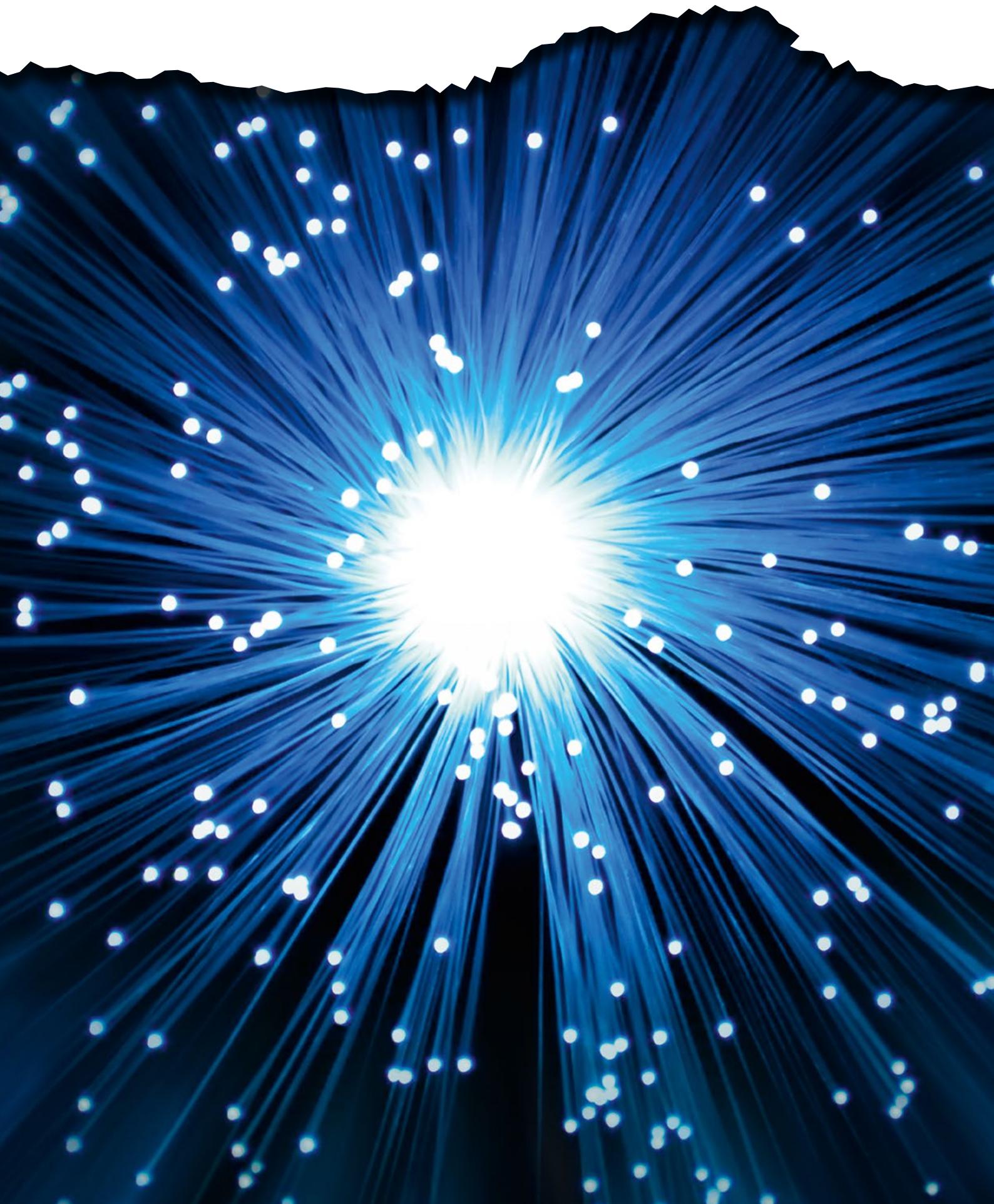


Product catalogue 2026

Fiber optic cables



Dear Customers,

since 1910 we have been supplying the cables which help you to solve your problems through communication. Enclosed, please, find a new comprehensive catalogue containing the basic product line of our company.

We tried not only to include the standard products that you probably know very well, but some innovations and brand new products as well. Despite the catalogue is considered as a complete presentation of our production, not all variants can be published and included.

For some special products, please, contact our Sales Department that will provide you with any information requested. Let us advice you of the fact that all cable parameters in this catalogue are for information only.

All rights reserved.

A handwritten signature in blue ink, appearing to read "Lenka Mádllová".

Lenka Mádllová
Head of Commercial Department – Member of board

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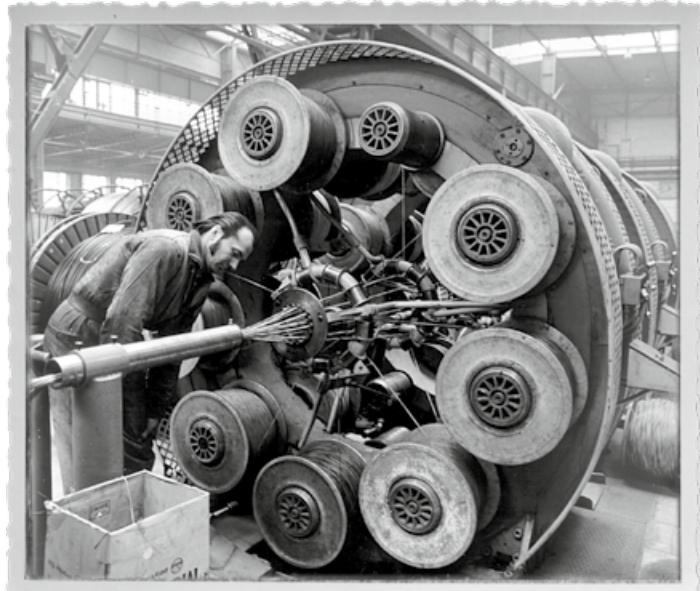
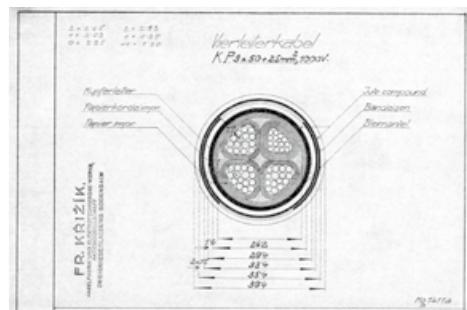
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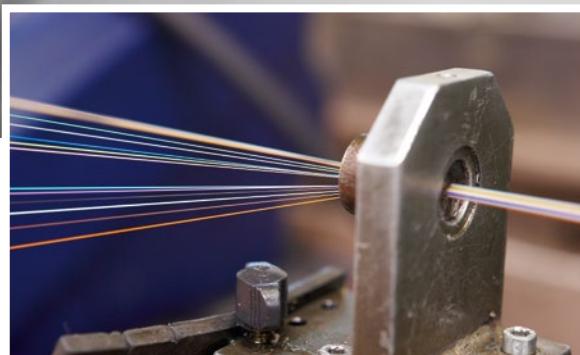
History and present of **KABELOVNA** Děčín Podmokly



KDP was founded in 1909 and 1910 as a branch of the Bergmann cable plants in Berlin, the original name of the company being „Rakouské Bergmannovy závody spol. s r.o., Vídeň, továrna Podmokly“.

From the very outset the plant manufactured all types of power and communications cables with lead casing and the relevant cable sets, as well as rubber-insulated conductors, dynamo wires and insulation pipes with accessories. Company activity at that time also included projects involving electrical equipment and its installation.

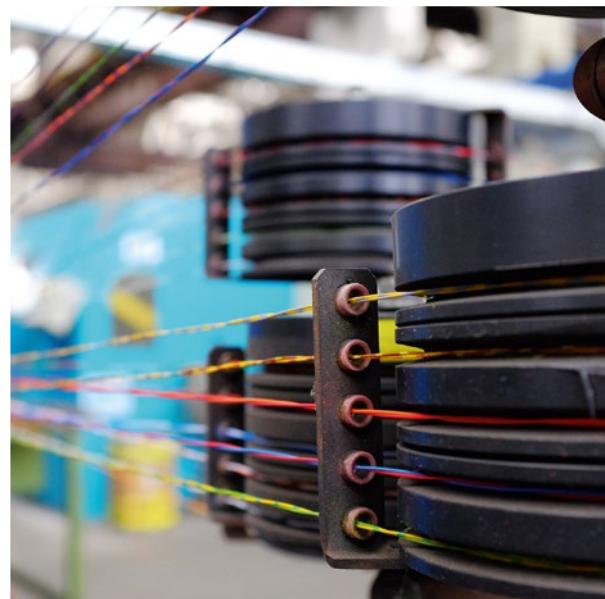




The cable factory came into the hands of Anglo-Pragobanka as part of Křižík a spol. Praha after the First World War and this company reconstructed the entire business. The production of trunk communications cables got underway at this time. The cable factory and neighbouring copper works were then merged in 1932 as the „Měďárna, kabelovna a elektrotechnické závody Křižík-Chaudoir, Praha“. However, the production programme at the cable factory did not change too radically.

The company was nationalised after 1945. It was later incorporated as part of KABLO Kladno and its specialisation amplified. The main production programme became the manufacture of communications cables and in 1961 KABLO Děčín became the monopoly producer of cables for local and long-distance telecommunications networks using top-of-the-range technology. The company was privatised after 1990, became independent again and returned to its traditional name of KABELOVNA Děčín-Podmokly, a.s. SIEMENS AG then entered the company in 1992. The result of mutual cooperation here was considerable modernisation of production technology, the expansion of the range produced and the strengthening of KABELOVNA Děčín-Podmokly, a.s. on global markets.

SIEMENS sold its share in KABELOVNA to American venture-capital fund Bancroft Eastern Europe Fund L.P. in July 2000, before this company in turn sold its share to American company CDT (Cable Design Technology) in December 2001. CDT then merged with American company BELDEN in 2004, the newly-founded company taking on the name of Belden CDT Inc. 2007 the cable works is sold to Wilms Gruppe, the company is divided into Kabelovna Děčín Podmokly, s.r.o. and KDP Assembly, s.r.o.



History

4. 9. 1909	Execution of contract on establishment of company „Rakouské Bergmannovy závody, Berlín, elektrotechnická společnost, s. r. o.“ with branch in Vienna.
27. 6. 1911	Launch of Production – 750 employees. Production of power and communication cables, cable sets and accessories, rubber wires and insulation tubes including accessories.
05/1919	The company was acquired by „Elektrotechnické závody František Křížík, Praha, a. s.“ Initiation of remote communication cables production.
03/1930	The company completely burnt down. Production restored at the end of year 1930.
05/1945	The company came under national control of Křížík a. s. corporation. Then it was nationalized and became a part of national company KABLO Bratislava. Production of power and communication cables with lead coating, rubberized wires and coil wires.
1. 1. 1950	Establishment of national company KABLO Děčín.
1959	Production of remote communication cables.
1961	KABLO Děčín became a monopoly producer of communication cables for local networks.
1982–1984	Construction of new hall to expand the production of communication cables.
1985	Termination of power cables production.
1988	Initiation of optic cables production.
31. 12. 1990	Privatization, establishment of incorporated company. The original name KABELOVNA Děčín Podmokly, a. s. was used.
1992	Company share acquisition by SIEMENS AG.
1994	Initiation of cable assemblies production.
1995	ISO 9001 certification completed.
1996	Initiation of installation cables production.
1996	Czech Republic Quality Award.
1998	ISO 14001 certification completed.
2000	Establishment of subsidiary company KDP Kabeltechnik Berlin, GmbH.
2000	Sale of SIEMENS AG share to investment fund BANCROFT CZ.
2001	CDT Pittsburgh becomes a majority owner of the company.
2002	Complete renewal of optic cable assortment.
2003	Initiation of data cable production.
2004	Merge with Belden company, Belden CDT inc. was established.
2007	Wilms Gruppe becomes a new owner of KABELOVNA.
2010	KABELOVNA Děčín Podmokly, s.r.o. celebrates 100 th Anniversary.
2015	New portfolio of cable constructions.
1. 1. 2016	KABELOVNA Děčín Podmokly, s.r.o. has become a member of FTTH Council.
2022	KDP has become a member of Association of Cable Manufacturers.

Certificates and CPR



DECLARATION OF PERFORMANCE

No. 2/23

1. Unique identification code of the product-type:	JIA-DQIBN/BSRH 12,24 (ZN01)
2. Intended use(s):	Communication fiber optical cable
3. Manufacturer:	KABELOVNA Děčín Podmokly, s.r.o., Ústecká 840/33, 406 33 Děčín 6, CZECH REPUBLIC
4. Authorised representative:	-
5. Systems of AVCP:	+
6. Harmonised standard:	EN 50575:2014+A1:2016
Notified body/ies:	ELEKTROTECHNICKÝ ZKUŠEBNÍ ÚSTAV s.p., No. 1014
7. Declared performance/s:	Reaction to fire: B2ca-s1,d0,a1 Dangerous substances: NFPA
8. Appropriate Technical Documentation and/or Specific Technical Documentation:	Test report No. 212740-01/02 16.12.2021

The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Place of issue: Děčín Date of issue: 9.2.2023

Signed for and on behalf of the manufacturer:

Ing. Lenka Mátlová

Function:

Commercial director

KABELOVNA Děčín Podmokly, s.r.o.
Ústecká 840/33, 406 33 Děčín
Česká republika

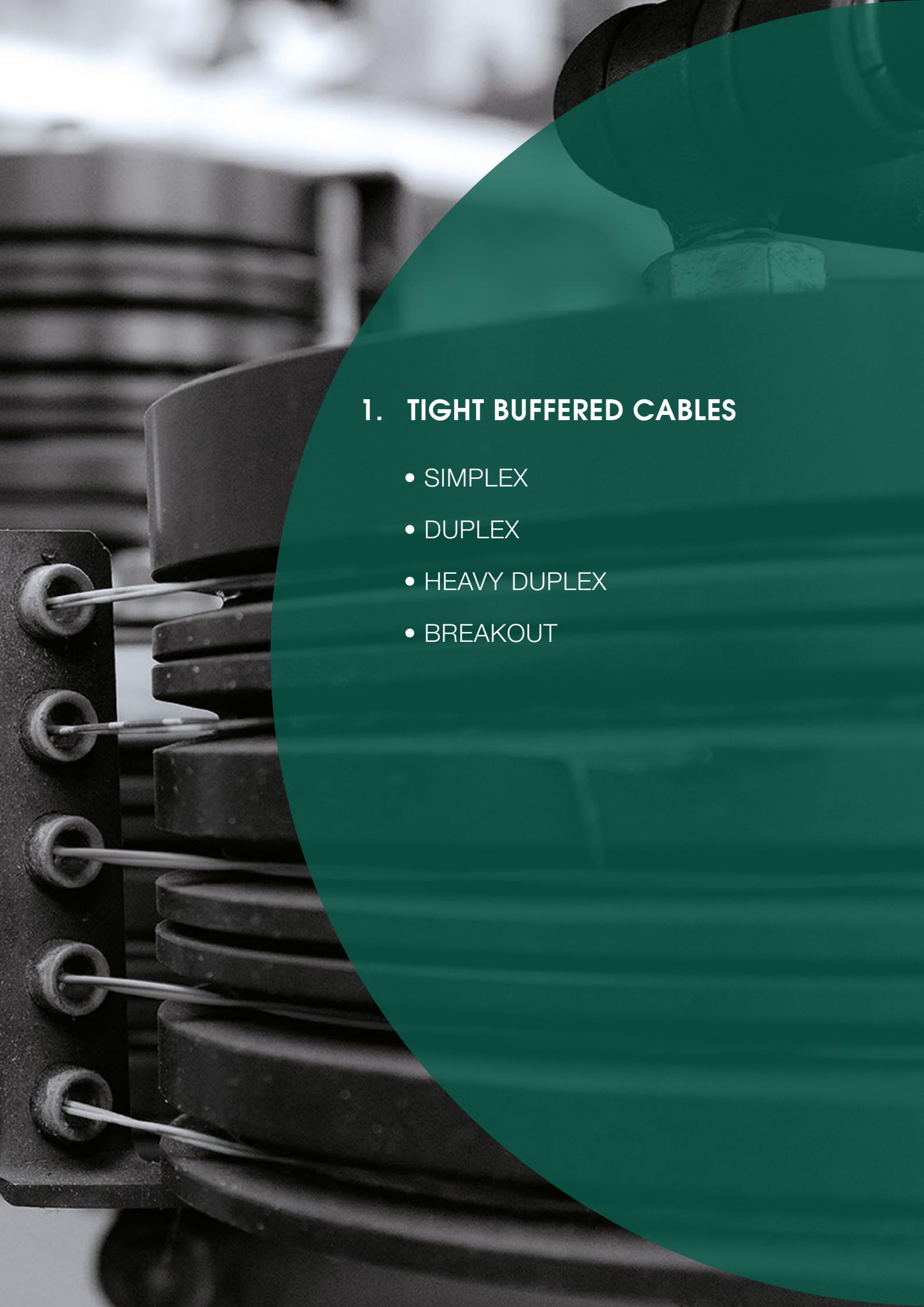
id. 0270991
IČ: 12201999

Address: 402 01 Děčín 111
E-mail: kabelova@kabelova.cz
www.kabelova.cz

Bez ohledu na fakturaci, faktura je vydávána v České republice, když je faktura vydávána v České republice, faktura je vydávána v České republice.







1. TIGHT BUFFERED CABLES

- SIMPLEX
- DUPLEX
- HEAVY DUPLEX
- BREAKOUT

SIMPLEX

Specification: 16x1, 17x1, 11x1, 12x1, 14x1, 15x1, 18x1, 19x1, 13x1, Z026, Z174



Indoor



FTTx



Data center



Halogen free



Description of materials:

1. FR-LSZH buffered optical fiber. 2. Waterblocking aramid yarn. 3. FR-LSZH outer jacket.

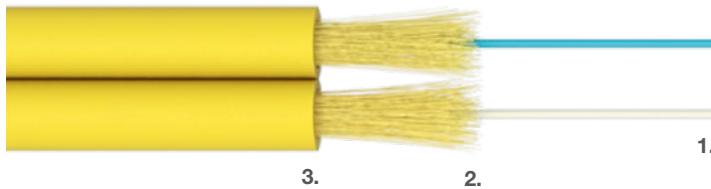
Temperature range

Installation	-5 to +50 °C
Operation	-5 to +50 °C
Storage	-5 to +50 °C

Design code	Simplex diameter [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
16x1	1.6	3	100	500
17x1	1.7	3	100	500
11x1	1.8	4	100	500
12x1	2.0	5	100	500
14x1	2.4	7	250	500
15x1	2.5	7	300	500
18x1	2.8	8	400	500
19x1	2.9	9	300	500
13x1	3.0	9	300	500
Z026	2.3	6	250	500
Z174	2.6	8	300	500

DUPLEX

Specification: 26x1, 21x1, 22x1, 24x1, 28x1, 23x1, Z175



Description of materials:

1. FR-LSZH buffered optical fibers. 2. Waterblocking aramid yarn. 3. FR-LSZH outer jacket.

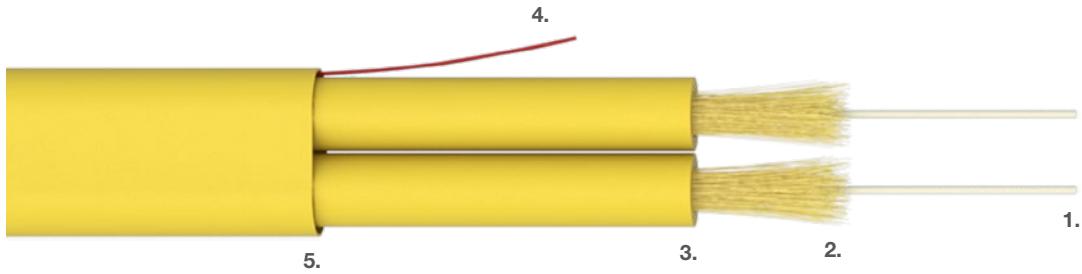
Temperature range

Installation	-5 to +50 °C
Operation	-5 to +50 °C
Storage	-5 to +50 °C

Design code	Cable outer diameter [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
26x1	1.6 x 3.4	6	200	1,000
21x1	1.8 x 3.8	7	200	1,000
22x1	2.0 x 4.3	9	200	1,000
24x1	2.4 x 5.1	12	500	1,000
28x1	2.8 x 5.9	17	500	1,000
23x1	3.0 x 6.3	20	500	1,000
Z175	2.6 x 5.6	14	500	1,000

HEAVY DUPLEX

Specification: 32x1, 34x1, 38x1, Z176, Z235, Z279



Description of materials:

1. FR-LSZH buffered optical fibers.
2. Waterblocking aramid yarn.
3. FR-LSZH inner jacket.
4. Rip-Cord.
5. FR-LSZH outer jacket, UV stable.

Temperature range	32x1, 34x1, 38x1, Z176	Z235, Z279
Installation	0 to +50 °C	-15 to +50 °C
Operation	0 to +50 °C	-20 to +70 °C
Storage	0 to +50 °C	-20 to +70 °C

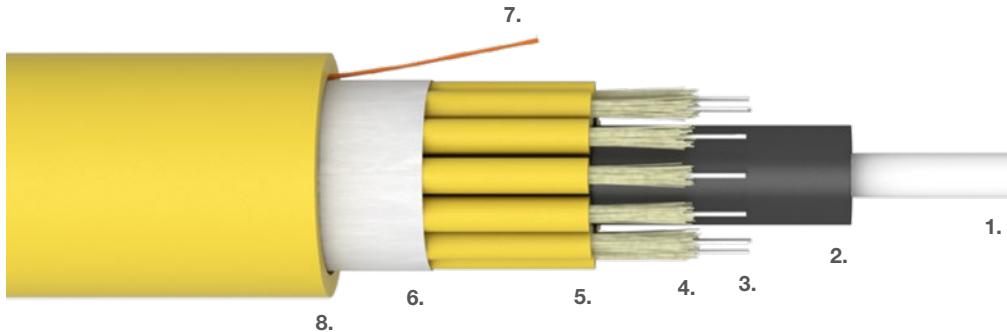
Design code	Cable outer diameter [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
32x1	3.0 x 5.0	19	200	1,000
34x1	3.6 x 6.0	28	500	1,000
38x1	4.2 x 7.0	35	500	1,000
Z176	3.6 x 6.2	28	600	1,000
Z235	3.0 x 5.0	18	200	1,000
Z279	4.2 x 7.0	33	500	1,000

BREAKOUT STANDARD

Specification: 41x1, 42x1, 44x1, 49x1



TIGHT BUFFERED



Description of materials:

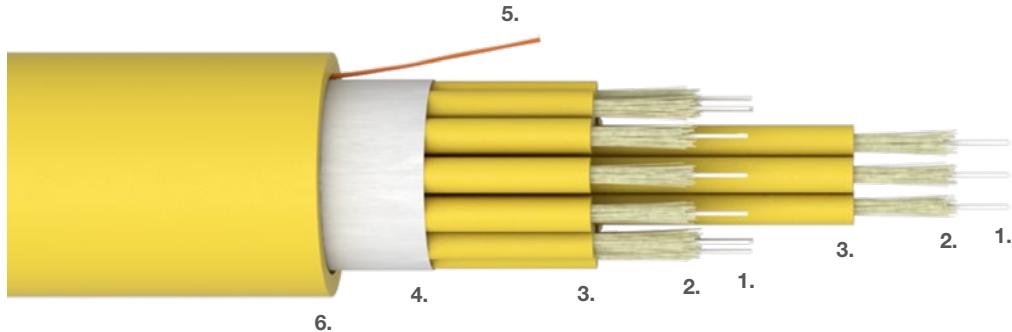
1. Central FRP strength member.
2. PE coating for central FRP strength member when necessary.
3. FR-LSZH buffered optical fibers.
4. Waterblocking aramid yarn.
5. Simplex cable.
6. Water-swellable tape.
7. Rip-Cord.
8. FR-LSZH outer jacket, UV stable.

