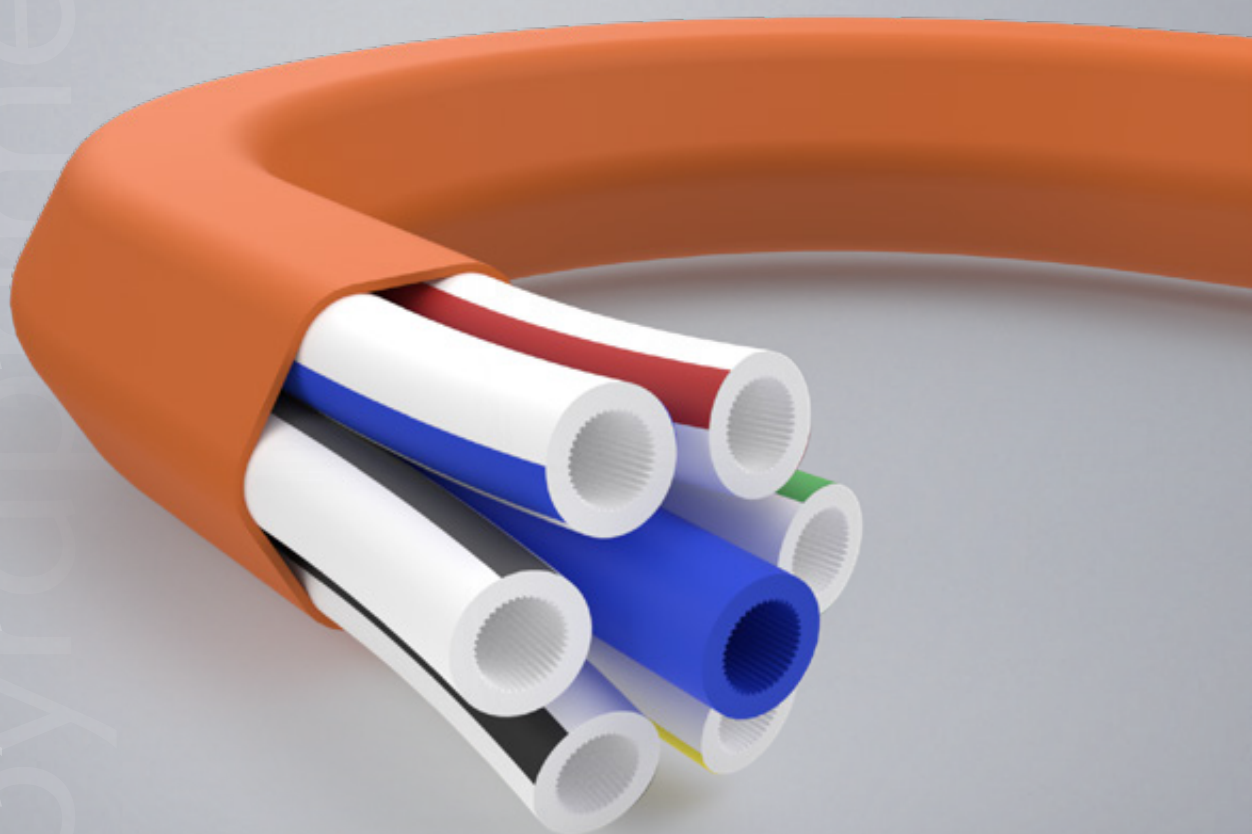


SPYRA PRIME

MICRODUCT FOR FIBRE OPTIC & HDPE/PP CONDUIT PIPES



SPYRA PRIME Sp. z o.o.
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SPYRA PRIME

Our products

Microducts, multiducts and microcables for constructing optical fibre microconduit system

SPYRA PRIME offers a whole range of equipment for constructing optical fibre microconduit systems and microcable networks, FTTH networks in particular, including:

- microduct: direct buried, duct-installed and indoor,
- tight multiduct: direct buried and indoor,
- loose multiduct: based on optical fibre ducts with a 32, 40, 50 and 63 mm diameter, containing a desired number (agreed with the customer) of pre-installed microducts,
- accessories for making optical fibre microconduit systems and microcable networks,
- know-how within designing and constructing optical fibre microconduit systems and microcable networks using the aforementioned products and other products available on the market.

The products conform to the requirements of the valid norms, particularly:

- **PN-EN 60794**
Conduit systems for cable management.
- **PN-EN 61386-24**
Conduit systems for cable management. Part 2-4.

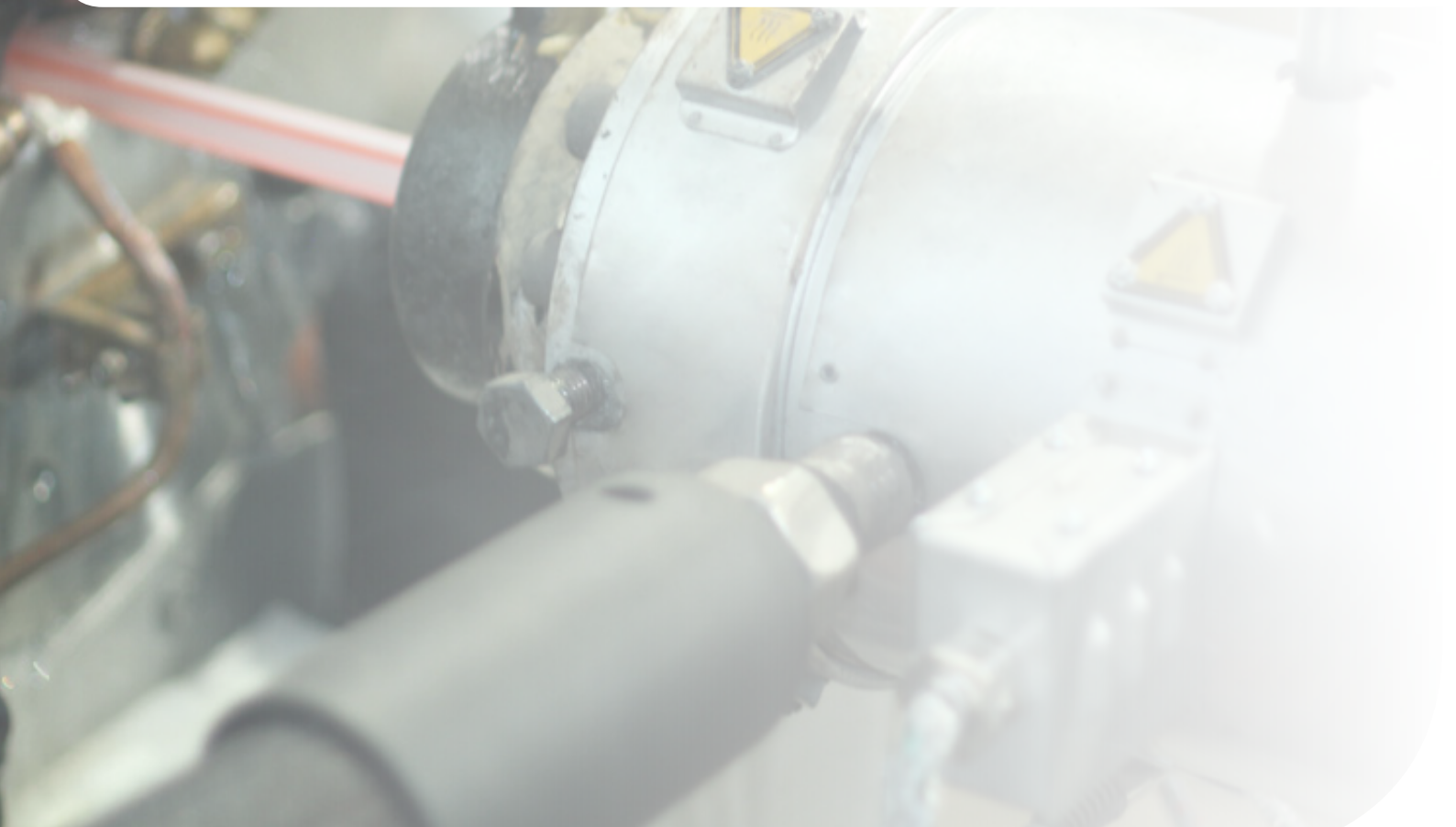
SPYRA PRIME Sp. z o.o. ensures high quality products and services, guaranteed by the ISO 9001 system.



