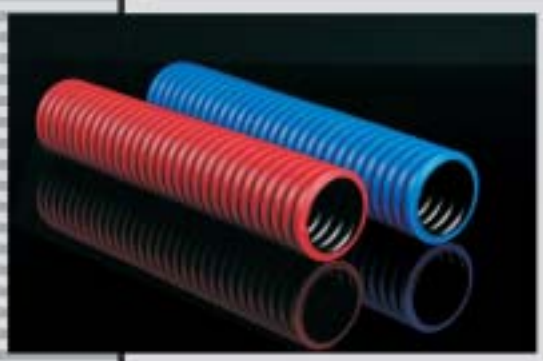
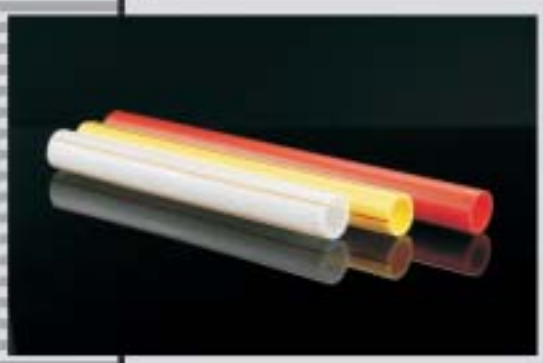
KOPOS





CABLE PROTECTION DUCTS

KOPOFLEX, KOPODUR, KOPOHALF
AND SMOOTH HDPE CABLE DUCTS

81 years of electro-installation and stowage material production

The beginning of electrotechnic production of KOPOS KOLÍN goes back to the year 1926. Even before the WWII the company reached monopolistic status among keen competition on domestic market. After war the assortment changed slightly to match political needs.
Starting from 1994, new management of the company started with intense investments and development program. To ensure enough of quality raw material, the company has built its own PVC mixture production facility. The apex of the renovation process has been the opening of new production and administration hall that cost 300 millions CZK, and that has been built to match fast growth of the company together with its high logistics needs.
Within the innovation processes the company progressively introduces a new way of producing the technical documentation and a lot of modern technologies. A lot of new products were introduced, e.g. series of electroinstallation laths, double-coated corrugated pipes, double-coated parapet culverts, lead-free products or wide range of halogen-free products. There are 5000 kinds of products up today in the assortment of KOPOS KOLÍN.
The company's number one production priority is the quality of products. New products are always adjusted to match the EU standard requirements and all the assortment is traditionally tested according requirements of harmonized electrotechnic standards.
KOPOS KOLÍN a.s. is a holder of the certificate ISO 9001 and ISO 14001 as well as the Safe company and the Czech quality certificates. The company provides 100% guarantee on keeping the process stability, and consequently on the quality and safety of the products.
The company is always ready to match increased needs of the market and this helps to keep its permanent leading position. As a major success, in last years KOPOS KOLÍN has opened 11 sale subsidiaries mostly in Eastern Europe and Asia, what changes the company from domestic producer to a company of world-wide character.

The most important man in KOPOS KOLÍN is always the customer.
THANK YOU FOR YOUR PARTNERSHIP

CERTIFICATE OF APPROVAL

KOPOS KOLÍN a.s.
Kolín IV
Czech Republic

ISO 14001:2004
EN ISO 14001:2004
ČSN EN ISO 14001:2005

Activities including and associated with the design and manufacture of electrical cable systems accessories made from metal and plastic; plastic fastening fittings and technical plastic mouldings; manufacture of mechanical protection for power distribution systems and communication cables buried underground; production of PVC mixes.