Temperature range	41x1, 49x1	42x1, 44x1
Installation	-5 to +40 °C	-5 to +50 °C
Operation	-5 to +50 °C	-20 to +60 °C
Storage	-25 to +60 °C	-20 to +60 °C

Design code	Max. fiber count	Simplex diameter [mm]	Cable outer diameter [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
41x1	36	1.8	15.0	226	3,500	2,000
42x1	24	2.0	14.3	197	4,000	1,500
44x1	24	2.4	16.8	277	4,000	1,500
49x1	24	2.9	19.7	334	5,300	1,500

BREAKOUT NO CSM

Specification: 82x1



Description of materials:

1. FR-LSZH buffered optical fibers.
2. Waterblocking aramid yarn.
3. Simplex cable.
4. Water-swellable tape.
5. Rip-Cord.
6. FR-LSZH outer jacket, UV stable.

Temperature range

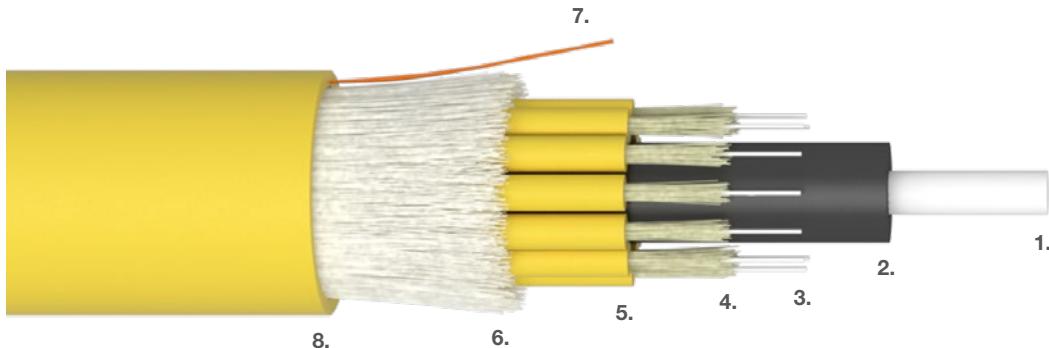
Installation	-5 to +50 °C
Operation	-20 to +60 °C
Storage	-20 to +60 °C

Design code	Max. fiber count	Simplex diameter [mm]	Cable outer diameter [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
82x1	24	2.0	14.3	192	300	1,000

BREAKOUT IMPROVED

Specification: 42x8, 44x8

TIGHT BUFFERED

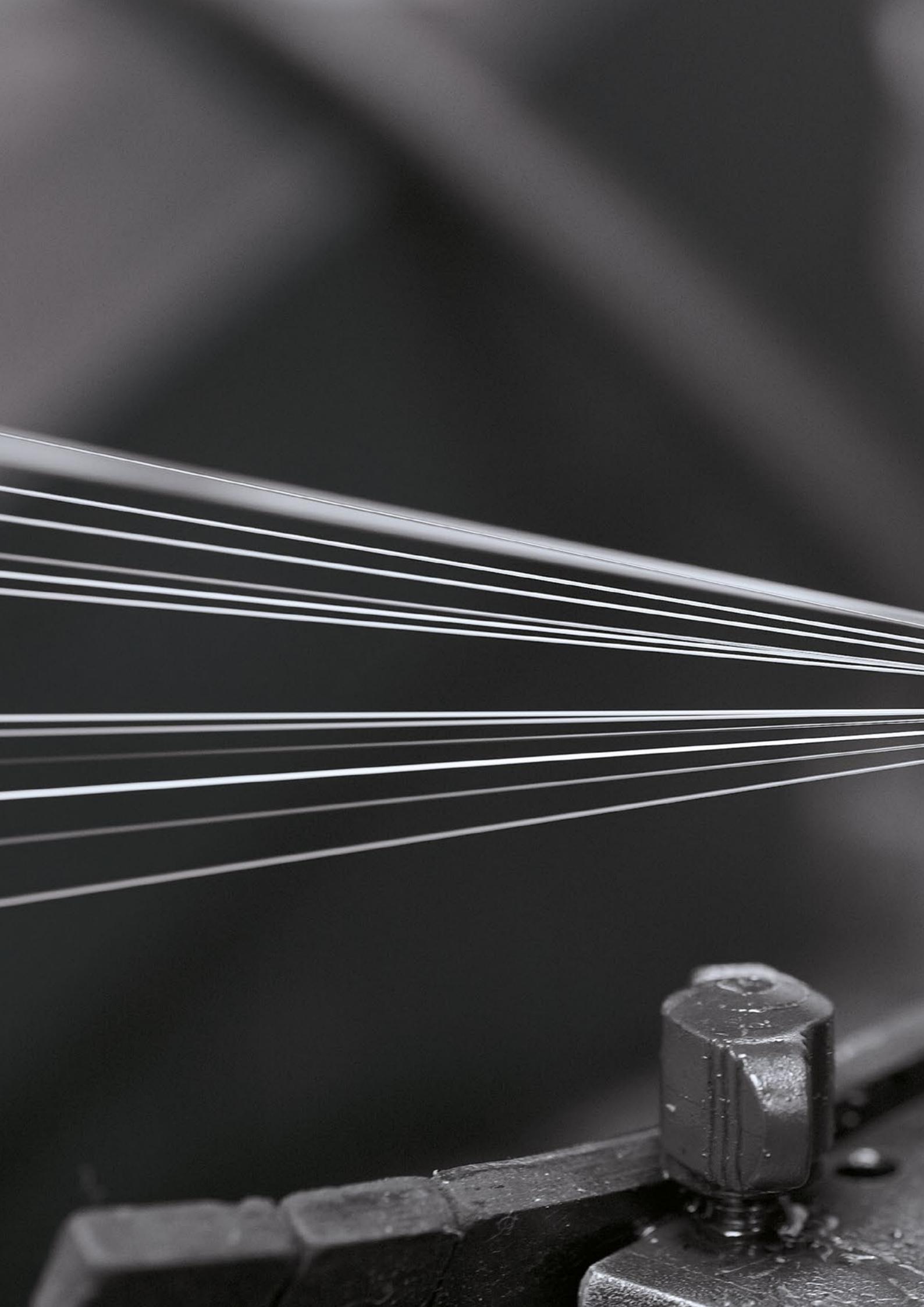


Description of materials:

1. Central FRP strength member.
2. PE coating for central FRP strength member when necessary.
3. FR-LSZH buffered optical fibers.
4. Waterblocking aramid yarn.
5. Simplex cable.
6. Waterblocking E-glass yarn.
7. Rip-Cord.
8. FR-LSZH outer jacket, UV stable.

Temperature range	42x8	44x8
Installation	-5 to +40 °C	-5 to +40 °C
Operation	-20 to +60 °C	-5 to +50 °C
Storage	-20 to +60 °C	-25 to +60 °C

Design code	Max. fiber count	Simplex diameter [mm]	Cable outer diameter [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
42x8	24	2.0	15.4	246	4,500	2,000
44x8	24	2.4	18.1	334	5,500	2,000



2. DROP CABLES

- DROP
- FLAT DROP
- FLAT DROP FIG. 8

DROP

Specification: 7A01, Z236, Z237, Z449



Description of materials:

1. Optical fibers. 2. Aramid yarn. 3. FR-LSZH outer jacket, UV stable.

Temperature range

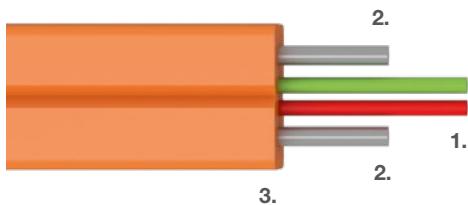
Installation	-5 to +50 °C
Operation	-20 to +60 °C
Storage	-20 to +60 °C

Design code	Fiber count	Cable outer diameter [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
7A01	1–6	3.0	10	500	1,000
7A01	8–12	3.4	12	500	1,000
7A01	16	3.7	14	500	1,000
7A01	24	4.0	16	500	1,000
Z236	1–12	3.4	13	700	1,000
Z237	2	3.0	11	1,000	1,000
Z237	4	3.2	11	1,000	1,000
Z237	8	3.2	12	1,000	1,000
Z237	12	3.4	13	1,000	1,000
NEW Z449	4	2,8	7	400	1,000

FLAT DROP

Specification: Z041, Z043

DROP



Description of materials:

1. Optical fibers. 2. Steel wire or FRP. 3. FR-LSZH outer jacket, UV stable.

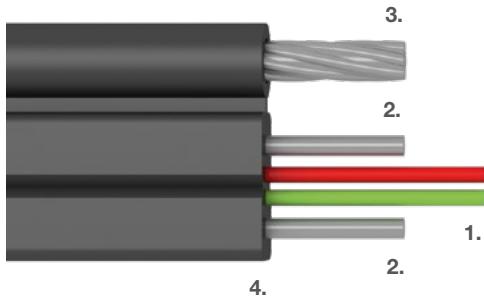
Temperature range

Installation	-15 to +50 °C
Operation	-30 to +70 °C
Storage	-30 to +70 °C

Design code	Fiber count	Cable outer diameter [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
Z041	2	2 x 3.0	10	300	4,000
Z043	2	2 x 3.0	8	100	4,000

FLAT DROP FIG. 8

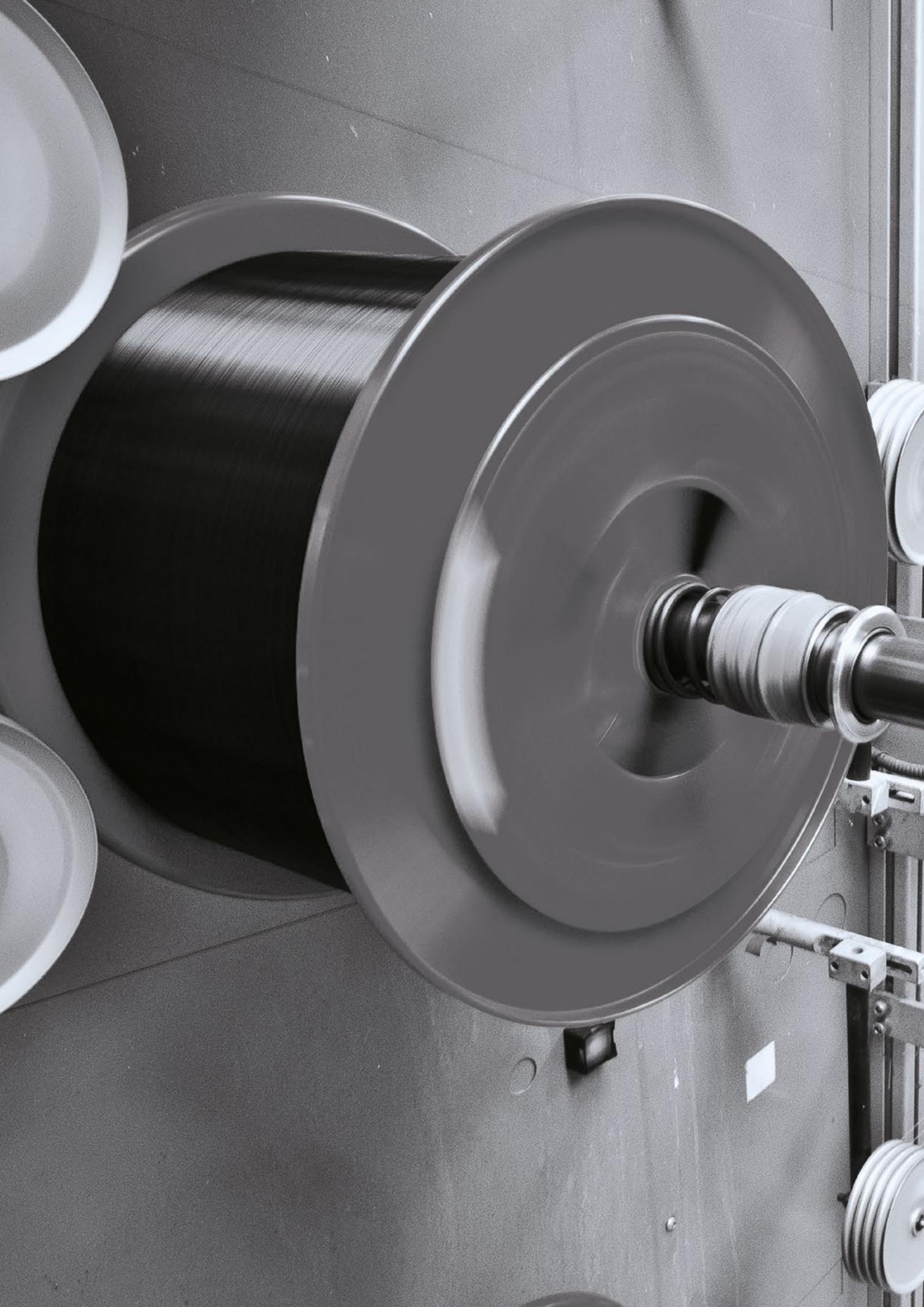
Specification: Z042, Z046



Description of materials:

1. Optical fibers.
2. Steel wire or FRP.
3. Steel wire messenger Ø 1.0 mm.
4. FR-LSZH outer jacket, UV stable.

Design code	Fiber count	Cable outer diameter [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
Z042	2	2 x 5.2	20	800	4,000
Z046	2	2 x 5.2	18	800	4,000



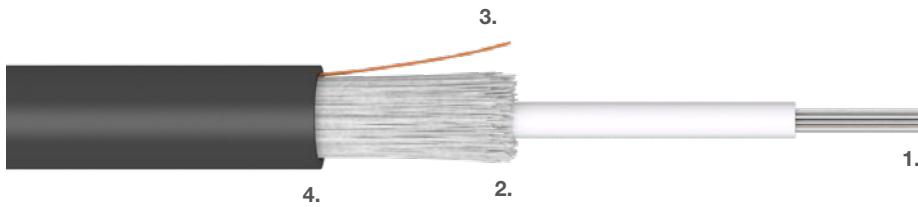


3. CLT CABLES

- STANDARD
- IMPROVED
- FRP
- CST SINGLE
- CST DOUBLE
- SWA
- MICRO

CLT STANDARD

Specification: AE00, BE00, AE02, BE02



Description of materials:

1. Gel filled PBT loose tube with optical fibers.
2. Waterblocking E-glass yarn.
3. Rip-Cord.
4. FR-LSZH or PE outer jacket, UV stable.

Temperature range

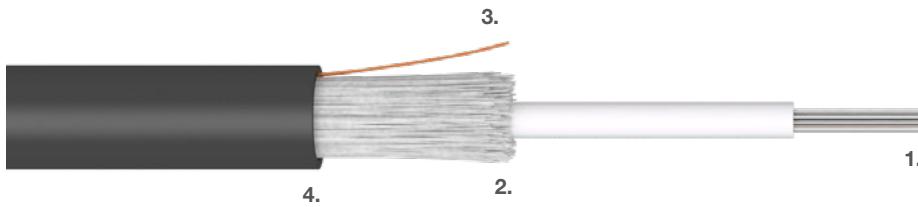
Installation	-15 to +50 °C
Operation	-20 to +70 °C
Storage	-20 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
AE00	12	2.5	5.4	27	1,100	2,000
BE00	24	3.0	5.8	31	1,100	2,000
AE02	12	2.5	5.4	35	1,100	2,000
BE02	24	3.0	6.4	48	1,100	2,000

CLT IMPROVED

Specification: AR00, BR00, AR02, BR02

CLT



Description of materials:

1. Gel filled PBT loose tube with optical fibers.
2. Waterblocking E-glass yarn.
3. Rip-Cord.
4. FR-LSZH or PE outer jacket, UV stable.

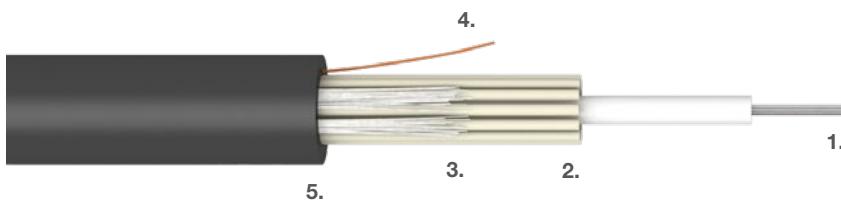
Temperature range

Installation	-15 to +50 °C
Operation	-20 to +70 °C
Storage	-20 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
AR00	12	2.5	6.5	39	2,000	2,000
BR00	24	3.0	7.7	52	2,500	2,000
AR02	12	2.5	6.5	50	2,000	2,000
BR02	24	3.0	7.7	68	2,500	2,000

CLT FRP

Specification: BF01, BF02



Description of materials:

1. Gel filled PBT loose tube with optical fibers.
2. FRP dielectric strength member.
3. Waterblocking E-glass yarn.
4. Rip-Cord.
5. FR-LSZH or PE outer jacket, UV stable.

Temperature range

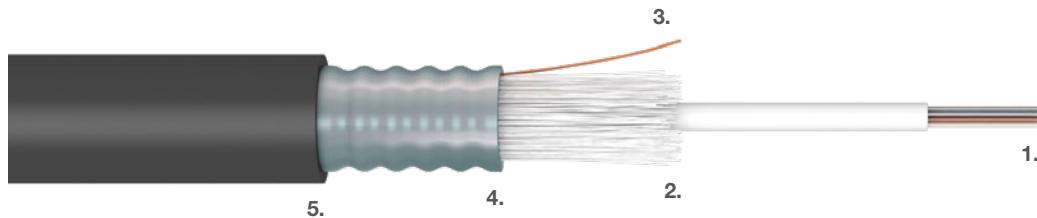
Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
BF01	24	3.0	7.4	53	2,300	2,000
BF02	24	3.0	7.4	65	2,300	2,000

CLT CST

Specification: BH01, BH02, Z144, Z145

CLT



Description of materials:

1. Gel filled PBT loose tube with optical fibers.
2. Waterblocking E-glass yarn.
3. Rip-Cord.
4. Corrugated steel tape.
5. FR-LSZH or PE outer jacket, UV stable.

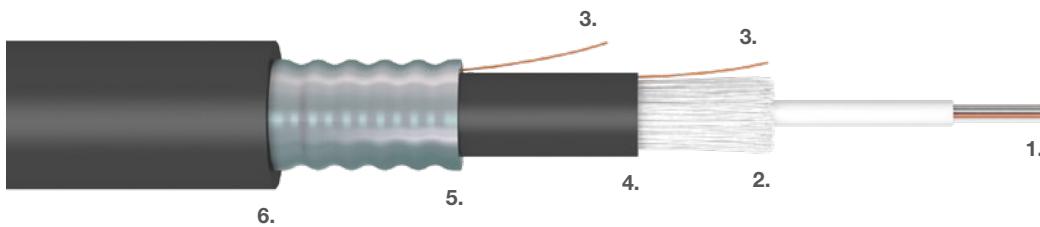
Temperature range

Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
BH01	24	3.0	9.9	98	2,500	6,000
BH02	24	3.0	10.1	120	2,500	6,000
Z144	24	3.0	7.7	70	1,100	5,000
Z145	24	3.0	7.9	87	1,100	3,000

CLT CST DOUBLE JACKET

Specification: BIP1, BIF2, BIP2



1. Gel filled PBT loose tube with optical fibres.
2. Waterblocking E-glass yarn.
3. Rip-Cord.
4. FR-LSZH or PE inner jacket.
5. Corrugated steel tape.
6. FR-LSZH or PE outer jacket, UV stable.

Temperature range

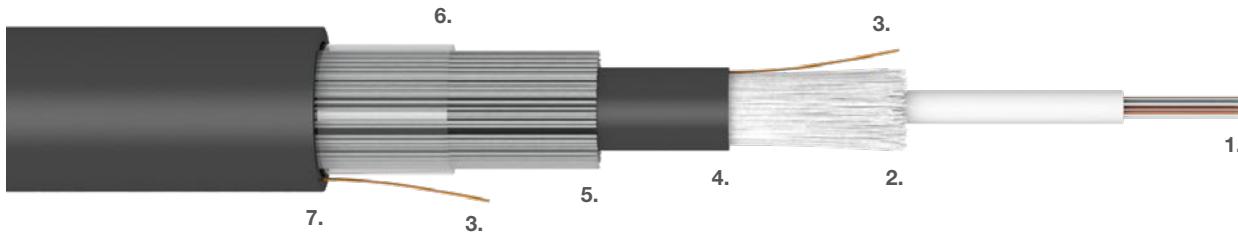
Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
BIP1	24	3.0	10.5	106	1,100	6,000
BIF2	24	3.0	10.5	138	1,100	6,000
BIP2	24	3.0	10.5	131	1,100	6,000

CLT SWA

Specification: BWPI, BWP2, BWFI, BWF2

CLT



Description of materials:

1. Gel filled PBT loose tube with optical fibers.
2. Waterblocking E-glass yarn.
3. Rip-Cord.
4. FR-LSZH or PE inner jacket.
5. Steel Wire Armour (SWA).
6. Water-swellable tape.
7. FR-LSZH or PE outer jacket, UV stable.