SPYRA PRIME

Optical fibre multiducts, microducts

Our products	2
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Optical fibre microconduit systems and microcable networks

The optical cable conduit miniaturisation

Nowadays, optical fibre cables are almost always installed in existing conduit systems. Thus the existing conduit system is overfilled and on the other hand a new conduit system construction is costly, those two factors constitute a problem. Optical fibre microconduit system and microcable networks solve the problem in a comprehensive way. Microconduit system consists of optical fibre single microducts and multiducts and their accessories. The standard diameters of microducts vary from 4 to 20 millimetres. They come as single microduct or multiduct, i.e. bundle of microducts in an outer jacket.

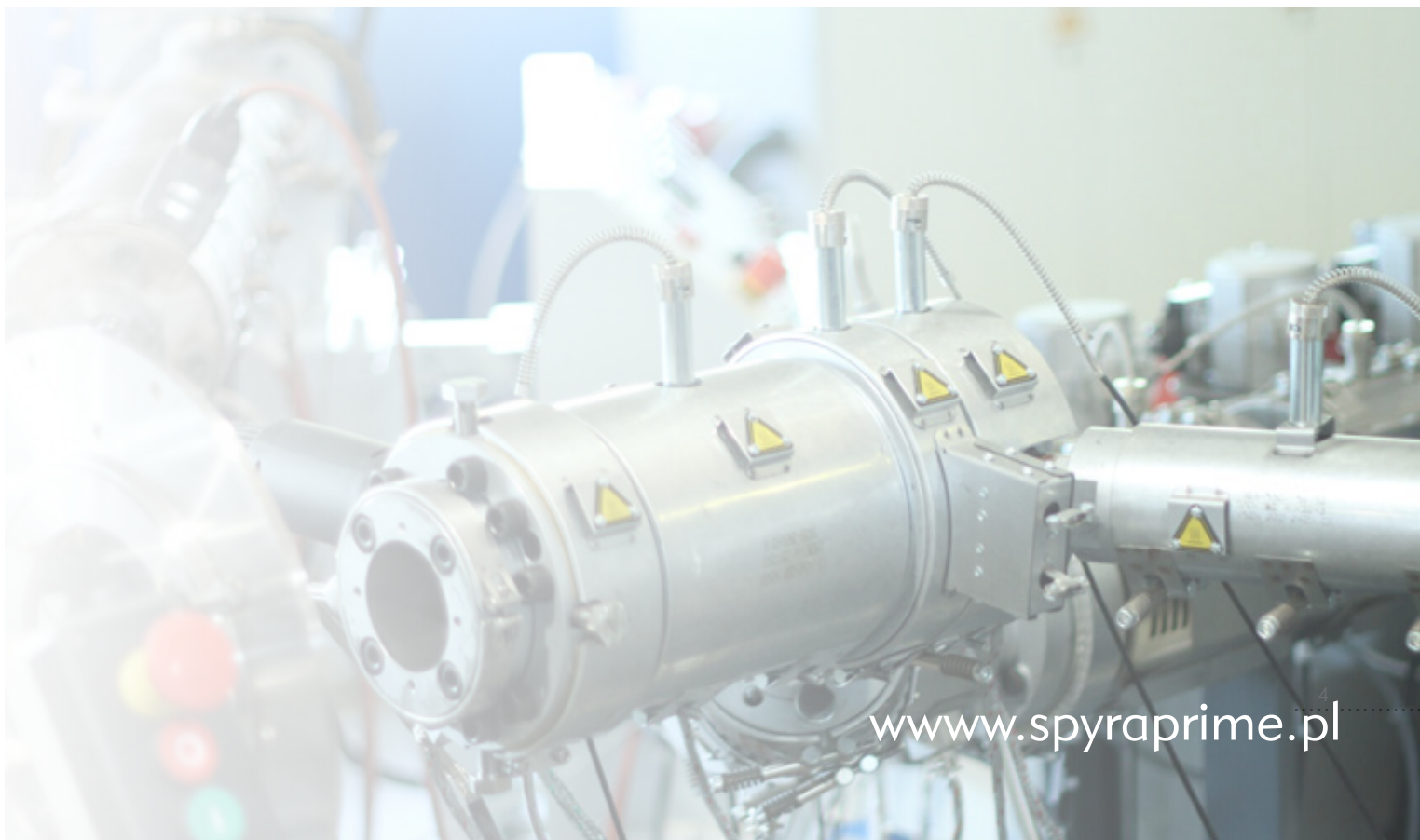
Single microducts are installed in bundles by blowing, in optical fibre ducts with a 32, 40, 50 and 63 mm diameter.

Direct buried and indoor microducts are installed directly in the ground or inside the buildings. Multiducts are installed in conduit system or directly in the ground.

Both the microducts and multiducts are available in a version preventing flame spreading, for indoor systems.

Optical fibre microcables installed in the microconduit systems by blowing are treated in an extremely gentle way, so they can be thin, light and cheap.

SPYRA PRIME offers a full range of equipment for making both optical fibre microconduit systems and microcable networks.



Main applications

Lower costs of fibre optical network construction and operation

- Multiplication of selected sections of the existing conduit systems and construction of new conduit systems using microducts and multiducts.
- Construction of indoor optical fibre microconduit systems and microcable networks.
- Construction of optical fibre microconduit systems and microcable networks /distributive and connected/ using microduct and multiduct pipes and mOTK microcables:
 - in an existing housing estate:
 - composed of blocks of flats with an existing conduit system,
 - composed of detached houses:
 - with an existing conduit system,
 - without an existing conduit system,
 - in a newly built housing estate:
 - composed of blocks of flats:
 - with an existing conduit system,
 - without an existing conduit system,
 - composed of detached houses without an existing conduit system.
- Construction of optical fibre microconduit systems and microcable networks of spatially wide buildings and facilities, including:
 - state and local administration buildings,
 - office blocks,
 - hotels,
 - hospitals,
 - shopping and entertainment centres,
 - schools,
 - high school campuses,
 - economic zones,
 - large industrial plants,
 - army facilities,
 - airports,
 - large railway junctions, etc
- Construction of intercity (long distance) optical fibre cable microconduit lines and microcable lines.