CERTIFICATE OF APPROVAL

KOPOS KOLÍN, a. s.
Kolín
Czech Republic

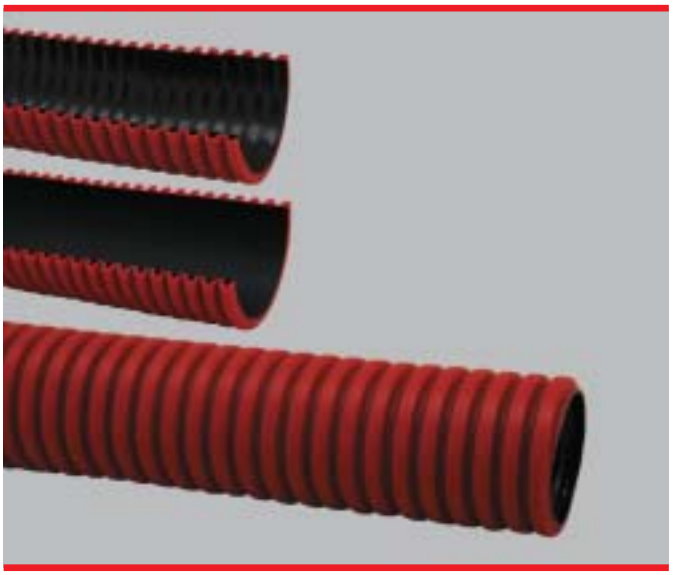
Design and manufacturing of electrical cable systems accessories made from metal and plastic, plastic fastening fittings and technical plastic moulding. Manufacture and mechanical protection for power distribution systems and communication cables buried underground. Production of PVC mixes.

The description of products

Documents for designing plastic cable ducts

Corrugated double-wall cable ducts
KOPOFLEX and KOPODUR

The duct system KOPOFLEX and KOPODUR offers a wide range of applicability. It is particularly suitable for the mechanical protection of all kinds of power and telecommunication cables. The ducts may also be used as auxiliary cable ducts for later use. They may be laid one above another and fixed by means of a spacer. The system is also used in chemical industry for its high resistance to aggressive substances.



KOPOFLEX
The outer wall of the cable duct is made of HDPE; the inner wall is made of LDPE. This combination allows high flexibility even with rather small bending radius. It is supplied in coils of 50 m standard length. In each coil, there is a pull-through wire or string. The inner wall is slightly corrugated, which provides better flexibility, and cables can be pulled in more easily. Other lengths are also available. Due to high flexibility and the strength of the walls, the system is suitable for the protection of water or gas connections.

KOPODUR
Both outer and inner walls are made of HDPE. The cable ducts are supplied on pallets in the form of bars of 6m standard length. Other lengths are also available.
KOPODUR has higher resistance to compression, and is mainly used for multiple installations with the use of spacers.

Technical specifications
The construction of double wall – a smooth tube inside and a corrugated tube outside – provides the cable duct with considerable dynamic and static load resistance. The inner and outer walls of cable ducts are formed in a single manufacturing operation. Due to savings of material resulting from the double-wall design the tubes may be handled easily when reloaded or stored.
The cable duct system attains the value of resistance in pressure >450 N, and can be used in temperature range between -45°C and +60°C with unchanged shape of the cable duct.
Protection: IP 67 – with sealing rings.
The cable ducts are normally supplied in red colour; other colours are also available.
On one side, there is a coupling that allows the connection of ducts. This joint is sealed against dust and sand. It may be made water-proof using two sealing rings on the tubes to be connected.
Practical accessories comprising 45° and 90° elbows (bends), a plug and a set of spacers constitute an up-to-date system of protection of power and telecommunication cables that can also be used in other applications.

Guarantee of quality
KOPOFLEX and KOPODUR duct system is manufactured in compliance with standard ČSN EN 50 086-2-4 (modification A1), and has been tested and certified by a certification body no. 224 – Institute for Testing and Certification, a.s. in Zlín.

Storage
The cable ducts may be stored in the open air on solidified surface; however, they shall be protected from long term direct sunshine. Other products shall be stored in roofed dry sheds.

KOPOFLEX

KOPOFLEX	outside diameter (mm)	inside diameter (mm)	minimum bend radius (mm)	package (m / kg)	package dimensions (cm)	m / 72 m³
KF 09040	40	32	230	50 / 9,5	80 x 25	14060
KF 09050	50	41	350	50 / 13	100 x 30	8720
KF 09063	63	52	350	50 / 15,7	90 x 46	7900
KF 09075	75	61	350	50 / 18,7	120 x 40	4100
KF 09090	90	75	400	50 / 27	125 x 45	3400
KF 09110	110	94	400	50 / 34,5	120 x 70	2100
KF 09120	120	100	500	50 / 37,5	150 x 60	2000
KF 09125	125	108	500	50 / 39	150 x 70	2350
KF 09160	160	136	650	50 / 46	190 x 80	1170
KF 09175	175	150	700	50 / 64	200 x 65	1220