Temperature range

Installation	-15 to +50 °C
Operation	-30 to +70 °C
Storage	-30 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
BWPI	24	3.0	11.0	199	4,000	4,000
BWP2	24	3.0	11.0	208	4,000	4,000
BWFI	24	3.0	11.0	231	4,000	4,000
BWF2	24	3.0	10.0	222	4,000	4,000

CLT MICRO

Specification: Z044, Z008, Z006, Z238



Indoor



Outdoor



FTTx



Halogen free



Duct



Air blown



Description of materials:

1. Optical fibres. 2. Gell filled PBT loose tube. 3. Low Friction Polymer.

Temperature range

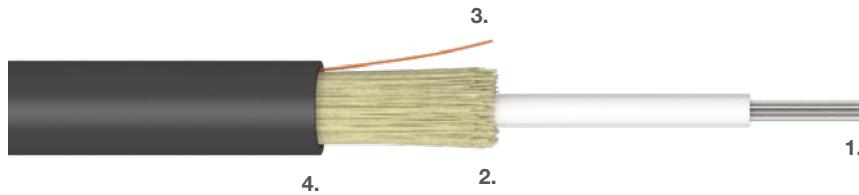
Installation	-5 to +50 °C
Operation	-20 to +70 °C
Storage	-20 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
Z044	4	2.0	2.0	4	70	1,000
Z008	12	2.5	2.5	6	70	1,000
Z006	12	2.8	2.8	8	70	1,000
Z238	24	3.2	3.2	11	250	1,000

CLT MICRO

Specification: AL00, Z339, Z366

CLT



Description of materials:

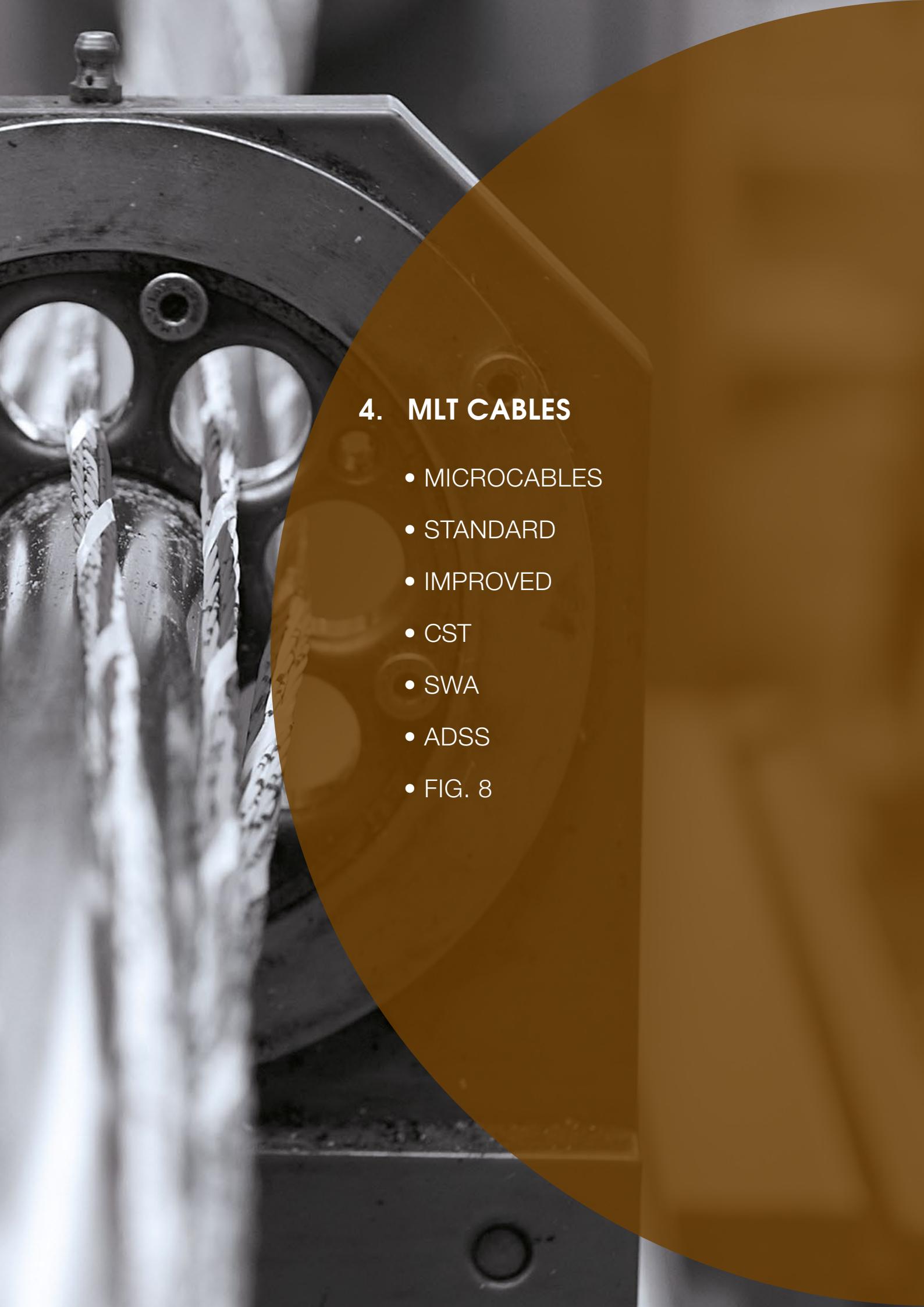
1. Gel filled PBT loose tube with optical fibers.
2. Waterblocking aramid yarn.
3. Rip-Cord.
4. PE outer jacket, UV stable.

Temperature range

Installation	-15 to +50 °C
Operation	-20 to +70 °C
Storage	-20 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
AL00	12	2.3	3.4	10	250	1,000
Z339	12	1.7	2.5	5	90	700
Z366	24	2.5	3.5	10	90	700



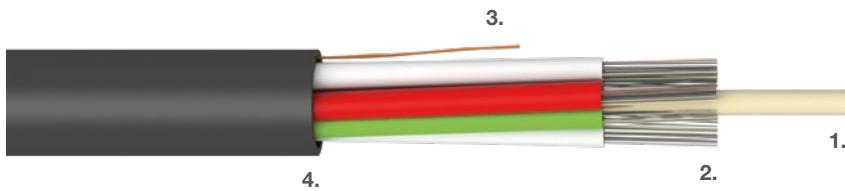


4. MLT CABLES

- MICROCABLES
- STANDARD
- IMPROVED
- CST
- SWA
- ADSS
- FIG. 8

MICROCABLES

Specification: Z019, TM01, TM02, QM01, QM02, WM01, WM02, Z202, Z108



Description of materials:

1. FRP dielectric central strength member.
2. Gel filled PBT loose tube with optical fibers.
3. Rip-Cord.
4. FR-LSZH or PE outer jacket, UV stable.

Temperature range

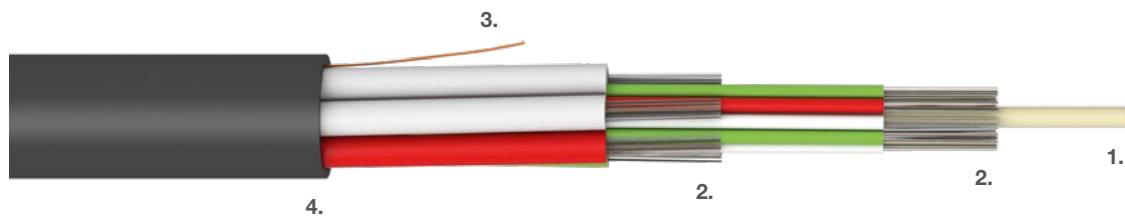
Installation	-15 to +50 °C
Operation	-30 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
Z019	60	1.5	5.2	22	250	1,500
TM01	72	1.5	5.8	29	700	1,500
TM02	72	1.5	6.8	49	700	1,500
QM01	96	1.5	6.5	40	1,400	1,500
QM02	96	1.5	7.5	62	1,400	1,500
WM01	144	1.5	8.6	62	1,500	1,500
WM02	144	1.5	9.6	91	1,500	1,500
Z202	144	1.5	7.1	43	450	1,500
Z108	192	1.5	8.0	53	700	1,500

MICROCABLES

Specification: Z049

MLT



Description of materials:

1. FRP dielectric central strength member. **2.** Gel filled PBT loose tube with optical fibers.
3. Rip-Cord. **4.** PE outer jacket, UV stable.

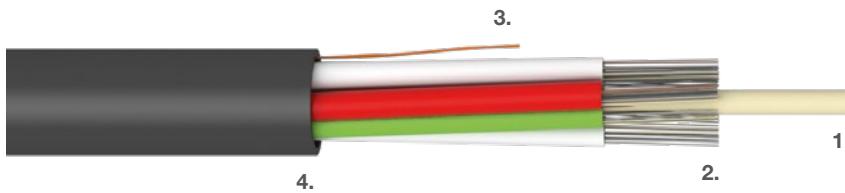
Temperature range

Installation	-15 to +50 °C
Operation	-30 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
Z049	288	1.5	10.2	87	1,100	1,500

MICROCABLES

Specification: UMO1, UM02, CM01, CM02, PM01, PM02, RM01, RM02, VM01, VM02



Description of materials:

1. FRP dielectric central strength member.
2. Gel filled PBT loose tube with optical fibers.
3. Rip-Cord.
4. FR-LSZH or PE outer jacket, UV stable.

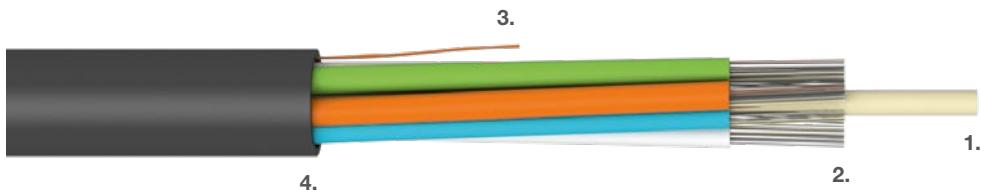
Temperature range

Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
UM01	60	1.7	5.7	27	320	1,500
UM02	60	1.7	6.7	53	320	1,500
CM01	72	1.7	6.2	33	680	1,500
CM02	72	1.7	7.2	61	680	1,500
PM01	96	1.7	7.4	50	2,400	1,500
PM02	96	1.7	8.4	84	2,400	1,500
RM01	144	1.7	9.6	76	2,200	1,500
RM02	144	1.7	10.6	119	2,200	1,500
VM01	216	1.7	9.5	72	1,000	900
VM02	216	1.7	10.5	105	1,000	900

MICROCABLES

Specification: DM01, DM02, KM01, KM02, SM01, SM02



Description of materials:

1. FRP dielectric central strength member.
2. Gel filled PBT loose tube with optical fibers.
3. Rip-Cord.
4. FR-LSZH or PE outer jacket, UV stable.

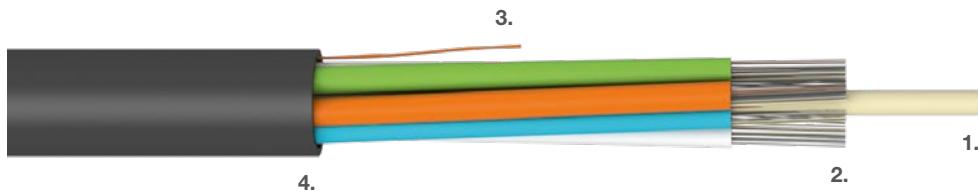
Temperature range

Installation	-15 to +50 °C
Operation	-30 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
DM01	144	2.5	8.7	58	200	1,000
DM02	144	2.5	9.7	87	200	1,000
KM01	192	2.5	10.2	83	1,000	1,000
KM02	192	2.5	11.2	117	1,000	1,000
SM01	288	2.5	13.3	138	1,500	1,000
SM02	288	2.5	14.3	182	1,500	1,000

MICROCABLES 200µm

Specification: Z393, Z024, Z045, Z025



Description of materials:

1. FRP dielectric central strength member. **2.** Gel filled PBT loose tube with up to 24 200µm optical fibers.
3. Rip-Cord. **4.** PE outer jacket, UV stable.

Temperature range

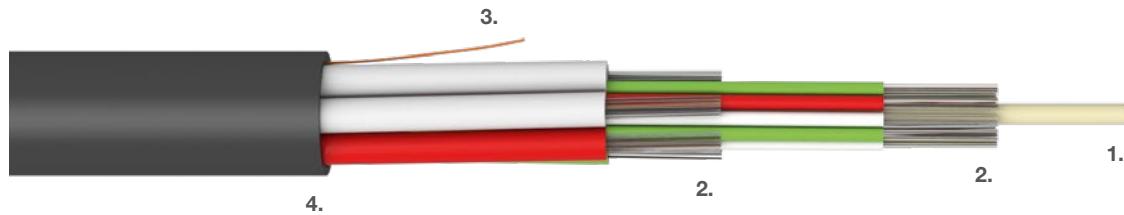
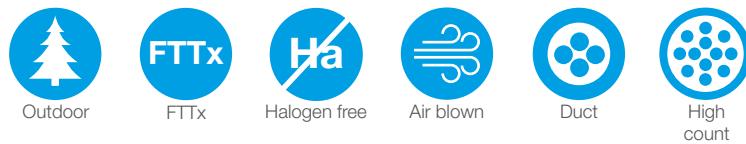
Installation	-5 to +50 °C
Operation	-20 to +60 °C
Storage	-20 to +60 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
Z393	96	1.7	5.2	27	500	50
Z024	144	1.7	6.2	34	700	1,500
Z045	192	1.7	7.4	47	900	1,500
Z025	288	1.7	9.6	79	2,500	1,500

MICROCABLES 200µm

Specification: Z436, Z437, Z022

MLT



Description of materials:

1. FRP dielectric central strength member.
2. Gel filled PBT loose tube with up to 24 200µm optical fibers.
3. Rip-Cord.
4. PE outer jacket, UV stable.

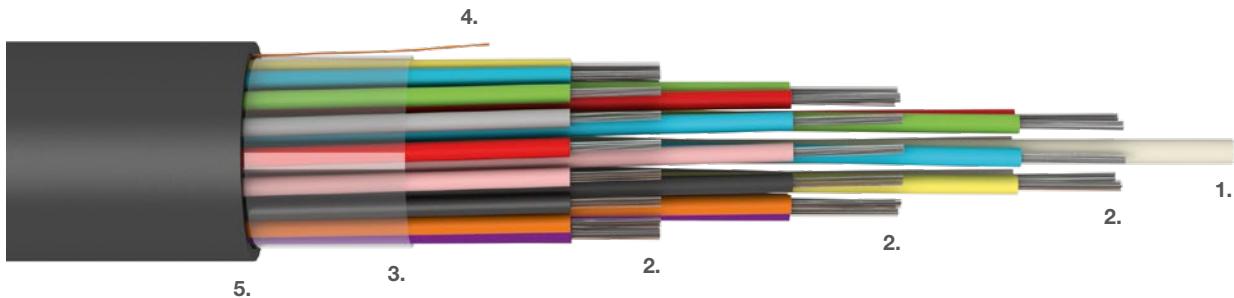
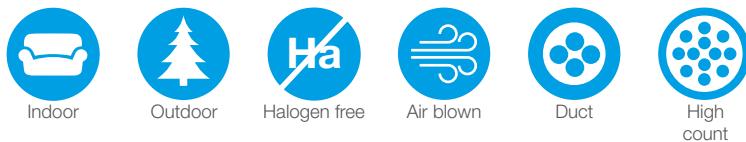
Temperature range

Installation	-15 to +50 °C
Operation	-30 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
Z436	432	1.7	9.8	81	500	500
Z437	576	1.7	11.4	109	800	500
Z022	864	1.7	14.4	165	700	1,000

MLT STANDARD

Specification: Z022, Z304



Description of materials:

1. FRP dielectric central strength member. 2. Gel filled PBT loose tube with optical fibres.
 3. Water-swellable tape. 4. Rip-Cord. 5. FR-LSZH or PE outer jacket, UV stable.

Temperature range

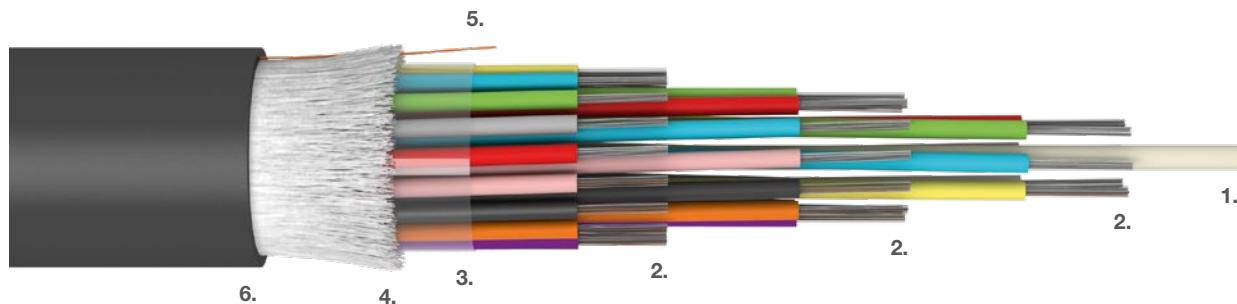
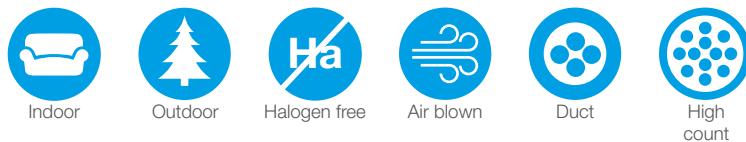
Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
Z022	432	1.7	14.4	157	700	1,000
Z304	432	1.7	15.4	216	700	1,000

MLT STANDARD

Specification: Z349, Z350

MLT



Description of materials:

1. FRP dielectric central strength member. 2. Gel filled PBT loose tube with optical fibers.
 3. Water-swellable tape. 4. Waterblocking E-glass yarn. 5. Rip-Cord. 6. FR-LSZH or PE outer jacket, UV stable.

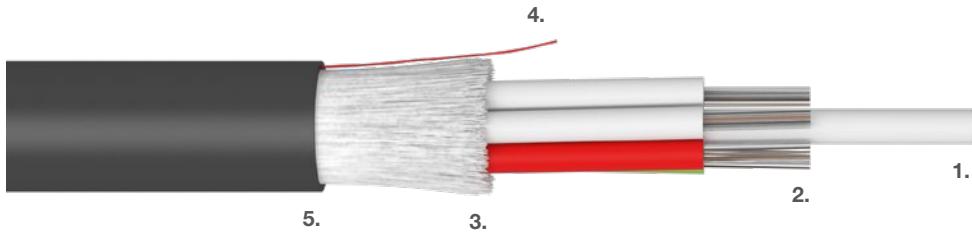
Temperature range

Installation	-15 to +50 °C
Operation	-30 to +70 °C
Storage	-30 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
Z349	864	2.5	21.7	353	4,700	2,000
Z350	864	2.5	21.7	407	4,500	2,000

MLT STANDARD

Specification: UE01, UE02, CE01, CE02, PE01, PE02, RE01, RE02, VE01, VE02



Description of materials:

1. FRP dielectric central strength member.
2. Gel filled PBT loose tube with optical fibers.
3. Waterblocking E-glass yarn.
4. Rip-Cord.
5. FR-LSZH or PE outer jacket, UV stable.

Temperature range

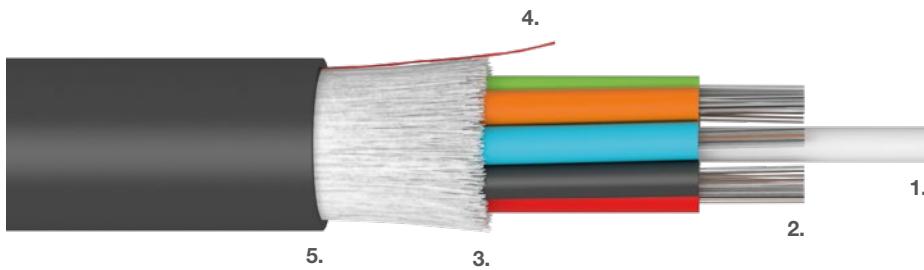
Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
UE01	60	1.7	8.3	58	1,300	2,000
UE02	60	1.7	8.3	75	1,300	2,000
CE01	72	1.7	8.8	67	2,000	2,000
CE02	72	1.7	8.8	86	2,000	2,000
PE01	96	1.7	10.0	90	4,300	2,000
PE02	96	1.7	10.0	111	4,300	2,000
RE01	144	1.7	12.2	127	7,300	2,000
RE02	144	1.7	12.2	154	7,300	2,000
VE01	216	1.7	11.9	117	2,200	2,000
VE02	216	1.7	11.9	146	2,200	2,000

MLT STANDARD

Specification: LE01, LE02, FE01, FE02, GE01, GE02, HE01, HE02, IE00, IE02

MLT



Description of materials:

1. FRP dielectric central strength member. 2. Gel filled PBT loose tube with optical fibers.
 3. Waterblocking E-glass yarn. 4. Rip-Cord. 5. FR-LSZH or PE outer jacket, UV stable.

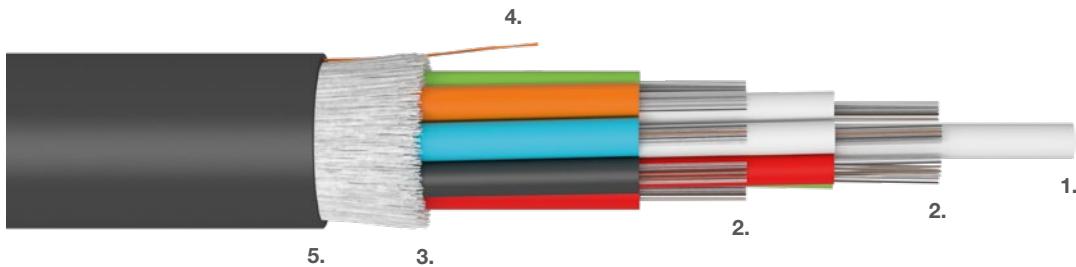
Temperature range

Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
LE01	48	2.3	8.9	63	1,000	2,000
LE02	48	2.3	8.9	83	1,000	2,000
FE01	72	2.3	10.6	89	1,900	2,000
FE02	72	2.3	10.6	112	1,900	2,000
GE01	96	2.3	11.9	113	2,500	2,000
GE02	96	2.3	11.9	141	2,500	2,000
HE01	144	2.3	14.8	170	4,000	2,000
HE02	144	2.3	14.8	206	4,000	2,000
IE00	216	2.3	15.6	223	3,300	2,000
IE02	216	2.3	15.6	223	3,300	2,000

MLT STANDARD

Specification: Z438



Description of materials:

1. FRP dielectric central strength member.
2. Gel filled PBT loose tube with optical fibers.
3. Waterblocking E-glass yarn.
4. Rip-Cord.
5. PE outer jacket, UV stable.

