Fiber optic cables

Product catalogue 2022

KDP®

WORLD CONNECTING 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.

Lenka Mádlová
Head of Commercial Department – Member of board

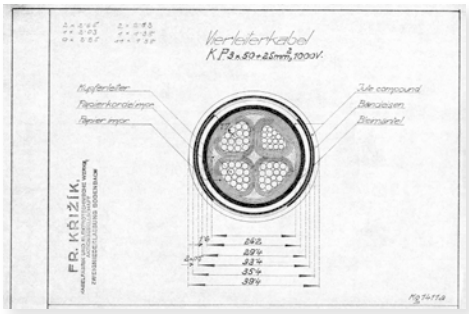
Summary

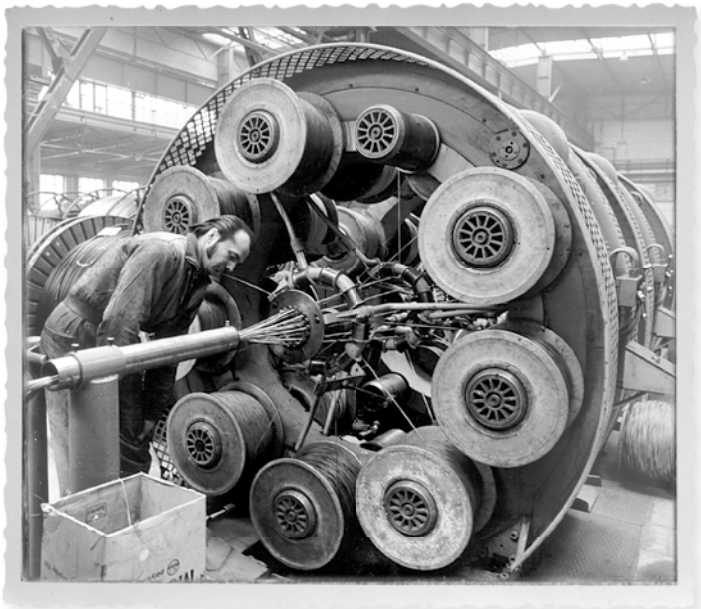
Index

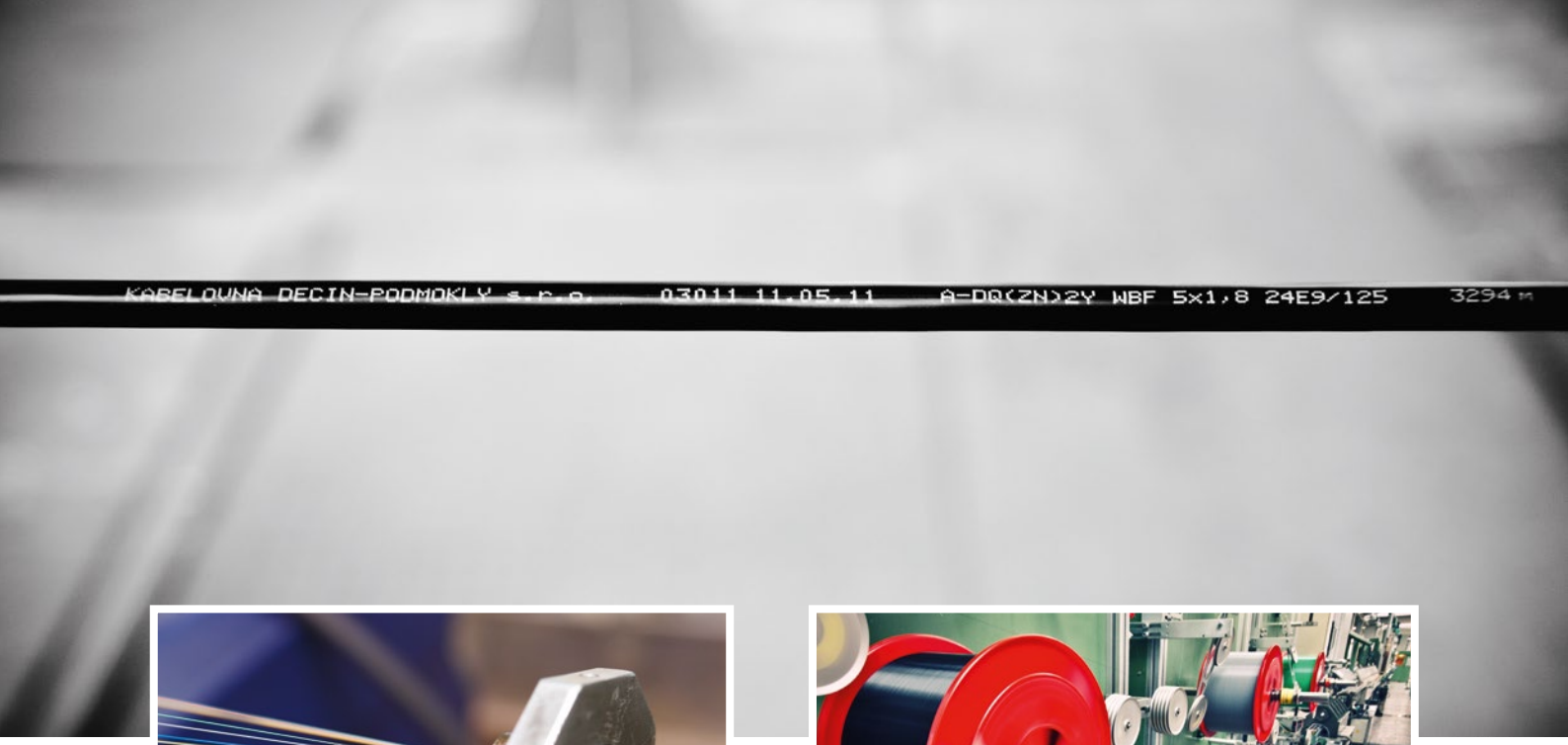
History and present of **KABELOVNA** Děčín Podmokly

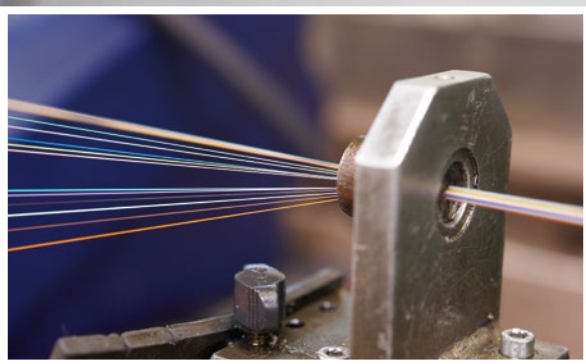
KDP was founded in 1909 and 1910 as a branch of the Bergmann cable plants in Berlin, the original name of the company being „Rakouské Bergmannovy závody spol. s r.o., Vídeň, továrna Podmokly“.

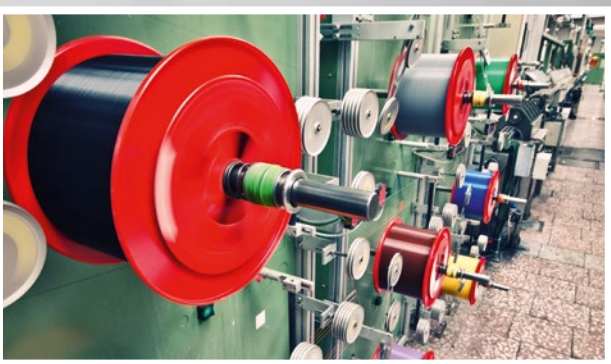
From the very outset the plant manufactured all types of power and communications cables with lead casing and the relevant cable sets, as well as rubber-insulated conductors, dynamo wires and insulation pipes with accessories. Company activity at that time also included projects involving electrical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







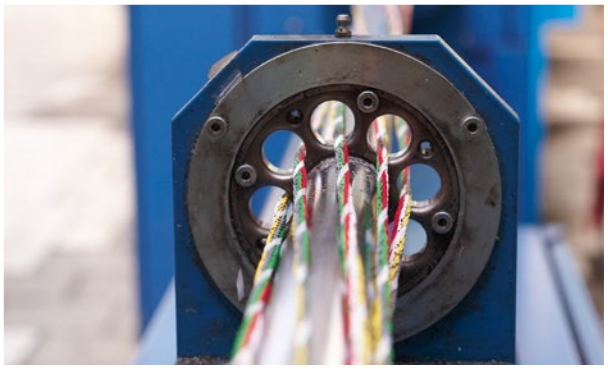


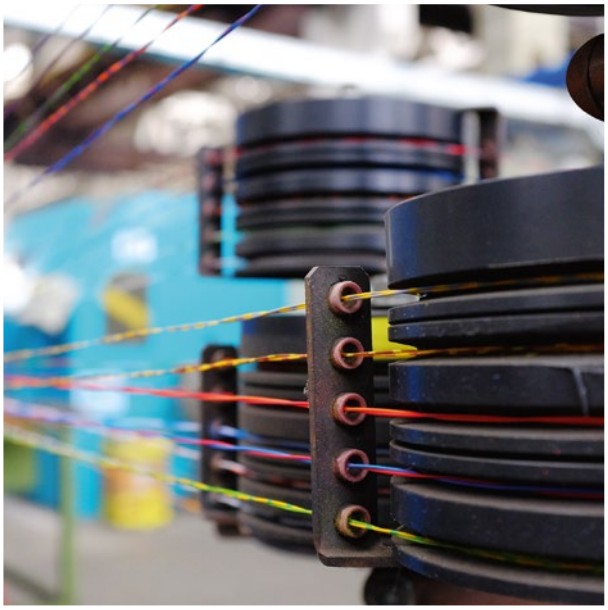


The cable factory came into the hands of Anglo-Pragobanka as part of Křižík a spol. Praha after the First World War and this company reconstructed the entire business. The production of trunk communications cables got underway at this time. The cable factory and neighbouring copper works were then merged 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 Bergmanovy 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 Křižík, 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 Křižík 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 100th Anniversary.
2015	New portfolio of cable constructions.
1. 1. 2016	KABELOVNA Děčín Podmokly, s.r.o. has become a member of FTTH Council.

Certificates and CPR

KDP
WORLD CONNECTING CABLES

DECLARATION OF PERFORMANCE
No. 20/17

1. Unique identification code of the product-type:	J/A-OQ(BN)BH (AR02)	
2. Intended use/es:	Communication fiber optical cable	
3. Manufacturer:	KABELOVNA Děčín Podmokly, s.r.o., Ústecká 840/33, 405 33 Děčín 5, CZECH REPUBLIC	
4. Authorised representative:	-	
5. System/s of AVCP:	3	
6. Harmonised standard:	EN 50575:2014+A1:2016	
Notified bodylies:	ELEKTROTECHNICKÝ ZKUŠEBNÍ ÚSTAV s.p. , No. 1014	
7. Declared performance/s:	Reaction to fire	Eca
	Dangerous substances	NPD
8. Appropriate Technical Documentation and/or Specific Technical Documentation:	Test report No.	703244-01/03 from 5.9.17

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: 15.9.2017

Signed for and on behalf of the manufacturer: Ing. Lenka Mádlová

Function: Commercial director

KABELOVNA Děčín Podmokly, s.r.o.
Ústecká 840/33 | 405 33 Děčín
Czech Republic

IČ 26703993
DIČ CZ26703993

Phone +420 412 706 111
E-mail: sales@kabelovna.cz
www.kabelovna.cz

TÜV NORD

CERTIFICATE

Management system as per
EN ISO 14001 : 2004

In accordance with TÜV NORD CERT procedures, it is hereby certified that

KABELOVNA Děčín Podmokly, s.r.o.
Ústecká ul. 840/33
405 33 Děčín V
Czech Republic

KDP
WORLD CONNECTING CABLES

applies a management system in line with the above standard for the following scope

Development, production and testing of metallic and optical cables.

Certificate Registration No. 04 104 980076
Audit Report No. 623 606/700

Valid from 2017-03-08
Valid until 2018-09-14
Initial certification 1998

Certification Body
at TÜV NORD CERT GmbH

Praha, 2017-03-02

This certification was conducted in accordance with the TÜV NORD CERT auditing and certification procedures and is subject to regular surveillance audits.

TÜV NORD CERT GmbH Langemarckstraße 20 45141 Essen www.tuevnord-cert.com

IAF DAkkS

TÜV NORD

CERTIFICATE

Management system as per
EN ISO 9001 : 2008

In accordance with TÜV NORD CERT procedures, it is hereby certified that

KABELOVNA Děčín Podmokly, s.r.o.
Ústecká ul. 840/33
405 33 Děčín V
Czech Republic

KDP
WORLD CONNECTING CABLES

applies a management system in line with the above standard for the following scope

Development, production and testing of metallic and optical cables.

Certificate Registration No. 04 100 950276
Audit Report No. 623 067/800

Valid from 2017-03-04
Valid until 2018-09-14
Initial certification 1995

Certification Body
at TÜV NORD CERT GmbH

Praha, 2017-03-02

This certification was conducted in accordance with the TÜV NORD CERT auditing and certification procedures and is subject to regular surveillance audits.

TÜV NORD CERT GmbH Langemarckstraße 20 45141 Essen www.tuevnord-cert.com

IAF DAkkS

1. TIGHT BUFFERED CABLES

- SIMPLEX
- DUPLEX
- HEAVY DUPLEX
- BREAKOUT
- DISTRIBUTION

SIMPLEX

Specification: 16×1, 17×1, 11×1, 12×1, 14×1, 15×1, 18×1, 19×1, 13×1, 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.

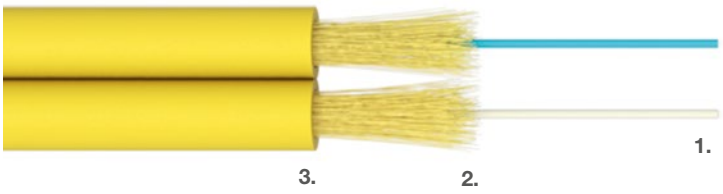
Temperature range	
Installation	-5 to +50 °C
Operation	-5 to +50 °C
Storage	-5 to +50 °C

Design code	Simplex diameter [mm]	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
16×1	1.6	2.8	100	500
17×1	1.7	3.2	100	500
11×1	1.8	3.7	100	500
12×1	2.0	4.6	100	500
14×1	2.4	7.1	250	500
15×1	2.5	7.3	300	500
18×1	2.8	8.2	300	500
19×1	2.9	8.5	300	500
13×1	3.0	8.8	300	500
Z026	2.3	6.6	250	500
Z174	2.6	8.2	300	500

DUPLEX

Specification: 26×1, 21×1, 22×1, 24×1, 28×1, 23×1, Z175

Indoor FTTx Data center Halogen free



Description of materials:

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

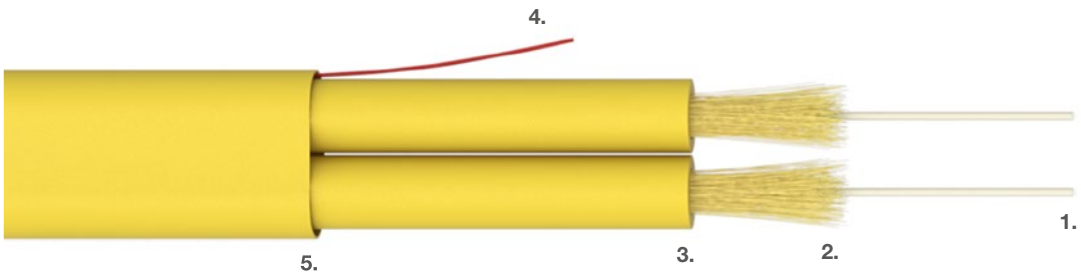
Temperature range	
Installation	-5 to +50 °C
Operation	-5 to +50 °C
Storage	-5 to +50 °C

Design code	Cable outer diameter [mm]	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
26×1	1.6 × 3.4	5.8	200	1,000
21×1	1.8 × 3.8	7.4	200	1,000
22×1	2.0 × 4.3	9.3	200	1,000
24×1	2.4 × 5.1	11.9	500	1,000
28×1	2.8 × 5.9	17.0	500	1,000
23×1	3.0 × 6.3	19.7	500	1,000
Z175	2.6 × 5.6	14.4	500	1,000

HEAVY DUPLEX

Specification: 32×1, 34×1, 38×1, Z176, Z235, Z279

Indoor · FTTx · Data center · Halogen free



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.

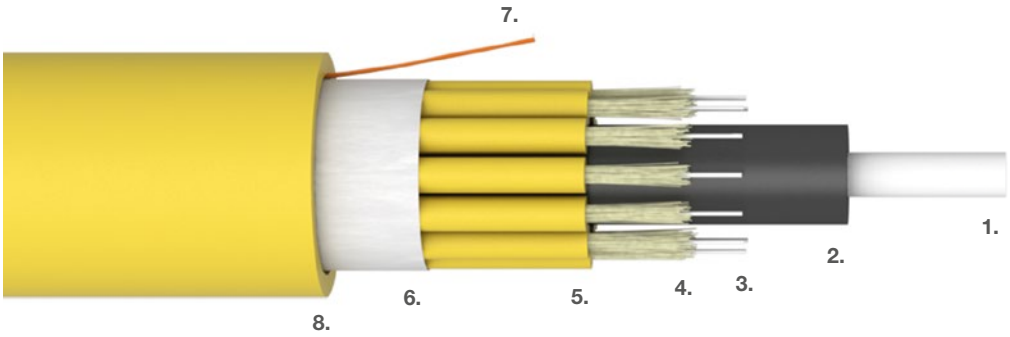
Temperature range	32×1, 34×1, 38×1, Z176	Z235, Z279
Installation	0 to +50 °C	-15 to +50 °C
Operation	0 to +50 °C	-20 to +70 °C
Storage	0 to +50 °C	-20 to +70 °C

Design code	Cable outer diameter [mm]	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
32×1	3.0 × 5.0	19.0	200	1,000
34×1	3.6 × 6.0	28.0	500	1,000
38×1	4.2 × 7.0	35.0	500	1,000
Z176	3.6 × 6.2	28.0	600	1,000
Z235	3.0 × 5.0	18.0	200	1,000
Z279	4.2 × 7.0	33.0	500	1,000

BREAKOUT STANDARD

Specification: 41×1, 42×1, 44×1, 49×1

Indoor FTTx Data center Halogen free



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.