KOPODUR

KOPODUR	outside diameter (mm)	inside diameter (mm)	package (m / kg)	package dimensions (cm)	m / 72 m³
KD 09050	50	41	1170 / 290	82 x 66 x 600	14040
KD 09063	63	52	624 / 215	80 x 52 x 600	9970
KD 09075	75	61	978 / 365	104 x 88 x 600	6540
KD 09090	90	75	648 / 367	120 x 76 x 600	4530
KD 09110	110	94	462 / 325	112 x 95 x 600	3700
KD 09120	120	100	612 / 459	112 x 128 x 600	2440
KD 09125	125	108	288 / 207	112 x 71 x 600	2300
KD 09160	160	136	198 / 240	117 x 83 x 600	1380
KD 09175	175	150	270 / 346	108 x 126 x 600	1350
KD 09200	200	175	120 / 178	115 x 76 x 600	840

Accessories for corrugated pipes KOPOFLEX and KOPODUR

COUPLINGS
Slip-over couplings are the same for both types of pipes and are used to join the pipes.

SEALING RINGS
The same for both types of pipes and are used to seal the joint to prevent it against humidity and water.

CLOSING PLUGS
For blinding of backup lines and for temporary blinding of pipes when installing.

45° ELBOWS
Rigid elbows for joining pipes in 45° angle. Per order only.

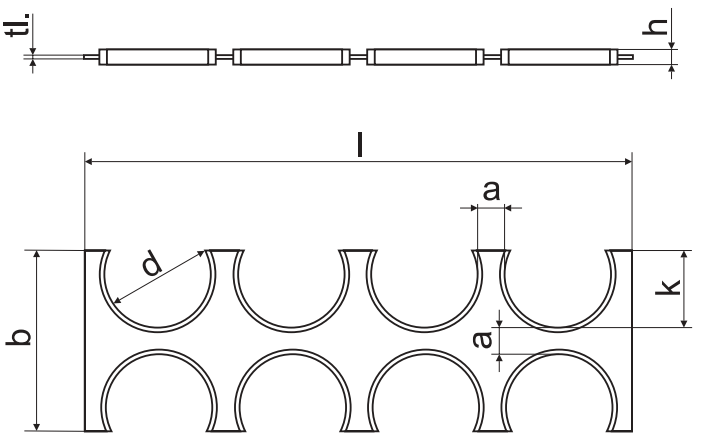
90° ELBOWS
Rigid elbows for joining pipes in 90° angle. Per order only.

DISTANCE SPACERS
For position fixation of several pipes in one excavation. Distance spacers are for fixation 8 pipes and spacer can be split for fixation 2, 4 and 6 pipes. Per order only.

Accessories for corrugated pipes KOPOFLEX and KOPODUR

outside diameter pipes	coupling	sealing ring	closing plug	elbow			distance spacer
				90°	45°	minimum bend radius	
40	02040	16040	17040				
50	02050	16050	17050	08050/90	08050/45	350	07050/8
63	02063	16063	17063	08063/90	08063/45	350	07063/8
75	02075	16075	17075	08075/90	08075/45	350	07075/8
90	02090	16090	17090	08090/90	08090/45	400	
110	02110	19110	17110	08110/90	08110/45	400	07110/8
120	02120	16120	17120	08120/90	08120/45	500	07120/8
125	02125	16125	17125	08125/90	08125/45	500	07125/8
160	02160	16160	17160	08160/90	08160/45	650	
175	02175	16175	17175	08175/90	08175/45	700	
200	02200	16200	17200	08200/90	08200/45	850	