Temperature range

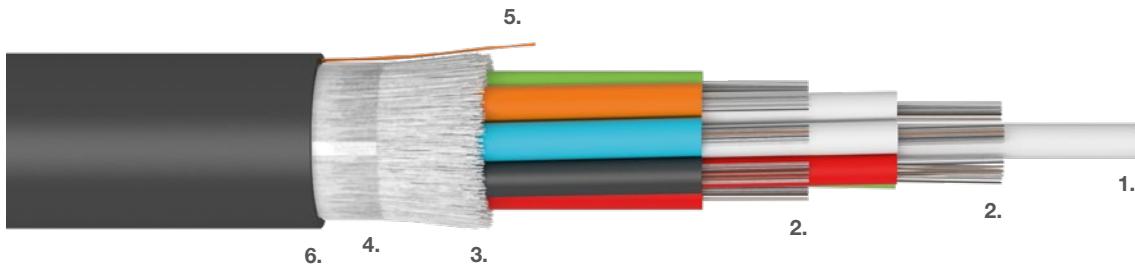
Installation	-15 to +50 °C
Operation	-20 to +70 °C
Storage	-20 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
Z438	288	1.7	13.2	144	3,200	1,000

MLT STANDARD

Specification: Z090, Z182

MLT



Description of materials:

1. FRP dielectric central strength member. 2. Gel filled PBT loose tube with optical fibers.
3. Waterblocking E-glass yarn. 4. Water-swellable tape. 5. Rip-Cord. 6. FR-LSZH or PE outer jacket, UV stable.

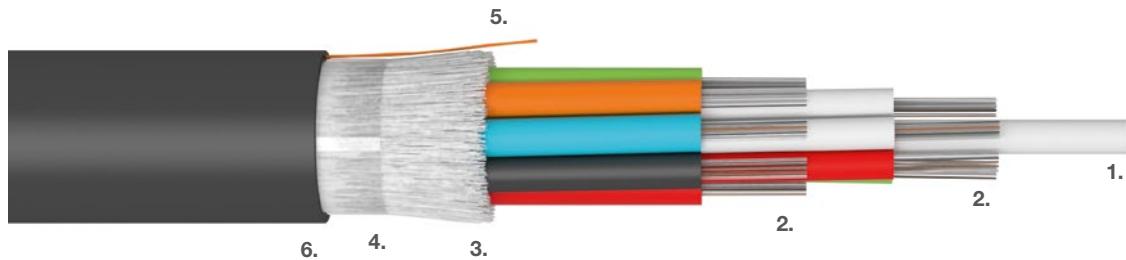
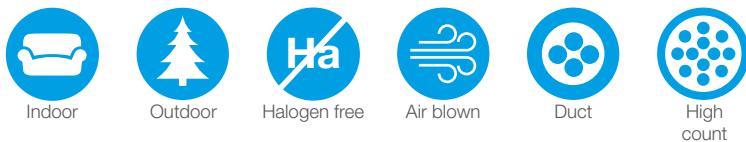
Temperature range

Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
Z090	288	2.3	17.7	236	4,400	2,000
Z182	288	2.3	17.7	279	4,400	2,000

MLT STANDARD

Specification: DE01, DE02, KE01, KE02, SE01, SE02



Description of materials:

1. FRP dielectric central strength member.
2. Gel filled PBT loose tube with optical fibers.
3. Waterblocking E-glass yarn.
4. Water-swellable tape.
5. Rip-Cord.
6. FR-LSZH or PE outer jacket, UV stable.

Temperature range

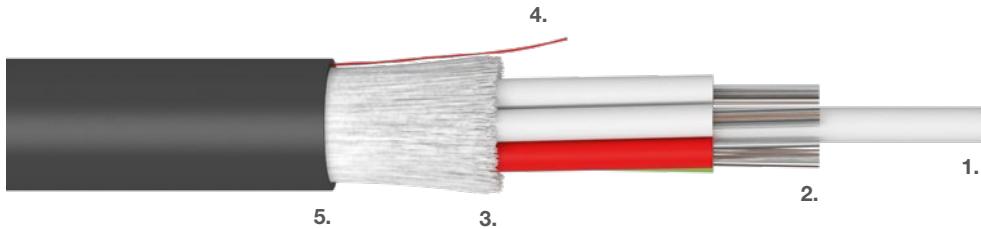
Installation	-15 to +50 °C
Operation	-30 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
DE01	144	2.5	11.7	73	2,000	1,500
DE02	144	2.5	11.7	102	2,000	1,500
KE01	192	2.5	13.1	98	3,200	1,500
KE02	192	2.5	13.1	132	3,200	1,500
SE01	288	2.5	16.2	157	5,200	1,500
SE02	288	2.5	16.2	201	5,200	1,500

MLT IMPROVED

Specification: CR01, CR02, PR01, PR02, RR01, RR02, VR01, VR02

MLT



Description of materials:

1. FRP dielectric central strength member.
2. Gel filled PBT loose tube with optical fibers.
3. Waterblocking E-glass yarn.
4. Rip-Cord.
5. FR-LSZH or PE outer jacket, UV stable.

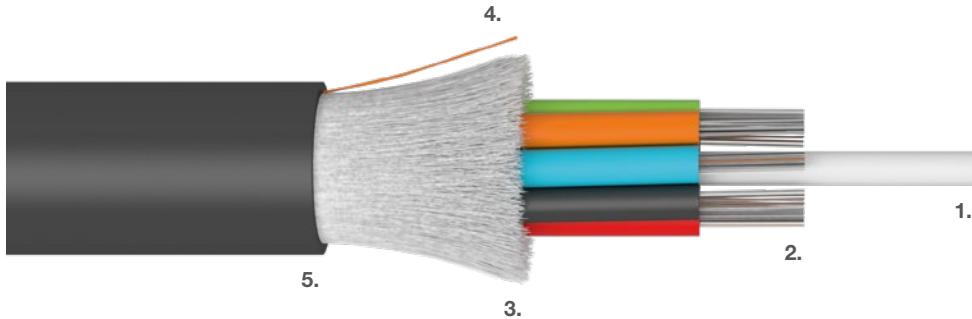
Temperature range

Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
CR01	72	1.7	9.6	83	3,700	2,000
CR02	72	1.7	9.4	101	3,700	2,000
PR01	96	1.7	10.8	108	7,300	2,000
PR02	96	1.7	10.8	130	7,300	2,000
RR01	144	1.7	12.8	150	11,500	2,000
RR02	144	1.7	12.8	179	11,500	2,000
VR01	216	1.7	12.4	133	4,000	2,000
VR02	216	1.7	12.4	166	4,000	2,000

MLT IMPROVED

Specification: LR01, LR02, FR01, FR02, GR01, GR02, HR01, HR02



Description of materials:

1. FRP dielectric central strength member.
2. Gel filled PBT loose tube with optical fibers.
3. Waterblocking E-glass yarn.
4. Rip-Cord.
5. FR-LSZH or PE outer jacket, UV stable.

Temperature range

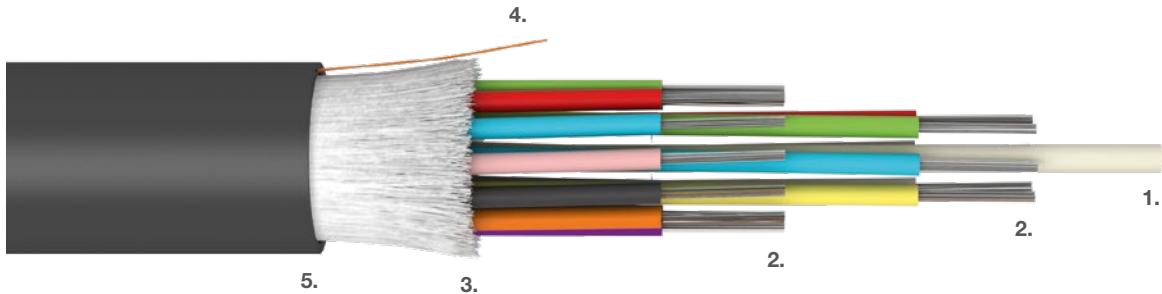
Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
LR01	48	2.3	9.5	75	2,000	2,000
LR02	48	2.3	9.5	95	2,000	2,000
FR01	72	2.3	10.9	100	3,200	2,000
FR02	72	2.3	10.9	124	3,200	2,000
GR01	96	2.3	12.4	133	5,500	2,000
GR02	96	2.3	12.4	161	5,500	2,000
HR01	144	2.3	15.4	199	10,000	2,000
HR02	144	2.3	15.4	235	10,000	2,000

MLT IMPROVED

Specification: IR01, IR02

MLT



Description of materials:

1. FRP dielectric central strength member. 2. Gel filled PBT loose tube with optical fibers.
 3. Waterblocking E-glass yarn. 4. Rip-Cord. 5. FR-LSZH or PE outer jacket, UV stable.

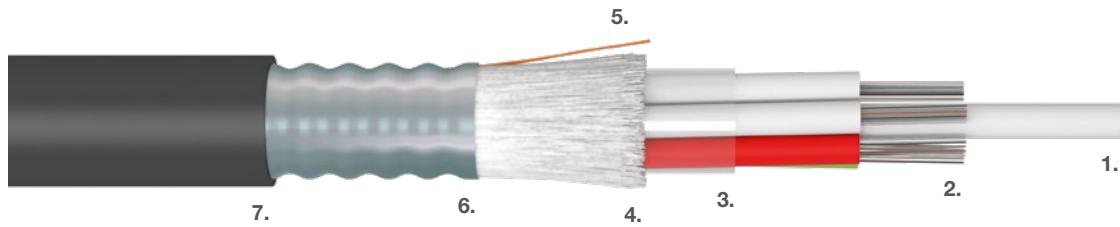
Temperature range

Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
IR01	216	2.3	15.8	201	6,000	2,000
IR02	216	2.3	15.8	242	6,000	2,000

MLT CST

Specification: CH01, CH02, PH01, PH02, RH01, RH02



Description of materials:

1. FRP dielectric central strength member.
2. Gel filled PBT loose tube with optical fibers.
3. Water-swellable tape.
4. Waterblocking E-glass yarn.
5. Rip-Cord.
6. Corrugated steel tape.
7. FR-LSZH or PE outer jacket, UV stable.

Temperature range

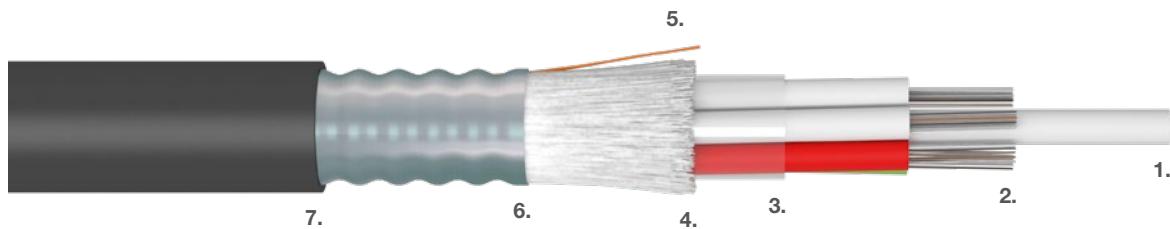
Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
CH01	72	1.7	10.1	107	1,800	3,500
CH02	72	1.7	10.1	127	1,800	2,000
PH01	96	1.7	12.1	141	3,800	2,000
PH02	96	1.7	12.1	165	3,800	2,000
RH01	144	1.7	14.1	186	5,600	3,500
RH02	144	1.7	14.1	216	5,600	2,000

MLT CST

Specification: LH01, LH02, FH01, FH02, GH01, GH02, HH01, HH02

MLT



Description of materials:

1. FRP dielectric central strength member.
2. Gel filled PBT loose tube with optical fibers.
3. Water-swellable tape.
4. Waterblocking E-glass yarn.
5. Rip-Cord.
6. Corrugated steel tape.
7. FR-LSZH or PE outer jacket, UV stable.

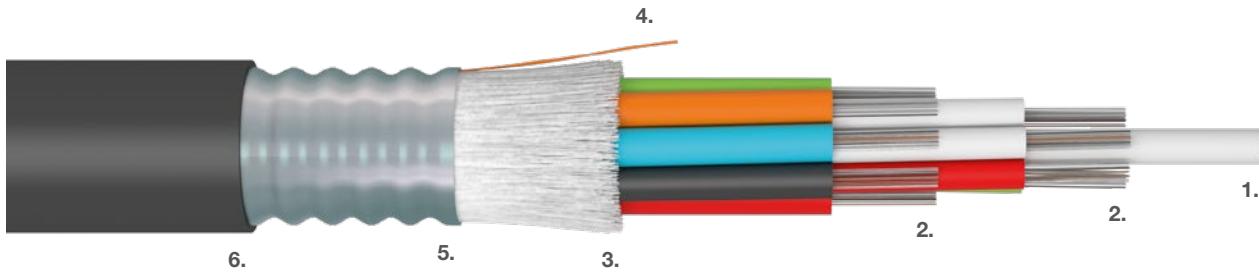
Temperature range

Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
LH01	48	2.3	11.5	125	1,200	4,500
LH02	48	2.3	11.5	151	1,200	2,500
FH01	72	2.3	12.5	150	2,100	4,500
FH02	72	2.3	12.5	178	2,100	2,500
GH01	96	2.3	14.5	186	2,600	4,500
GH02	96	2.3	14.5	219	2,600	2,500
HH01	144	2.3	16.5	250	4,500	4,500
HH02	144	2.3	16.5	289	4,500	2,500

MLT CST

Specification: VH01, VH02



Description of materials:

1. FRP dielectric central strength member. 2. Gel filled PBT loose tube with optical fibers.
 3. Waterblocking E-glass yarn. 4. Rip-Cord. 5. Corrugated steel tape. 6. FR-LSZH or PE outer jacket, UV stable.

Temperature range

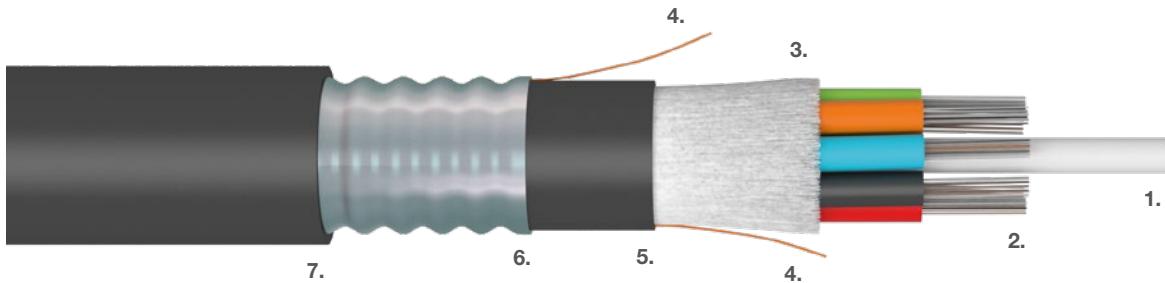
Installation	-15 to +50 °C
Operation	-45 to +70 °C
Storage	-45 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
VH01	216	1.7	14.5	195	2,200	6,000
VH02	216	1.7	14.5	228	2,200	6,000

MLT CST DOUBLE JACKET

Specification: LIPI, LIP2, LIF2, FIPI, FIP2, FIF2

MLT



Description of materials:

1. FRP dielectric central strength member.
2. Gel filled PBT loose tube with optical fibers.
3. Waterblocking E-glass yarn.
4. Rip-Cord.
5. FR-LSZH or PE inner jacket.
6. Corrugated steel tape.
7. FR-LSZH or PE outer jacket, UV stable.

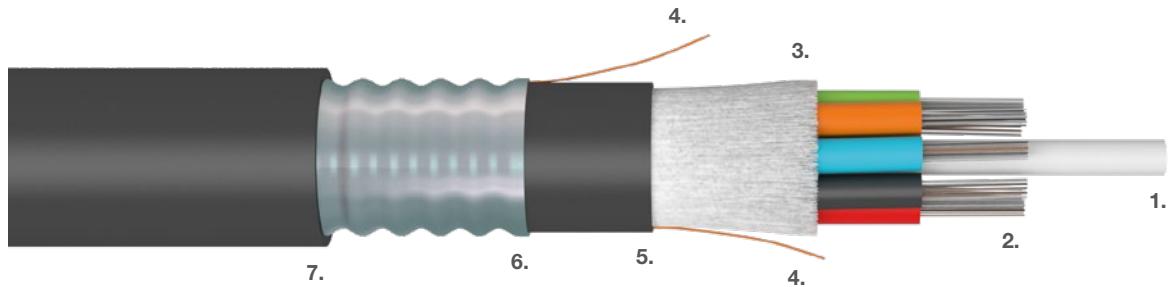
Temperature range

Installation	-15 to +50 °C
Operation	-45 to +70 °C
Storage	-45 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
LIPI	48	2.3	13.5	166	1,500	6,000
LIP2	48	2.3	13.5	196	1,500	4,000
LIF2	48	2.3	13.5	209	1,500	4,000
FIPI	72	2.3	14.5	197	3,000	6,000
FIP2	72	2.3	14.5	230	3,000	4,000
FIF2	72	2.3	14.5	246	3,000	4,000

MLT CST DOUBLE JACKET

Specification: GIPI, GIF2, HIPI, HIF2



Description of materials:

1. FRP dielectric central strength member.
2. Gel filled PBT loose tube with optical fibers.
3. Waterblocking E-glass yarn.
4. Rip-Cord.
5. FR-LSZH or PE inner jacket.
6. Corrugated steel tape.
7. FR-LSZH or PE outer jacket, UV stable.

Temperature range

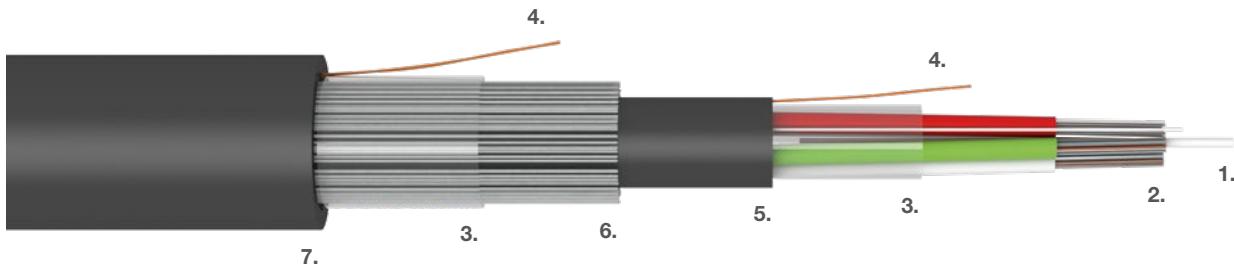
Installation	-15 to +50 °C
Operation	-45 to +70 °C
Storage	-45 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
GIPI	96	2.3	16.5	240	4,000	6,000
GIF2	96	2.3	16.5	296	4,000	4,000
HIPI	144	2.3	19.5	323	7,000	6,000
HIF2	144	2.3	19.5	393	7,000	4,000

MLT SWA

MLT

Specification: LWPI, LWF2, FWPI, FWF2, GWPI, GWF2, HWPI, HWF2



Description of materials:

1. FRP dielectric central strength member.
2. Gel filled PBT loose tube with optical fibers.
3. Water-swellable tape.
4. Rip-Cord.
5. FR-LSZH or PE inner jacket.
6. Steel Wire Armour (SWA).
7. FR-LSZH or PE outer jacket, UV stable.

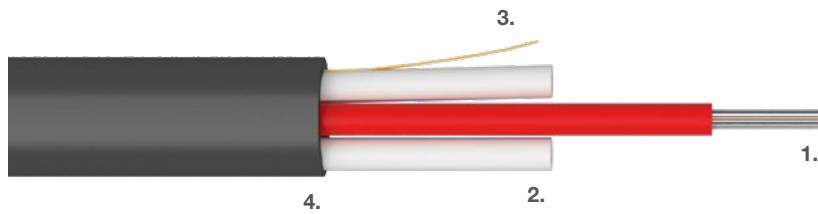
Temperature range

Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
LWPI	48	2.3	13.2	278	4,000	4,500
LWF2	48	2.3	13.2	317	4,000	4,500
FWPI	72	2.3	14.7	334	6,500	4,500
FWF2	72	2.3	14.7	380	6,500	4,500
GWPI	96	2.3	16.0	392	7,500	4,500
GWF2	96	2.3	16.0	442	7,500	4,500
HWPI	144	2.3	18.9	516	8,500	4,500
HWF2	144	2.3	18.9	579	8,500	4,500

ADSS

Specification: AS01, Z159, Z194



Description of materials:

1. Gel filled PBT loose tube with optical fibers. **2.** FRP periferal strength member.
3. Rip-Cord. **4.** PE outer jacket, UV stable.

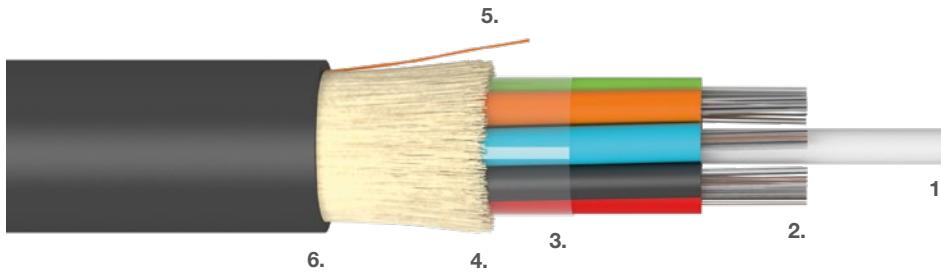
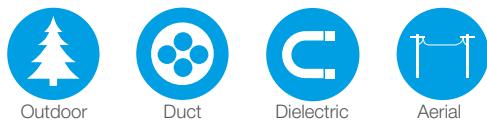
Temperature range

Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
AS01	12	2.0	4.2 x 7.8	36	1,600	4,000
Z159	24	1.7	9.1 x 3.8	36	1,300	4,000
Z194	48	3.5	12.5 x 5.5	75	2,500	2,500

ADSS – Light 2.6 kN

Specification: N3HI, N4HI, N5HI, N6HI



Description of materials:

1. FRP dielectric central strength member. **2.** Gel filled PBT loose tube with optical fibers.
3. Water-swellable tape. **4.** Waterblocking aramid yarn. **5.** Rip-Cord. **6.** PE outer jacket, UV stable.