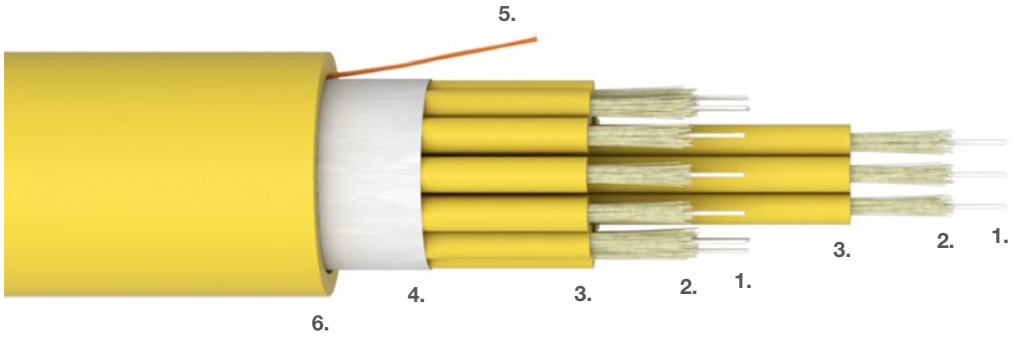
Temperature range	41×1, 49×1	42×1, 44×1
Installation	-5 to +40 °C	-5 to +50 °C
Operation	-5 to +50 °C	-20 to +60 °C
Storage	-25 to +60 °C	-20 to +60 °C

Design code	Max. fiber count	Simplex diameter [mm]	Cable outer diameter [mm]	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
41×1	36	1.8	15.0	226.0	3,500	2,000
42×1	48	2.0	19.0	339.0	5,000	1,500
44×1	24	2.4	16.8	277.0	4,000	1,500
49×1	24	2.9	19.7	334.0	3,200	1,500

BREAKOUT NO CSM

Specification: 82×1

Indoor · FTTx · Data center · Halogen free



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.

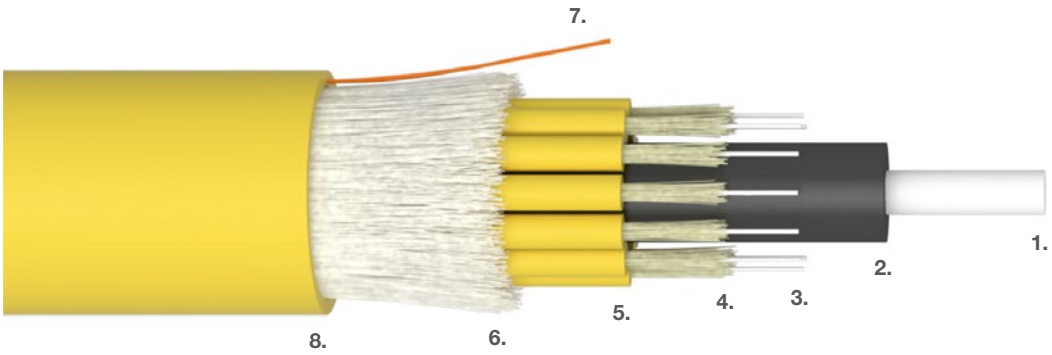
Temperature range	
Installation	-5 to +50 °C
Operation	-20 to +60 °C
Storage	-20 to +60 °C

Design code	Max. fiber count	Simplex diameter [mm]	Cable outer diameter [mm]	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
82×1	48	2.0	18.7	314.0	300	1,000

BREAKOUT IMPROVED

Specification: 42×8, 44×8

Indoor · FTTx · Data center · Halogen free · High tensile



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.

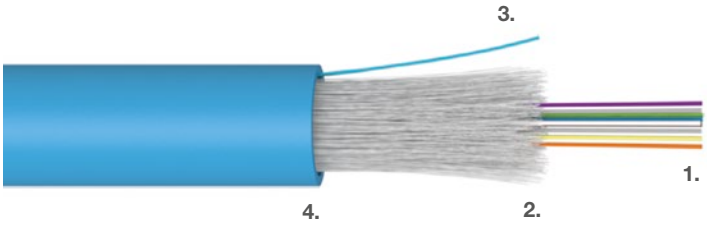
Temperature range	42×8	44×8
Installation	-5 to +40 °C	-5 to +40 °C
Operation	-20 to +60 °C	-5 to +50 °C
Storage	-20 to +60 °C	-25 to +60 °C

Design code	Max. fiber count	Simplex diameter [mm]	Cable outer diameter [mm]	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
42×8	24	2.0	15.7	248.0	4,500	2,000
44×8	24	2.4	18.1	334.0	5,500	2,000

DISTRIBUTION STANDARD

Specification: 5E×1

Indoor | Outdoor | FTTx | Data center | Halogen free



Description of materials:

1. FR-LSZH buffered optical fibers. **2.** Waterblocking E-glass yarn. **3.** Rip-Cord.
4. FR-LSZH outer jacket, UV stable.

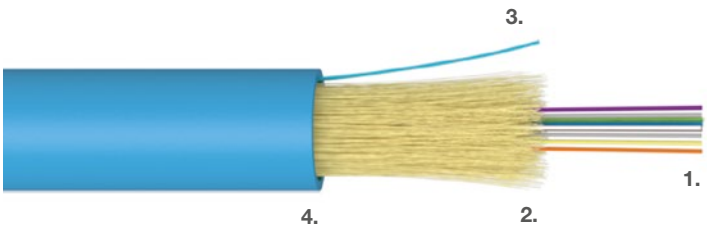
Temperature range	
Installation	-5 to +50 °C
Operation	-20 to +60 °C
Storage	-20 to +60 °C

Design code	Fiber count	Cable outer diameter [mm]	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
5E×1	2	5.5	32.0	850	2,000
5E×1	4	6.0	39.0	1,200	2,000
5E×1	6	6.3	42.0	1,200	2,000
5E×1	8	7.1	51.0	1,500	2,000
5E×1	12	8.1	64.0	2,500	2,000
5E×1	16	9.7	85.0	2,700	2,000
5E×1	24	11.4	109.0	3,500	2,000

DISTRIBUTION STANDARD

Specification: 5V×1

Indoor · Outdoor · FTTx · Data center · Halogen free



Description of materials:

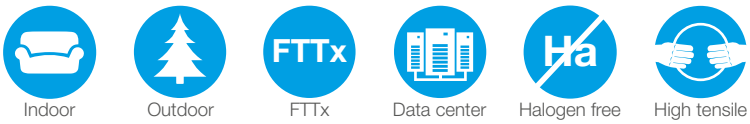
1. FR-LSZH buffered optical fibers. **2.** Waterblocking aramid yarn. **3.** Rip-Cord.
4. FR-LSZH outer jacket, UV stable.

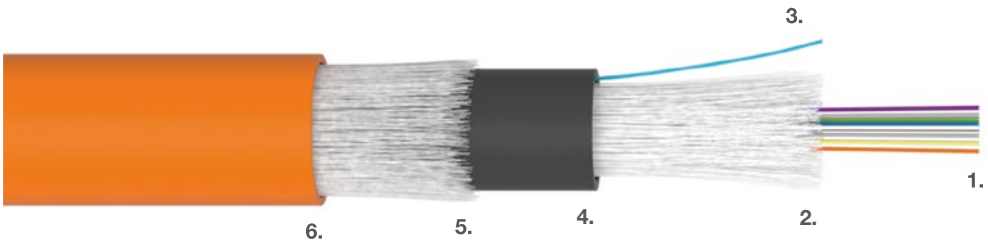
Temperature range	
Installation	-5 to +50 °C
Operation	-20 to +60 °C
Storage	-20 to +60 °C

Design code	Fiber count	Cable outer diameter [mm]	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
5V×1	2	4.4	20.0	550	2,000
5V×1	4	5.1	26.0	750	2,000
5V×1	6	5.3	30.0	900	2,000
5V×1	8	5.9	35.0	1,000	2,000
5V×1	10	6.1	38.0	1,000	2,000
5V×1	12	6.4	42.0	1,100	2,000
5V×1	16	7.5	57.0	1,300	2,000
5V×1	24	8.5	72.0	1,600	2,000

DISTRIBUTION IMPROVED

Specification: 5E×8





Description of materials:

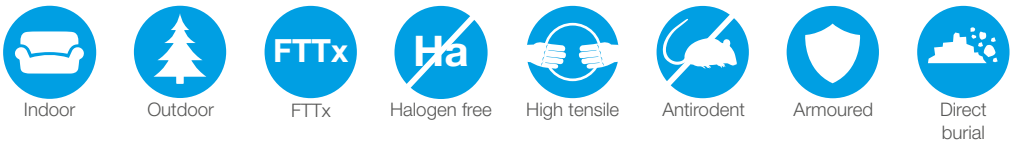
1. FR-LSZH buffered optical fibers. **2.** Waterblocking E-glass yarn. **3.** Rip-Cord. **4.** FR-LSZH inner jacket. **5.** Waterblocking E-glass yarn. **6.** FR-LSZH outer jacket, UV stable.

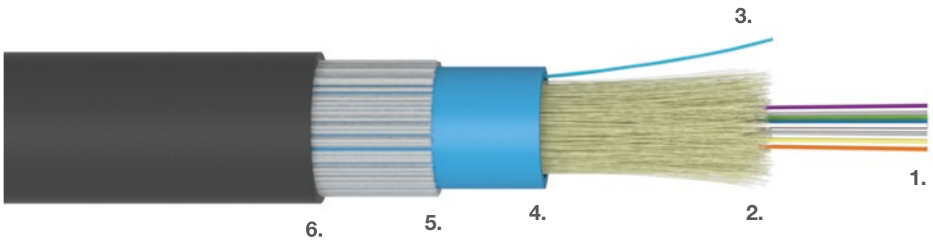
Temperature range	
Installation	-5 to +50 °C
Operation	-20 to +60 °C
Storage	-20 to +60 °C

Design code	Fiber count	Cable outer diameter [mm]	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
5E×8	2	8.4	84.0	2,500	2,000
5E×8	4	8.9	95.0	2,800	2,000
5E×8	6	9.2	102.0	3,000	2,000
5E×8	8	10.1	115.0	3,300	2,000
5E×8	12	11.1	135.0	3,600	2,000
5E×8	16	12.3	164.0	3,800	2,000
5E×8	24	14.1	201.0	4,100	2,000

DISTRIBUTION SWA

Specification: 5A×4, 5A×5





Description of materials:

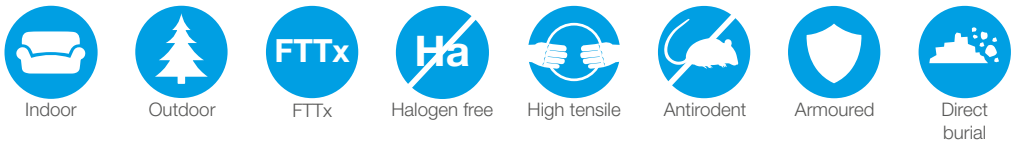
1. FR-LSZH buffered optical cable. **2.** Waterblocking aramid yarn. **3.** Rip-Cord. **4.** FR-LSZH inner jacket. **5.** Steel Wire Armour (SWA). **6.** FR-LSZH or PE outer jacket, UV stable.

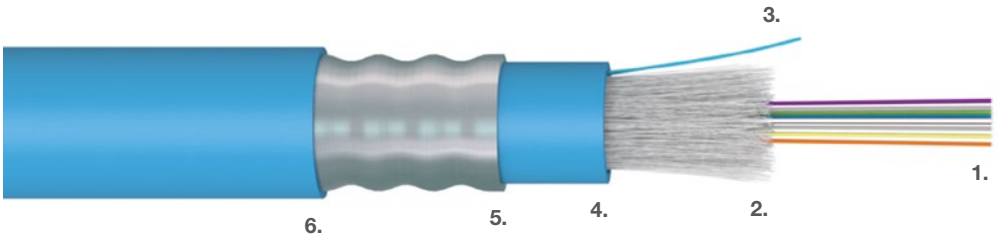
Temperature range	
Installation	-5 to +50 °C
Operation	-20 to +60 °C
Storage	-20 to +60 °C

Design code	Fiber count	Cable outer diameter [mm]	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
5A×4	4	10.2	169.0	4,350	2,000
5A×4	8	11.2	199.0	5,100	2,000
5A×4	12	11.7	217.0	5,550	2,000
5A×4	24	14.8	312.0	7,800	2,000
5A×5	4	10.2	145.0	4,350	2,000
5A×5	8	11.2	173.0	5,100	2,000
5A×5	12	11.7	190.0	5,550	2,000
5A×5	24	14.8	276.0	7,800	2,000

DISTRIBUTION CST

Specification: 5S×0, 5S×1





Description of materials:

1. FR-LSZH buffered optical fibers. **2.** Waterblocking E-glass yarn. **3.** Rip-Cord. **4.** FR-LSZH inner jacket. **5.** Corrugated steel tape. **6.** FR-LSZH or PE outer jacket, UV stable.

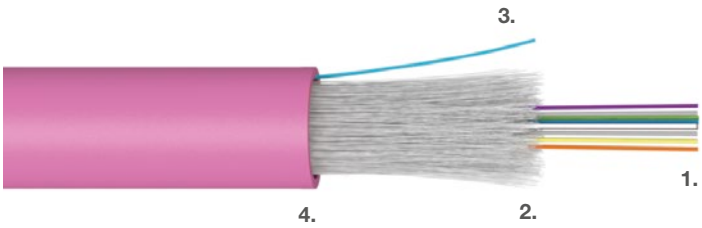
Temperature range	
Installation	-5 to +50 °C
Operation	-20 to +60 °C
Storage	-20 to +60 °C

Design code	Fiber count	Cable outer diameter [mm]	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
5S×0	4	10.5	107.0	800	5,000
5S×0	8	11.5	127.0	1,100	5,000
5S×0	12	15.5	134.0	1,200	5,000
5S×0	24	10.5	206.0	2,100	5,000
5S×1	4	11.5	131.0	800	5,000
5S×1	8	11.5	155.0	1,100	5,000
5S×1	12	15.5	161.0	1,200	5,000
5S×1	24	15.5	244.0	2,100	5,000

DISTRIBUTION ACRYLATE BUFFER

Specification: 5VA1

Indoor | Outdoor | FTTx | Data center | Halogen free

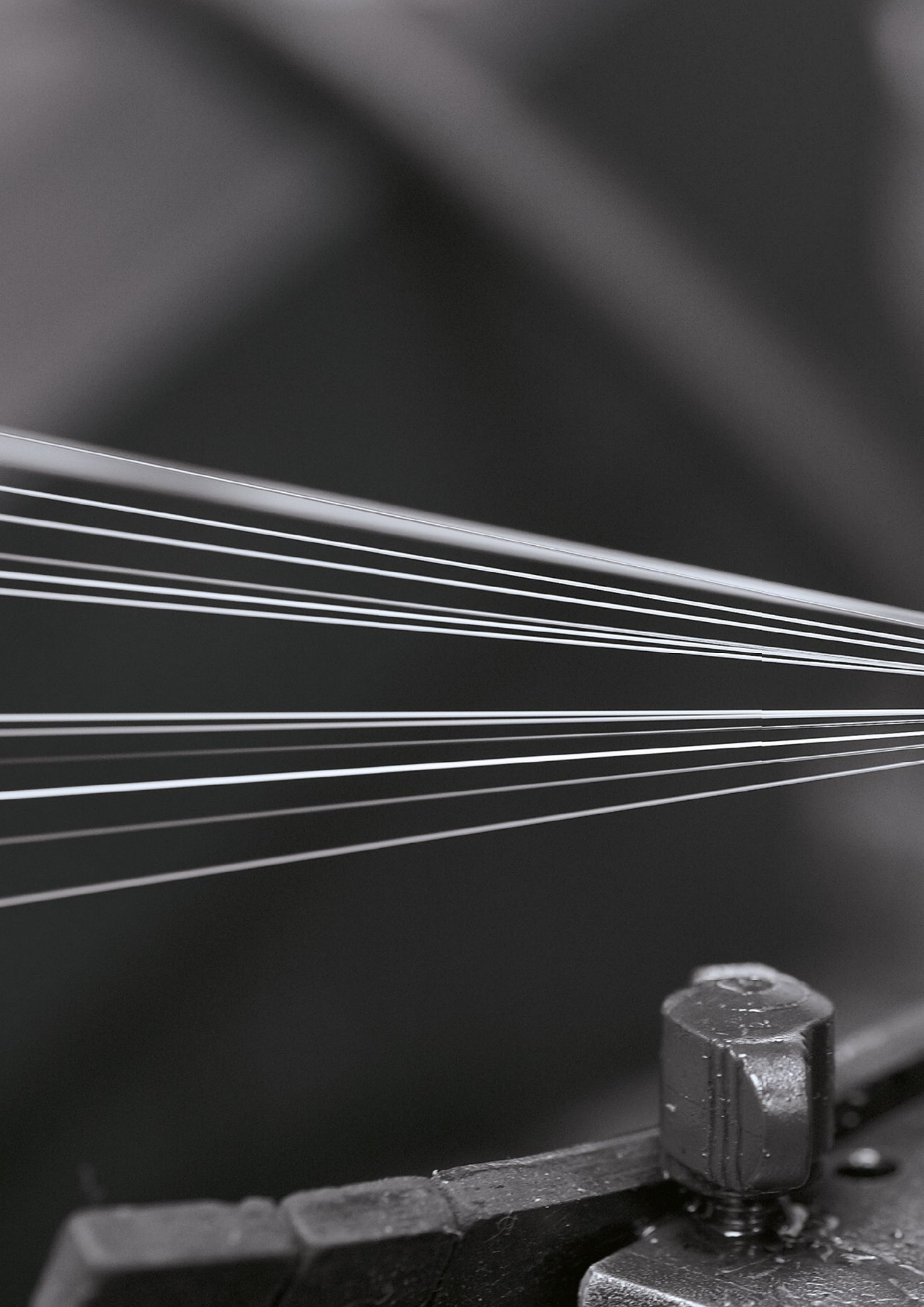


Description of materials:

1. Acrylate buffered optical fibers. **2.** Waterblocking E-glass yarn. **3.** Rip-Cord.
4. FR-LSZH outer jacket, UV stable.