The dimensions of distance spacers for corrugated cable ducts KOPOFLEX and KOPODUR



	distance	height	fixing width	fixing height	material thickness	total width	total width after opening		
	a	b	h	k	tl.	l (8x)	l (2x)	l (4x)	l (6x)
07050/8	30	97	12	34	2,5	328	80	160	240
07063/8	30	116	12	43	2,5	381	95	190	280
07075/8	25	125	12	50	2,5	408	105	208	305
07090/8	28	148	14	60	2,5	482	125	247	360
07110/8	30	190	15	80	3	568	142	284	426
07125/8	38	210	20	88	3	658	175	336	497
07160/8	60	270	25	107	5	885	225	450	665
07200/8	80	345	25	133	5	1135	287	575	847

ELEKTROTECHNICKÝ ZKUŠEBNÍ ÚSTAV

ELECTROTECHNICAL TESTING INSTITUTE - CZECH REPUBLIC
ELEKTROTECHNISCHE PRÜFANSTALT - TSCHECHISCHE REPUBLIK
INSTITUT ELECTROTECHNIQUE D'ESSAIS - REPUBLIQUE TCHÈQUE

Pod lisem 129, 171 02 Praha 8 - Troja

CERTIFICATE

No.: 1050988

Product: Conduit system KOPOFLEX, KOPODUR

Type: KD 09040 - KD 09200, KF 09040 - KF 09200

Rating: Diameter 40 to 200 mm

Ordering firm: KOPOS KOLÍN a. s.
Havlíčkova 432, 280 94 Kolín IV, Czech Republic

Manufacturer: KOPOS KOLÍN a. s.
Havlíčkova 432, 280 94 Kolín IV, Czech Republic

Trade mark:

The test results are stated in the test-report No.: 503041-01/01 of: 23.09.2005

A sample of the product was found to be in conformity with:
ČSN EN 50086-1:96+Z1:04
ČSN EN 50086-2-4:96+A1:01

The validity of the certificate is limited to: 30.9.2008

4.10.2005

Prague

Pavel Kudrna
Certification and Inspection Manager

Stamp

503041-01

KOPOS KOLÍN a.s.
Havlíčkova 432
CZ - 280 94 Kolín IV

7/C/ KD,KF/10-05

CONFORMITY DECLARATION

We, KOPOS KOLÍN a.s.
Havlíčkova 432
280 94 KOLÍN
Czech Republic

declare under our sole responsibility, that

the product: **Conduit system KOPOFLEX, KOPODUR**

type: **KD 09040 – KD 09200, KF 09040 – KF 09200**

manufacturer: KOPOS KOLÍN a.s. Havlíčkova 432, 280 94 Kolín IV, Czech republic

to which this declaration relates is in conformity with the following standards:

Czech Standards	Europe Standards
ČSN EN 50086-1:96+Z1:04	EN 50086-1:93
ČSN EN 50086-2-4:96+A1:01	EN 50086-2-4:94+A1:01

following the provision of Directive:

NV 17/2003 Sb. including amendments	73/023/EEC including amendments

Complementary information: Certificate EZÚ No. : **1050988, 2050057 of 4.10.2005**
Test Report ref. No .: **503041-01/01 of 23.9.2005**
issued by Elektrotechnický zkušební ústav, Pod Lisem 129, 171 02 Praha 71, Czech Republic

The last two digits of the year in which the CE marking was affixed: 05

KOPOS KOLÍN a.s.
ÚSEK ŘÍZENÍ SYSTÉMŮ JAKOSTI

Place of issue: Kolín, Czech Republic — Ing. Jana Dejmková

Date of issue: 4.10.2005 — Management representative for QMS

tel.: +420 321 730 111 e-mail: kopos@kopos.cz Bankovní spojení: č.ú.: 4102 – 151/0100 DIČ: CZ61672971
fax: +420 321 730 129 www.kopos.cz Komerční banka, a.s. IBAN: CZ1901000000000004102151 IČ: 61672971
Společnost je zapsaná v obchodním rejstříku vedaném Městským soudem v Praze, oddíl B, vložka 3689