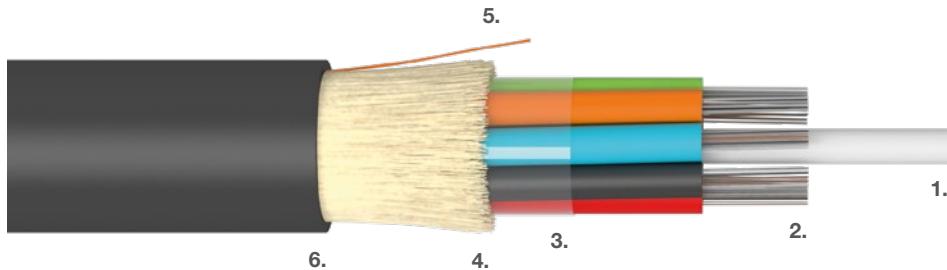
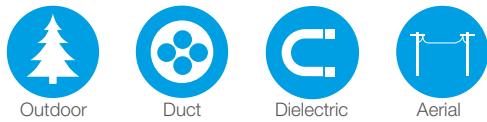
Temperature range

Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
N3HI	48	2.0	8.9	63	3,000	1,500
N4HI	72	2.0	9.8	80	3,000	1,500
N5HI	96	2.0	11.2	100	3,000	1,500
N6HI	144	2.0	13.6	145	3,000	1,500

ADSS 3 kN

Specification: N3XI, N4XI, N5XI, N6XI



Description of materials:

1. FRP dielectric central strength member.
2. Gel filled PBT loose tube with optical fibers.
3. Water-swellable tape.
4. Waterblocking aramid yarn.
5. Rip-Cord.
6. PE outer jacket, UV stable.

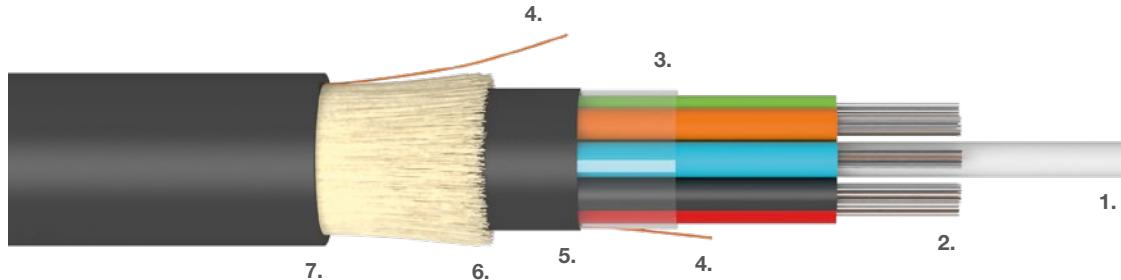
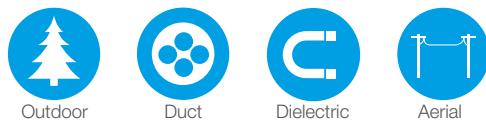
Temperature range

Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
N3XI	48	2.5	10.2	81	3,000	3,000
N4XI	72	2.5	11.9	112	3,000	3,000
N5XI	96	2.5	13.3	135	3,000	3,000
N6XI	144	2.5	16.4	203	3,000	3,000

ADSS 6 kN

Specification: N3Y1, N4Y1, N5Y1, N6Y1



Description of materials:

1. FRP dielectric central strength member.
2. Gel filled PBT loose tube with optical fibers.
3. Water-swellable tape.
4. Rip-Cord.
5. PE inner jacket.
6. Waterblocking aramid yarn.
7. PE outer jacket, UV stable.

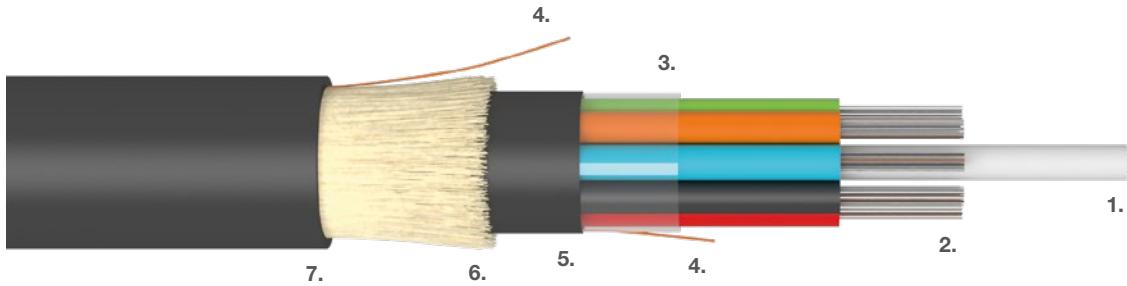
Temperature range

Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
N3Y1	48	2.5	12.2	115	6,000	3,000
N4Y1	72	2.5	13.8	159	6,000	3,000
N5Y1	96	2.5	15.3	178	6,000	3,000
N6Y1	144	2.5	18.4	268	6,000	3,000

ADSS 10 kN

Specification: N4ZI, N5ZI, N6ZI, N9ZI



Description of materials:

1. FRP dielectric central strength member. **2.** Gel filled PBT loose tube with optical fibers. **3.** Water-swellable tape. **4.** Rip-Cord. **5.** PE inner jacket. **6.** Waterblocking aramid yarn. **7.** PE outer jacket, UV stable.

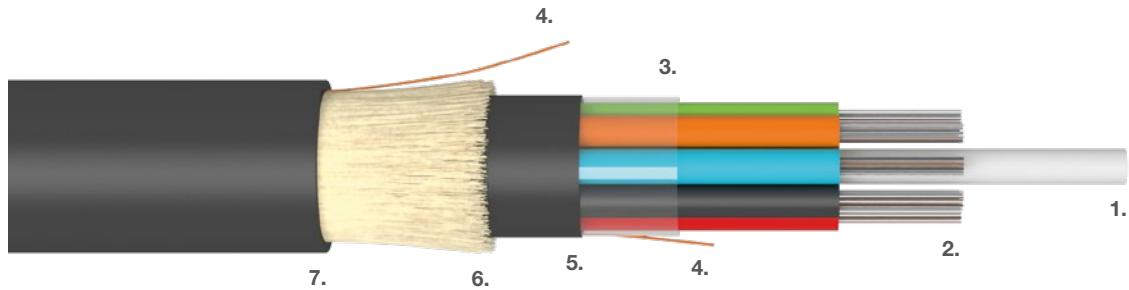
Temperature range

Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
N4ZI	72	2.8	15.5	195	10,000	3,000
N5ZI	96	2.8	17.0	225	10,000	3,000
N6ZI	144	2.8	20.5	316	10,000	3,000
N9ZI	288	2.5	22.2	367	10,000	3,000

ADSS 15 kN

Specification: N4RI, N5RI, N6RI, N7RI, N7SI



Description of materials:

1. FRP dielectric central strength member. **2.** Gel filled PBT loose tube with optical fibers. **3.** Water-swellable tape. **4.** Rip-Cord. **5.** PE inner jacket. **6.** Waterblocking aramid yarn. **7.** PE outer jacket, UV stable.

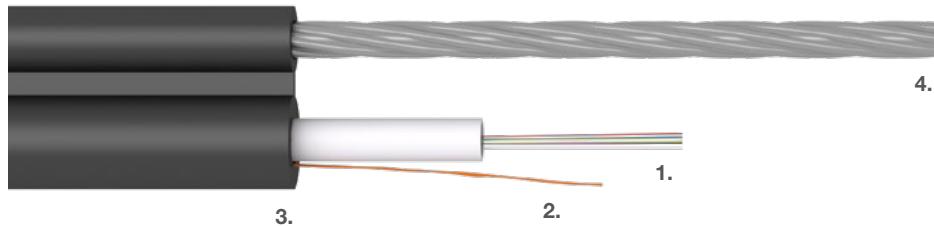
Temperature range

Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
N4RI	72	2.8	15.6	203	15,000	3,000
N5RI	96	2.8	17.1	237	15,000	3,000
N6RI	144	2.8	20.6	339	15,000	3,000
N7RI	216	2.8	20.9	337	15,000	3,000
N7SI	216	2.8	19.0	281	15,000	3,000

FIG.8

Specification: A860, A862, Z187



Description of materials:

1. Gel filled PBT loose tube with optical fibers.
2. Rip-Cord.
3. FR-LSZH or PE outer jacket, UV stable.
4. Steel wire messenger.

Temperature range

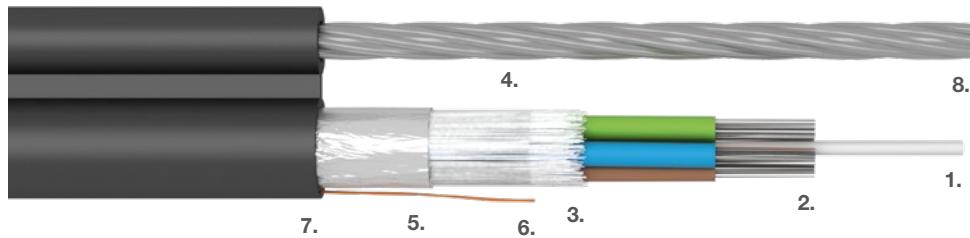
Installation	-15 to +50 °C
Operation	-30 to +70 °C
Storage	-30 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
A860	12	2.5	6.1 × 11.7	57	1,000	1,000
A862	12	2.5	6.1 × 11.7	80	1,000	1,000
Z187	24	4.5	8.5 × 18.0	140	3,000	2,000

FIG.8

Specification: L83A, F83A, G83A, H83A

MLT



Description of materials:

1. FRP dielectric central strength member.
2. Gel filled PBT loose tube with optical fibers.
3. Waterblocking E-glass yarn.
4. Water-swellable tape.
5. Moisture barrier.
6. Rip-Cord.
7. PE outer jacket, UV stable.
8. Steel wire messenger.

Temperature range

Installation	-15 to +50 °C
Operation	-30 to +70 °C
Storage	-30 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
L83A	48	2.3	11.1 × 20.7	161	5,000	2,000
F83A	72	2.3	13.1 × 22.7	192	5,000	2,000
G83A	96	2.3	14.1 × 23.7	216	5,000	2,000
H83A	144	2.3	17.1 × 26.7	283	5,000	2,000

K 307

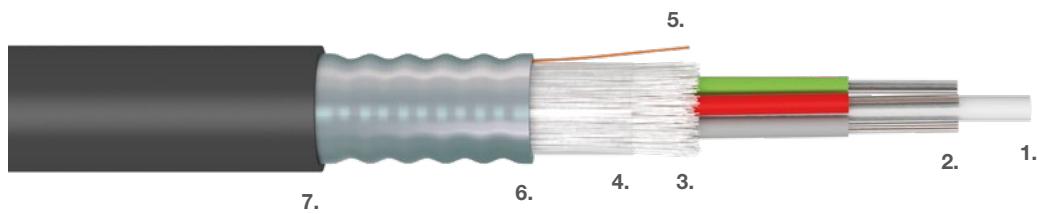


5. SPECIAL CABLES

- FIRE RESISTANT 🔥
- CPR 🔥
- TUNNELS AND SUBWAY
- HYBRID
- UNDERWATER
- ARMOURED MICRODUCT
- FLES TUBE
- TRACER WIRE

FIRE RESISTANT – FSC 90 min.

Specification: CLT – Z297; MLT – Z298, Z299, Z300



Description of materials:

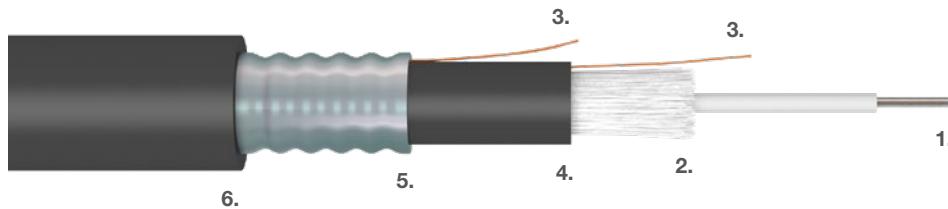
1. FRP dielectric central strength member.
2. Gel filled PBT loose tube with optical fibers.
3. Waterblocking E-glass yarn.
4. Water-swellable tape.
5. Rip-Cord.
6. Corrugated steel tape.
7. FR-LSZH outer jacket, UV stable.

Temperature range	Z297	Z298, Z299, Z300
Installation	-15 to +50 °C	-15 to +50 °C
Operation	-30 to +70 °C	-40 to +70 °C
Storage	-30 to +70 °C	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
Z297	24	3.0	8.9	112	1,500	3,000
Z298	72	1.7	12.1	179	3,000	2,500
Z299	96	1.7	13.1	213	6,000	2,500
Z300	144	1.7	15.1	284	10,000	2,500

FIRE RESISTANT – FSC 180 min.

Specification: CLT – Z281; Z285 – distribution cable; MLT – Z282, Z283, Z284



Description of materials:

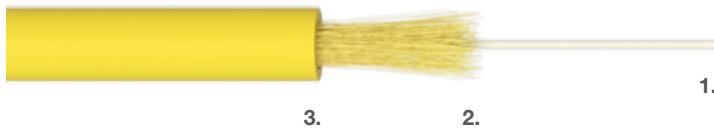
1. Gel filled PBT loose tube with optical fibers.
2. Waterblocking E-glass yarn.
3. Rip-Cord.
4. FR-LSZH inner jacket, UV stable.
5. Corrugated steel tape.
6. FR-LSZH outer jacket, UV stable.

Temperature range	Z281	Z285	Z282, Z283, Z284
Installation	-15 to +50 °C	-15 to +50 °C	-15 to +50 °C
Operation	-30 to +80 °C	-20 to +80 °C	-40 to +80 °C
Storage	-40 to +80 °C	-20 to +80 °C	-40 to +80 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
Z281	24	3.2	12.5	211	2,000	5,000
Z285	24	0.9 – buffer	17.5	333	3,000	5,000
Z282	72	1.7	15.5	291	3,000	5,000
Z283	96	1.7	16.5	336	6,000	5,000
Z284	144	1.7	18.5	421	8,800	5,000

CPR – Simplex

Specification: ZNx1 Classification CPR Cca



Description of materials:

1. FR-LSZH buffered optical fiber. **2.** Waterblocking aramid yarn. **3.** FR-LSZH outer jacket.

Temperature range

Installation	-5 to +50 °C
Operation	-5 to +50 °C
Storage	-5 to +50 °C

Design code	Fiber count	Cable outer diameter [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
ZNx1	1	3.0	9	300	500

CPR – Duplex

Specification: ZNx0 Classification CPR Cca



Description of materials:

1. FR-LSZH buffered optical fiber. 2. Waterblocking aramid yarn. 3. FR-LSZH outer jacket.

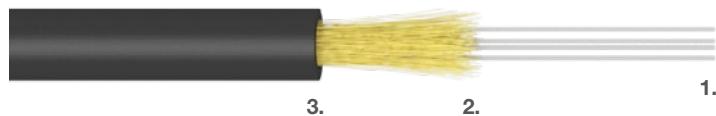
Temperature range

Installation	-5 to +50 °C
Operation	-5 to +50 °C
Storage	-5 to +50 °C

Design code	Fiber count	Cable outer diameter [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
ZNx0	2	2.8	8	280	1,000

CPR – DROP

Specification: ZN02 Classification CPR Dca



Description of materials:

1. Optical fibers. 2. Aramid yarn. 3. FR-LSZH outer jacket, UV stable.

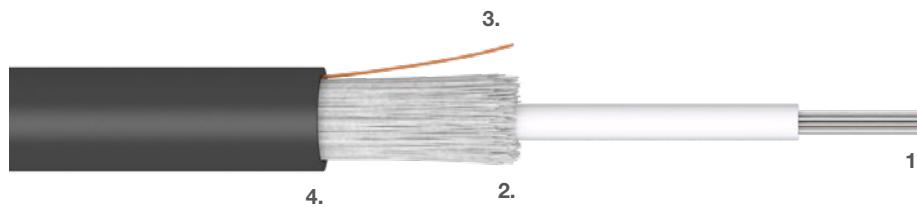
Temperature range

Installation	-5 to +50 °C
Operation	-20 to +60 °C
Storage	-20 to +60 °C

Design code	Fiber count	Cable outer diameter [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
ZN02	24	4.0	16	700	1,000

CPR – CLT

Specification: ZN06 Classification CPR Dca



Description of materials:

1. Gel filled PBT loose tube with optical fibers. 2. Waterblocking E-glass yarn. 3. Rip-Cord.
 4. FR-LSZH outer jacket, UV stable.

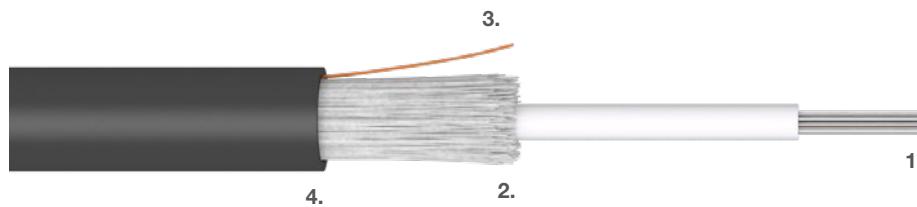
Temperature range

Installation	-15 to +50 °C
Operation	-20 to +70 °C
Storage	-20 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
ZN06	4-12	2.5	5.4	37	1,100	2,000

CPR – CLT

Specification: ZN05 Classification CPR Dca



Description of materials:

1. Gel filled PBT loose tube with optical fibers.
2. Waterblocking E-glass yarn.
3. Rip-Cord.
4. FR-LSZH outer jacket, UV stable.

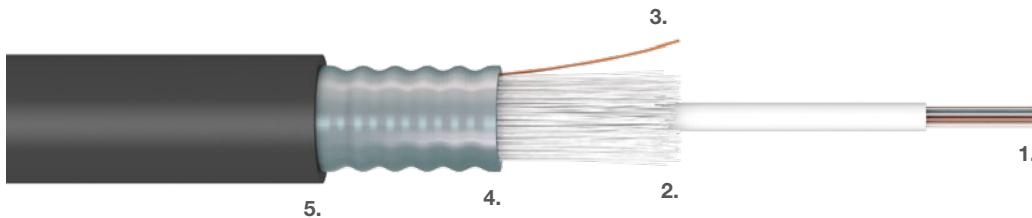
Temperature range

Installation	-15 to +50 °C
Operation	-20 to +70 °C
Storage	-20 to +70 °C

Design code	Fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
ZN05	4-24	3.0	6.4	51	1,100	2,000

CPR – CLT CST – FSC 90 min.

Specification: ZN01 for 12F or 24F Classification CPR B2ca, for 1–24F Classification CPR Cca



Description of materials:

1. Gel filled PBT loose tube with optical fibers.
2. Waterblocking E-glass yarn.
3. Rip-Cord.
4. Corrugated steel tape.
5. FR-LSZH outer jacket, UV stable.

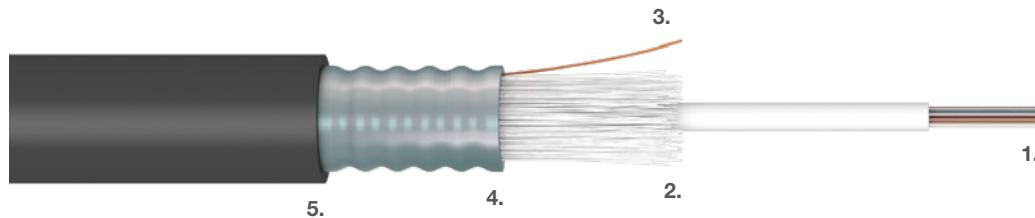
Temperature range

Installation	-15 to +50 °C
Operation	-20 to +70 °C
Storage	-20 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
ZN01	1–24	3.0	10.1	124	2,500	4,500

CPR – CLT CST

Specification: ZN07 for 4–24F Classification CPR Dca



Description of materials:

1. Gel filled PBT loose tube with optical fibers.
2. Waterblocking E-glass yarn.
3. Rip-Cord.
4. Corrugated steel tape.
5. FR-LSZH outer jacket, UV stable.

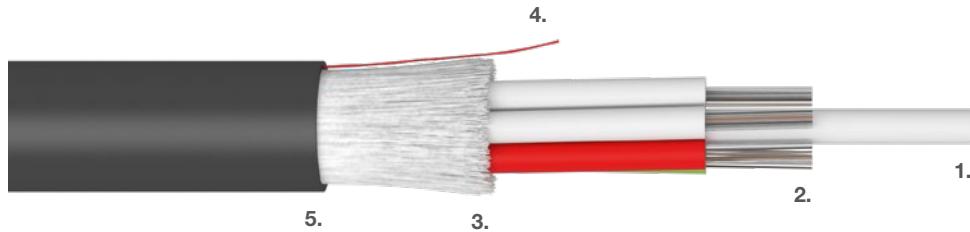
Temperature range

Installation	-15 to +50 °C
Operation	-20 to +70 °C
Storage	-20 to +70 °C

Design code	Fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
ZN07	4–24	3.0	7.9	90	1,100	3,000

CPR – MLT

Specification: ZN03 for 12 fibers Classification CPR Cca for 12–144 fibers Classification CPR Dca



Description of materials:

1. FRP dielectric central strength member.
2. Gel filled PBT loose tube with optical fibers.
3. Waterblocking E-glass yarn.
4. Rip-Cord.
5. FR-LSZH outer jacket, UV stable.