Temperature range	
Installation	-30 to +60 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Fiber count	Cable outer diameter [mm]	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
5VA1	2	4.4	20.0	550	2,000
5VA1	4	5.1	25.0	750	2,000
5VA1	6	5.3	28.0	900	2,000
5VA1	8	5.9	33.0	1,000	2,000
5VA1	10	6.1	35.0	1,000	2,000
5VA1	12	6.4	38.0	1,100	2,000
5VA1	16	7.5	52.0	1,300	2,000
5VA1	24	8.5	64.0	1,600	2,000



2. DROP CABLES

- DROP
- FLAT DROP
- FLAT DROP FIG. 8

DROP

Specification: 7A01, Z236, Z237

Description of materials:

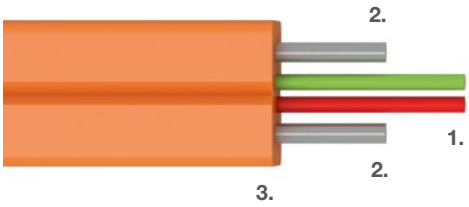
1. Optical fibers. **2.** Aramid yarn. **3.** FR-LSZH outer jacket, UV stable.

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]	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
7A01	1–6	3.0	10.0	500	1,000
7A01	8–12	3.4	12.0	500	1,000
7A01	16	3.7	13.5	500	1,000
7A01	24	4.0	15.5	500	1,000
Z236	1–12	3.4	13.0	700	1,000
Z237	2	3.0	11.0	1,000	1,000
Z237	4	3.2	11.0	1,000	1,000
Z237	8	3.2	12.0	1,000	1,000
Z237	12	3.4	13.0	1,000	1,000

FLAT DROP

Specification: Z041, Z043



Description of materials:

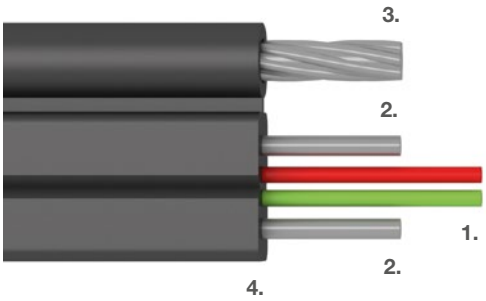
1. Optical fibers. **2.** Steel wire or FRP. **3.** FR-LSZH outer jacket, UV stable.

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]	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
Z041	2	2 × 3.0	9.5	300	4,000
Z043	2	2 × 3.0	7.6	100	4,000

FLAT DROP FIG. 8

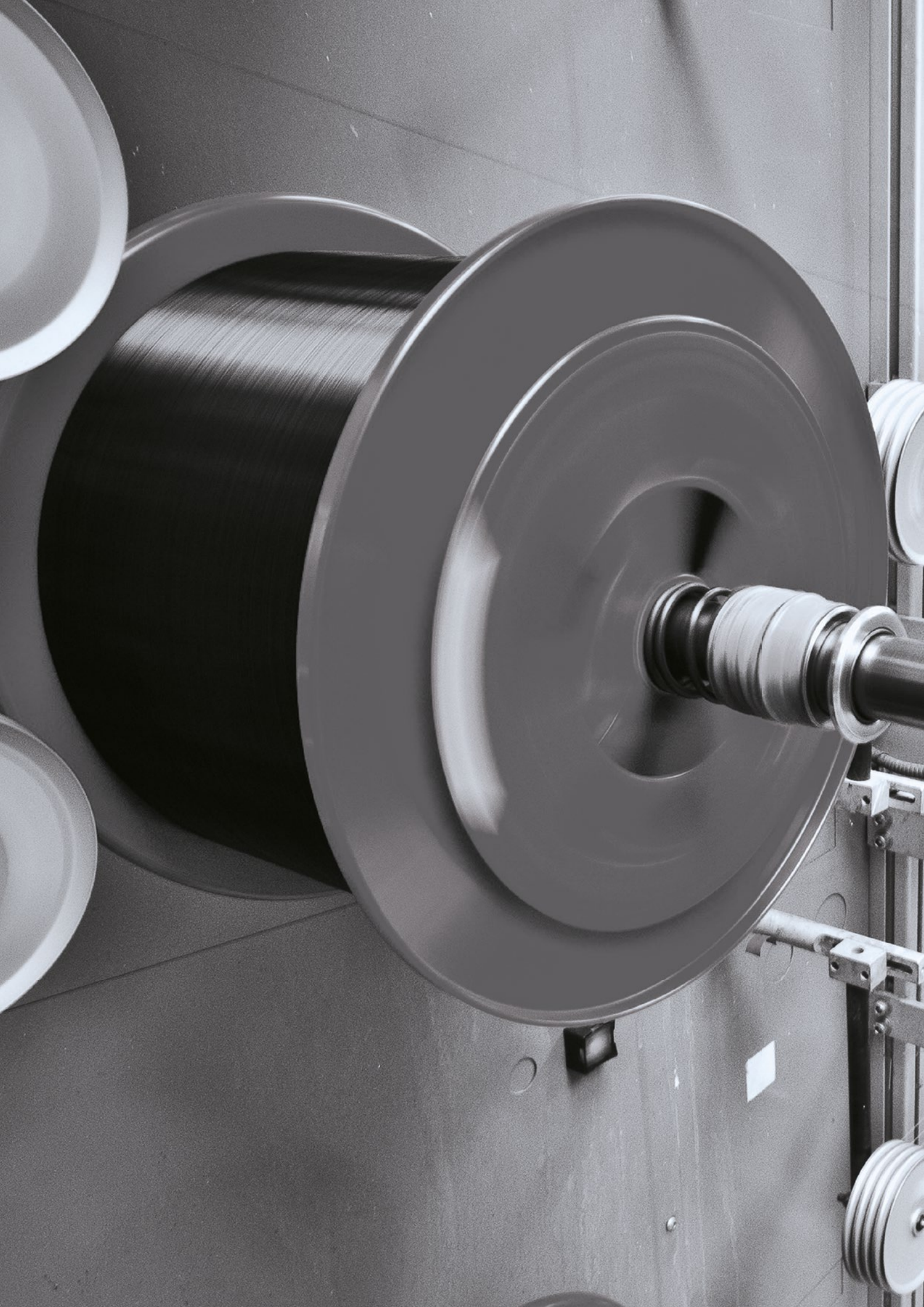
Specification: Z042, Z046



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]	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
Z042	2	2 × 5.2	20.0	800	4,000
Z046	2	2 × 5.2	18.0	800	4,000



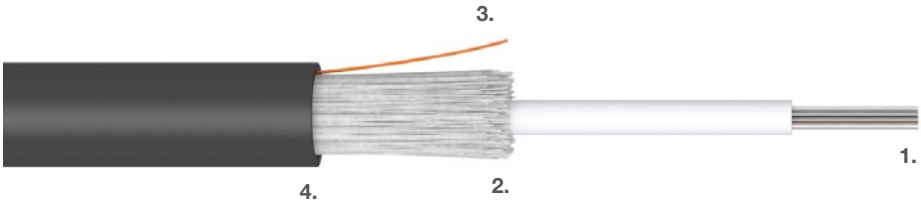
3. CLT CABLES

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

CLT STANDARD

Specification: AE00, BE00, AE02, BE02

Indoor Outdoor FTTx Halogen free



Description of materials:

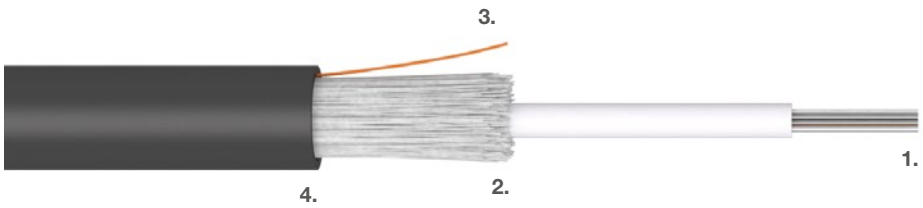
1. Gel filled PBT loose tube with optical fibers. **2.** Waterblocking E-glass yarn. **3.** Rip-Cord.
4. FR-LSZH or PE outer jacket, UV stable.

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	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
AE00	12	2.5	5.4	27.0	1,100	2,000
BE00	24	3.0	5.8	31.0	1,100	2,000
AE02	12	2.5	5.4	35.0	1,100	2,000
BE02	24	3.0	6.4	48.0	1,100	2,000

CLT IMPROVED

Specification: AR00, BR00, AR02, BR02



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.

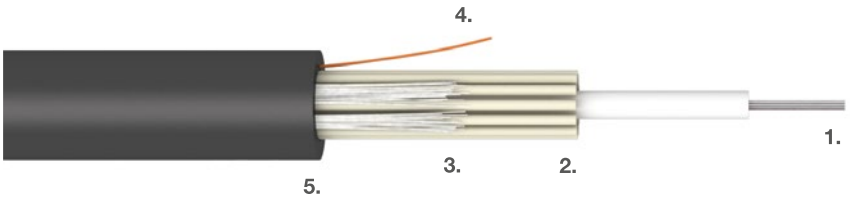
Temperature range	
Installation	-15 to +50 °C
Operation	-20 to +70 °C
Storage	-20 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
AR00	12	2.5	6.5	39.0	2,000	2,000
BR00	24	3.0	7.7	51.0	2,500	2,000
AR02	12	2.5	6.5	50.0	2,000	2,000
BR02	24	3.0	7.7	68.0	2,500	2,000

CLT FRP

Specification: BF0I, BF02

Indoor · Outdoor · FTTx · Halogen free · Armoured · Dielectric · Direct burial



Description of materials:

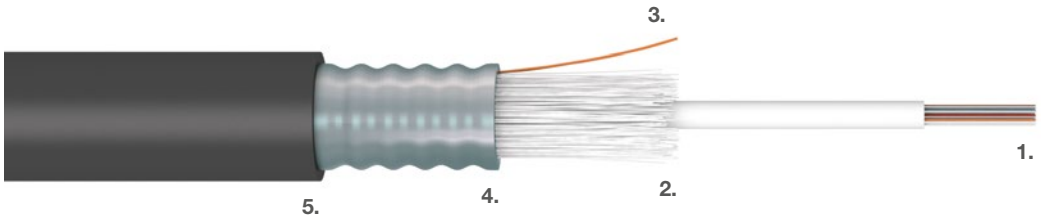
1. Gel filled PBT loose tube with optical fibers. **2.** FRP dielectric strength member.
3. Waterblocking E-glass yarn. **4.** Rip-Cord. **5.** FR-LSZH or PE outer jacket, UV stable.

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	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
BF0I	24	3.0	7.4	53.0	2,300	3,000
BF02	24	3.0	7.4	65.0	2,300	3,000

CLT CST

Specification: BH0I, BH02, Z144, Z145



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.

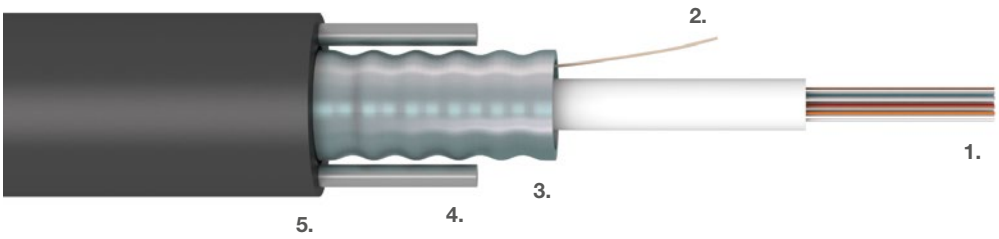
Temperature range	
Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
BH0I	24	3.0	9.9	98.0	2,500	10,000
BH02	24	3.0	10.1	120.0	2,500	10,000
Z144	24	3.0	7.7	70.0	1,100	10,000
Z145	24	3.0	7.9	87.0	1,100	10,000

CLT CST

Specification: X008

Outdoor | FTTx | Armoured | Duct | Antirodent



Description of materials:

1. Gel filled PBT loose tube with optical fibers. **2.** Rip-Cord. **3.** Corrugated Steel tape. **4.** Steel Wire. **5.** PE outer jacket, UV stable.

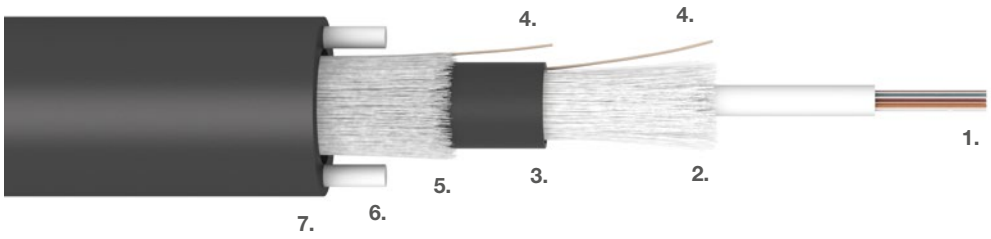
Temperature range	
Installation	-50 to +70 °C
Operation	-30 to +50 °C
Storage	-60 to +70 °C

	Design code	Max. fiber count	Cable size	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/cm]
NEW	**X008**	12	8.3	83.0	2,700	500
	X008	24	8.5	86.0	2,700	500

CLT FRP DOUBLE JACKET

Specification: X017

Outdoor FTTx Aerial Dielectric



Description of materials:

1. Gel filled PBT loose tube with optical fibers. **2.** Waterblocking E-glass yarn. **3.** FR-LSZH inner jacket. **4.** Rip-Cord. **5.** Waterblocking E-Glass yarn. **6.** FRP rods. **7.** PE outer jacket, UV stable.

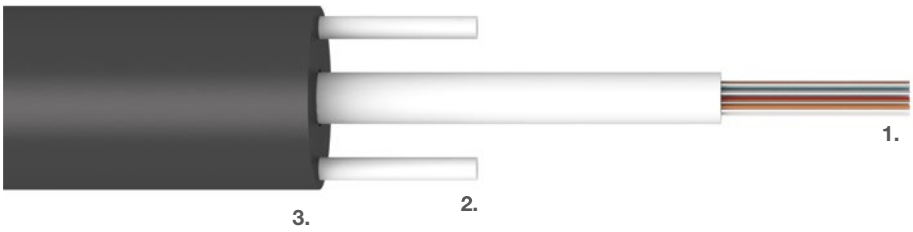
Temperature range	
Installation	-40 to +70 °C
Operation	-30 to +50 °C
Storage	-60 to +70 °C

	Design code	Max. fiber count	Cable size	Net weight [kg/km]	Max. load (installation) [kN]	Crush resistance [N/cm]
NEW	**X017**	12	9.7	80.5	2	300

CLT DROP

Specification: X018

Outdoor FTTx Duct Dielectric



Description of materials:

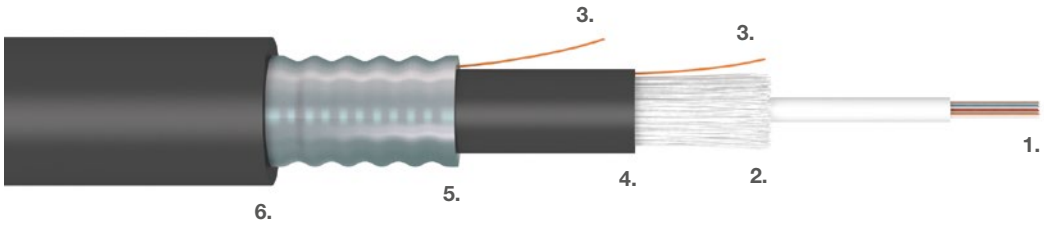
1. Gel filled PBT loose tube with optical fibers. **2.** FRP rods. **3.** PE outer jacket, UV stable.

Temperature range	
Installation	-50 to +70 °C
Operation	-10 to +50 °C
Storage	-50 to +50 °C

	Design code	Max. fiber count	Cable size	Net weight [kg/km]	Max. load (installation) [N]
NEW	**X018**	12	5.2	22.4	550

CLT CST DOUBLE JACKET

Specification: BIPI, BIF2, BIP2



Description of materials:

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.