HDPE SINGLE-WALL CABLE DUCTS
- for the protection of communication cables

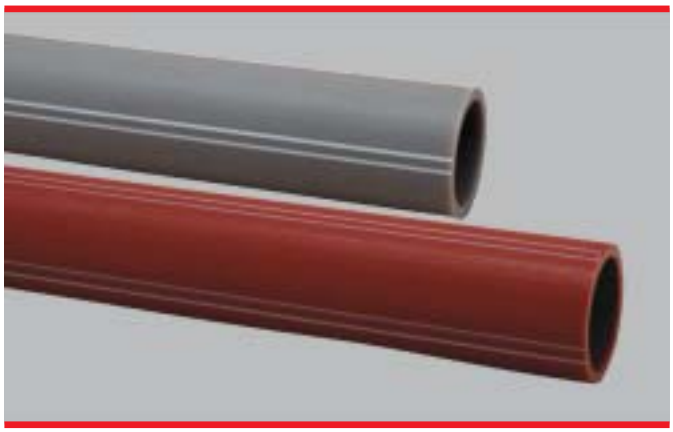
Single-wall tubes, such as optical fibre cable and coaxial cable ducts, are made of high-density polyethylene, and are adapted to machine blowing-in. The cable ducts are highly resistant to ambient conditions, meet the requirements for the resistance to mechanical stress, and are simple to install. In particular, they may be used in the sphere of telecommunications, when building communication, railway and road networks or airports.

Technical specifications

The cable ducts are made of HDPE with the application temperature range between -5°C and +50°C. Mechanical resistance is 750 N/5cm. If required, the inner wall of the cable duct may be lubricated with mineral oil. The colour, designation, number of distinguishing stripes, inner grooving and wall thickness of the cable duct may be modified according to the customer's option.
Cable ducts may be cut by common tools. They shall be connected by means of a special coupling ensuring sufficient strength and tightness.

input HDPE

- melt flow index	up to 0.40g / 10min.
- specific weight	940 - 960 kg / m3-
- tensile strength	18 - 32 MPa
- elongation at the breaking limit	min. 450%
- elongation at yield point	max. 7%
- E module of bending flexibility	800 - 900 MPa



Guarantee of quality

Single-wall cable ducts are manufactured in compliance with technical conditions of SPT Telecom, and have been tested and certified by Technical Centre of Telecommunications and Posts, Prague.

Storage

Cable ducts may be stored in the open air on solidified surface; the accessories shall be stored in roofed dry sheds.

HDPE	outside diameter (mm)	inside diameter (mm)	package - cable harnesses (m/kg)	package - drums (m/kg)
06032	32	27	100 / 26	1750 / 755
06040	40	35	100 / 39	1750 / 974
06050	50	44	100 / 48	1250 / 897

HDPE coupling

Protector coupling of optical cables is designed to join the pipes when tracing and guarantees its perfect connection.

HDPE coupling	outside diameter pipes (mm)	package (pcs)
05030	32	1
05040	40	1
05050	50	1

HDPE terminal

The terminal of optical cableprotector is designed to terminate the tracing.
The 05042 terminal - with valve.
In the pressure test of HDPE end piece with a valve, the pressure of 1.5 Mpa is applied for 2 hours. Optical cables are blown in under the pressure of 1 – 1.2 Mpa.

HDPE terminal	outside diameter pipes (mm)	package (pcs)
05031	32	1
05041	40	1
05042	40	1
05051	50	1

ELEKTROTECHNICKÝ ZKUŠEBNÍ ÚSTAV

ELECTROTECHNICAL TESTING INSTITUTE - CZECH REPUBLIC
ELEKTROTECHNISCHE PRÜFANSTALT - TSCHECHISCHE REPUBLIK
INSTITUT ELECTROTECHNIQUE D'ESSAIS - RÉPUBLIQUE TCHÈQUE

Pod Lisem 129, 171 02 Praha 8 - Troja

CERTIFICATE

No.: 1071039

Product: Cable protective conduit systems HDPE and accessories

Type: 06032, 06040, 06050, 06063

Rating: external diameter 32, 40, 50, 63 mm

Ordering firm: KOPOS KOLÍN a.s.
Havlíčkova 432, 280 94 Kolín IV, Czech Republic

Manufacturer: KOPOS KOLÍN a.s.
Havlíčkova 432, 280 94 Kolín IV, Czech Republic

Trade mark:

The test results are stated in the test-report No.: 703950-01/01 of: 29.11.2007

A sample of the product was found to be in conformity with:
ČSN EN 50086-1:1996+Z1:2004, ČSN EN 50086-2-4:1996+A1:2001 (EN 50086-2-4:1994+A1:2001)