Main advantages

The optical cable conduit miniaturisation

Advantages for the systems, networks and lines investor:

- easy gradual development of cable networks, which are the main part of the cost due to easy blowing-in and blowing-out the optical fibre microcables,
- lower material and installation cost (microducts, multiducts, microcables and their accessories) and therefore lower total cost of 1 km cable conduit,
- much longer installation sections (between joints), fewer joints, cable manholes and storage bins,
- lower cost of space occupied by the microconduit lines, e.g. a 7x10 multiduct can hold cables with the same number of optic fibres as 7 pipes with a 40 mm diameter, and takes up 7 times less space; it is particularly noticeable at passages under obstacles in the ground,
- possibility to create access networks without optic fibre joints, on long and winding routes from the access centres to the user's building or even a flat,
- easy replacement of old optical fibre types to new ones.

Advantages for the line and network installer:

- much smaller volume and weight of the materials (microducts, multiducts and microcables) and equipment (blowing-in machines, compressors),
- and hence easier and cheaper:
 - storage, loading, transport and unloading of the materials and equipment,
 - execution of the works due to the easier handling of materials and equipment at the building site.

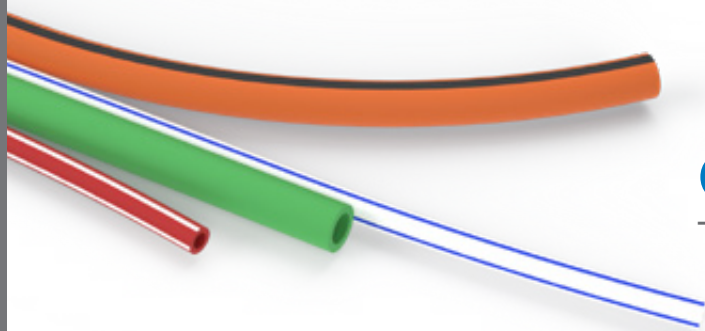
Advantages for the network operator:

- easy blowing-in of the optical fibre microcables, according to the user's order as well as blowing the microcables out to replace them with new ones, remove the line or remove a fault,
- lower, comparing to traditional system cost of maintaining a reserve capacity of the microconduit system with the possibility of renting it out to other users,
- easy to branch out the lines.

Advantages for the product manufacturer:

- lower material consumption,
- longer fabrication sections,
- smaller packaging units (drums),
- lower cost of transport and storage in the warehouse,
- lower cost of loading, transporting and unloading.





Optical fibre microducts

The optical cable conduit miniaturisation



TDB

Microduct, direct buried : a microduct with a increased wall thickness, installed directly in the ground.



TDI

Microduct, duct-installed: a microduct installed in optical fibre ducts.



TFR

Microduct, indoor: flame spreading preventing microduct, halogen free and low smoke emission designed for indoor systems.

Specification

- Microducts diameter od 4 - 20mm
- Pneumatic strength while blowing-in microcables TDI 1,6MPa, TDB 2,4 MPa.
- Installation temperature: -10 to +50°C
- Temperature range during transport and storage: -40 + 70°C
- Compressive strength: TDB ~750N, TDI ~250N
- Material: HDPE virgin
- Plug connections
- Possible color variants, compatible with the color table (transparent, full color or with colored stripes)

Main applications

- For protective telecommunication cables (copper and fiber optic)
- Used in networks supplied directly to the building or local network node
- Microducts designed for fiber optic cables (fiber bundles, mini and microcables)

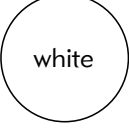
Target group

- Telecommunications network operators
- Power network operators
- Construction companies

Identifications



Custom colors for microducts

 red	 brown
 green	 violet
 blue	 turquoise
 yellow	 black
 white	 orange
 grey	 pink

The basic variants for microducts

	Full color
	Single stripes
	Double stripes
	Single wide stripes
	Double wide stripes

Options



With pulling cord



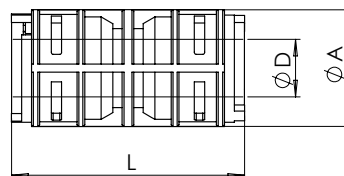
LSOH
Flame retardant



Resistant to UV

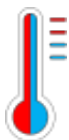
Microduct accessories

Straight connector



Product	D (mm)	A (mm)	L (mm)	Working pressure	Working temperature
MS-4 Gas and watertight	4	11	32,6	PN16	-20 do +50 °C
MS-5 Gas and watertight	5	13	35,2	PN16	-20 do +50 °C
MS-7 Gas and watertight	7	14,6	39,1	PN16	-20 do +50 °C
MS-10 Gas and watertight	10	19	48,4	PN16	-20 do +50 °C
MS-12 Gas and watertight	12	21,5	49,2	PN16	-20 do +50 °C
MS-14 Gas and watertight	14	23	49,4	PN16	-20 do +50 °C
MS-16 Gas and watertight	16	26	51	PN16	-20 do +50 °C
MS-18 Gas and watertight	18	29	57,4	PN16	-20 do +50 °C
MS-20 Gas and watertight	20	31	58,4	PN16	-20 do +50 °C

We have a full range for microducts with a diameter of 4 - 20mm
Compliance with the IEC 61753-1 and EN 50411-2-8



Working temperature
-20 to +50 °C

Working pressure
16 bar

Burst pressure
> 45 bar

Pull-out force
5-7mm >250N
10-20mm >500N

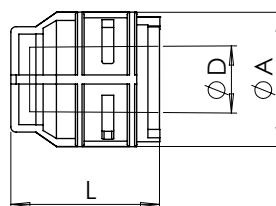


EN 50411-2-8 - Microducts specifications

EN 61300-2-4
EN 61300-2-10
EN 60794-1-2:2003 M. E4
EN 61300-2-33
EN 61300-2-22
EN 61300-2-23:1997 M. 2
EN 61300-2-26
EN 61300-2-34
EN 50411-2-8, A. C
EN 50411-2-8 A. D
EN 50411-2-8 A. E

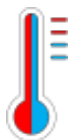
EN 60529
EN 61386-22
EN 61386-24

End-Cap



Product	D (mm)	A (mm)	L (mm)	Working pressure	Working temperature
ME-4 Gas and watertight	4	11	17,5	PN16	-20 do +50 °C
ME-5 Gas and watertight	5	13	17,5	PN16	-20 do +50 °C
ME-7 Gas and watertight	7	14,6	20,8	PN16	-20 do +50 °C
ME-10 Gas and watertight	10	19	25,3	PN16	-20 do +50 °C
ME-12 Gas and watertight	12	21,5	25,6	PN16	-20 do +50 °C
ME-14 Gas and watertight	14	23	25,7	PN16	-20 do +50 °C
ME-16 Gas and watertight	16	26	27	PN16	-20 do +50 °C
ME-18 Gas and watertight	18	29	30,2	PN16	-20 do +50 °C
ME-20 Gas and watertight	20	31	30,7	PN16	-20 do +50 °C