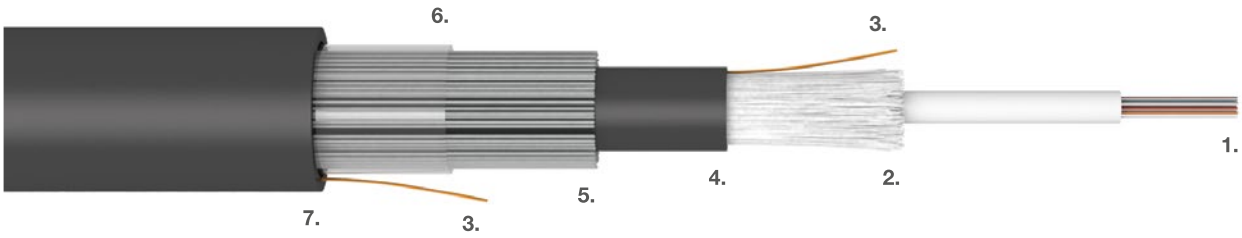
Temperature range	
Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
BIPI	24	3.0	10.5	106.0	1,100	6,000
BIF2	24	3.0	10.5	138.0	1,100	6,000
BIP2	24	3.0	10.5	131.0	1,100	6,000

CLT SWA

Specification: BWPI, BWP2, BWFI, BWF2

Indoor · Outdoor · FTTx · Halogen free · Armoured · Antirodent · Direct burial



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	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
BWPI	24	3.0	10.7	157.0	8,000	4,000
BWP2	24	3.0	10.7	179.0	8,000	4,000
BWFI	24	3.0	10.7	166.0	8,000	4,000
BWF2	24	3.0	10.7	188.0	8,000	4,000

CLT MICRO

Specification: Z044, Z008, Z006, Z238

Description of materials:

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

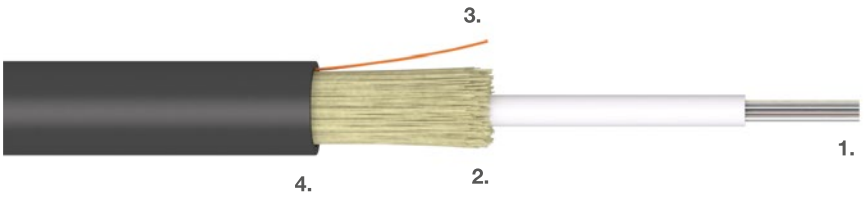
Temperature range	
Installation	-5 to +50 °C
Operation	-20 to +70 °C
Storage	-20 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
Z044	4	2.0	2.0	4.0	70	1,000
Z008	12	2.5	2.5	6.0	70	1,000
Z006	12	2.8	2.8	8.0	70	1,000
Z238	24	3.2	3.2	10.0	70	1,000

CLT MICRO

Specification: AL00, Z339, Z366

Outdoor | FTTx | Duct | Air blown

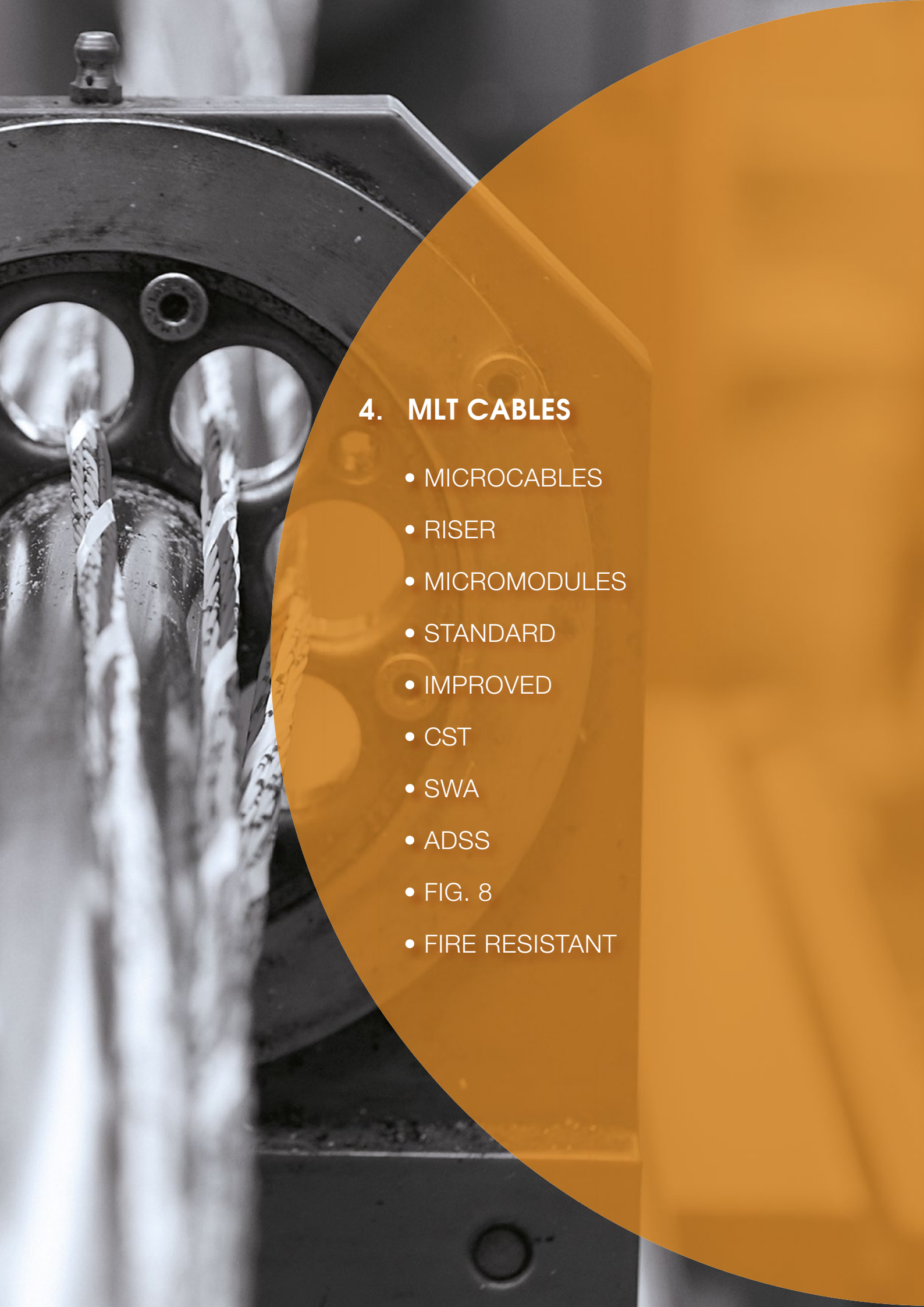


Description of materials:

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	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
NEW	**AL00**	12	2.3	3.4	10	250	1,000
NEW	**Z339**	12	1.7	2.5	5	90	700
NEW	**Z366**	24	2.5	3.5	10	90	700



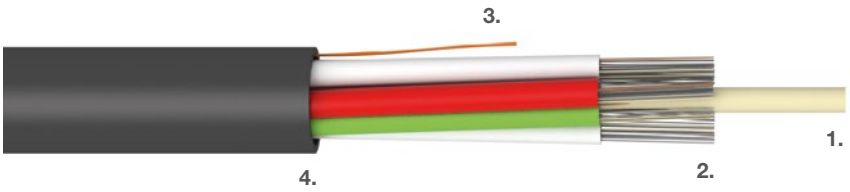
4. MLT CABLES

- MICROCABLES
- RISER
- MICROMODULES
- STANDARD
- IMPROVED
- CST
- SWA
- ADSS
- FIG. 8
- FIRE RESISTANT

MICROCABLES

Specification: Z019, TM0I, TM02, QM0I, QM02, WM0I, WM02, Z202, Z108

Indoor · Outdoor · FTTx · Halogen free · Air blown · Duct



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.

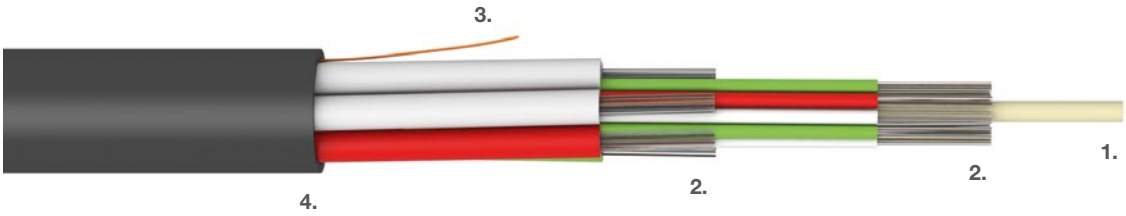
Temperature range	
Installation	-15 to +50 °C
Operation	-30 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
Z019	60	1.5	5.2	22.0	250	1,500
TM0I	72	1.5	5.8	29.0	700	1,500
TM02	72	1.5	6.8	48.0	700	1,500
QM0I	96	1.5	6.5	40.0	1,400	1,500
QM02	96	1.5	7.5	62.0	1,400	1,500
WM0I	144	1.5	8.6	62.0	1,500	1,500
WM02	144	1.5	9.6	91.0	1,500	1,500
Z202	144	1.5	7.1	43.0	450	1,500
Z108	192	1.5	8.0	53.0	700	1,500

MICROCABLES

Specification: Z049

Outdoor | FTTx | Halogen free | Air blown | Duct



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.

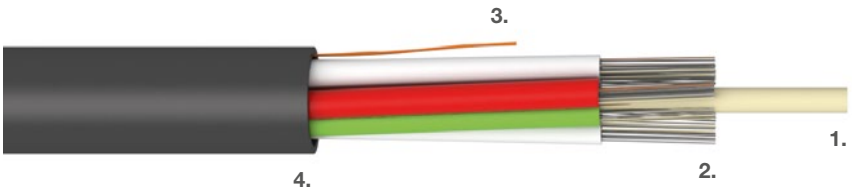
Temperature range	
Installation	-15 to +50 °C
Operation	-30 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size	Net 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: UM0I, UM02, CM0I, CM02, PM0I, PM02, RM0I, RM02, VM0I, VM02

Indoor · Outdoor · FTTx · Halogen free · Air blown · Duct



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.

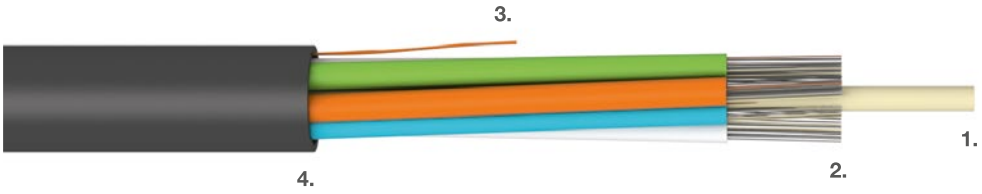
Temperature range	
Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
UM0I	60	1.7	5.7	27.0	320	1,500
UM02	60	1.7	6.7	53.0	320	1,500
CM0I	72	1.7	6.2	33.0	680	1,500
CM02	72	1.7	7.2	61.0	680	1,500
PM0I	96	1.7	7.4	50.0	2,400	1,500
PM02	96	1.7	8.4	84.0	2,400	1,500
RM0I	144	1.7	9.6	76.0	2,700	1,500
RM02	144	1.7	10.6	119.0	2,700	1,500
VM0I	216	1.7	9.5	72	700	1,500
VM02	216	1.7	10.5	105	700	1,500

MICROCABLES

Specification: DM0I, SM0I, KM0I, DM02, SM02, KM02

Indoor | Outdoor | FTTx | Halogen free | Air blown | Duct



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.

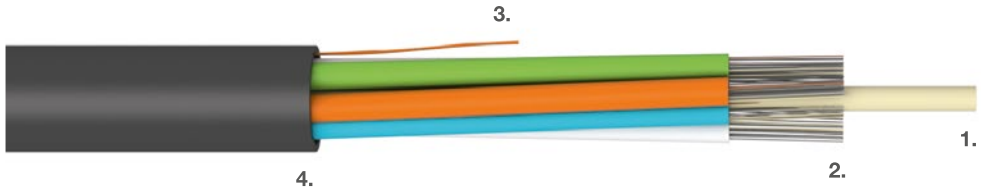
Temperature range	
Installation	-15 to +50 °C
Operation	-30 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
NEW **DM0I**	144	2.5	8.7	58.0	200	1,000
NEW **SM0I**	288	2.5	13.3	138.0	1,500	1,000
NEW **KM0I**	192	2.5	10.2	83.0	1,000	1,000
NEW **DM02**	144	2.5	9.7	87.0	200	1,000
NEW **SM02**	288	2.5	14.3	182.0	1,500	1,000
NEW **KM02**	192	2.5	11.2	117.0	1,000	1,000

MICROCABLES 200µm

Specification: Z393, Z024, Z045, Z025

Outdoor · FTTx · Halogen free · Air blown · Duct



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.

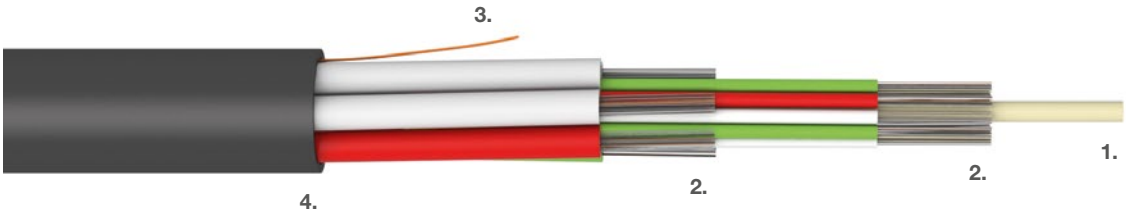
Temperature range	
Installation	-5 to +50 °C
Operation	-20 to +60 °C
Storage	-20 to +60 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
NEW **Z393**	96	1.7	5.4	27	90	50
NEW **Z024**	144	1.7	6.2	34	700	1,500
NEW **Z045**	196	1.7	7.4	52	2,200	1,500
NEW **Z025**	288	1.7	9.6	79	2,500	1,500

MICROCABLES 200µm

Specification: Z156, Z157, Z158

Outdoor | FTTx | Halogen free | Air blown | Duct | High count



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.

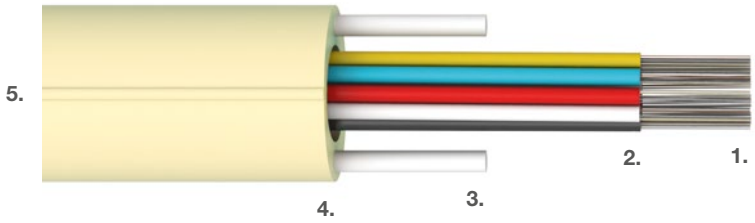
Temperature range	
Installation	-15 to +50 °C
Operation	-30 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
NEW **Z156**	432	2.0	12.7	131	1,100	1,000
NEW **Z157**	576	2.0	14.4	172	1,800	1,000
NEW **Z158**	864	2.0	16.7	223	1,100	1,000

MICROMODULE RISER CABLE

Specification: X009

Indoor | Outdoor | FTTx | Halogen free | Dielectric



Description of materials:

1. Optical fibers. **2.** Gel filled micromodules. **3.** FRP rods. **4.** FR-LSZH outer jacket.
5. Lines show place for opening of the cable.

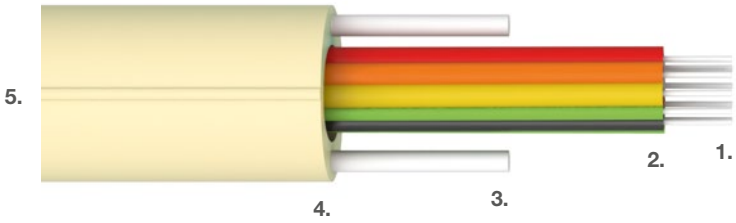
Temperature range	
Installation	-15 to +50 °C
Operation	-30 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Cable size	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/cm]
NEW **X009**	96	10.5	84.5	400	80

TIGHT-BUFFERED RISER CABLE

Specification: X010

Indoor Outdoor FTTx Halogen free Dielectric



Description of materials:

1. Optical fibers. **2.** Tight buffer. **3.** FRP rods. **4.** FR-LSZH outer jacket.
5. Lines show place for opening of the cable.

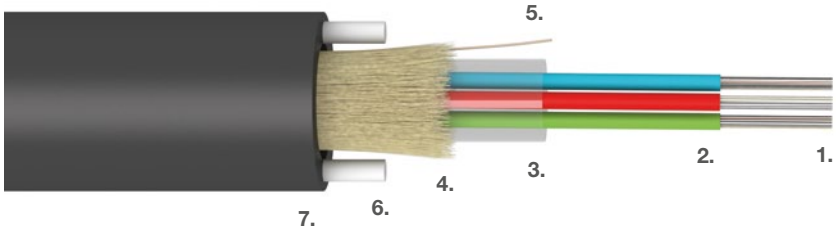
Temperature range	
Installation	-15 to +50 °C
Operation	-30 to +70 °C
Storage	-40 to +70 °C

	Design code	Max. fiber count	Cable size	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/cm]
NEW	**X010**	24	10.5	91.3	400	80

MICROMODULE CABLE

Specification: X007

Outdoor FTTx Dielectric Duct Aerial



Description of materials:

1. Optical fiber. **2.** Gel filled micromodules. **3.** Water-swellable Tape. **4.** Waterblocking aramid yarn. **5.** Rip-Cord. **6.** FRP rods. **7.** PE outer Jacket, UV stable.