The validity of the certificate is limited to: 31.12.2010

11.12.2007

Prague

Pavel Kudrna
Certification and Inspection Manager

Stamp

703950-01

KOPOS KOLÍN a.s.
Havlíčkova 432
CZ - 280 94 Kolín IV

7/CE/HDPE/12-07

CONFORMITY DECLARATION

We, KOPOS KOLÍN a.s.
Havlíčkova 432
280 94 KOLÍN
Czech Republic

declare under our sole responsibility, that

the product: **Cable protective conduit systems HDPE and accessories**

type: **06032, 06040, 06050, 06063**

manufacturer: KOPOS KOLÍN a.s. Havlíčkova 432, 280 94 Kolín IV, Czech republic

to which this declaration relates is in conformity with the following standards

Czech Standards	Europe Standards
ČSN EN 50086-1:1996	EN 50086-1:1993 including amendments,
ČSN EN 50086-2-4:1996 including amendments,	EN 50086-2-4:1994 including amendments,

following the provision of Directive:

NV 17/2003 Sb. including amendments	2006/95/EC - including amendments

Complementary information: Certificate EZÚ No. : **1071039, 2070055 of 11.12.2007**
Test Report ref. No .: **703950-01/01 of 29.11.2007**
issued by Elektrotechnický zkušební ústav, Pod Lisem 129, 171 02 Praha 71, Czech Republic

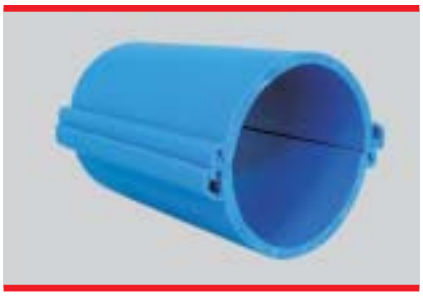
The last two digits of the year in which the CE marking was affixed: 07

Place of issue: Kolín, Czech Republic
Date of issue: 11.12.2007

Ing. Jana Dejmková
Management representative for QMS

tel.: +420 321 730 111 e-mail: kopos@kopos.cz Bankovní spojení: č.ú.: 4102 - 151/0100 DIČ: CZ61672971
fax: +420 321 730 129 www.kopos.cz Komerční banka, a.s. IBAN: CZ1901000000000004102151 IČ: 61672971
Společnost je zapsaná v obchodním rejstříku vedeném Městským soudem v Praze, oddíl B, vložka 3689

Divided cable ducts
KOPOHALF



The system of divided cable ducts has a wide range of applicability due to its use value. Primarily, it is suitable for the protection of cables installed underground in industrial and road constructions, railways, airports and power stations, and when power and communication cable routes are set out. The system may also be used when installing cables in concrete constructions, and for the protection of cables and other underground services in bridges. The ducts may also be used as auxiliary cable ducts in which cables may be inserted later. The duct system is also used in chemical industry for its high resistance to aggressive substances.
Also, the system of divided ducts may be used as extra protection of buried cables already laid.
The ducts may be cut by common tools.

Assembly

The cable ducts are supplied disassembled. Cables are laid in the lower part; the upper part is then pressed against the lower part until it snaps into place. During the installation, individual parts shall not be crossed. According to local practice, it is recommended to lay the lower part on a sand bed.

Technical specifications

Cable ducts are manufactured and tested in accordance with ČSN 50 086-2-4.
The ducts are included in flammability class C3 according to ČSN 73 0823.
The cable ducts are made of halogen-free polyethylene HDPE.
The system meets the requirements for the resistance to compression:

	Ø 110 (06110/2)	>450 N
	Ø 160 (06160/2)	>750 N.
The temperature limits:	storage, permanent installation	-45 °C to +75 °C
	assembly	-5 °C to +75 °C

Protection: IP 30

Storage

The cable ducts may be stored in the open air on solidified surface; however, they shall be protected from long term direct sunshine.