We have a full range for microducts with a diameter of 4 - 20mm
Compliance with the IEC 61753-1 and EN 50411-2-8



Working temperature
-20 to +50 °C

Working pressure
16 bar

Burst pressure
> 45 bar

Pull-out force
5-7mm >250N
10-20mm >500N



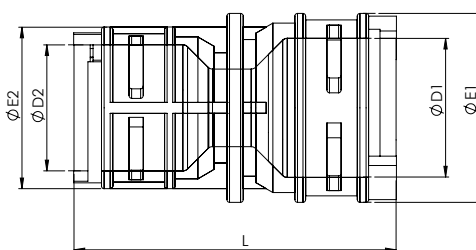
EN 50411-2-8 - Microducts specifications

EN 61300-2-4
EN 61300-2-10
EN 60794-1-2:2003 M. E4
EN 61300-2-33
EN 61300-2-22
EN 61300-2-23:1997 M. 2
EN 61300-2-26
EN 61300-2-34
EN 50411-2-8, A. C
EN 50411-2-8 A. D
EN 50411-2-8 A. E

EN 60529
EN 61386-22
EN 61386-24

Microduct accessories

Reduced Union Connectors



Product	D1 (mm)	D2 (mm)	E1 (mm)	E2 (mm)	L (mm)
MS-5/4 Gas and watertight	5	4	13.5	11.5	33.6
MS-7/4 Gas and watertight	7	4	15.0	11.5	36.3
MS-7/5 Gas and watertight	7	5	15.0	13.5	36.5
MS-10/5 Gas and watertight	10	5	19.0	13.5	43.1
MS-10/7 Gas and watertight	10	7	19.0	15.0	42.6
MS-10/8 Gas and watertight	10	8	19.0	15.0	42.6
MS-12/7 Gas and watertight	12	7	21.5	15.0	44.3
MS-12/8 Gas and watertight	12	8	21.5	15.0	44.3
MS-12/10 Gas and watertight	12	10	21.5	19.0	47.2
MS-14/7 Gas and watertight	14	7	23.5	15.0	44.6
MS-14/10 Gas and watertight	14	10	23.5	19.0	47.7
MS-14/12 Gas and watertight	14	12	23.5	21.5	48.3
MS-16/12 Gas and watertight	16	12	26.5	21.5	50.1
MS-16/14 Gas and watertight	16	14	26.5	23.5	50.6

We have a full range for microducts with a diameter of 4 - 20mm
Compliance with the IEC 61753-1 and EN 50411-2-8



Working temperature
-20 to +50 °C

Working pressure
16 bar

Burst pressure
> 45 bar

Pull-out force
5-7mm >250N
10-20mm >500N

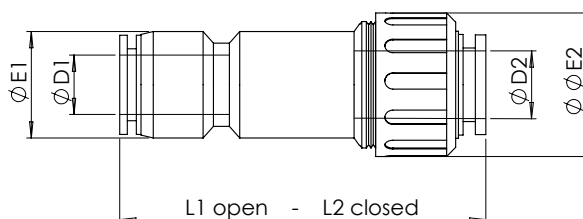


EN 50411-2-8 - Microducts specifications

EN 61300-2-4
EN 61300-2-10
EN 60794-1-2:2003 M. E4
EN 61300-2-33
EN 61300-2-22
EN 61300-2-23:1997 M. 2
EN 61300-2-26
EN 61300-2-34
EN 50411-2-8, A. C
EN 50411-2-8 A. D
EN 50411-2-8 A. E

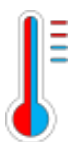
EN 60529
EN 61386-22
EN 61386-24

Gas Block Double Push-in System



Product	D1 (mm)	D2 (mm)	E1 (mm)	E2 (mm)	L1 (mm)	L2 (mm)	Fibre cable size range	Color
MEC-4 Gas and watertight	4	4	11,0	17,5	53,0	50,0	0,5 - 2,5	Blue
MEC-5 Gas and watertight	5	5	13,0	20,5	55,9	52,9	0,5 - 3,5	Blue
MEC-7 Gas and watertight	7	5	14,6	20,5	66,8	63,8	0,5 - 3,5	Blue
	7	7	14,6	22,5	66,8	63,8	0,5 - 3,5	Blue
	7	7	14,6	22,5	66,8	63,8	3,0 - 5,0	Red
MEC-10 Gas and watertight	10	7	19,0	22,5	70,2	67,2	2,0 - 4,0	Red
	10	10	19,0	27,0	75,0	71,0	0,5 - 3,0	Blue
	10	10	19,0	27,0	75,0	71,0	3,0 - 6,0	Red
	10	10	19,0	27,0	75,0	71,0	6,0 - 8,0	Yellow
MEC-12 Gas and watertight	12	12	21,5	30,5	79,3	74,8	3,0 - 6,0	Red
	12	12	21,5	30,5	79,3	74,8	6,0 - 8,0	Yellow
	12	12	21,5	30,5	79,3	74,8	8,0 - 10,0	Green
MEC-14 Gas and watertight	14	14	23,0	31,5	82,0	77,0	3,0 - 6,0	Red
	14	14	23,0	31,5	82,0	77,0	6,0 - 8,0	Yellow
	14	14	23,0	31,5	82,0	77,0	8,0 - 10,0	Green
MEC-16 Gas and watertight	16	16	26,0	35,0	89,4	82,4	6,0 - 8,0	Yellow
	16	16	26,0	35,0	89,4	82,4	8,0 - 10,0	Green
	16	16	26,0	35,0	89,4	82,4	10,0 - 12,0	Black

We have a full range for microducts with a diameter of 4 - 20mm
Compliance with the IEC 61753-1 and EN 50411-2-8



Working temperature
-20 to +50 °C

Working pressure
16 bar

Burst pressure
> 45 bar

Pull-out force
5-7mm >250N
10-20mm >500N



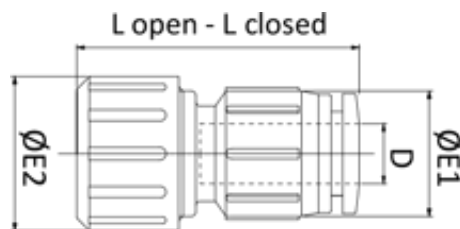
EN 50411-2-8 - Microducts specifications

EN 61300-2-4
EN 61300-2-10
EN 60794-1-2:2003 M. E4
EN 61300-2-33
EN 61300-2-22
EN 50411-2-8, A. C
EN 50411-2-8 A. D
EN 50411-2-8 A. E