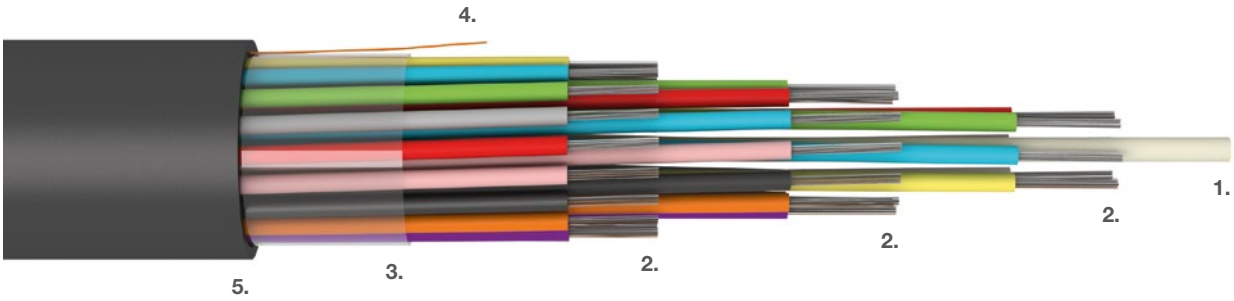
Temperature range	
Installation	-30 to +60 °C
Operation	-10 to +50 °C
Storage	-50 to +50 °C

	Design code	Max. fiber count	Cable size	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/cm]
NEW	**X007**	12	7.1	38.9	600	250
	X007	48	8.4	55.4	700	250
	X007	72	9.2	65.9	900	250
	X007	96	9.8	73.2	900	250
	X007	144	10.9	90.1	1,200	250

MLT STANDARD

Specification: Z022, Z304

Indoor | Outdoor | Halogen free | Air blown | Duct | High count



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.

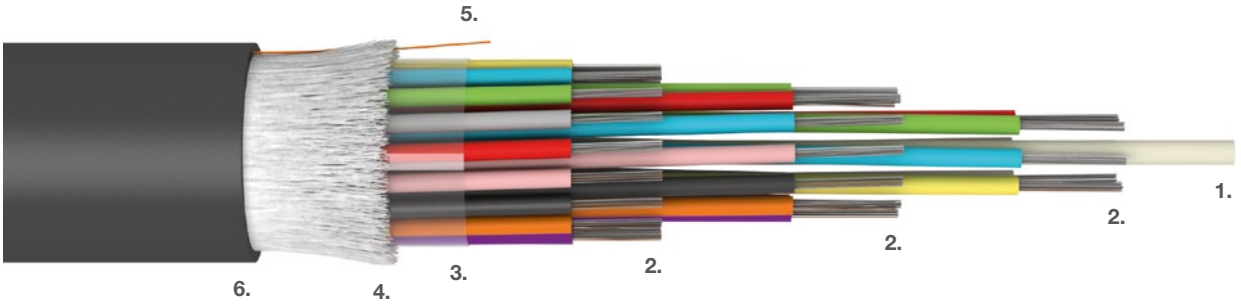
Temperature range	
Installation	-15 to +50 °C
Operation	-30 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
Z022	432	1.7	14.3	155.0	700	1,000
Z304	432	1.7	15.3	215.0	700	1,000

MLT STANDARD

Specification: Z017, Z018, Z349, Z350

Indoor | Outdoor | Halogen free | Air blown | Duct | High count



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.

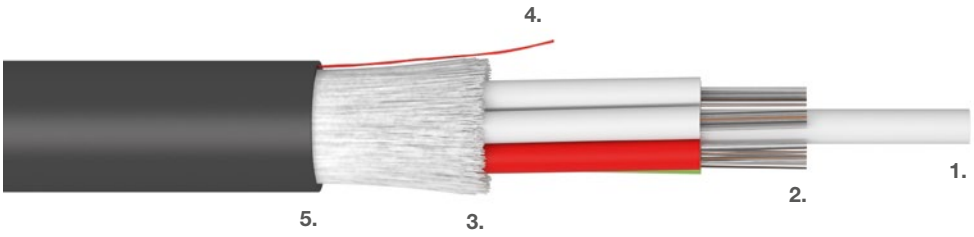
Temperature range	
Installation	-15 to +50 °C
Operation	-30 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
Z017	864	3.0	26.2	496.0	4,800	2,000
Z018	864	3.0	26.2	575.0	4,800	2,000
NEW **Z349**	864	2.5	21.7	353.0	4,500	2,000
NEW **Z350**	864	2.5	21.7	407.0	4,500	2,000

MLT STANDARD

Specification: UE0I, UE02, CE0I, CE02, PE0I, PE02, RE0I, RE02, VE0I, VE02

Indoor Outdoor Halogen free FTTx Duct



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.

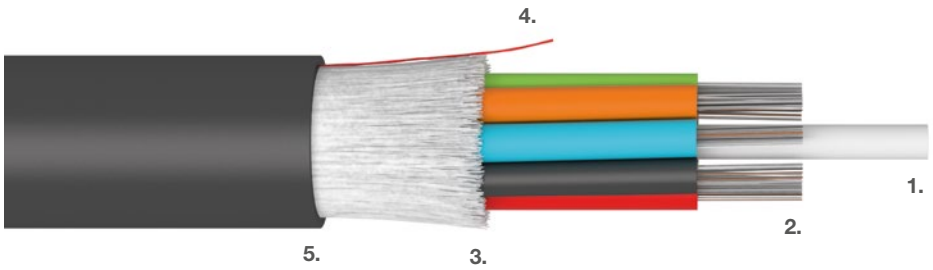
Temperature range	
Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
UE0I	60	1.7	7.9	56.0	1,300	3,000
UE02	60	1.7	7.9	72.0	1,300	3,000
CE0I	72	1.7	8.4	65.0	2,000	3,000
CE02	72	1.7	8.4	83.0	2,000	3,000
PE0I	96	1.7	9.5	87.0	4,300	3,000
PE02	96	1.7	9.5	107.0	4,300	3,000
RE0I	144	1.7	11.8	125.0	7,300	3,000
RE02	144	1.7	11.8	151.0	7,300	3,000
VE0I	216	1.7	11.9	116.0	2,200	2,000
VE02	216	1.7	11.9	145.0	2,200	2,000

MLT STANDARD

Specification: LE0I, LE02, FE0I, FE02, GE0I, GE02, HE0I, HE02

Indoor | Outdoor | Halogen free | FTTx | Duct



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.

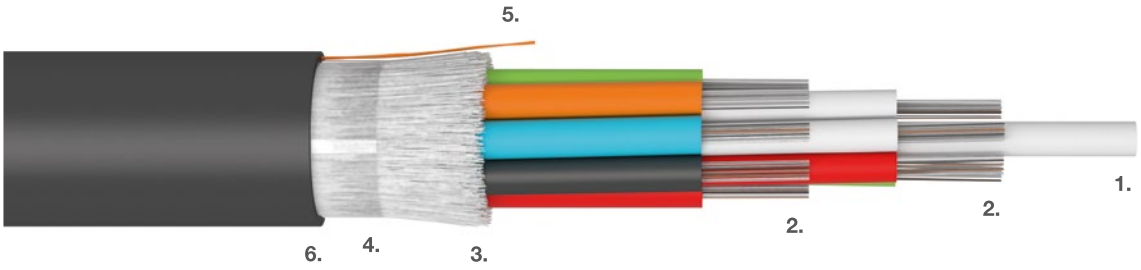
Temperature range	
Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
LE0I	48	2.3	8.9	63.0	1,400	2,000
LE02	48	2.3	8.9	83.0	1,400	2,000
FE0I	72	2.3	10.6	89.0	2,400	2,000
FE02	72	2.3	10.6	113.0	2,400	2,000
GE0I	96	2.3	11.9	113.0	3,400	2,000
GE02	96	2.3	11.9	140.0	3,400	2,000
HE0I	144	2.3	14.8	170.0	5,500	2,000
HE02	144	2.3	14.8	206.0	5,500	2,000

MLT STANDARD

Specification: IE00, IE02

Indoor Outdoor Halogen free FTTx Duct



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.

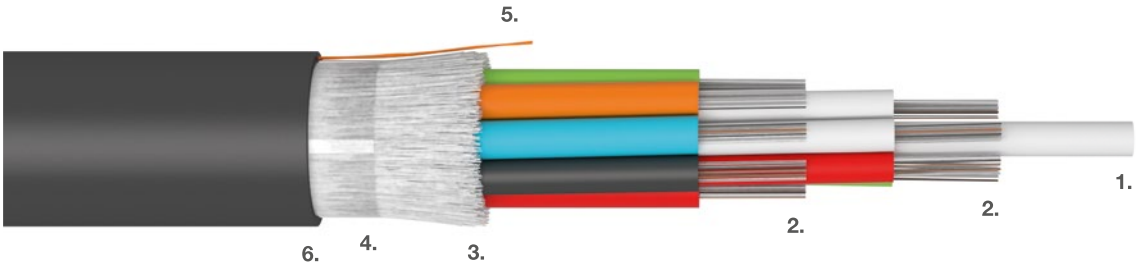
Temperature range	
Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
IE00	216	2.3	15.4	184.0	3,300	2,000
IE02	216	2.3	15.4	223.0	3,300	2,000

MLT STANDARD

Specification: Z090, Z182

Indoor Outdoor Halogen free FTTx Duct



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.

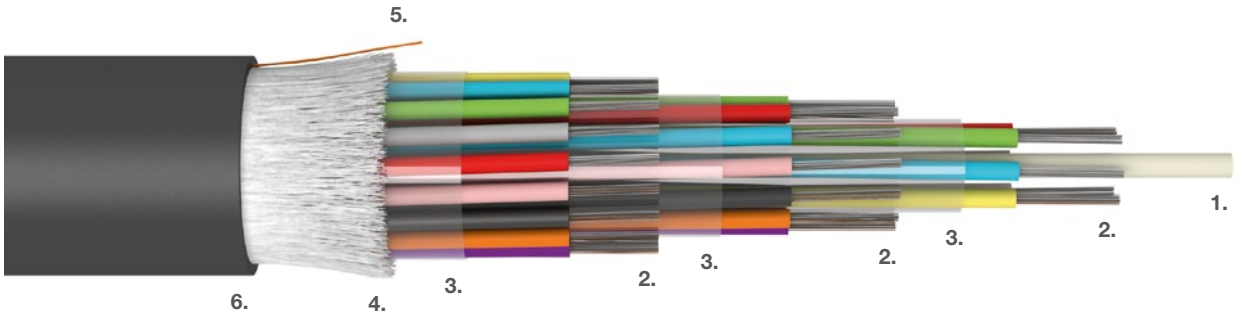
Temperature range	
Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
Z090	288	2.3	17.7	234.0	5,500	2,000
Z182	288	2.3	17.7	276.0	5,500	2,000

MLT STANDARD

Specification: ME00, ME02

Indoor | Outdoor | Halogen free | FTTx | Duct | High count



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.

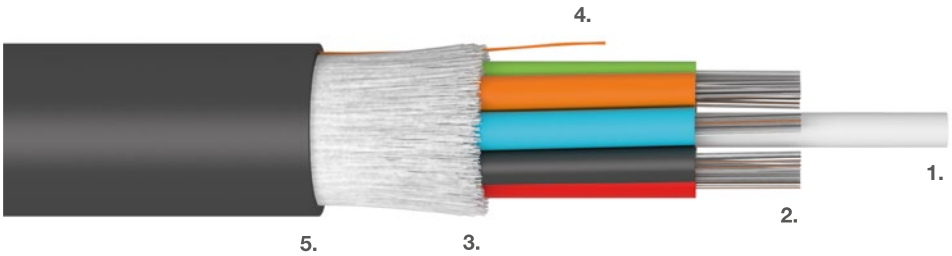
Temperature range	
Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
ME00	432	2.5	22.6	349.0	2,400	2,000
ME02	432	2.5	22.6	408.0	2,400	2,000

MLT STANDARD

Specification: YE0I, YE02

Indoor Outdoor Halogen free FTTx Duct



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.

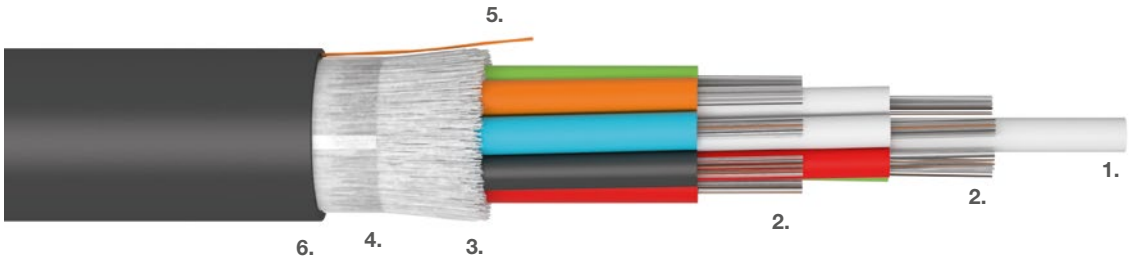
Temperature range	
Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
YE0I	288	2.8	17.2	240.0	6,400	3,000
YE02	288	2.8	17.2	279.0	6,400	3,000

MLT STANDARD

Specification: DE0I, SE0I, KE0I, DE02, SE02, KE02

Indoor | Outdoor | Halogen free | Air blown | Duct | High count



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.

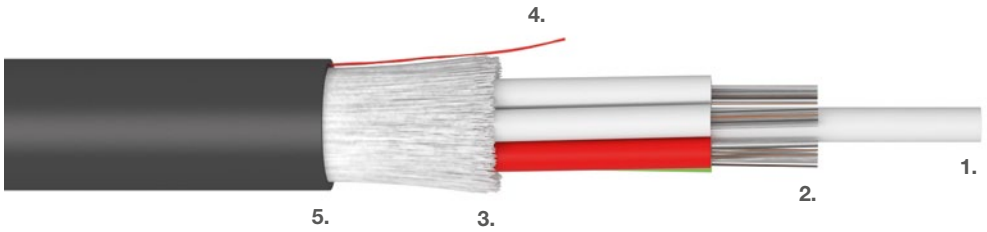
Temperature range	
Installation	-15 to +50 °C
Operation	-30 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
NEW **DE0I**	144	2.5	11.7	73.0	2,000	1,500
NEW **SE0I**	288	2.5	16.2	157.0	5,200	1,500
NEW **KE0I**	192	2.5	13.1	98.0	3,200	1,500
NEW **DE02**	144	2.5	11.7	102.0	2,000	1,500
NEW **SE02**	288	2.5	16.2	201.0	5,200	1,500
NEW **KE02**	192	2.5	13.1	132.0	3,200	1,500

MLT IMPROVED

Specification: CR0I, CR02, PR0I, PR02, RR0I, RR02, VR0I, VR02

Indoor | Outdoor | Halogen free | FTTx | Duct | High tensile



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.

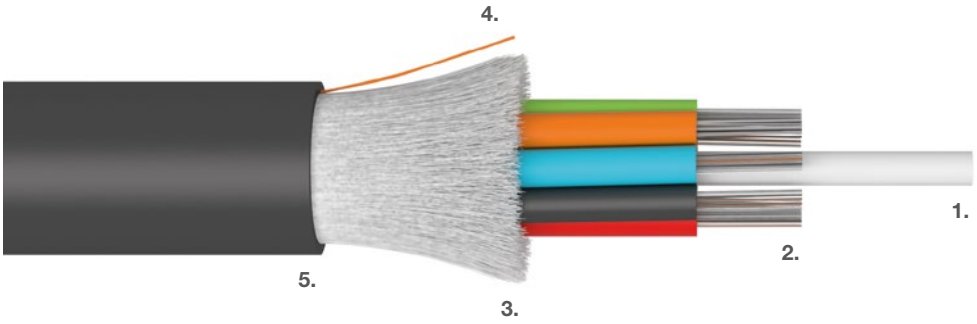
Temperature range	
Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
CR0I	72	1.7	9.4	81.0	4,600	3,000
CR02	72	1.7	9.4	101.0	4,600	3,000
PR0I	96	1.7	10.8	108.0	8,000	3,000
PR02	96	1.7	10.8	132.0	8,000	3,000
RR0I	144	1.7	12.8	150.0	13,000	3,000
RR02	144	1.7	12.8	179.0	13,000	3,000
VR0I	216	1.7	12.1	133.0	5,100	2,000
VR02	216	1.7	12.1	161.0	5,100	2,000

MLT IMPROVED

Specification: LR0I, LR02, FR0I, FR02, GR0I, GR02, HR0I, HR02

Indoor | Outdoor | Halogen free | FTTx | Duct | High tensile



Description of materials:

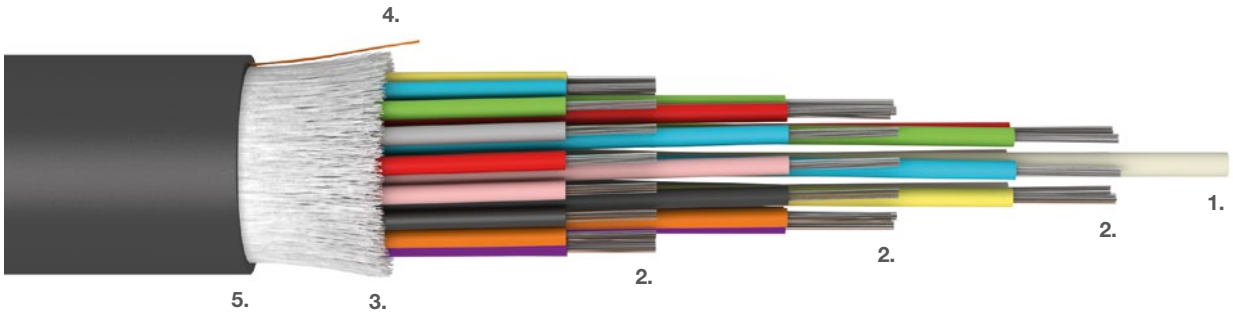
1. FRP dielectric central strength member. **2.** Gel filled PBT loose tube with optical fibers.
3. Waterblocking E-glass yarn. **4.** Rip-Cord. **5.** FR-LSZH or PE outer jacket, UV stable.

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	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
LR0I	48	2.3	9.2	74.0	2,600	2,000
LR02	48	2.3	9.2	95.0	2,600	2,000
FR0I	72	2.3	10.6	99.0	4,000	2,000
FR02	72	2.3	10.6	122.0	4,000	2,000
GR0I	96	2.3	12.0	131.0	7,000	2,000
GR02	96	2.3	12.0	158.0	7,000	2,000
HR0I	144	2.3	14.9	197.0	10,000	2,000
HR02	144	2.3	14.9	231.0	10,000	2,000

MLT IMPROVED

Specification: MR00, MR02



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.