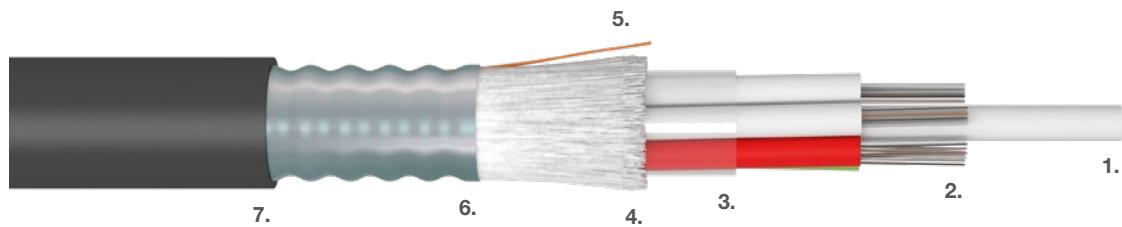
Temperature range

Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
ZN03	12–48	1.7	7.9	71	1,300	2,000
ZN03	12–72	1.7	8.8	90	2,000	2,000
ZN03	96	1.7	10.0	116	4,300	2,000
ZN03	144	1.7	12.2	171	7,300	2,000

CPR – MLT CST

Specification: ZN04 for 12F Classificaton B2ca and a 12–72F Classification CPR Cca



Description of materials:

- FRP dielectric central strength member.
- Gel filled PBT loose tube with optical fibers.
- Water-swellable tape.
- Waterblocking E-glass yarn.
- Rip-Cord.
- Corrugated steel tape.
- FR-LSZH or PE outer jacket, UV stable.

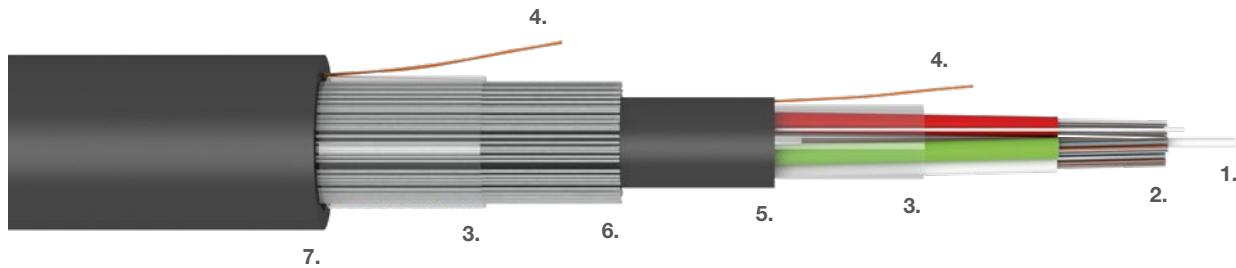
Temperature range

Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
ZN04	12–48	1.7	10.5	132	1,300	2,000
ZN04	12–72	1.7	10.5	142	1,800	2,000

CPR – MLT SWA

Specification: ZN08 Classification CPR B2ca 72F.



Description of materials:

- FRP dielectric central strength member.
- Gel filled PBT loose tube with optical fibers.
- Water-swellable tape.
- Rip-Cord.
- FR-LSZH inner jacket.
- Steel Wire Armour (SWA).
- FR-LSZH outer jacket, UV stable.

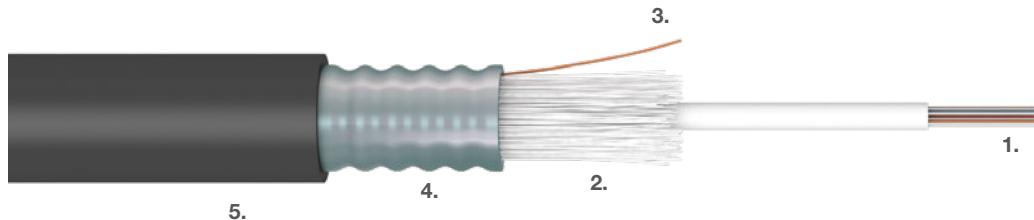
Temperature range

Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
NEW ZN08	72	1.7	13	322	4,000	2,000

TUNNELS and SUBWAY – CLT Fire Resistant Cable CST Armoured – FSC 90 min.

Specification: Z297 Classification CPR Dca



Description of materials:

1. Gel filled PBT loose tube with optical fibers.
2. Waterblocking E-glass yarn.
3. Rip-Cord.
4. Corrugated steel tape.
5. Black FR-LSZH outer jacket, UV stable.

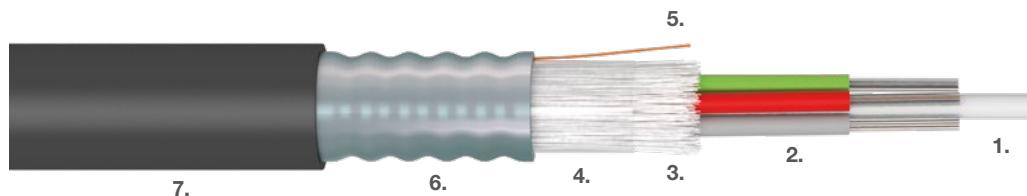
Temperature range

Installation	-15 to +50 °C
Operation	-30 to +70 °C
Storage	-30 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
NEW Z297	24	3.0	8.9	112	1,500	3,000

TUNNELS and SUBWAY – MLT Fire Resistant Cable CST Armoured – FSC 90 min.

Specification: Z300 Classification CPR Dca



Description of materials:

1. FRP dielectric central strength member (OD 2.5 mm), PE coated (OD 5.2 mm). **2.** Gel filled PBT loose tube with optical fibres. **3.** Waterblocking E-glass yarn. **4.** Water-swellable tape. **5.** Rip-Cord. **6.** Corrugated steel tape. **7.** FR-LSZH outer jacket, UV stable.

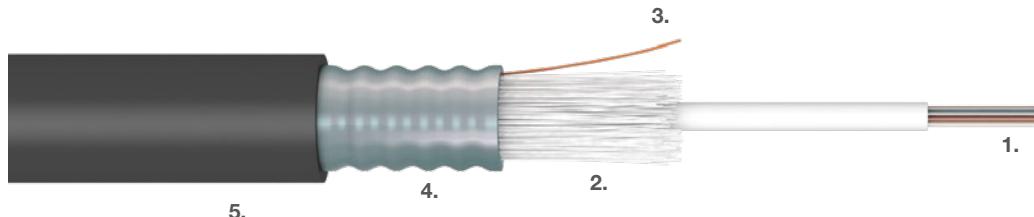
Temperature range

Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
NEW Z300	144	1.7	15.1	284	10,000	2,500

TUNNELS and SUBWAY – CLT Fire Resistant Cable CST Armoured – FSC 90 min.

Specification: ZN01 for 12F or 24F Classification CPR B2ca, for 1–24F Classification CPR Cca



Description of materials:

1. Gel filled loose tube with optical fibres.
2. Waterblocking E-glass yarn.
3. Rip-Cord.
4. Corrugated steel tape.
5. FR-LSZH outer jacket, UV stable.

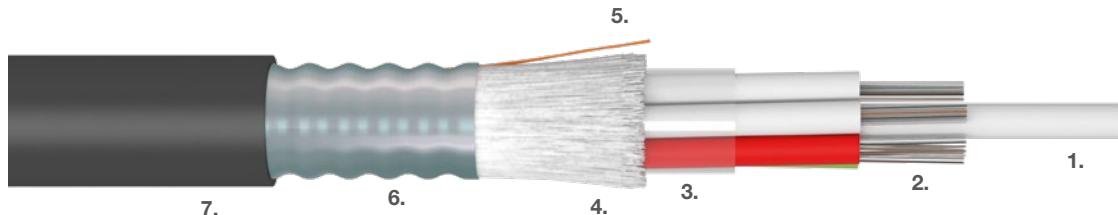
Temperature range

Installation	-15 to +50 °C
Operation	-20 to +70 °C
Storage	-20 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
NEW ZN01	1-24	3.0	10.1	124	2,500	4,500

TUNNELS and SUBWAY – MLT Fire Resistant Cable CST Armoured – FSC 90 min.*

Specification: ZN04 for 12F Classification B2ca and a 12–72F Classification CPR Cca



Description of materials:

1. FRP dielectric central strength member (OD 3.0 mm).
2. Gel filled PBT loose tube with optical fibers.
3. Water-swellable tape.
4. Waterblocking E-glass yarn.
5. Rip-Cord.
6. Corrugated steel tape.
7. FR-LSZH or PE outer jacket, UV stable.

Temperature range

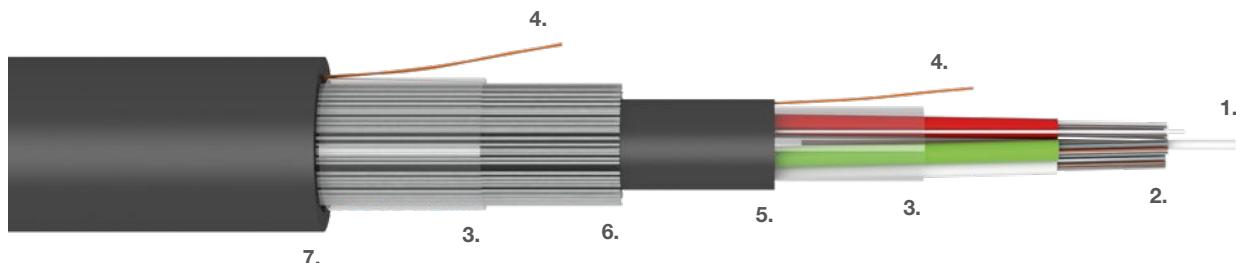
Installation	-15 to +50 °C
Operation	-40 to +60 °C
Storage	-40 to +60 °C

*Available in Autumn 2025

Design code	Fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
NEW ZN04	12–48	1.7	10.5	132	1,300	2,000
NEW ZN04	12–72	1.7	10.5	142	1,800	2,000

TUNNELS and SUBWAY – MLT Fire Resistant Cable SWA Armoured – FSC 90 min.*

Specification: ZN08 Classification CPR B2ca



Description of materials:

1. FRP dielectric central strength member.
2. Gel filled PBT loose tube with optical fibers.
3. Water-swellable tape.
4. Rip-Cord.
5. Black FR-LSZH inner jacket.
6. Steel Wire Armour (SWA).
7. Black FR-LSZH outer jacket, UV stable.

Temperature range

Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

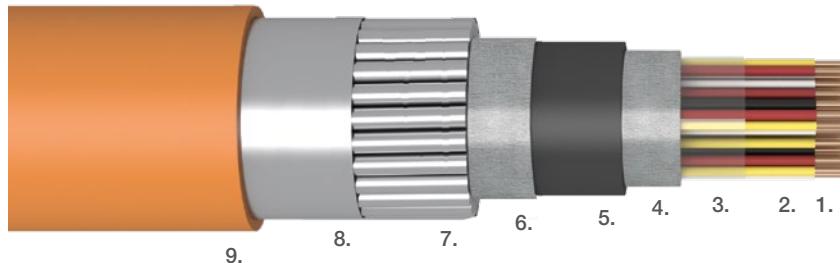
*Available in Autumn 2025

Design code	Fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
NEW ZN08	72	1.7	13	322	4,000	2,000

TUNNELS and SUBWAY – Metallic cable – AJ-HHAAH

...x2x... P LG (...AL) FRNC CPR B2ca s1a d1 a1

Specification: TP 02.01.23 – KDP – 01/23



Description of materials:

1. Copper wire.
2. Core insulation – solid PE.
3. Wrapping plastic tape.
4. FR tape.
5. FRNC inner jacket, black.
6. FR tape.
7. Armor aluminium wires.
8. Fe/Zn tape.
9. FRNC outer jacket, orange.

Each 2 wires twisted to a pair.

Application

- » transmission of electric signal of telecommunication, controlling and protecting purposes of control circuit
- » for using in area danger of fire
- » for indoor and outdoor installations, tunnels or collectors, direct burial placing with highest tension or supporting without carrying wire
- » grasp or free placing in areas with alternating electromagnetic field danger
- » standard, wet or moist ambient, spraying water and fleet immersion, dropping water with pH 7÷11

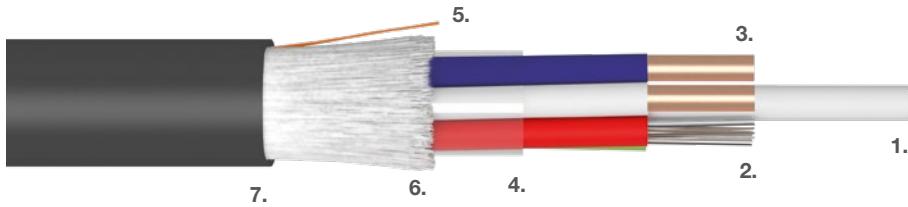
Environmental conditions

Temperature ranges for laying and assembly	-5 °C
Operation and store temperatures	-40 °C ÷ +65 °C
Permitted minimum bending radius	min. 10D
Cable lifetime	min. 40 years
D – outside cable diameter	

Packing on drums.

HYBRID

Specification: Z001



Description of materials:

1. FRP dielectric central strength member. **2.** Gel filled PBT loose tube with optical fibers.
3. Cu pair. **4.** Water-swellable tape. **5.** Rip-Cord. **6.** Waterblocking E-glass yarn. **7.** PE outer jacket UV stable.

Temperature range

Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
Z001	60	2.3	10.7	94	2,500	2,000

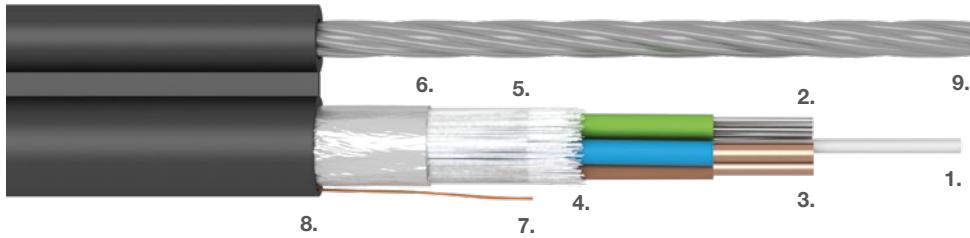
HYBRID

Specification: Z047



Outdoor

Aerial



Description of materials:

1. FRP dielectric central strength member.
2. Gel filled PBT loose tube with optical fibers.
3. Cu wire
4. Waterblocking E-glass yarn.
5. Water-swellable tape.
6. Moisture barrier.
7. Rip-Cord.
8. PE outer jacket, UV stable.
9. Steel wire messenger.

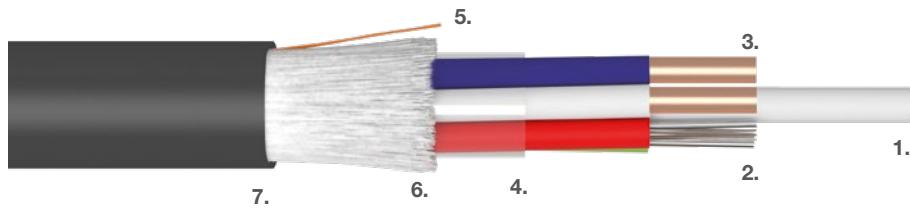
Temperature range

Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
Z047	12–36	2.5	21.1 × 11.2	218 (12 F + 3 Cu) 206 (24 F + 2 Cu) 194 (36 F + 1 Cu)	5,000	2,000

HYBRID

Specification: Z078, Z130



Description of materials:

1. FRP dielectric central strength member.
2. Gel filled PBT loose tube with optical fibers.
3. Cu wire 1.4/2.6 mm.
4. Water-swellable tape.
5. Rip-Cord.
6. Waterblocking E-glass yarn.
7. FR - LSZH or PE outer jacket, UV stable.

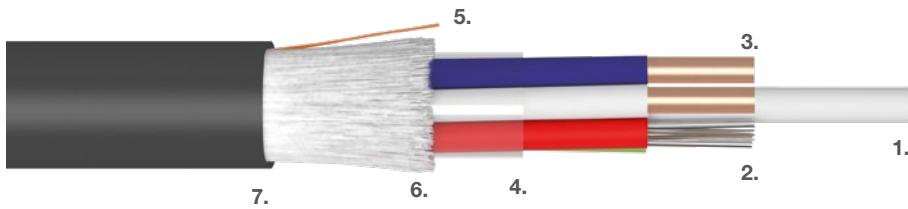
Temperature range

Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
Z078	12–36	2.5	10.5	126 (12 F + 3 Cu) 110 (24 F + 2 Cu) 94 (36 F + 1 Cu)	2,000	2,000
Z130	12–36	2.5	10.5	150 (12 F + 3 Cu) 134 (24 F + 2 Cu) 117 (36 F + 1 Cu)	2,000	2,000

HYBRID

Specification: Z131, Z132



Description of materials:

1. FRP dielectric central strength member.
2. Gel filled PBT loose tube with optical fibers.
3. Cu wire 1.8/2.7 mm.
4. Water-swellable tape.
5. Rip-Cord.
6. Waterblocking E-glass yarn.
7. FR-LSZH or PE outer jacket, UV stable.

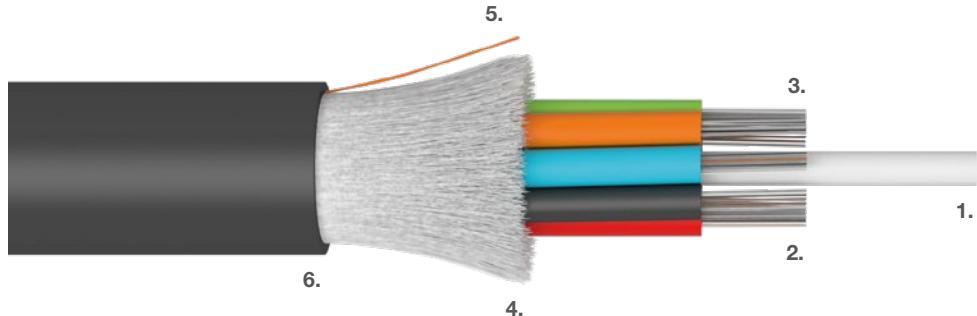
Temperature range

Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
Z131	24–36	2.5	10.6	146 (12 F + 3 Cu) 125 (24 F + 2 Cu) 105 (36 F + 1 Cu)	1,900	2,000
Z132	24–36	2.5	10.6	170 (12 F + 3 Cu) 150 (24 F + 2 Cu) 129 (36 F + 1 Cu)	1,900	2,000

HYBRID

Specification: Z212



Description of materials:

1. FRP dielectric central strength member.
2. Gel filled PBT loose tube with optical fibers.
3. Cu wire 1.4/3.0 mm.
4. Waterblocking E-glass yarn.
5. Rip-Cord.
6. PE outer jacket, UV stable.

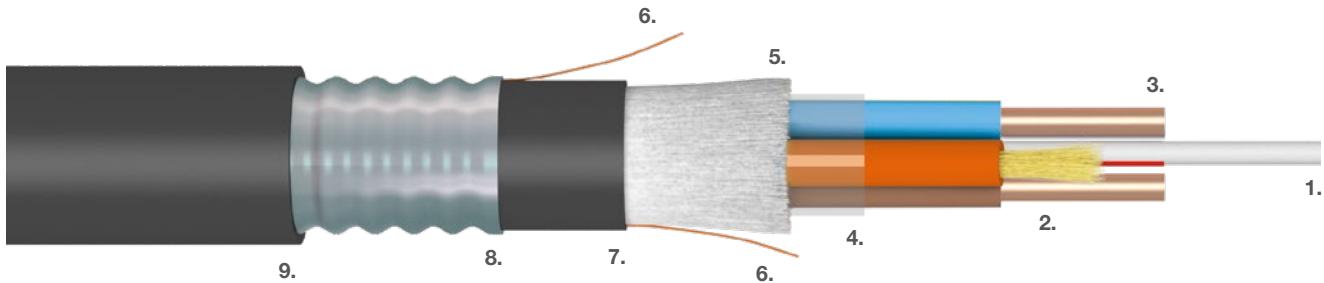
Temperature range

Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
Z212	24	3.0	13.1	176	2,700	2,000

HYBRID

Specification: Z320



Description of materials:

1. FRP dielectric central strength member. 2. Simplex. 3. Cu wire 1.8/2.8 mm 4. Water-swellable tape. 5. Waterblocking E-glass yarn. 6. Rip-Cord. 7. PE inner jacket, UV stable. 8. Corrugated steel tape. 9. PE outer jacket, UV stable.

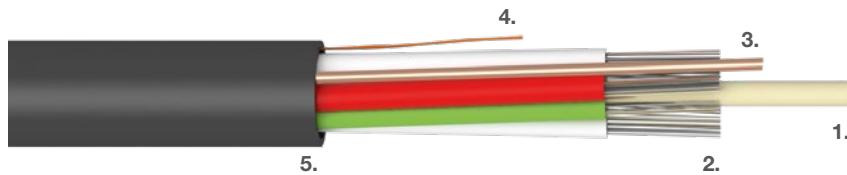
Temperature range

Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Simplex diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
Z320	2	2.8	15.5	249	2,000	5,000

HYBRID

Specification: TM5I, QM5I, WM5I



Description of materials:

1. FRP dielectric central strength member.
2. Gel filled PBT loose tube with optical fibers.
3. Cu wire (AWG 24).
4. Rip-Cord.
5. PE outer jacket, UV stable.

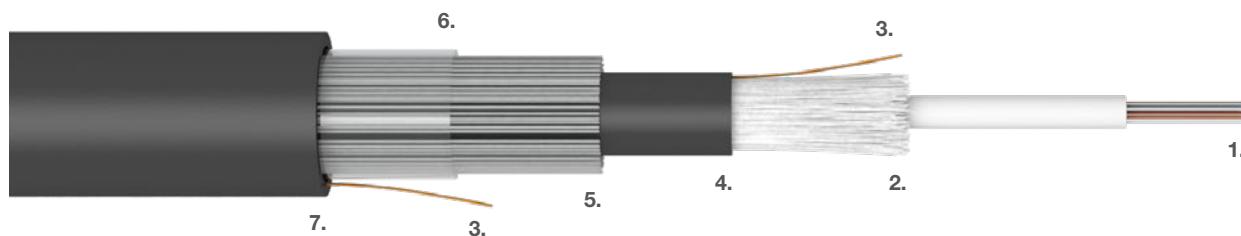
Temperature range

Installation	-15 to +50 °C
Operation	-30 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
TM5I	72	1.5	5.8	31	700	1,500
QM5I	96	1.5	6.5	42	1,400	1,500
WM5I	144	1.5	8.6	63	1,500	1,500

UNDERWATER

Specification: BWPI



Description of materials:

1. Gel filled PBT loose tube with optical fibers.
2. Waterblocking E-glass yarn.
3. Rip-Cord.
4. PE inner jacket.
5. Steel Wire Armour (SWA).
6. Water-swellable tape.
7. PE outer jacket, UV stable.