EN 60529
EN 61386-22

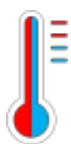
Microduct accessories

Gas Block Single Push-in System



Product	D1 (mm)	E1 (mm)	E2 (mm)	L1 (mm)	L2 (mm)	Fibre cable size range	Color
MEC-5 Gas and watertight	5	14,6	18,0	35,0	32,5	0,5 - 3,5	Blue
MEC-7 Gas and watertight	7	14,6	18,0	35,6	33,1	0,5 - 3,5	Blue
	7	14,6	18,0	35,6	33,1	2,6 - 4,0	Red
	7	14,6	18,0	35,6	33,1	3,0 - 5,0	Red
MEC-10 Gas and watertight	10	19,0	22,5	42,5	38,5	0,5 - 3,0	Blue
	10	19,0	22,5	42,5	38,5	3,0 - 6,0	Red
	10	19,0	22,5	42,5	38,5	6,0 - 8,0	Yellow
MEC-12 Gas and watertight	12	21,5	25,0	46,7	42,2	3,0 - 6,0	Red
	12	21,5	25,0	46,7	42,2	6,0 - 8,0	Yellow
	12	21,5	25,0	46,7	42,2	8,0 - 10,0	Green
MEC-14 Gas and watertight	14	23,0	27,0	47,7	42,7	3,0 - 6,0	Red
	14	23,0	27,0	47,7	42,7	6,0 - 8,0	Yellow
	14	23,0	27,0	47,7	42,7	8,0 - 10,0	Green
MEC-16 Gas and watertight	16	26,0	30,0	55,2	48,2	6,0 - 8,0	Yellow
	16	26,0	30,0	55,2	48,2	8,0 - 10,0	Green
	16	26,0	30,0	55,2	48,2	10,0 - 12,0	Black

We have a full range for microducts with a diameter of 4 - 20mm
Compliance with the IEC 61753-1 and EN 50411-2-8



Working temperature
-20 to +50 °C

Working pressure
16 bar

Burst pressure
> 45 bar

Pull-out force
5-7mm >250N
10-20mm >500N

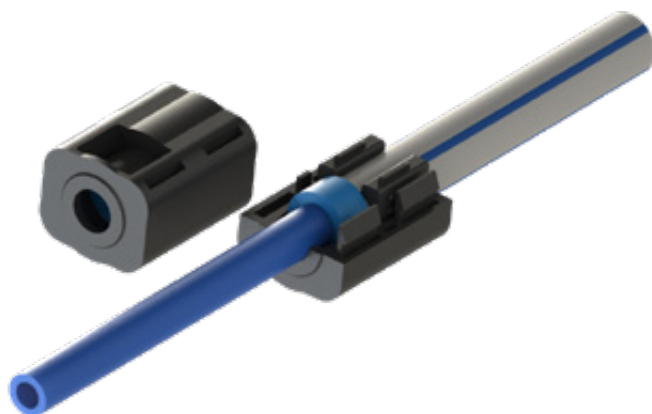


EN 50411-2-8 - Microducts specifications

EN 61300-2-4
EN 61300-2-10
EN 60794-1-2:2003 M. E4
EN 61300-2-33
EN 61300-2-22
EN 50411-2-8, A. C
EN 50411-2-8 A. D
EN 50411-2-8 A. E

EN 60529
EN 61386-22

Divisible seal cup



Product	Microduct external diameter (mm)	Fibre cable size range (mm)
MECD-7 Gas and watertight	7	1,5 - 2,5
MECD-10 Gas and watertight	10	1,5 - 4,0
MECD-12 Gas and watertight	12	3,0 - 6,5
MECD-14 Gas and watertight	14	3,0 - 8,0
MECD-16 Gas and watertight	16	5,0 - 10,0
MECD-20 Gas and watertight	20	7,0 - 12,0

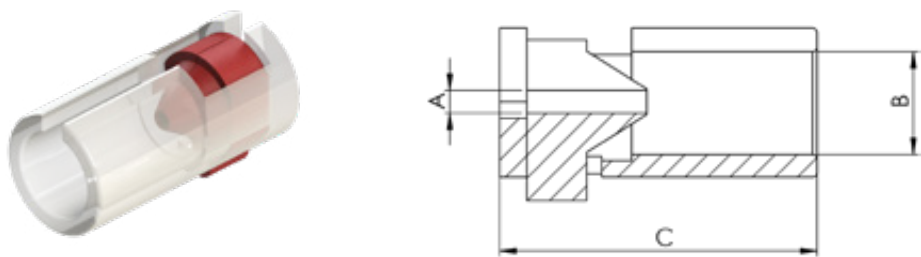
Resistant to dirt, splash water, oils and greases.
Sealing up to 0,5 bar.

Compliance with the IEC 61753-1 and EN 50411-2-8



Microduct accessories

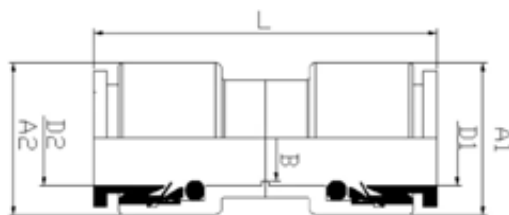
Mini duct seal



	7 mm		10 mm	
Dimensions	21 x 10 mm		24 x 15 mm	
Plastic housing material	PC (polycarbonate)		PC (polycarbonate)	
Sealing plug material	TPE		TPE	
Sealing	up to 0,5 bar		up to 0,5 bar	
Pull strenght duct seal from the duct	≥ 70N		≥ 100N	
Cable diameter sealing	7/0,9	purple	10/0,9	purple
	7/1,25	red	10/1,25	red
	7/1,6	green	10/1,6	green
	7/2,1	blue	10/2,1	blue
	7/2,5	yellow	10/2,1	yellow
			10/2,9	orange
			10/3,3	brown
			10/3,8	grey

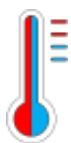


Straight indoor connectors flame retardant LSOH



Product	D1 (mm)	D2 (mm)	A1 (mm) ±0,2	A2 (mm) ±0,2	B (mm) ±0,2	L
5/3,5	5	5	13,5	13,5	3,5	35,8
7/4	7	7	15,2	15,2	4	41,2
10/6	10	10	17,5	17,5	6	45,2
10/8	10	10	17,5	17,5	8	45,2
12/8	12	12	21,5	21,5	8	52,2
12/10	12	12	21,5	21,5	10	52,2
14/10	14	14	23,5	23,5	10	52,2

Tested to UL94 V-0: fire retardant for indoor use.
Compliance with the IEC 61753-1 and EN 50411-2-8



Working temperature

-15 to +45 °C

Working pressure

26 bar

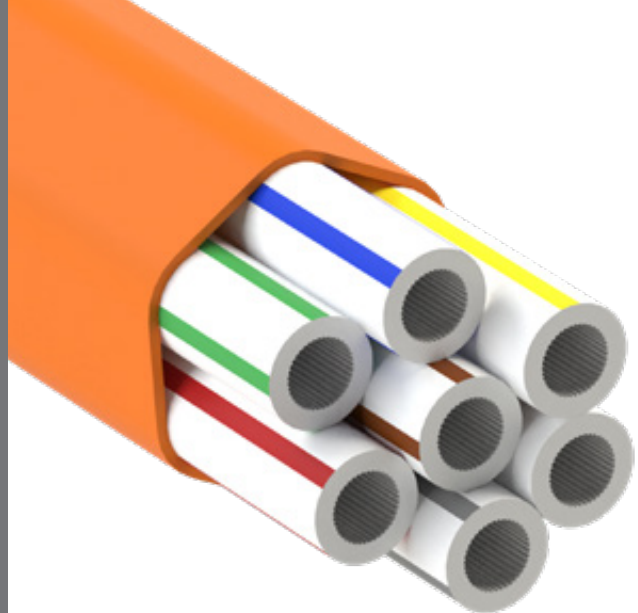
Burst pressure

25bar

Pull-out force

≤ 50N





Optical fibre multiducts

The optical cable conduit miniaturisation



MTDB

Microtube bundle: microtube bundle for buried directly in the ground, does not additional hardware beyond connectors.