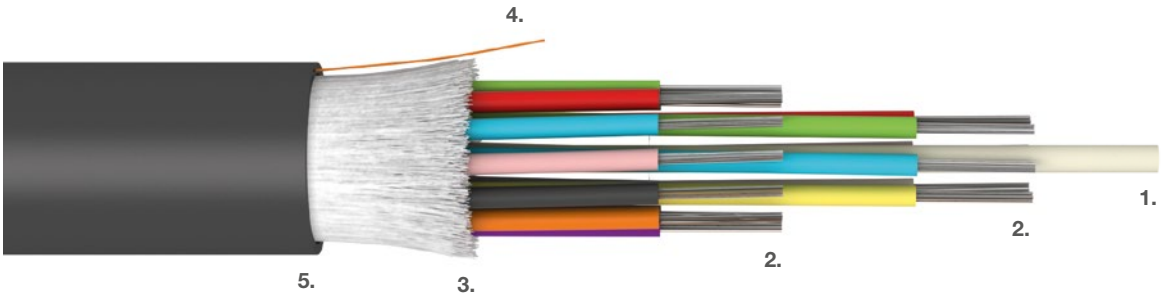
Temperature range	
Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
MR00	432	2.3	20.3	320.0	7,700	2,000
MR02	432	2.3	20.3	375.0	7,700	2,000

MLT IMPROVED

Specification: IR0I, IR02

Indoor | Outdoor | Halogen free | FTTx | Duct | High tensile



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.

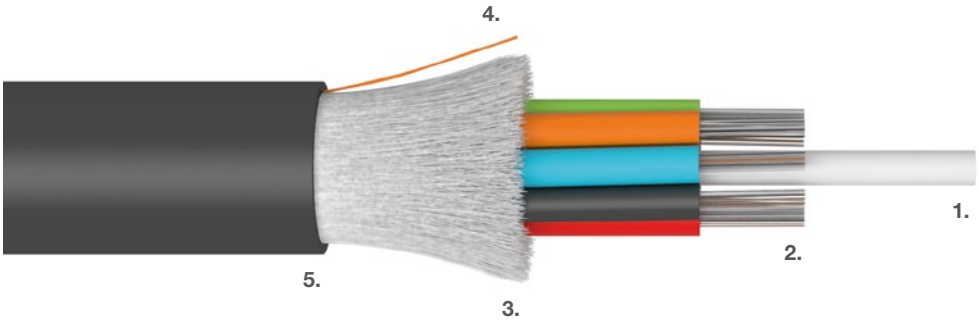
Temperature range	
Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
IR0I	216	2.3	15.8	221.0	6,700	2,000
IR02	216	2.3	15.8	258.0	6,700	2,000

MLT IMPROVED

Specification: YR0I, YR02

Indoor | Outdoor | Halogen free | FTTx | Duct | High tensile



Description of materials:

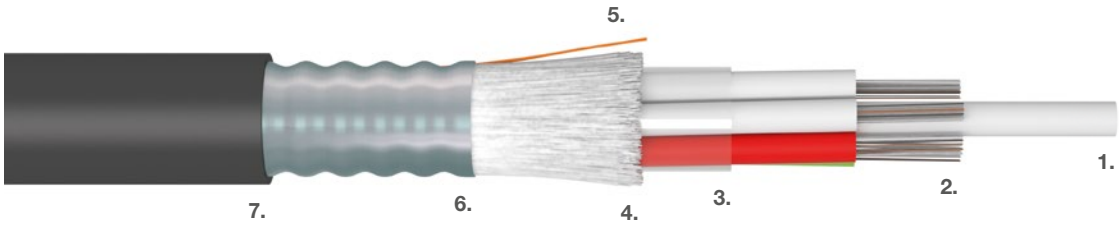
1. FRP dielectric central strength member. **2.** Gel filled PBT loose tube with optical fibers.
3. Waterblocking E-glass yarn. **4.** Rip-Cord. **5.** FR-LSZH or PE outer jacket, UV stable.

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

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
YR0I	288	2.8	17.6	257.0	10,000	3,000
YR02	288	2.8	17.6	298.0	10,000	2,000

MLT CST

Specification: CH0I, CH02, PH0I, PH02, RH0I, 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.

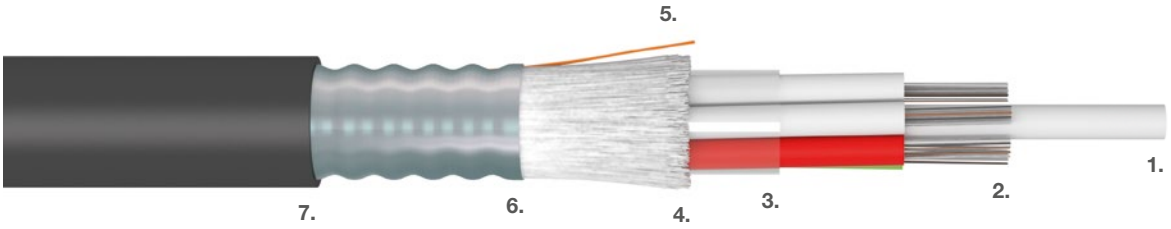
Temperature range	
Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
CH0I	72	1.7	10.2	107.0	2,600	10,000
CH02	72	1.7	10.2	126.0	2,600	10,000
PH0I	96	1.7	11.1	130.0	5,400	10,000
PH02	96	1.7	11.1	152.0	5,400	10,000
RH0I	144	1.7	14.1	186.0	6,600	10,000
RH02	144	1.7	14.1	214.0	6,600	10,000

MLT CST

Specification: LH0I, LH02, FH0I, FH02, GH0I, GH02, HH0I, HH02

Indoor Outdoor Halogen free Armoured Direct burial



Description of materials:

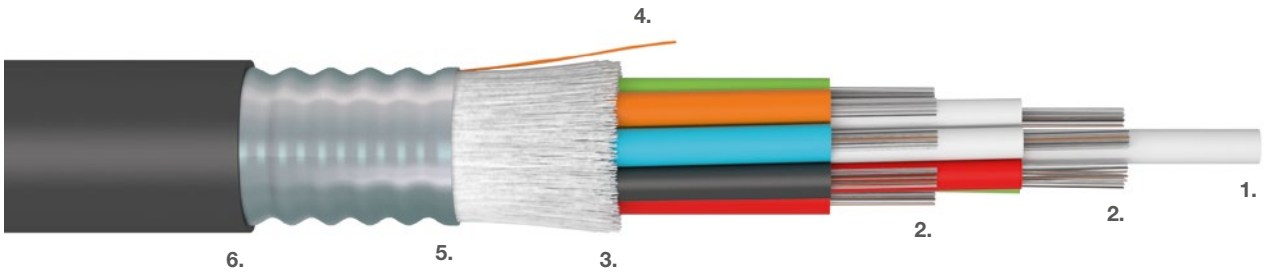
1. FRP dielectric central strength member. **2.** Gel filled PBT loose tube with optical fibers.
3. Water-swellable tape. **4.** Waterblocking E-glass yarn. **5.** Rip-Cord. **6.** Corrugated steel tape.
7. FR-LSZH or PE outer jacket, UV stable.

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	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
LH0I	48	2.3	11.5	125.0	1,200	10,000
LH02	48	2.3	11.5	151.0	1,200	10,000
FH0I	72	2.3	12.5	150.0	2,100	10,000
FH02	72	2.3	12.5	178.0	2,100	10,000
GH0I	96	2.3	14.5	185.0	2,600	10,000
GH02	96	2.3	14.5	219.0	2,600	10,000
HH0I	144	2.3	16.5	250.0	4,500	10,000
HH02	144	2.3	16.5	288.0	4,500	10,000

MLT CST

Specification: VH0I, VH02



Description of materials:

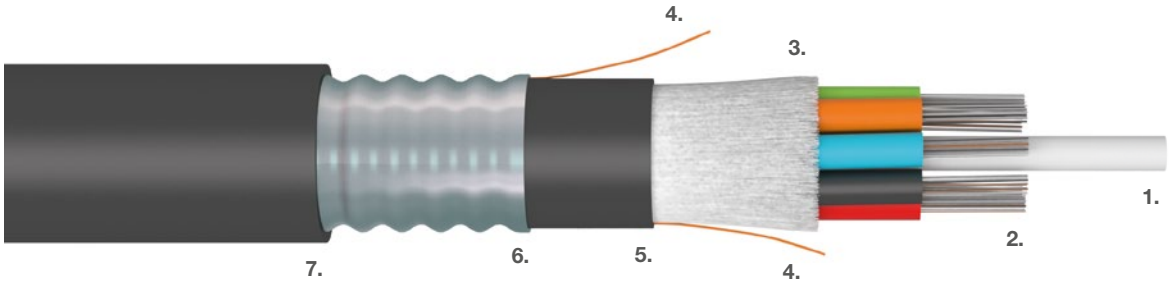
1. FRP dielectric central strength member. **2.** Gel filled PBT loose tube with optical fibers.
3. Waterblocking E-glass yarn. **4.** Rip-Cord. **5.** Corrugated steel tape. **6.** FR-LSZH or PE outer jacket, UV stable.

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	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
VH0I	216	1.7	14.5	193.0	3,000	10,000
VH02	216	1.7	14.5	228.0	3,000	10,000

MLT CST DOUBLE JACKET

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



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.

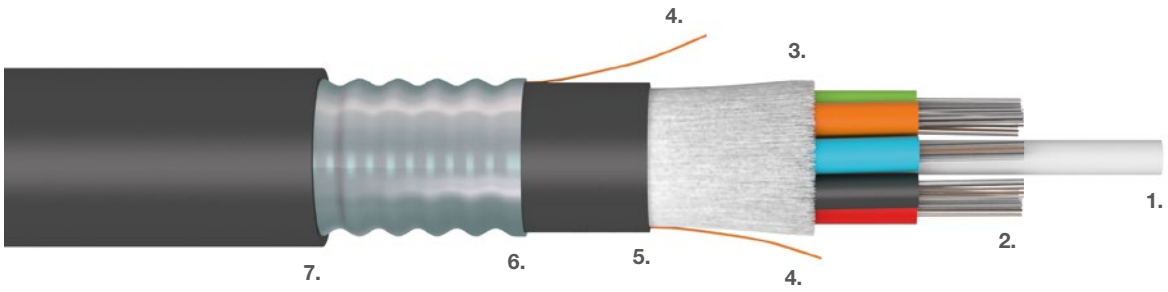
Temperature range	
Installation	-15 to +50 °C
Operation	-45 to +70 °C
Storage	-45 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
LIPI	48	2.3	13.5	165.0	1,500	10,000
LIP2	48	2.3	13.5	196.0	1,500	10,000
LIF2	48	2.3	13.5	209.0	1,500	10,000
FIPI	72	2.3	14.5	197.0	3,300	10,000
FIP2	72	2.3	14.5	230.0	3,300	10,000
FIF2	72	2.3	14.5	246.0	3,300	10,000

MLT CST DOUBLE JACKET

Specification: GIPI, GIF2, HIPI, HIF2

Indoor | Outdoor | Halogen free | Armoured | Direct burial



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.

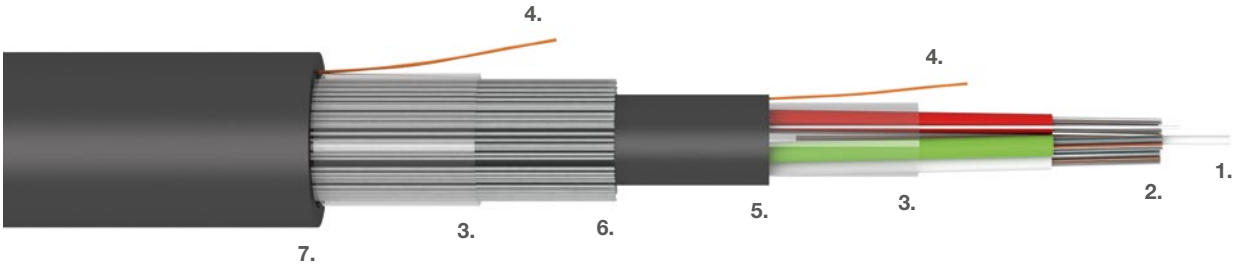
Temperature range	
Installation	-15 to +50 °C
Operation	-45 to +70 °C
Storage	-45 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
GIPI	96	2.3	16.5	240.0	4,800	10,000
GIF2	96	2.3	16.5	295.0	4,800	10,000
HIPI	144	2.3	19.5	323.0	10,000	10,000
HIF2	144	2.3	19.5	391.0	10,000	10,000

MLT SWA

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

Indoor | Outdoor | Halogen free | Armoured | Direct burial | High tensile



Description of materials:

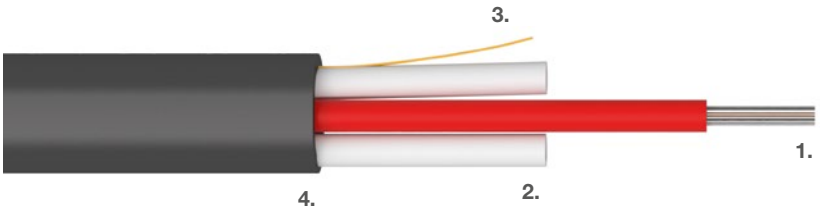
1. FRP dielectric central strength member. **2.** Gel filled PBT loose tube with optical fibers.
3. Water-swellable tape. **4.** Rip-Cord. **5.** FR-LSZH or PE inner jacket. **6.** Steel Wire Armour (SWA).
7. FR-LSZH or PE outer jacket, UV stable.

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	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
LWPI	48	2.3	13.2	278.0	1,900	4,500
LWF2	48	2.3	13.2	317.0	1,900	4,500
FWPI	72	2.3	14.7	334.0	4,200	4,500
FWF2	72	2.3	14.7	380.0	4,200	4,500
GWPI	96	2.3	16.0	392.0	5,500	4,500
GWF2	96	2.3	16.0	443.0	5,500	4,500
HWPI	144	2.3	18.9	516.0	9,700	4,500
HWF2	144	2.3	18.9	579.0	9,700	4,500

ADSS

Specification: AS0I, Z159, Z194



Description of materials:

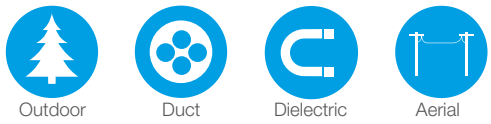
1. Gel filled PBT loose tube with optical fibers. **2.** FRP periferal strength member.
3. Rip-Cord. **4.** PE outer jacket, UV stable.

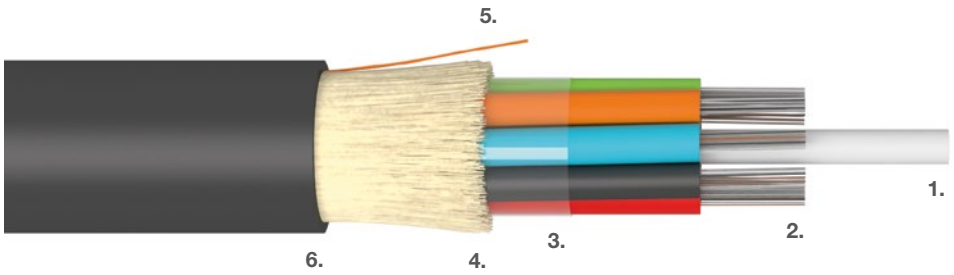
Temperature range	
Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
AS0I	12	2.0	4.2 × 7.8	37.0	1,600	4,000
Z159	24	1.7	9.1 × 3.8	36.0	1,300	4,000
Z194	48	3.5	12.5 × 5.5	72.0	2,500	2,500

ADSS

Specification: N3XI, N4XI, N5XI, N6XI





Description of materials:

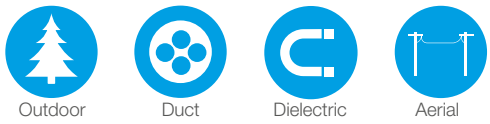
1. FRP dielectric central strenght member. **2.** Gel filled PBT loose tube with optical fibers.
3. Water-swellable tape. **4.** Waterblocking aramid yarn. **5.** Rip-Cord. **6.** PE outer jacket, UV stable.