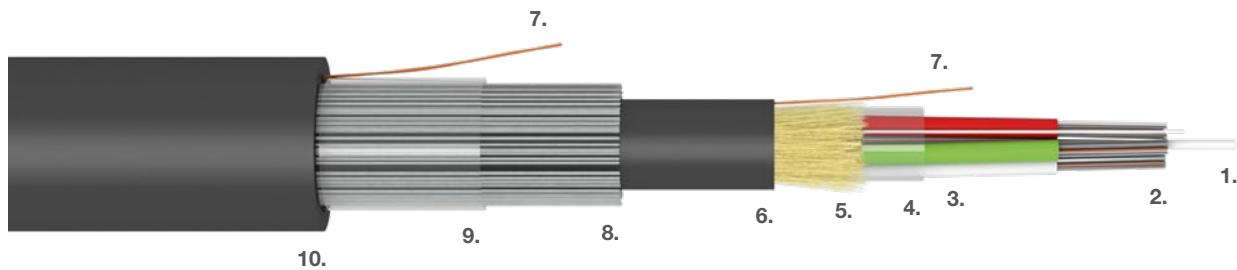
Temperature range

Installation	-15 to +50 °C
Operation	-30 to +70 °C
Storage	-30 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Max. water depth [m]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
BWPI	24	3.0	11.0	150	199	4,000	4,000

UNDERWATER

Specification: LXPK, FXPK, GXPK, HXPK, IXPK



Description of materials:

1. FRP dielectric central strength member.
2. Gel filled PBT loose tube with optical fibers.
3. Gel filling.
4. PET foil.
5. Waterblocking aramid yarn.
6. PE inner jacket, UV stable.
7. Rip-Cord.
8. Steel Wire Armour (SWA).
9. Water-swellable tape.
10. PE outer jacket, UV stable.

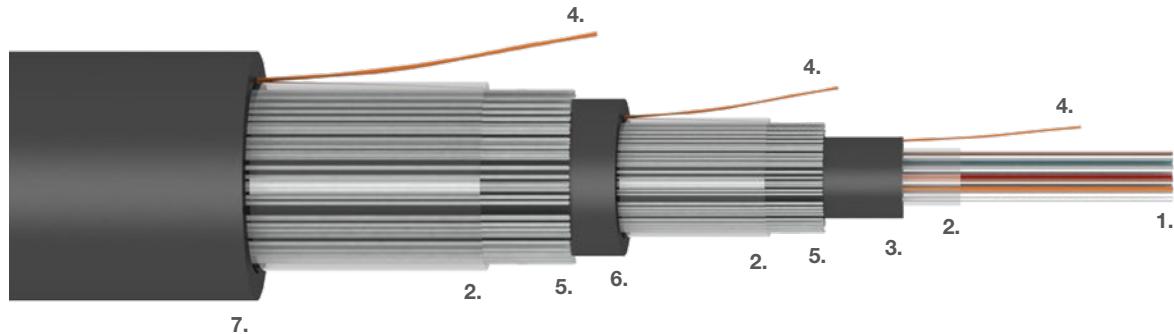
Temperature range

Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Max. water depth [m]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
LXPK	48	2.3	13.8	200	299	5,000	5,000
FXPK	72	2.3	15.0	150	348	7,500	5,000
GXPK	96	2.3	16.3	140	410	8,500	5,000
HXPK	144	2.3	19.2	130	540	12,000	5,000
IXPK	216	2.3	19.6	100	566	9,000	4,000

UNDERWATER

Specification: Z439



Description of materials:

1. Gel filled loose tube with optical fibers. **2.** Water-swellable tape. **3.** PE inner jacket, UV stable.
4. Rip-Cord. **5.** Steel Wire Armour (SWA). **6.** PE intermediate jacket, UV stable. **7.** PE outer jacket, UV stable.

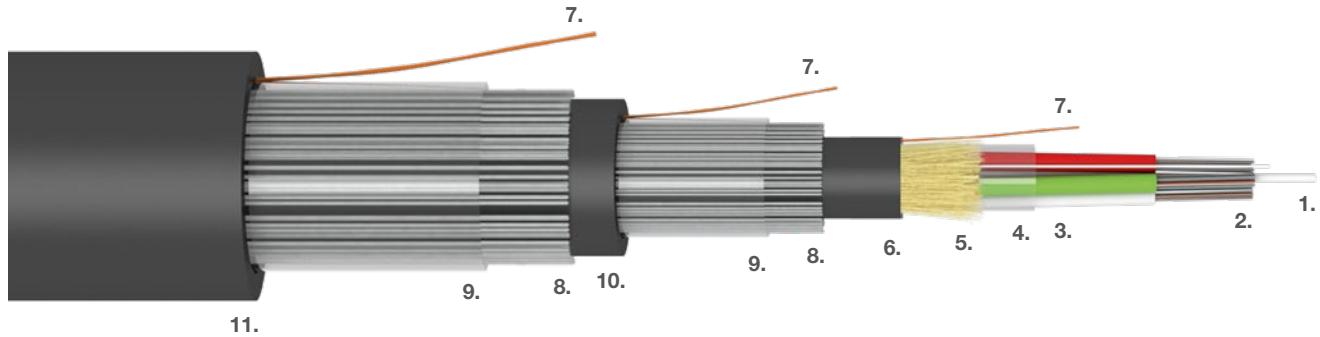
Temperature range

Installation	-15 to +50 °C
Operation	-30 to +70 °C
Storage	-30 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Max. water depth [m]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
Z439	24	3.0	16.2	180	502	6,500	5,500

UNDERWATER

Specification: Z388



1. FRP dielectric central strength member.
2. Gel filled PBT loose tube with optical fibers.
3. Gel filling.
4. PET foil.
5. Waterblocking aramid yarn.
6. PE inner jacket, UV stable.
7. Rip-Cord.
8. Steel Wire Armour (SWA).
9. Water-swellable tape.
10. PE intermediate jacket, UV stable.
11. PE outer jacket, UV stable.

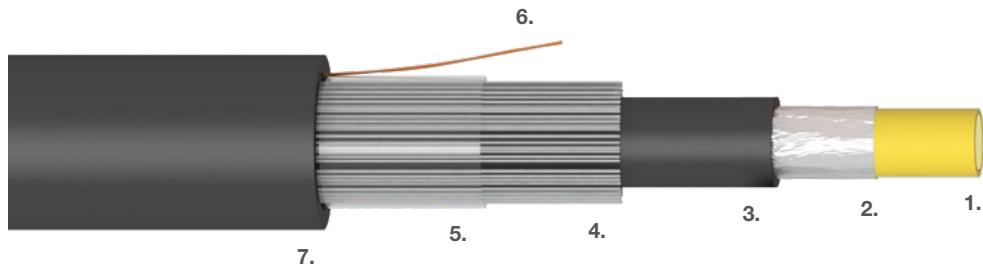
Temperature range

Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size [mm]	Max. water depth [m]	Cable weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
Z388	48	2.3	19.0	90	654	14,000	8,000

ARMOURED MICRODUCT

Specification: Z387, Z410



Description of materials:

1. Microduct. **2.** Moisture barrier. **3.** PE inner jacket, UV stable. **4.** Steel Wire Armour (SWA).
5. Water-swellable tape. **6.** Rip-Cord. **7.** PE outer jacket, UV stable.

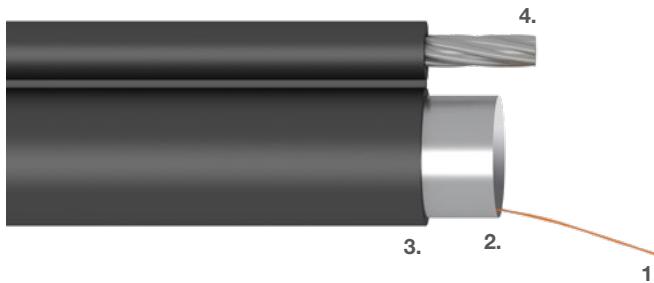
Temperature range

Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Outer jacket thickness [mm]	Microduct diameter [mm]	Cable size [mm]	Cable weight [kg/km]
Z387	1.5	12/10	21.3±0.4	564
Z410	1.5	14/12	23.8±0.4	725

FLES TUBE

Specification: FLES 3.0/8.5, FLES 4.32/20



Description of materials:

1. Pulling element. **2.** Moisture barrier. **3.** PE outer jacket, UV stable. **4.** Steel Wire messenger.

Temperature range

Installation	-15 to +50 °C
Operation	-30 to +70 °C
Storage	-40 to +70 °C

Design code	Inner diameter [mm]	Max. width of cable [mm]	Max. height of cable [mm]	Supporting element diameter [mm]	Max. load (installation) [N]
FLES 3.0/8.5	8.5 ± 0.5	14,0	23.5	3.15	8,600
FLES 4.32/20	20.0 ± 1.0	26.0	38.5	4.32	16,000

TRACER WIRE

Specification: Tracer wire 0.8/1.5, Tracer wire 1.13/2.8



Outdoor



Direct
burial



Description of materials:

1. Copper wire. 2. PE outer jacket, UV stable.

Temperature range

Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Wire diameter [mm]	Outer diameter [mm]	Cable weight [kg/km]	Cu content [kg/km]
Tracer wire 0.8/1.5	0.8	1.5	6	5
Tracer wire 1.13/2.8	1.13	2.8	14	10

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6. GENERAL SPECIFICATION

- COLOUR CODE CHARTS
- CODE TABLE
- STRIPABILITY OF THE TIGHT BUFFERED FIBER
- USED ABBREVIATIONS
- PROPERTIES OF THE CABLE SHEATH
- CHEMICAL RESISTANCE TABLE
- FIRE PROPERTIES

Colour Code Charts

IEC 60304 (Standard)

Tight Buffer

1	2	3	4	5	6	7	8	9	10	11	12
red	green	blue	yellow	white	grey	brown	violet	aqua	black	orange	pink
13	14	15	16	17	18	19	20	21	22	23	24
red + black strip	green + black strip	blue + black strip	yellow + black strip	white + black strip	grey + black strip	brown + black strip	violet + black strip	aqua + black strip	black + white strip	orange + black strip	pink + black strip

Loose Tube

1	2	3	4	5	6	7	8	9	10	11	12
red	green	blue	yellow	white	grey	brown	violet	aqua	black	orange	pink
13	14	15	16	17	18	19	20	21	22	23	24
red + black strip	green + black strip	blue + black strip	yellow + black strip	white + black strip	grey + black strip	brown + black strip	violet + black strip	aqua + black strip	natur + black strip	orange + black strip	pink + black strip

Multi Loose Tube – Tubes Colour Code

1	2	3
red	green	natur
		white

Note: Different colour sequences available on request.

Colour Code Charts

TIA/EIA 598

Tight Buffer

1	2	3	4	5	6	7	8	9	10	11	12
blue	orange	green	brown	grey	white	red	black	yellow	violet	pink	aqua
13	14	15	16	17	18	19	20	21	22	23	24
blue + black strip	orange + black strip	green + black strip	brown + black strip	grey + black strip	white + black strip	red + black strip	black + white strip	yellow + black strip	violet + black strip	pink + black strip	aqua + black strip

Loose Tube

1	2	3	4	5	6	7	8	9	10	11	12
blue	orange	green	brown	grey	white	red	black	yellow	violet	pink	aqua
13	14	15	16	17	18	19	20	21	22	23	24
blue + black strip	orange + black strip	green + black strip	brown + black strip	grey + black strip	white + black strip	red + black strip	natur + black strip	yellow + black strip	violet + black strip	pink + black strip	aqua + black strip

Loose Tube Cables – Sheath Colour

All Cables



black

Tight Buffer Cables – Sheath Colour

SM E9/125 G62,5/125 OM1 G50/125 OM2 G50/125 OM3 G50/125 OM4



yellow



blue



orange



aqua



violet

Note: Different sheath colour available on request.

Code table

TIGHT BUFFER CABLES

Position	1 Character	2 Character	3 Character	4 Character
0	Fiber in tight SP	0 Buffer only	A Acrylate buffer	0 LDPE jacket
1	Simplex cable	1 Ø simplex 1.8 mm	B	1 LSZH jacket
2	Duplex cable	2 Ø simplex 2.0 mm	C	2 LSZH jacket + FRP members in jacket
3	Heavy-duplex cable	3 Ø simplex 3.0 mm	D	3 LDPE jacket + FRP members in jacket
4	Break-out cable	4 Ø simplex 2.4 mm	E	4 LSZH / SWA / LSZH
5	Distribution cable	5 Ø simplex 2.5 mm	F	5 LSZH / SWA / HDPE
6	Multi-distribution cable	6 Ø simplex 1.6 mm	G	6 PVC jacket – inner / universal cable
7	Drop cable	7 Ø simplex 1.7 mm	H	7 PUR jacket – inner / outdoor
8	Break-out cable without central strength member	8 Ø simplex 2.8 mm	–	8 LSZH / glass yarn / LSZH
9	Quadplex cable	9 Ø simplex 2.9 mm	–	9 PUR jacket outdoor only
		A Distribution cable – Aramid	S	A HDPE jacket
		D Distribution cable – Standard		B Buffer
		E Distribution cable – E-glass		S E-glass yarn under jacket
		S Distribution cable – CST		K Aramid yarn under jacket
		V Distribution cable – waterblocking Aramid		–
		U Subunits with fibers	X	Y HDPE jacket + FRP elements in jacket
		Y –	Y	Z –
	Z (+number) custom designs	Z –	0	0 Fiber without buffer

LOOSE TUBE CABLES

Position	1 Character	2 Character	3 Character	4 Character
A	CLT max. 12 fibers	0 –	0 –	0 LDPE outer jacket, dry core
B	CLT max. 24 fibers	1 FIG.8 + CST one jacket	1 –	1 LDPE outer jacket, filled core
C	MLT 6 x 1.7 mm [6x12] – 72	2 FIG.8 + CST two jackets	2 Messenger 2.0 mm	2 LSZH outer jacket, dry core
D	MLT 6 x 2.3 mm [6x24] – 144	3 4 x 12 in relation to „N“ in the column 1	3 Messenger 3.0 mm	3 LSZH outer jacket, filled core
E	MLT 18 x 1.5 mm [18x12] – 216	4 6 x 12 in relation to „N“ in the column 1	4 Messenger 4.5 mm	4 PA outer jacket, dry core
F	MLT 6 x 2.3 mm [6x12] – 72	5 8 x 12 in relation to „N“ in the column 1	5 Grounding conductor in core	5 PA outer jacket, filled core
G	MLT 8 x 2.3 mm [8x12] – 96	6 12 x 12 in relation to „N“ in the column 1	6 Messenger 1.6 mm	6 PE / PA outer jacket, dry core
H	MLT 12 x 2.3 mm [12x12] – 144	7 18 x 12 in relation to „N“ in the column 1	7 FRP messenger	7 PE / PA outer jacket, filled core
I	MLT 18 x 2.3 mm [18x12] – 216	8 FIG. 8	8 FRP members in core	8 LSZH / PA outer jacket, dry core
J	MLT 5 x 2.3 mm [5x12] – 60	9 24 x 12 in relation to „N“ in the column 1	9 FeZn wires in jacket	9 LSZH / PA outer jacket, filled core
K	MLT 8 x 2.3 mm [8x24] – 192	A Aramid (WB)	A –	A AL + PE outer jacket, dry core
L	MLT 4 x 2.3 mm [4x12] – 48	B –	B Inner PA jacket	B AL + PE outer jacket, filled core
M	MLT 36 x 2.3 mm [36x12] – 432	C CST one jacket with aramid under jacket	C Inner PVC jacket	C –
N	ADSS	D CST two jacket with aramid under jacket	D Supporting element FeZn wire	D –
P	MLT 8 x 1.7 mm [8x12] – 96	E E-glass	E –	E –
Q	MLT 8 x 1.5 mm [8x12] – 96	F FRPA	F Inner FRNC jacket	F –
R	MLT 12 x 1.7 mm [12x12] – 144	G –	G –	G PUR outer jacket, dry core
S	MLT 12 x 2.3 mm [12x24] – 288	H CST one jacket with E-glass yarns under jacket	H –	H PUR outer jacket, filled core
T	MLT 6 x 1.5 mm [6x12] – 72	I CST two jackets with E-glass yarns under jacket	I –	I HDPE outer jacket, dry core
U	MLT 5 x 1.7 mm [5x12] – 60	J –	J –	J –
V	MLT 18 x 1.7 mm [18x12] – 216	K –	K –	K HDPE outer jacket, filled core
W	MLT 12 x 1.5 mm [12x12] – 144	L Attenuated (lower tensile strength and jacket)	L Inner Al/PE	L –
X	New custom designs	M Micro cable (without strength members)	M –	M –
Y	MLT 12 x 2.8 mm [12x24] – 288	N –	N –	N –
Z	(+number) custom designs	P (jacket – aramid – jacket)	P Inner PE jacket	P PVC outer jacket, dry core
		Q (jacket – E-glass – jacket)	Q –	Q PVC outer jacket, filled core
		R Improved resistance	R 15 kN – 2 jackets	R –
		S Self-supporting nonmetallic strength member	S –	S –
		T Self-supporting dielectric member – two jackets	T –	T Track resistant HDPE
		U –	U –	U –
		V –	V –	V –
		W SWA two jackets – without strength members	W	W –
		X SWA two jackets – aramid on core	X 3 kN – 1 jacket	X –
		Y SWA two jackets – E-glass on core	Y 6 kN – 2 jackets	Y –
		Z –	Z 9 kN – 2 jackets	Z –

Stripability of the Tight Buffered Fiber

TIGHT (CODE T)	stripability up to 10 cm
FREE (CODE F)	stripability more than 100 cm

Used Abbreviations

LSZH	LOW SMOKE, ZERO HALOGEN
LS0H	LOW SMOKE, ZERO HALOGEN
LSHF	LOW SMOKE, HALOGEN FREE
HFFR	HALOGEN FREE, FLAME RETARDANT
FRNC	FIRE RETARDANT, NON-CORROSIVE
FR-LSZH	FIRE RETARDANT – LOW SMOKE, ZERO HALOGEN

Properties of the Cable Sheath

	LDPE	HDPE	PA	FR-LSZH	PUR
Flexibility	Medium	Low	Low	High	Very High
Water Resistance	High	High	Medium	Medium	Medium
Abrasion Resistance	High	High	High	Low	High
UV Radiation Resistance	High	High	Low	High	High
Brittleness in Low Temperature	Medium	Medium	Low	Medium	Very Low

Chemical Resistance Table (@ 20 °C)

	LDPE	HDPE	PA	FR-LSZH	PUR
Acids, Dilute or Weak	E	E	F	N	G
Acids*, Strong or Concentrated	E	E	N	N	F
Alcohols, Aliphatic	E	E	N	N	F
Aldehydes	G	G	F	F	G
Bases	E	E	F	G	N
Esters	G	G	E	N	N
Hydrocarbons, Aliphatic	F	G	E	F	E
Hydrocarbons, Aromatic	F	G	E	N	N
Hydrocarbons, Halogenated	N	F	G	N	N
Ketones	G	G	E	N	N
Oxidizing Agents, Strong	F	F	N	N	N
Salts	E	E	E	G	E
Crude Oil	N	N	G	F	F
Kerosene	F	F	E	N	F
Mineral Oil	G	G	E	N	F

* For oxidizing acids, see „Oxidizing Agents, strong“.

E 30 days of constant exposure causes no damage. Plastic may tolerate for years.

G Little or no damage after 30 days of constant exposure to the reagent.

F Some effect after 7 days of constant exposure to the reagent.
The effect may be crazing, cracking, loss of strength or discoloration, depending on the plastic.

N Not recommended. Immediate damage may occur. Depending on the plastic, the effect may be severe crazing, cracking, loss of strength, discoloration deformation, dissolution or permeation loss.

Note: This table must be considered as an orientation.

Fire properties

		METHOD	COMMENT
Fire properties – Flammability	pass	EN 60332-3-22 (cat. A) EN 50266-2-2	- 40 min exposure to flame - length of the burned sample max. 2.5 m
Fire properties – Acid gases	pass	EN 60754-1 EN 60754-2	- min. pH 4.3 - max. 10 µS/mm
Fire properties – Smoke density	pass	EN 61034-1 EN 61034-2	- min. 60 %

Note: Valid for all FR-LSZH sheaths.

Fire Properties

FLAME-RETARDANT

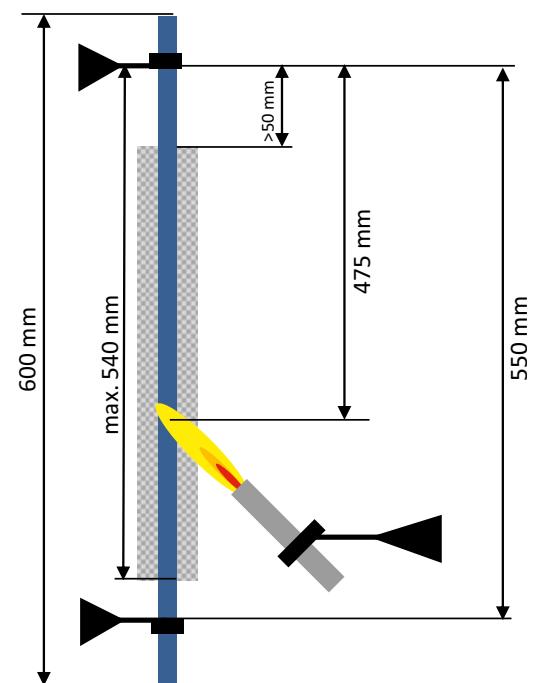
The cable must meet the requirements of the test specified in IEC standard 60332-3 or IEC 60332-1.

The cable does not propagate fire and is self-extinguishing.

Notice: You can not assume that if the cable passes the test according 60332-1, a bundle of such cables passing a test 60332-3.

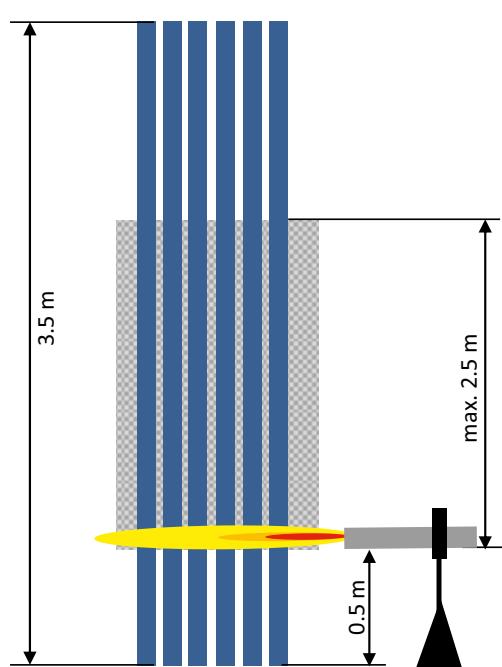
TEST ACC.