MTDB

Tight multiduct, direct buried: a multiduct intended for being buried directly in the ground, used for making optical fibre microduct systems and trunk microconduits.

Specification

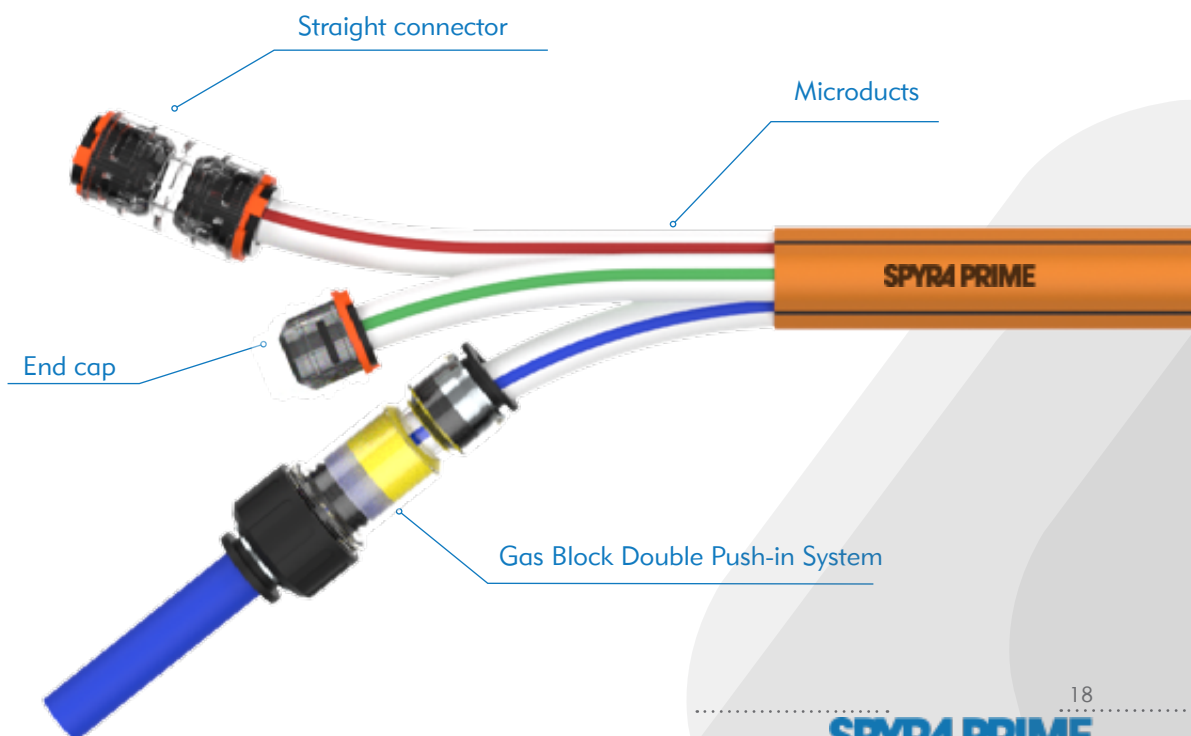
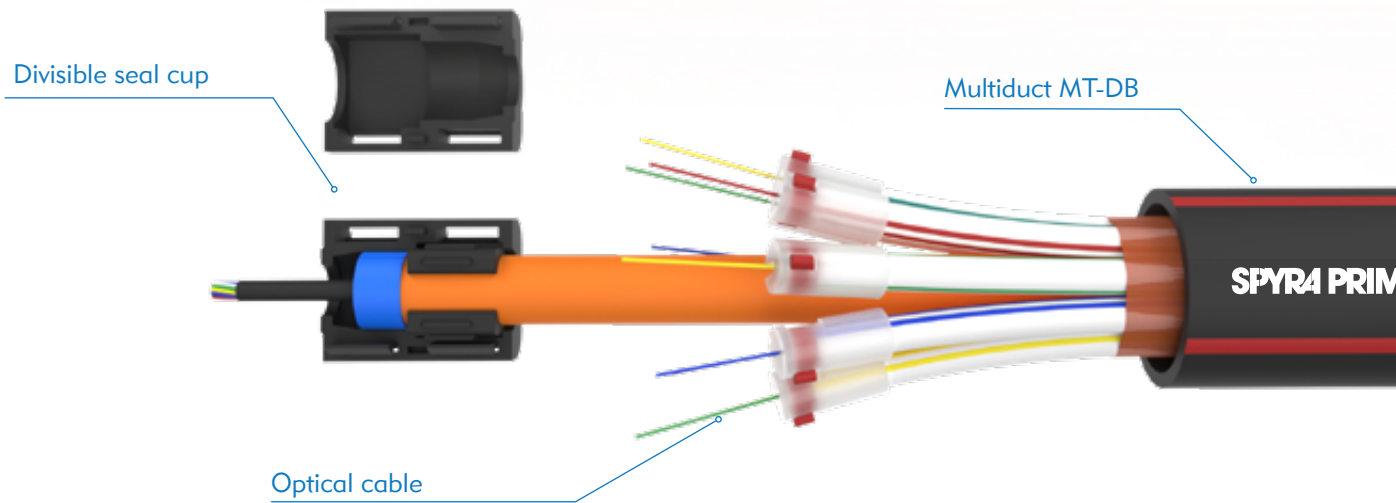
- Standard design with a flexible outer coat in black or orange color
- Bundle in rigid protective tube, dimensions from 32-63mm
- The variety of micro-pipe bundles on customer's request, the maximum number of 26 microducts.
- Microtube bundle for buried directly in the ground with compressive strength ~750N and maximum pull force up to 9500N.
- Microtube bundle for installation NO-DIG type (HDD drilling) with compressive strength~750-1250N and maximum pull force up to 23000N.
- Installation temperature: -10 to +50°C
- Temperature range during transport and storage: -40 + 70°C
- Material: polyolefin
- Plug connections
- Possible color variants, compatible with the color table.

Main applications

- For protective telecommunication cables (copper and fiber optic)
- For the construction of a sewage system / existing sewage teletechnical
- For the construction of cable micro-circuits as well as for the creation of main microchannel strings in large buildings (multiducts indoor).