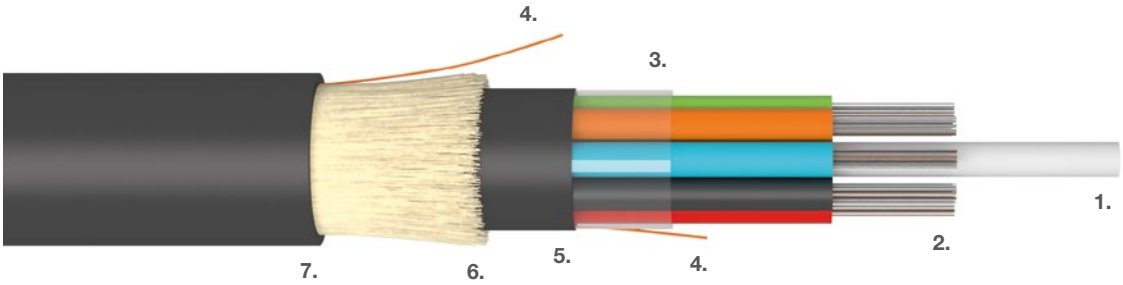
Temperature range	
Installation	-15 to +50 °C
Operation	-40 to +70 °C
Storage	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
N3XI	48	2.5	10.2	79.0	3,000	3,000
N4XI	72	2.5	11.9	110.0	3,000	3,000
N5XI	96	2.5	13.3	133.0	3,000	3,000
N6XI	144	2.5	16.4	200.0	3,000	3,000

ADSS

Specification: N3YI, N4YI, N5YI, N6YI





Description of materials:

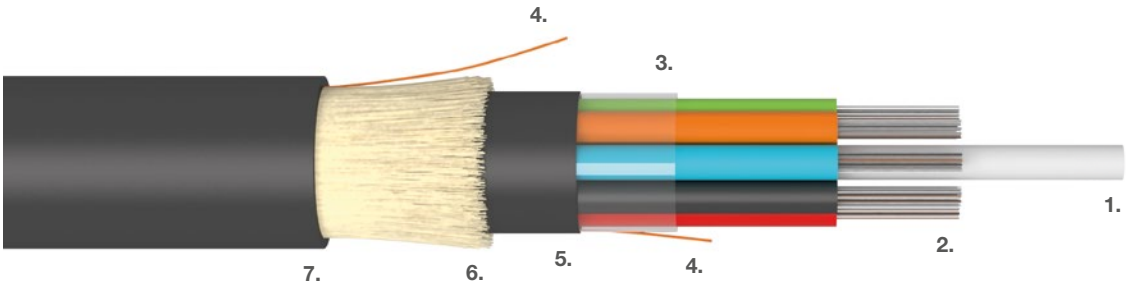
1. FRP dielectric central strenght member. **2.** Gel filled PBT loose tube with optical fibers.
3. Water-swellable tape. **4.** Rip-Cord. **5.** PE inner jacket. **6.** Waterblocking aramid yarn.
7. PE outer jacket, UV stable.

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	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
N3YI	48	2.5	12.2	115.0	6,000	3,000
N4YI	72	2.5	13.8	149.0	6,000	3,000
N5YI	96	2.5	15.3	178.0	6,000	3,000
N6YI	144	2.5	18.4	255.0	6,000	3,000

ADSS

Specification: N4ZI, N5ZI, N6ZI



Description of materials:

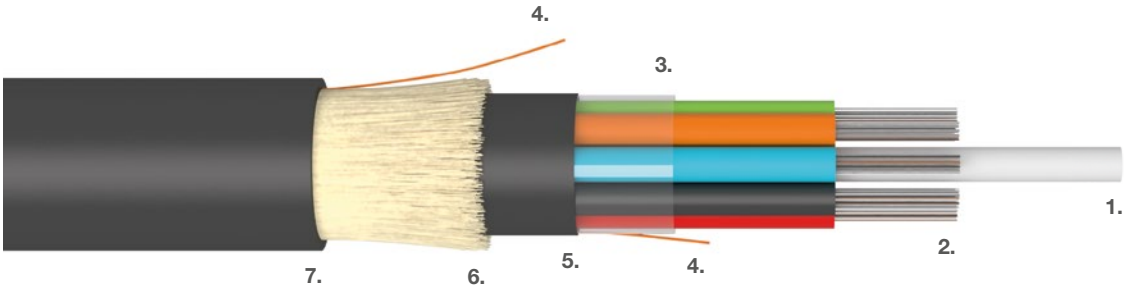
1. FRP dielectric central strenght member. **2.** Gel filled PBT loose tube with optical fibers. **3.** Water-swellable tape. **4.** Rip-Cord. **5.** PE inner jacket. **6.** Waterblocking aramid yarn. **7.** PE outer jacket, UV stable.

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	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
N4ZI	72	2.8	15.5	192.0	10,000	3,000
N5ZI	96	2.8	17	221.0	10,000	3,000
N6ZI	144	2.8	20.5	312.0	10,000	3,000

ADSS

Specification: N4RI, N5RI, N6RI, N7RI, N7SI, N9ZI



Description of materials:

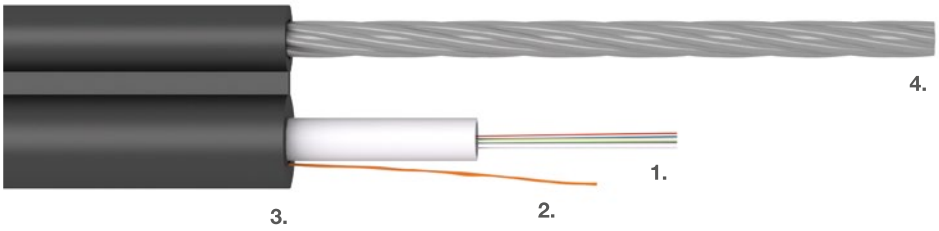
1. FRP dielectric central strenght member. **2.** Gel filled PBT loose tube with optical fibers. **3.** Water-swellable tape. **4.** Rip-Cord. **5.** PE inner jacket. **6.** Waterblocking aramid yarn. **7.** PE outer jacket, UV stable.

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	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
N4RI	72	2.8	15.6	200.0	15,000	3,000
N5RI	96	2.8	17.3	236.0	15,000	3,000
N6RI	144	2.8	20.9	341.0	15,000	3,000
N7RI	216	2.8	21.2	343.0	15,000	3,000

FIG.8

Specification: A860, A862, Z187



Description of materials:

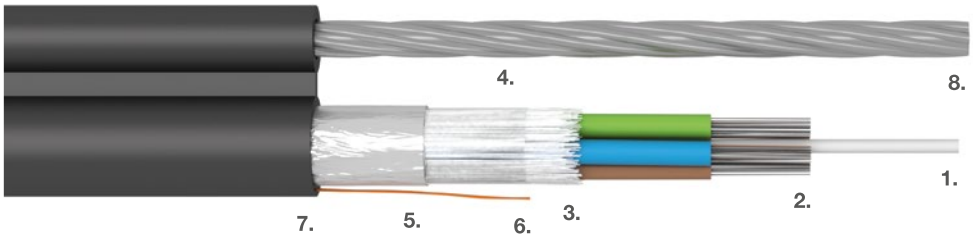
1. Gel filled PBT loose tube with optical fibers. **2.** Rip-Cord. **3.** FR-LSZH or PE outer jacket, UV stable.
4. Steel wire messenger.

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	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
A860	12	2.3	5.9 × 11.5	55.0	1,000	1,000
A862	12	2.3	5.9 × 11.5	78.0	1,000	1,000
Z187	24	4.5	8.5 × 18.0	140.0	3,000	2,000

FIG.8

Specification: L83A, F83A, G83A, H83A



Description of materials:

1. FRP dielectric central strenght 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.

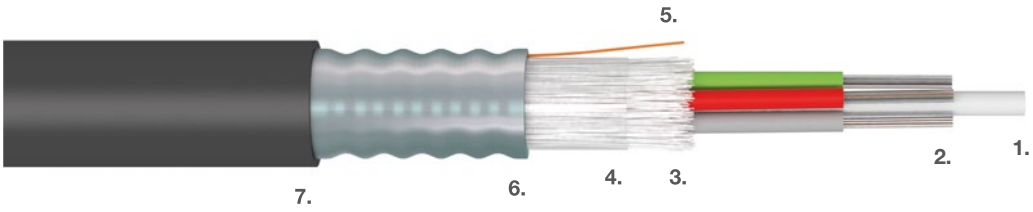
Temperature range	
Installation	-15 to +50 °C
Operation	-30 to +70 °C
Storage	-30 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
L83A	48	2.3	11.1 × 20.7	162.0	5,000	2,000
F83A	72	2.3	13.1 × 22.7	192.0	5,000	2,000
G83A	96	2.3	14.1 × 23.7	219.0	5,000	2,000
H83A	144	2.3	17.1 × 26.7	285.0	5,000	2,000

FIRE RESISTANT – FSC 90 min.

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

Indoor Outdoor Halogen free Armoured Duct Fire resistant



Description of materials:

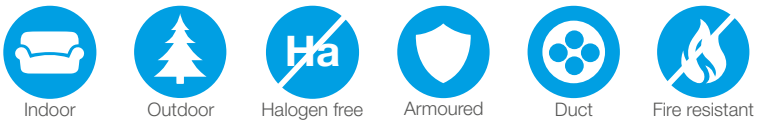
1. FRP dielectric central strenght member. **2.** Gel filled PBT loose tube with optical fibers.
3. Waterblocking E-glass yarn. **4.** Water-swellable tape. **5.** Rip-Cord. **6.** Corrugated steel tape.
7. FR-LSZH outer jacket, UV stable.

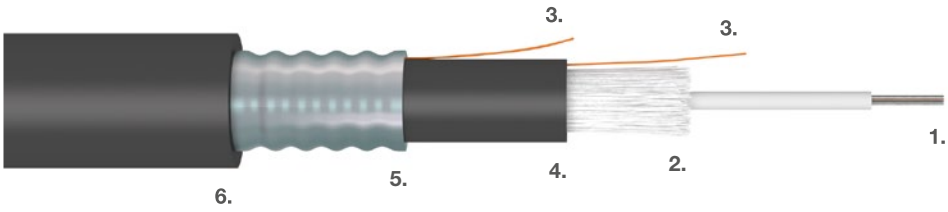
Temperature range	Z297	Z298, Z299, Z300
Installation	-15 to +50 °C	-15 to +50 °C
Operation	-30 to +70 °C	-40 to +70 °C
Storage	-30 to +70 °C	-40 to +70 °C

Design code	Max. fiber count	Loose tube diameter [mm]	Cable size	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
Z297	24	3.0	8.9	108.0	1,500	10,000
Z298	72	1.7	12.1	171.0	3,000	10,000
Z299	96	1.7	13.1	203.0	6,000	10,000
Z300	144	1.7	15.1	272.0	12,000	10,000

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	Net weight [kg/km]	Max. load (installation) [N]	Crush resistance [N/10 cm]
Z281	24	3.2	12.5	201.0	2,000	10,000
Z285	24	-	17.5	332.0	3,000	8,000
Z282	72	1.7	14.5	260.0	2,900	10,000
Z283	96	1.7	15.5	301.0	5,700	10,000
Z284	144	1.7	17.5	382.0	10,200	10,000


KABELOVNA DECIN-PODMOKLY s.r.o. 03011

5. 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	LSZH Free-tight buffer	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 strenght 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	LSZH Free-strip (semi-tight) buffer	A	HDPE jacket
			D	Distribution cable – Standard				
			E	Distribution cable – E-glass	T	LSZH Tight buffer	B	Buffer
			S	Distribution cable – CST	–	–	S	E-glass yarn under jacket
			V	Distribution cable – waterblocking Aramid			K	Aramid yarn under jacket
			U	Subunits with fibers	X	LSZH Shielded buffer	–	–
			Y	–	Y	–	Y	HDPE jacket + FRP elements in jacket
			Z	–	Z	–	Z	–
	Z	(+number) custom designs			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 × 1.7 mm [6×12] – 72	2	FIG.8 + CST two jackets	2	Messenger 2.0 mm	2	LSZH outer jacket, dry core
	D	MLT 6 × 2.3 mm [6×24] – 144	3	4 × 12 in relation to „N“ in the column 1	3	Messenger 3.0 mm	3	LSZH outer jacket, filled core
	E	MLT 18 × 1.5 mm [18×12] – 216	4	6 × 12 in relation to „N“ in the column 1	4	Messenger 4.5 mm	4	PA outer jacket, dry core
	F	MLT 6 × 2.3 mm [6×12] – 72	5	8 × 12 in relation to „N“ in the column 1	5	Grounding conductor in core	5	PA outer jacket, filled core
	G	MLT 8 × 2.3 mm [8×12] – 96	6	12 × 12 in relation to „N“ in the column 1	6	Messenger 1.6 mm	6	PE / PA outer jacket, dry core
	H	MLT 12 × 2.3 mm [12×12] – 144	7	18 × 12 in relation to „N“ in the column 1	7	FRP messenger	7	PE / PA outer jacket, filled core
	I	MLT 18 × 2.3 mm [18×12] – 216	8	FIG. 8	8	FRP members in core	8	LSZH / PA outer jacket, dry core
	J	MLT 5 × 2.3 mm [5×12] – 60	9	24 × 12 in relation to „N“ in the column 1	9	FeZn wires in jacket	9	LSZH / PA outer jacket, filled core
	K	MLT 8 × 2.3 mm [8×24] – 192	A	Aramid (WB)	A	–	A	AL + PE outer jacket, dry core
	L	MLT 4 × 2.3 mm [4×12] – 48	B	–	B	Inner PA jacket	B	AL + PE outer jacket, filled core
	M	MLT 36 × 2.3 mm [36×12] – 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 × 1.7 mm [8×12] – 96	E	E-glass	E	–	E	–
	Q	MLT 8 × 1.5 mm [8×12] – 96	F	FRPA	F	Inner FRNC jacket	F	–
	R	MLT 12 × 1.7 mm [12×12] – 144	G	–	G	–	G	PUR outer jacket, dry core
	S	MLT 12 × 2.3 mm [12×24] – 288	H	CST one jacket with E-glass yarns under jacket	H	–	H	PUR outer jacket, filled core
	T	MLT 6 × 1.5 mm [6×12] – 72	I	CST two jackets with E-glass yarns under jacket	I	–	I	HDPE outer jacket, dry core
	U	MLT 5 × 1.7 mm [5×12] – 60	J	–	J	–	J	–
	V	MLT 18 × 1.7 mm [18×12] – 216	K	–	K	–	K	HDPE outer jacket, filled core
	W	MLT 12 × 1.5 mm [12×12] – 144	L	Attenuated (lower tensile strenght and jacket)	L	Inner Al/PE	L	–
	X	New custom designs	M	Micro cable (without strenght members)	M	–	M	–
	Y	MLT 12 × 2.8 mm [12×24] – 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 resistence	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 strenght 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	**L**OW **S**MOKE, **Z**ERO **H**ALOGEN
LS0H	**L**OW **S**MOKE, **Z**ERO **H**ALOGEN
LSHF	**L**OW **S**MOKE, **H**ALOGEN **F**REE
HFFR	**H**ALOGEN **F**REE, **F**LAME **R**ETARDANT
FRNC	**F**IRE **R**ETARDANT, **N**ON-**C**ORROSIVE
FR-LSZH	**F**IRE **R**ETARDANT – **L**OW **S**MOKE, **Z**ERO **H**ALOGEN

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.

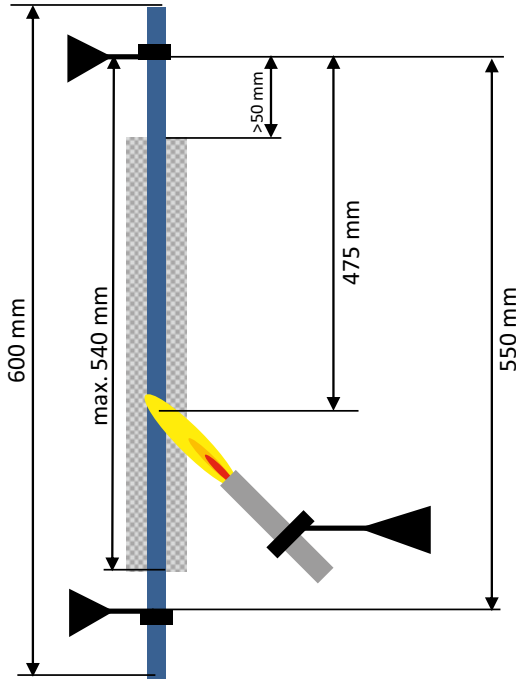
Fire Properties

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.

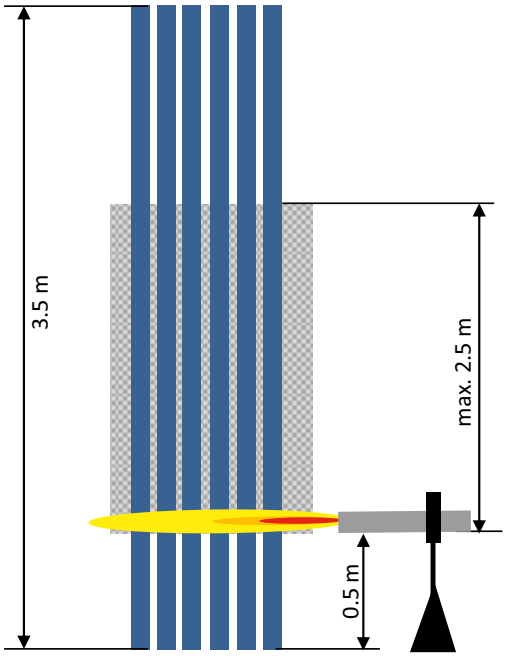
Notice: You can not assume that if the cable passes the test according 60332-1,
a bundle of such cables passing a test 60332-3.

TEST ACC.
TO IEC 60332-1



Charred part of the cable

TEST ACC.
TO IEC 60332-3



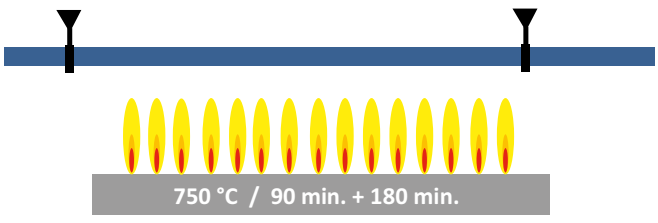
Cable Diameter	Burning Time
≤ 25 mm	60 sec
≥ 25 mm; ≤ 50 mm	120 sec

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.



6. 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.