TO IEC 60332-1



TEST ACC.

TO IEC 60332-3



Charred part of the cable

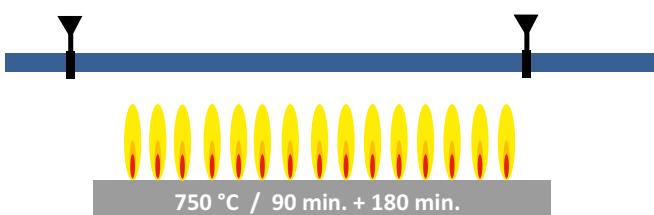
Cable Diameter	Burning Time
$\leq 25 \text{ mm}$	60 sec
$\geq 25 \text{ mm}; \leq 50 \text{ mm}$	120 sec

Category	Amount of Burning Material	Burning Time
A*	7.0 lt/m	40 min
B	3.5 lt/m	40 min
C	1.5 lt/m	20 min
D	0.5 lt/m	20 min

* KDP Cables

FIRE-RESISTANT

The cable must meet the requirements test specified in standard IEC 60331-11 and 25. The cable must be functional a minimum of 90 minutes in direct fire.







7. INSTALLATION AND MANIPULATION

- INTRODUCTION
- MANIPULATION AND STORAGE
- REWINDING/UNWINDING OF CABLE
- BEND RADIUS OF CABLE
- PULL STRENGTH OF CABLE
- VERTICAL INSTALLATION
- TWIST OF CABLE

Introduction

It is very easy to damage optical cables if manipulation with them is incorrect or if important installation procedures are not followed.

The information stated below should be taken into consideration when installing and manipulating with optical cables. Violating any of the basic rules can result in worsening of the cable's transfer characteristics or it can permanently damage it and shorten its lifetime. The handbook can also serve as a guideline for solving problem not only related to the installation of new cables but also for possible problems of cables, which have already been installed.

There is an assumption that the customer has general knowledge about the design of optical cables and the terminology related to it. If necessary, please contact KDP.

Symbols Used:



RECOMMENDED



NOT RECOMMENDED

Manipulation and Storage

The drums with the cables cannot be thrown from any heights! The drums with optical cables have to always stand on the edges of the head, secured with a wedge to prevent movement. The only time when it is not necessary to secure the drums with a wedge is when the drums are mutually secured between each other by standing them crosswise. /Pic. 1

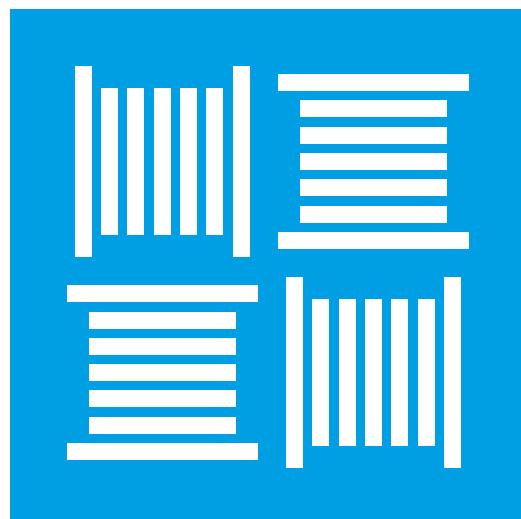
It is possible to store HEAVYDUPLEX, SIMPLEX, DUPLEX type cables and coils with cables up to 4mm in diameter by laying them on the head. However, the cable has to be fastened by shrink wrap to prevent the loosening of individual cable coils.

Cables intended for internal use can only be stored in closed areas without humidity. Cables for universal and outdoor use can be stored in outdoor conditions. However, the cable ends have to be waterproof. However, if the cable is on a plywood spool, it has to be stored in such a manner so as to prevent the effects of water on the spool.

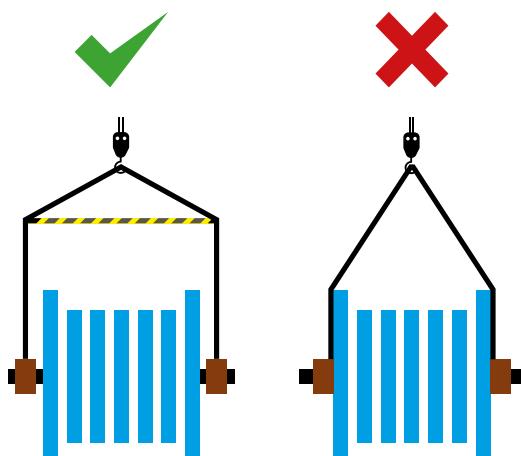
When manipulating with the drums using a crane, a spacer rod has to be placed between the load bearing ropes, so that the ropes do not exert pressure on the cable through the side drums. /Pic. 2

When lifting the drums using a forklift, the drums can only be gripped from the sides and only when the skids of the forklift are long enough for the head of the drum to be positioned on it with a safe overhang. /Pic. 3

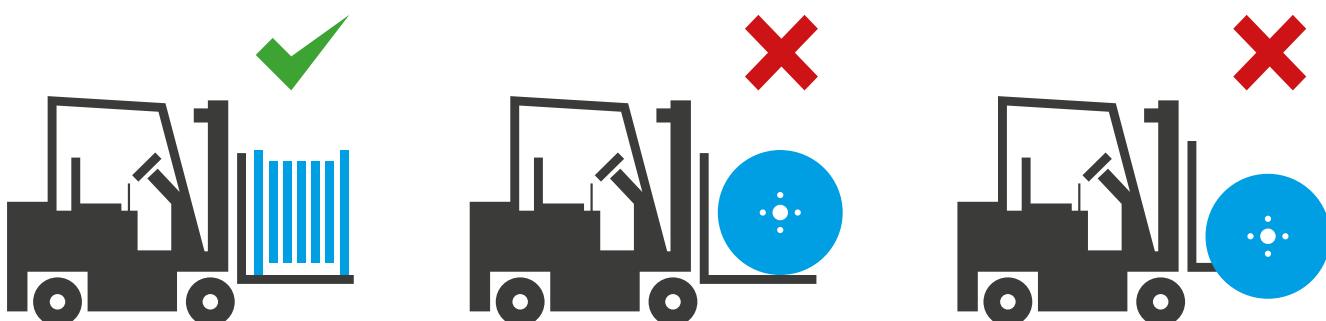
It is only possible to roll the drums short distances and only on a hard and flat surface.



Pic. 1



Pic. 2

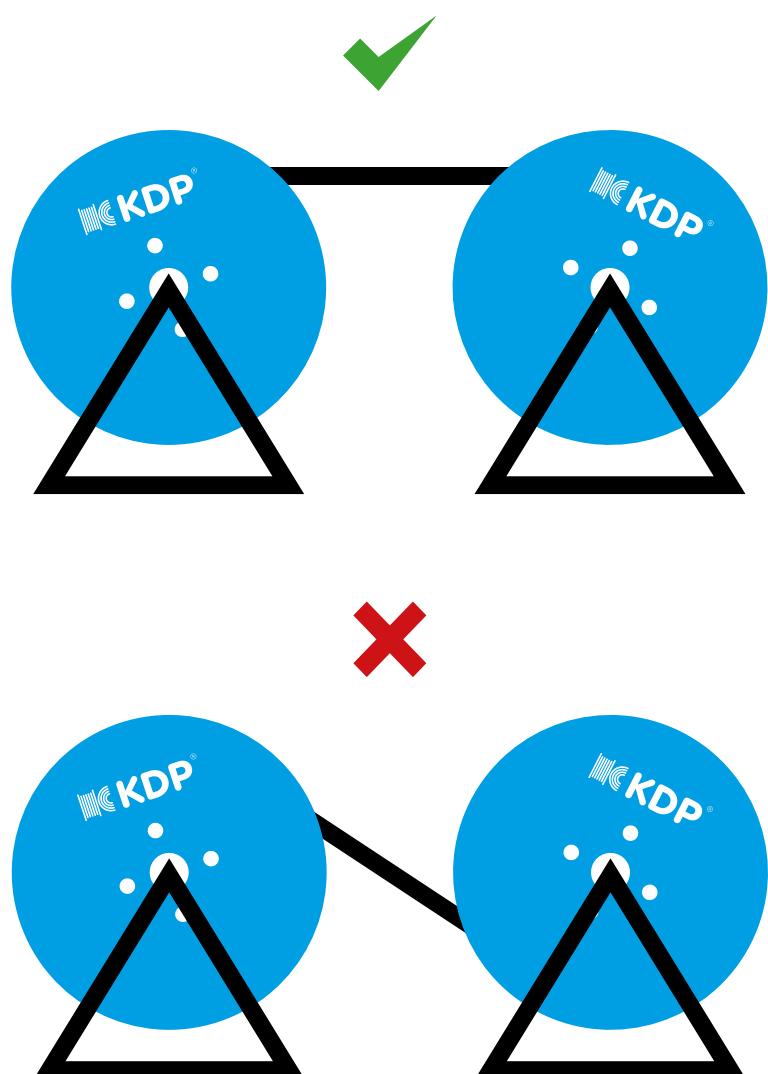


Pic. 3

Rewinding/Unwinding of Cable

The rewinding and unwinding of cables is only possible in temperature above 5 °C. If for any reason, it is necessary to unwind the cable in a lower temperature, the cable has to be left at a minimum temperature of 20 °C for at least 24 hours beforehand. For rewinding the cable, the winding (bending) direction of the cable has to be maintained, unwinding cannot form an "S" shape. /Pic. 4

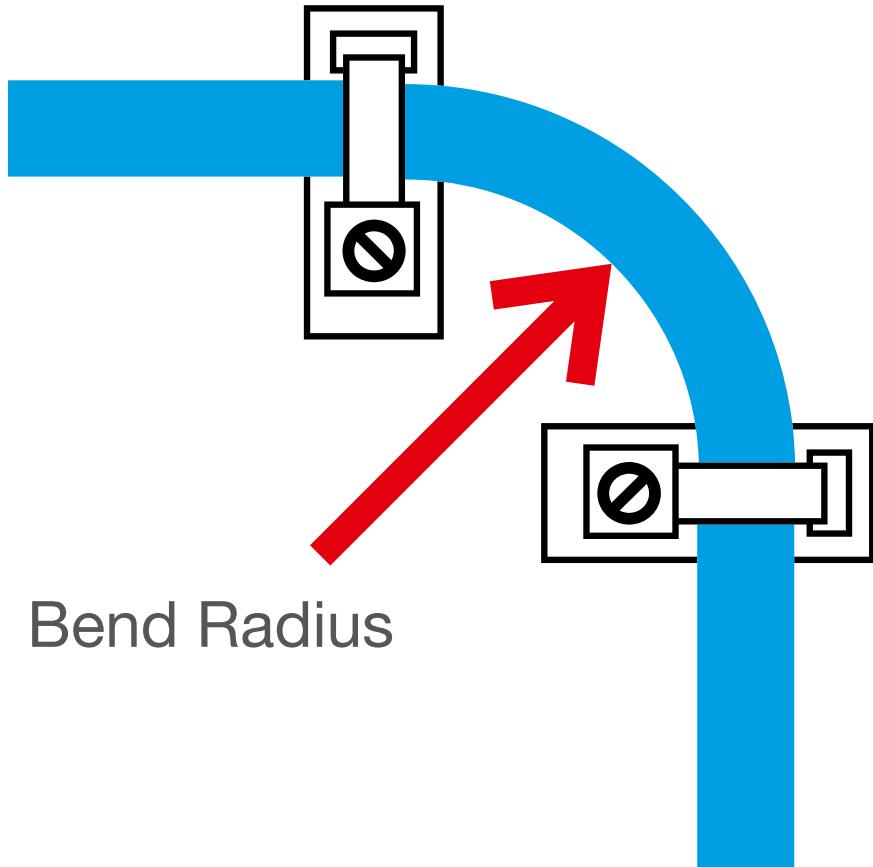
When unwinding the cable, it is necessary to maintain continuous pull without variation. Unwinding without pull can then lead to the loosening of individual rolls and to the consequent mutual under pull, possibly to the uncontrolled, sharp tugging of the cable, resulting in the damaging of the optical fibers.



Pic. 4

Bend Radius of Cable

This value is defined by the cable manufacturer and exceeding this value can cause invisible fiber damage, which does not have to be evident immediately following installation, but later on. Therefore, it is important to follow the minimum bend diameter not only during installation but also for a cable, which has already been installed.



Pic. 5

Pull Strength of Cable

Unless stated otherwise, all optical cables manufactured at KDP are designed for conditions under which there is no pull strain exerted during operations, or only such a pull that the fiber in the cable is not strained (such an option is stated in the cable specification). If the straining of cables takes place in operations, we recommend consulting such situation with KDP prior to cable installation.

The maximum pull defined is for the purpose of cable installation and this value should never be exceeded! It is not force that snaps the cable in two, but the limit which guarantees that the fibers will not be damaged.

For checking purposes, upon installation, it is strongly recommended to place a mid-cable and a pull cable measuring pull for the continuous monitoring of the current cable pull. If necessary, also record a video of the course of installation, which then significantly aids in resolving consequent problems following installation. In order to decrease resistance when dragging, it is suitable to use a lubricant. Prior to use, verify that it is compatible with the material of the cable coating.

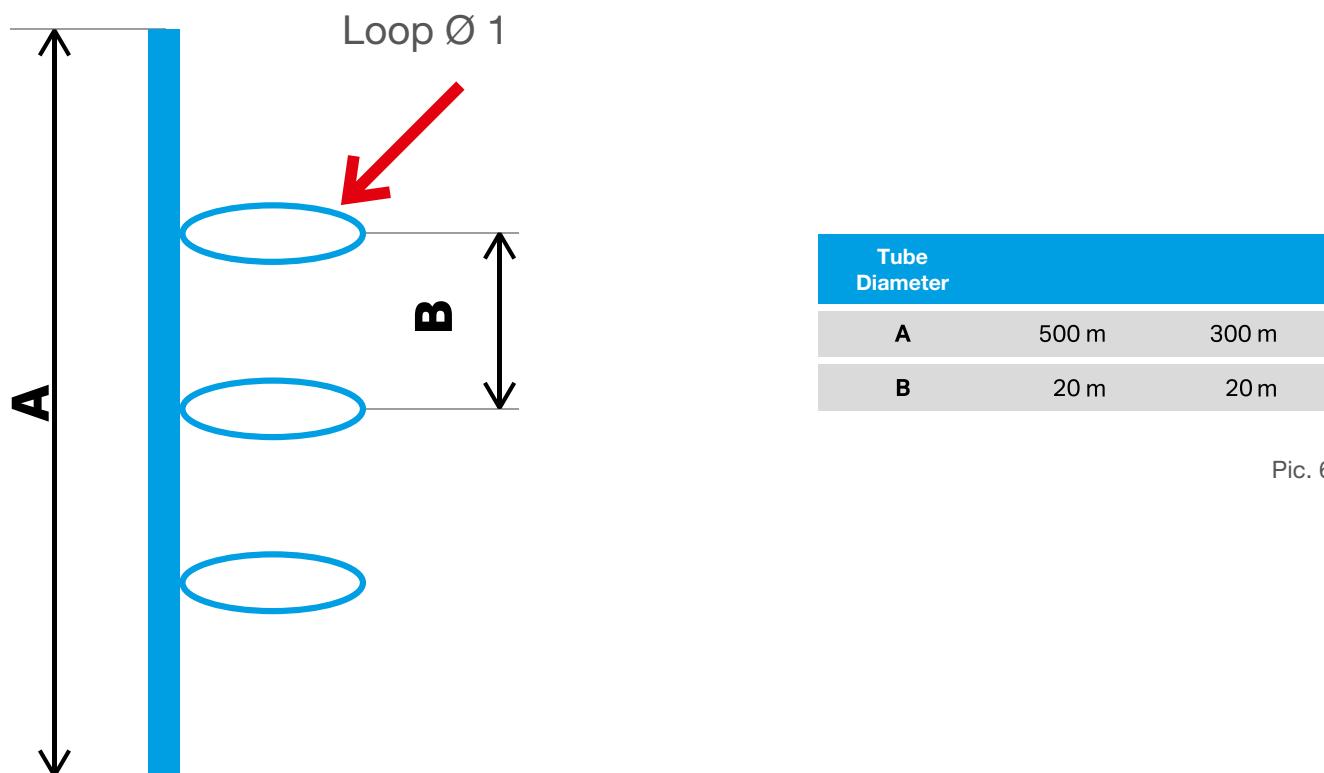
Vertical Installation

A gel, resistant to dripping up to 70 °C for a period of 24 hours, is used in optical KDP cables. This gel is also excludes oil and maintains its characteristics for the entire lifetime of the cable. Therefore, it is possible to install optical cables with independent secondary protection, a gel-filled tube, vertically, either as a construction with one central tube as well as multi-tube cables. This does not apply for multi-tubes, where the inner cable tube (the space between the individual tubes) is filled with gel. We do not recommend installing such cables vertically.

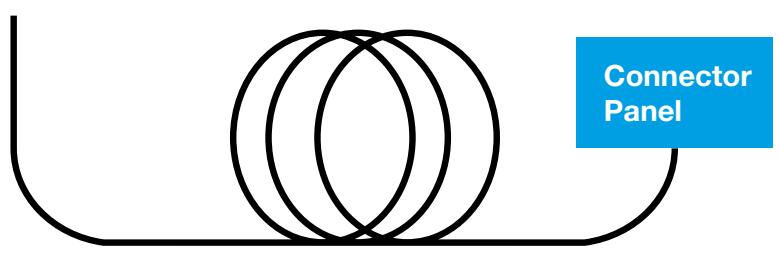
Conditions for the bend radius of the pull strength and other parameters are the same as for any common horizontal installation. The procedure applies for installation outdoors as well as indoors, sewage systems, etc.

The vertical placement of cables has to be fastened by clamps, to prevent sliding. The maximum distance between individual clamps has to be such, where the weight of the cables between the clamps exceeds the pull strength and does not strain the fibers in the cable. Horizontal loops will form on vertically running cable as a relief element and protection against the possible movement of the cable in case of vibration of the load bearing construction against fixed mounting in the lower part of the cable. The distance of the loops depends on the inner diameter of the tubes in the cable. /Pic. 6

If the cable in the lower part directly enters into the connector panel, it should enter by 3 loops. The purpose of this is to compare the change in the lengths of cables given the change in temperatures. This is from the lower part of the panel. /Pic. 7



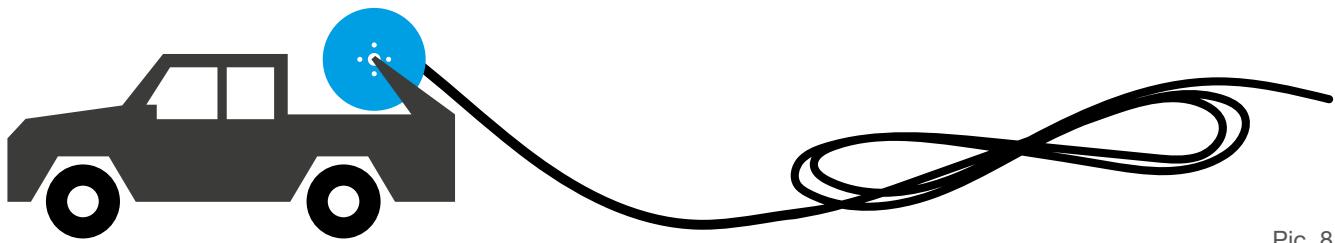
Pic. 6



Pic. 7

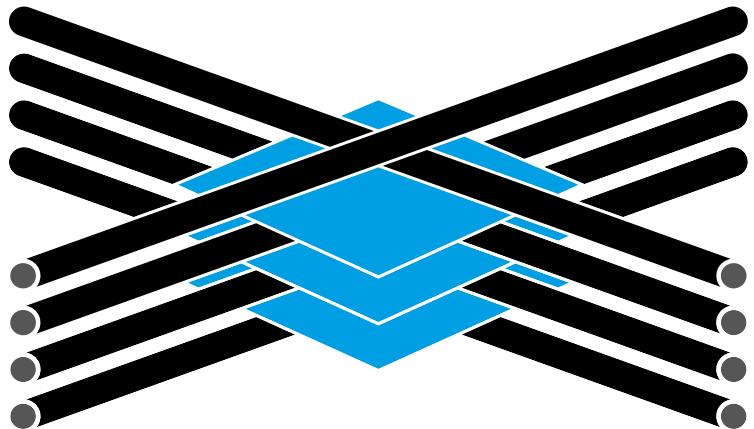
Twist of Cable

Avoid twisting the cable during installation because this can cause stress to the fiber. If you install a cable longer than 30 m and you are pulling it through a narrower section (for example, underground), unwind the cable beforehand. Place cables freely in a figure eight on the floor. /Pic. 8. Placing cables in a loop prevents twisting. The diameter of the loop should be 2–4 m, depending on the rigidity of the cable. The length of the figure eight is 8–10 m.



Pic. 8

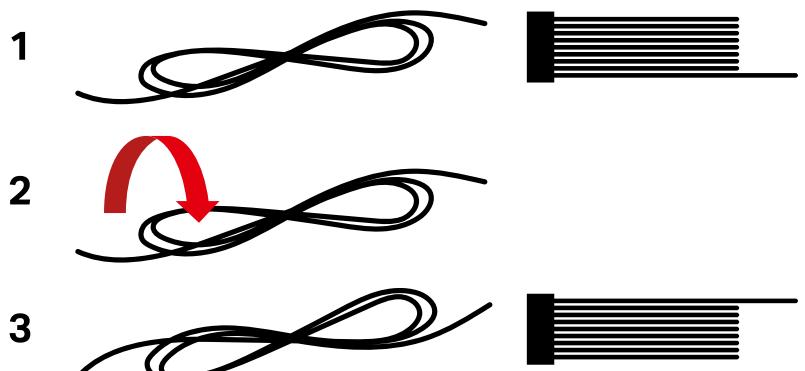
It is recommended to place for example, cardboard paper between individual rolls.
Pic. 9



Pic. 9

Prior to taking the cable from the figure eight, tilt it by 180°, with the aid of other individuals, so that the beginning of the cable is facing upward. /Pic. 10

After pulling it through, do not wind it back up onto the drum, but place it back in a figure eight for further laying.



Pic. 10

Notes



[!\[\]\(a1f787aff975ee7b4466d883820aa46c_img.jpg\) KDP](#) | [!\[\]\(c71b15e6b819271e51cc0a122b551c34_img.jpg\) KDP - World Connecting Cables](#)

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