Target group

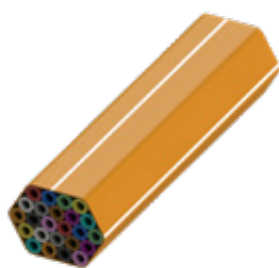
- Telecommunications network operators
- Power network operators
- Construction companies





MT-DB

Microtube bundle for buried directly in the ground with flexible outer coat



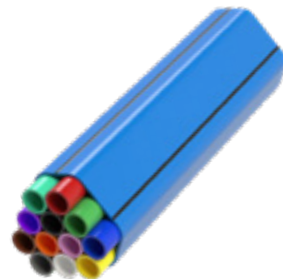
24x



19x



21x



12x



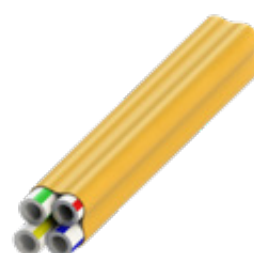
5x



7x



3x



4x



MT-DB

Microtube bundle for buried directly in the ground with central tube



25x + 1x
double layer
oversath



16x + 3x



7x + 1x



22x + 1x



22x + 1x



14x + 1x



6x + 2x



12x + 1x



MT-DB

Microtube bundle with protective flexible coat for instalation NO-DIG type



Multiduct with double flexible coat



Multiduct with double-layer rigid protective tube



Multiduct in rigid protective tube



Multiduct 10 + 1 core in rigid protective tube



40 + 4x



40 + 7x



40 + 24x + 1x

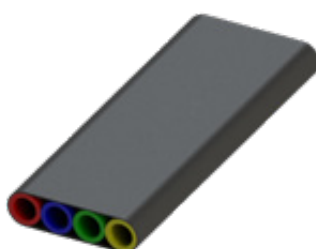


MT-DB

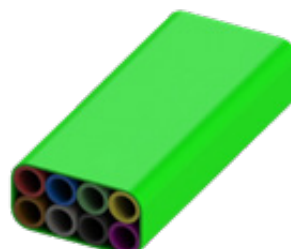
Microtube bundle for buried directly in the ground type FLAT and FENDER



Multiduct FLAT 2 core with location wire



Multiduct FLAT 4 core



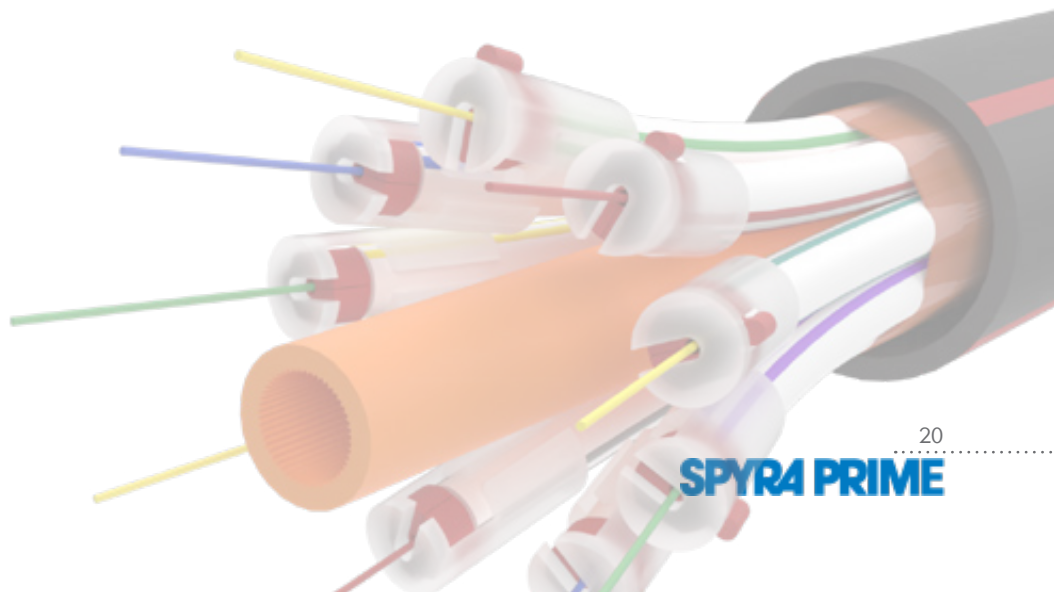
Multiduct FLAT 8 core



Multiduct FENDER 7 core



Multiduct FLAT LIGHT 4 core





2 way



3 way



3 + 3 way



4 way



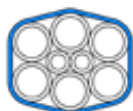
5 way



5 way



6 way



6 + 2 way



6 + 2 way



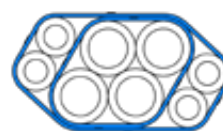
7 way



7 + 1 way



8 way



4 + 4 way



8 + 1 way



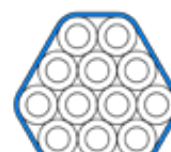
9 + 1 way



9 + 1 way



10 + 1 way



12 way



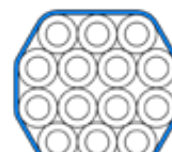
12 + 1 way



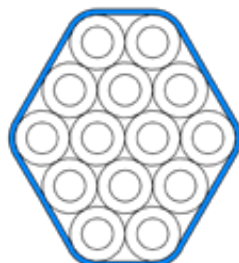
12 + 1 way



12 + 1 way



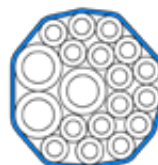
14 way



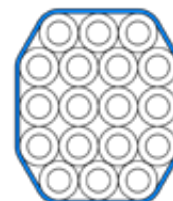
14 way



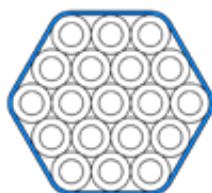
14 + 1 way



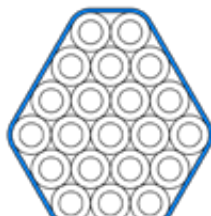
16 + 3 way



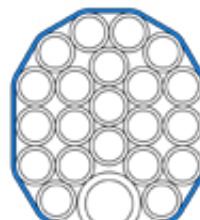
18 way



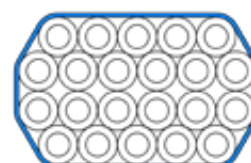
19 way



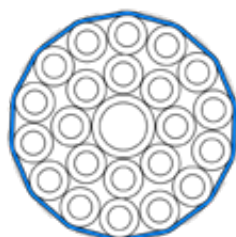
21 way



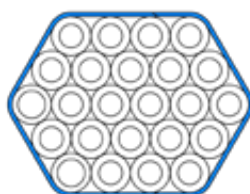
21 + 1 way



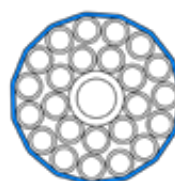
22 way



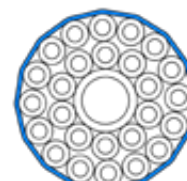
22 + 1 way



24 way



24 + 1 way



25 + 1 way

Multiduct accessories

Fibre optical enclosures are used to create straight connection of multiducts and to branch with large capacity multiducts into smaller capacity multiducts or microducts bundles. Inside the enclosure microducts should be connected by using MS or MSR connectors.

Enclosures are made of plastic materials, by injection method, providing long term usage.

Straight MCS and MCST enclosures allow making straight connection of multiducts (direct buried and duct installed).

MCYT enclosures are designed to make branch connections of direct buried and duct installed multiducts and to branch out microduct bundles (direct buried and duct installed).

Enclosures of OZ system has following features:

- completeness of sets,
- waterproofness,
- tension resistance corresponding to a class of connected multiducts,
- ease of installation.