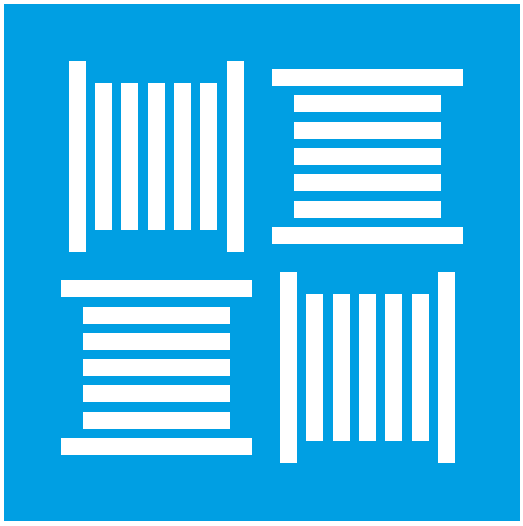
Symbols Used:

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

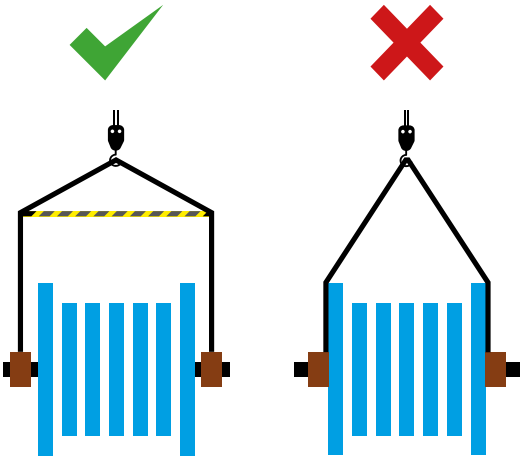


Pic. 1

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.

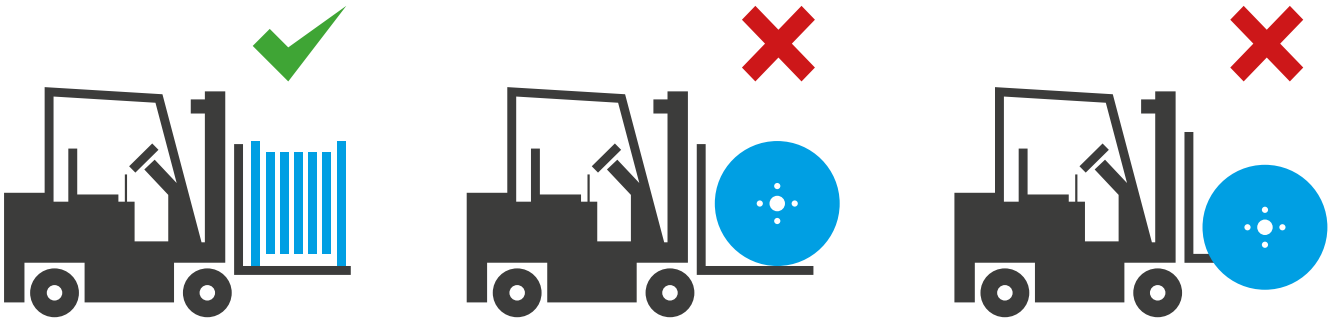
When manipulating with the drums using a crane, a spacer rod has to be placed between the load bearing ropes, so that the ropes do not exert pressure on the cable through the side drums. /Pic. 2



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.

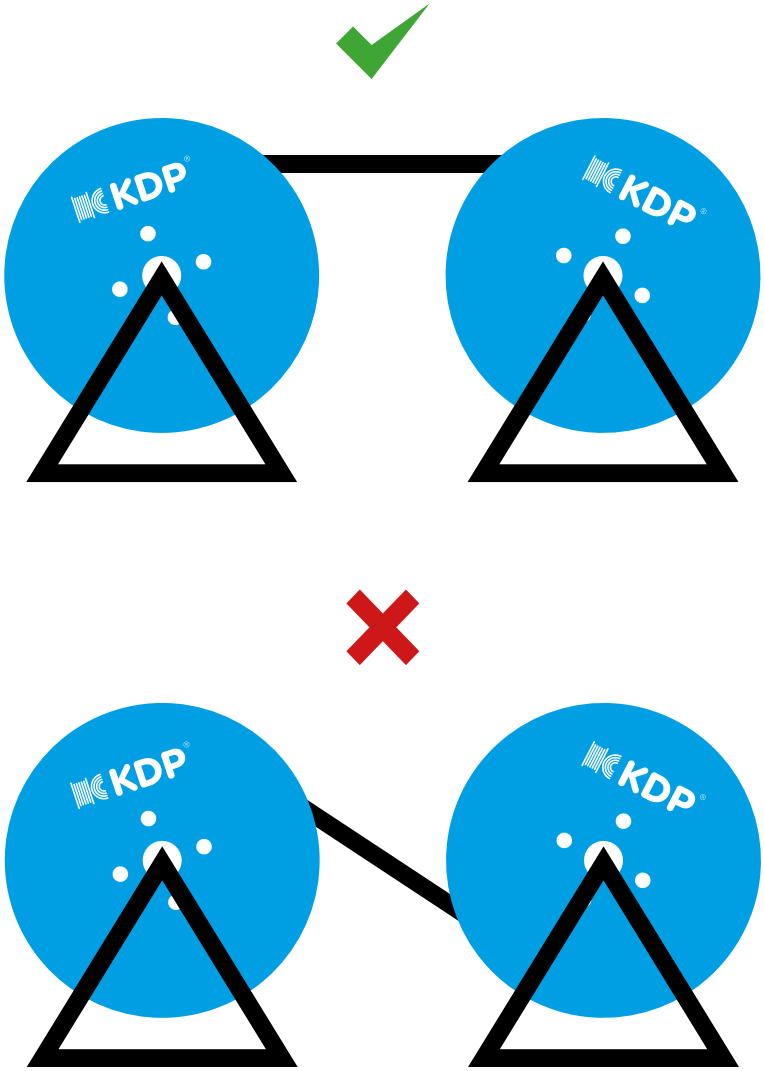


Pic. 3

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

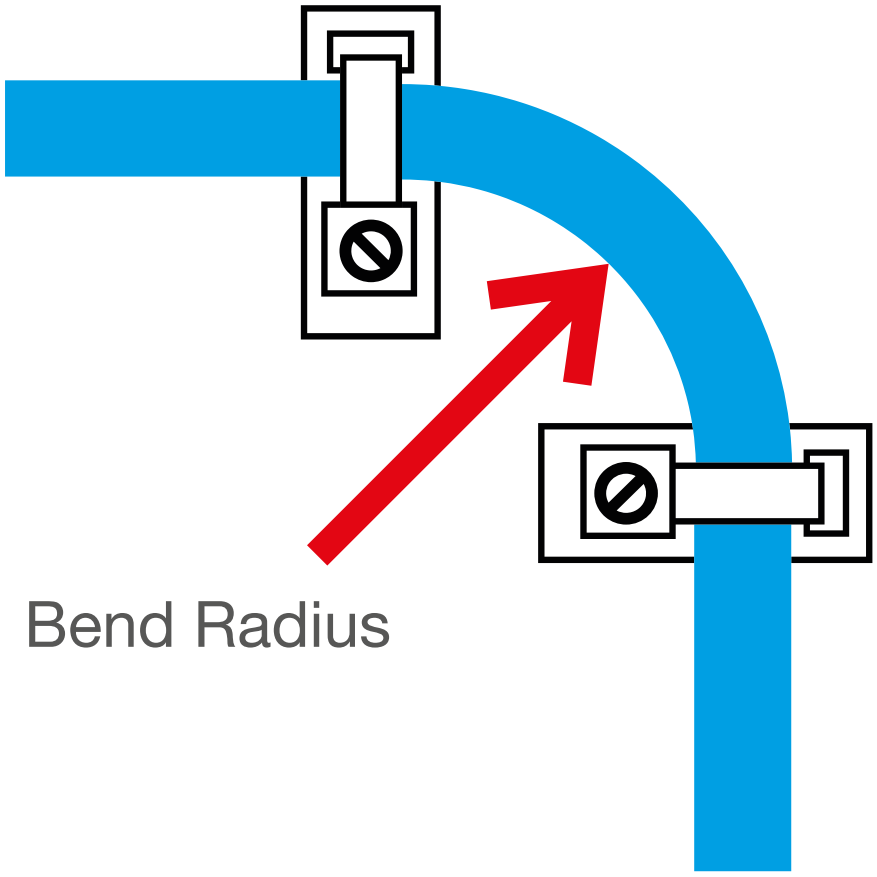
When unwinding the cable, it is necessary to maintain continuous pull without variation. Unwinding without pull can then lead to the loosening of individual rolls and to the consequent mutual under pull, possibly to the uncontrolled, sharp tugging of the cable, resulting in the damaging of the optical 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 in-stallation 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 not 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.

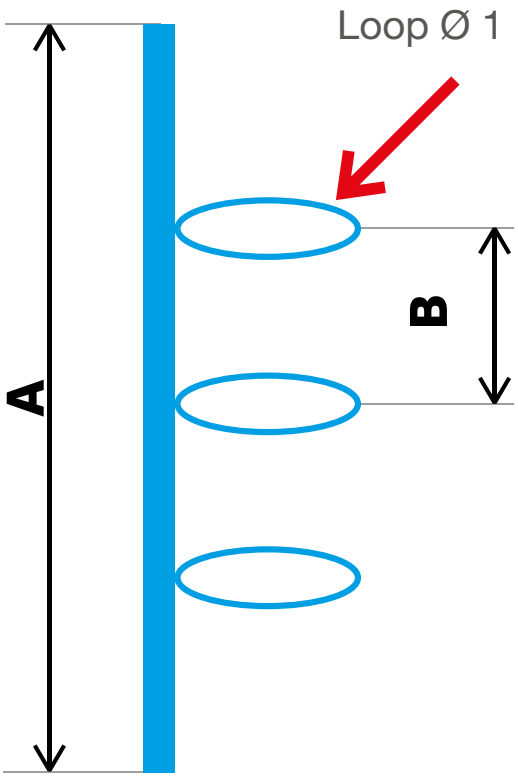
Vertical Installation

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.

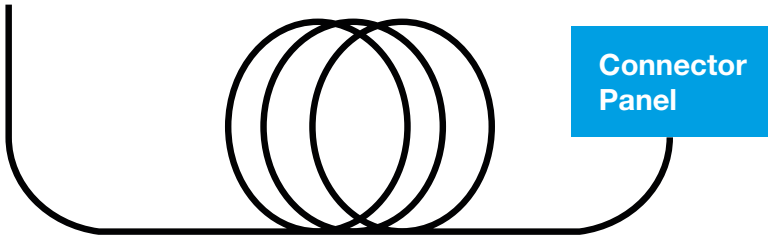
The vertical placement of cables has to be fastened by clamps, to prevent sliding. The maximum distance between individual clamps has to be such, where the weight of the cables between the clamps exceeds the pull strength and does not strain the fibers in the cable. Horizontal loops will form on vertically 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



Tube Diameter		
A	500 m	300 m
B	20 m	20 m

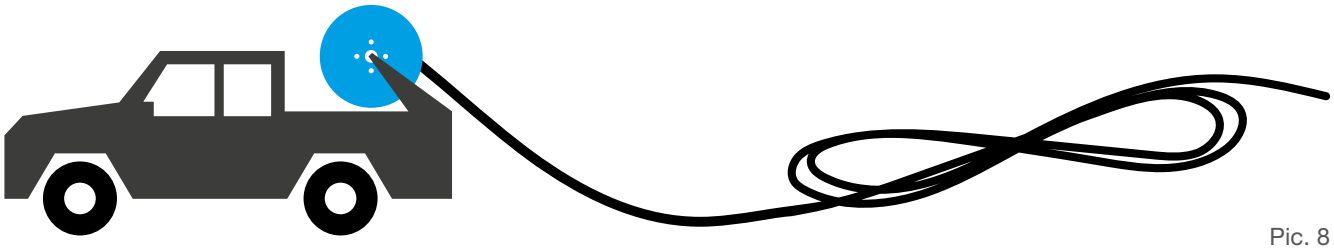
Pic. 6



Pic. 7

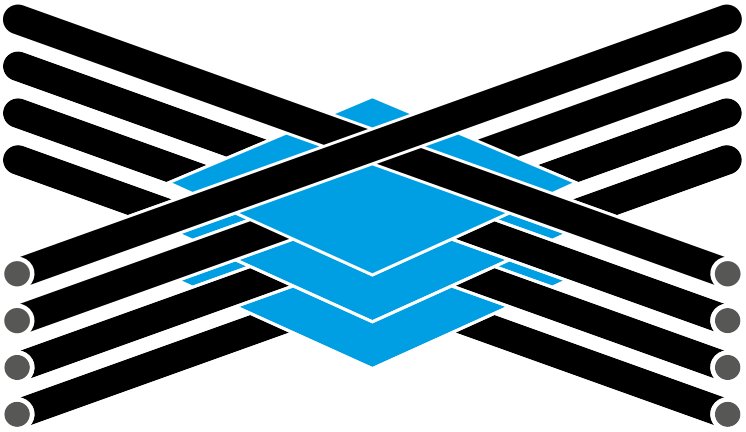
Twist of Cable

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

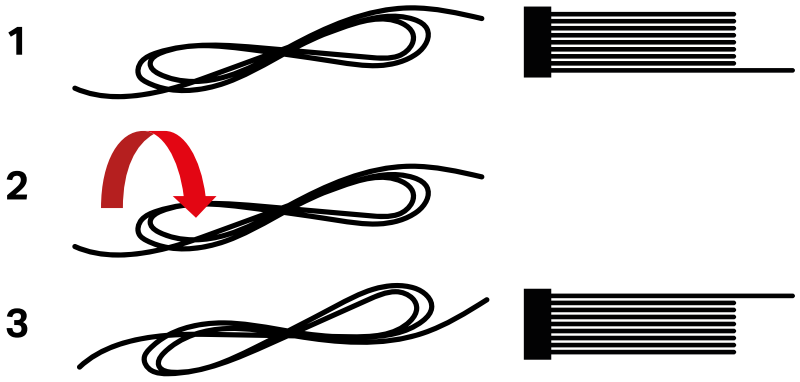
It is recommended to place for example, cardboard paper between individual rolls. Pic. 9



Pic. 9

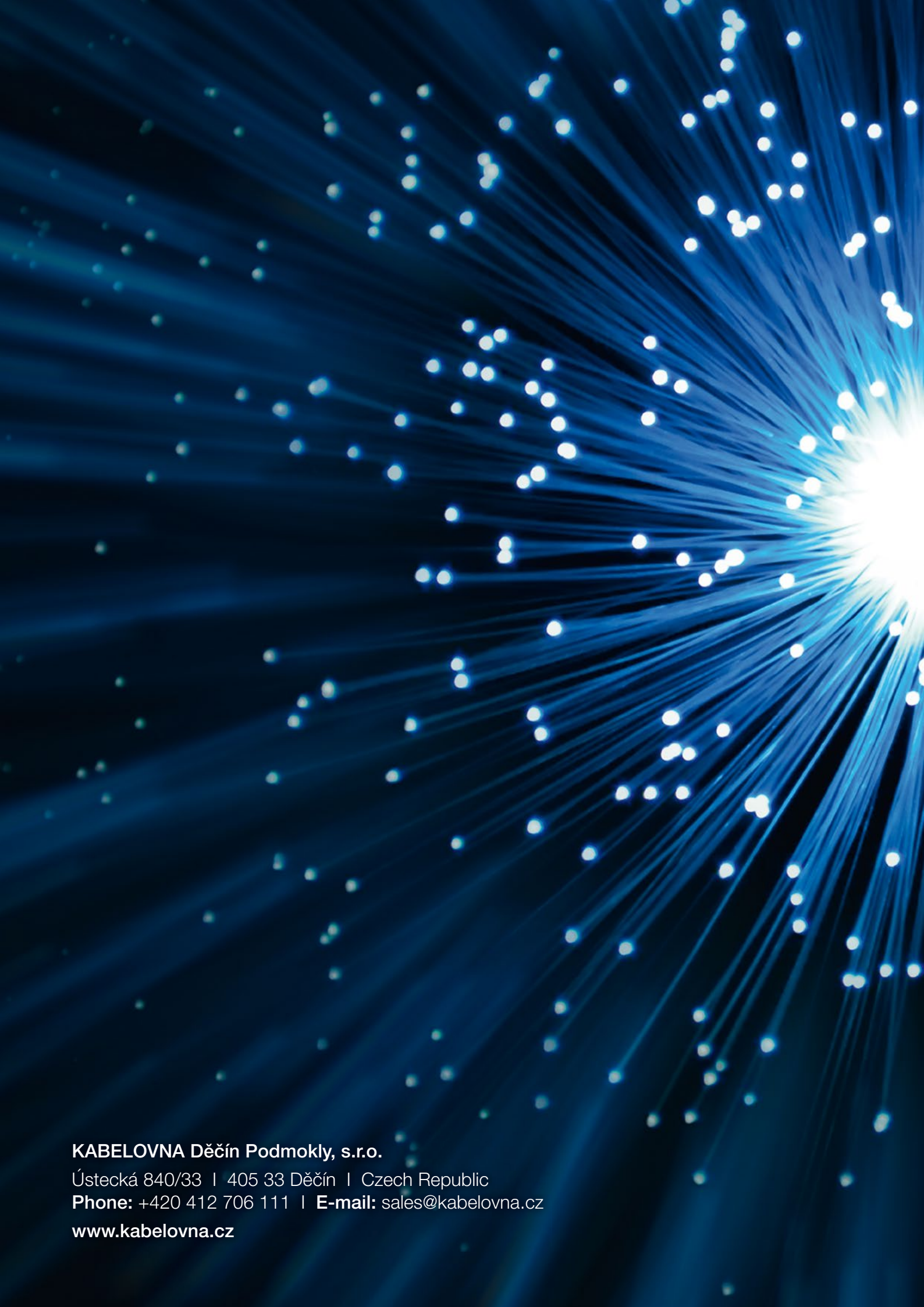
Prior to taking the cable from the figure eight, tilt it by 180°, with the aid of other individuals, so that the beginning of the cable is facing upward. /Pic. 10

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



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