Branch for multiducts

Type:

T

Y

H



In / Out: 25mm, 40mm, 50mm
Dimension: 350 / 210 mm

25mm, 40mm, 50mm, 60mm
260 / 200 mm

32mm, 40mm, 50mm
350 / 170 mm

Universal socket 4- i 6-port for multiduct connection, output microducts

4-port



Dimension: 463x268x101 mm
Weight: 3 kg
Port number: 4
Protection class: IP68
Diameter holes: Ø9 - Ø45

6-port



Dimension: 316x220x70 mm
Weight: 2 kg
Port number: 6
Protection class: IP68
Diameter holes: Ø9 - Ø45

Divisible duct seal



Product	Pipe external diameter (mm)	Microduct external diameter (mm)	Microduct number
OF0122	40	12	4
OF0121	50	12	7
OF0342	63	12	7

- Pressure seal $\geq 0.25\text{bar}$
- Tensile seal $\geq 1000\text{N}$ between tube and element
- Body material: Ryton® - Polyphenylene sulfide (PPS)
- Gasket material: EPDM

Protective straight duct closure



Pipe external diameter (mm)	25x25	32x32	40x40	50x50
Pull out force [N]	1500			
IP protection degree	IP 68			

- Fully divisible (including the nuts and a ring)
- Can be installed in any place of the pipeline
- Protects microducts and couplings from mechanical damages
- Connects 2 pipes straight
- Body provides enough space for connecting microducts with couplings
- Water tight
- Body: PP
- Nuts: PP
- Pipe seal ring: EPDM
- Squeeze ring: POM
- Pipe stop: PE
- 2K seal: TPE-V

Cable tray

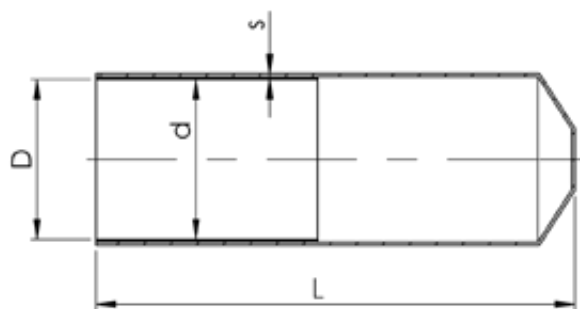
- Designed for storing and protecting from mechanical damage,
- For stocks of fiber optic cables,
- The possibility of pulling cables in the case of small radius curves,
- In underground installations as well as cable wells, basements.

Symbol (type)

ZKSP 2/4 big

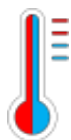
ZKSP 2/4 small





Product	D (mm)	d (mm)	s (mm)	L (mm)
33/15	33	14,6	3,5	106
40/15	40	14,6	3,5	106
52/25	53	24,2	3,5	160
70/25	70	24,2	3,5	115

D – minimum inner diameter before recovery
d – maximum inner diameter after entire recovery
s – wall thickness after entire recovery
L – end cap length recovery



Working temperature

-55 to +105 °C

Shrink temperature

120 to 200 °C



Resistant to UV radiation



Smooth conduit cable pipe

for ground installation

Specification

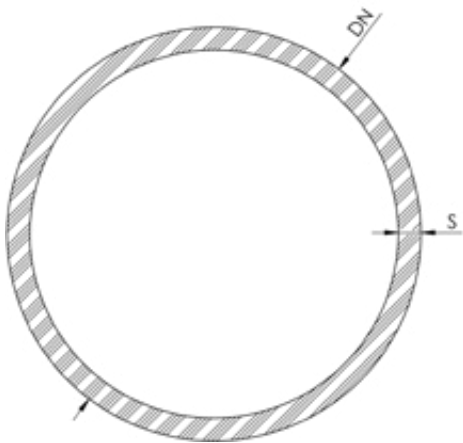
Material	HDPE*
Diameter	(OD) 75-420mm
SDR:	7,4 to 55 **
Length:	6 - 12m
Connections:	Welding, connector
Type:	Black or 2 - layers
Compressive strength	≥ 750 N
Compliance with the norm PE-EN 61386-24	
Package:	Coil: 25m / 50m / or other (dia. max.125mm) Pack: 6 -12 m

* Optional: HDPE PE100, HDPE PE100 RC, HDPE PE-RT, HDPE modified, PP

** Non-standard diameters, SDRs - upon special request



	SDR								
DN (mm)	7,4	9	11	17	17,6	21	33	41	55
75	x	x	x	x	x	x			
90	x	x	x	x	x	x			
100	x	x	x	x	x	x			
110	x	x	x	x	x	x			
125	x	x	x	x	x	x			
140	x	x	x	x	x	x	x		
160	x	x	x	x	x	x	x		
180	x	x	x	x	x	x	x	x	
200	x	x	x	x	x	x	x	x	x
225	x	x	x	x	x	x	x	x	x
250	x	x	x	x	x	x	x	x	x
280	x	x	x	x	x	x	x	x	x
315	x	x	x	x	x	x	x	x	x
355	x	x	x	x	x	x	x	x	x
400	x	x	x	x	x	x	x	x	x
420	x	x	x	x	x	x	x	x	x



$S = \frac{DN}{SDR}$

S - Wall thickness
DN - Diameter Nominal
SDR - Standard Dimension Ratio



Smooth conduit pipe

for fibre optic cable

Specification

Material	HDPE
Inner layer:	Sliding with grooves
Diameter:	(OD) 25-63mm
SDR:	11 - 17,6
Working pressure:	to 12 bar
Length:	250m / 1000m / or other
Connections:	straight connector
Type:	black / 2-layer / black with stripes / orange
Option:	HDPE flame retardant HDPE Resistant to UV

Compliance with the norm PE-EN 61386-24

Package: Coil: 250m / 1000m / or other



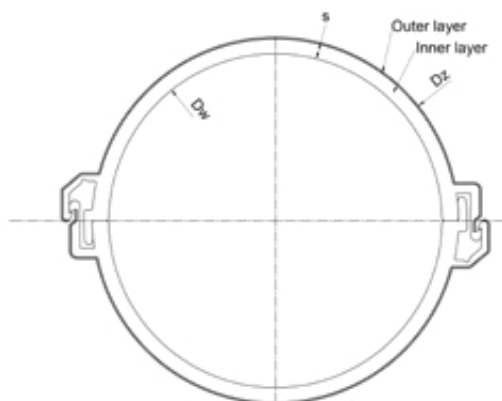


Halfpipe for protect existing cables

Specification

Material:	HDPE
Option:	HDPE + UV / HDPE + UV-t
Diameter.	(ID) 50-140mm
Length:	3m
Mark:	black / blue to 1kV / red upper 1kV
Type:	black or 2 - layer
Compliance with the norm PE-EN 61386-24	
Package:	3m

Type	Outer diameter Dz (mm)	Inner diameter Dw (mm)	Weight kg/m	Lenght L (m)	Comments
RHDPE-2D 56	56	50	1,3	3	
RHDPE-2D 82	82	75	1,5	3	
RHDPE-2D 110	110	100	1,7	3	
RHDPE-2D 119	119	110	1,8	3	
RHDPE-2D 160	156	140	3,2	3	



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