Connecting individual parts

No special coupling is required. The cable ducts are connected by covering the lower parts to be joined with an upper part in the length of approx. 30 cm.

type designation	outside diameter (mm)	inside diameter (mm)	wall thickness (mm)	length (m)	package (m)	package (kg)	package dimensions (mm)
06110/2	110	100	5	3	162	375	1070 x 1070 x 3000
06160/2	160	138	11	3	72	360	560 x 600 x 3000

ELEKTROTECHNICKÝ ZKUŠEBNÍ ÚSTAV

ELECTROTECHNICAL TESTING INSTITUTE - CZECH REPUBLIC
ELEKTROTECHNISCHE PRÜFANSTALT - TSCHECHISCHE REPUBLIK
INSTITUT ELECTROTECHNIQUE D'ESSAIS - RÉPUBLIQUE TCHÈQUE
ЭЛЕКТРОТЕХНИЧЕСКИЙ ИСПЫТАТЕЛЬНЫЙ ИНСТИТУТ - ЧЕШСКАЯ РЕСПУБЛИКА

Pod lisem 129, 171 02 Praha 8 - Troja

CERTIFICATE

No.: 1060833

Product: Divided cable ducts

Type: 06058/2, 06083/2, 060110/2, 060120/2, 060160/2

Rating: Diameter 58, 83, 110, 120, 160 mm

Ordering firm: KOPOS KOLÍN a. s.
Havlíčkova 432, 280 94 Kolín IV, Czech Republic

Manufacturer: KOPOS KOLÍN a.s.
Havlíčkova 432, 280 94 Kolín IV, Czech Republic

Trade mark:

The test results are stated in the test-report No.: 402719-01/01 of: 25.08.2005

A sample of the product was found to be in conformity with:
ČSN EN 50086-1:96+Amd. Z1:04
ČSN EN 50086-2-4:96+Amd. A1:01

The validity of the certificate is limited to: 31.7.2008

ELEKTROTECHNICKÝ ZKUŠEBNÍ ÚSTAV
POD LISEM 129, PRAHA - TROJA

29.8.2005

Prague

Pavel Kudrna
Certification and Inspection Manager

Stamp

402719-01

KOPOS KOLÍN a.s.

KOPOS KOLÍN a.s., Havlíčkova 432, CZ 280 94 Kolín IV.

T/C/ 06058/2 /08-05

CONFORMITY DECLARATION

We, KOPOS KOLÍN a.s.
Havlíčkova 432
280 94 KOLÍN
Czech Republic

declare under our sole responsibility, that

the product: **Divided cable ducts**

type: **06058/2, 06083/2, 06110/2, 06120/2, 06160/2**

manufacturer: KOPOS KOLÍN a.s. Havlíčkova 432, 280 94 Kolín IV, Czech republic

to which this declaration relates is in conformity with the following standards:

Czech Standards	Europe Standards
ČSN EN 50086-1:96+změna Z1:04	EN 50086-1:1993
ČSN EN 50086-2-4:96+změna A1:01	EN 50086-2-4:1994+A1:01

following the provision of Directive:

NV 17/2003 Sb. including amendments	73/023/EEC including amendments

Complementary information: Certificate EZÚ No. : **1050833, 2050053 of 29.8.2005**
Test Report ref. No .: **402719-01/01 of 25.8.2005**
issued by Elektrotechnický zkušební ústav, Pod Lisem 129, 171 02 Praha 71, Czech Republic

The last two digits of the year in which the CE marking was affixed: 05

KOPOS KOLÍN a.s.
ÚSEK ŘÍZENÍ SYSTÉMU JAKOSTI

Place of issue: Kolín, Czech Republic — Ing. Jana Dejmková

Date of issue: 29.8.2005 — Management representative for QMS

TELEFON: ústředna +420 321 730 111, ředitel +420 321 730 129, prodej +420 321 730 190, zásobování +420 321 730 220
FAX: ústředna +420 321 730 811, odbyt +420 321 730 890, zásobování +420 321 730 820
e-mail: kopos@kopos.cz, prodej@kopos.cz **web:** http://www.kopos.cz
DIČ: CZ61672971 **IČ:** 61672971
Bankovní spojení: KB CZ1901000000000004102151

Manufacturer: EGÚ Brno, a.s., Hudcova 487/76a, 612 48 Brno - Medlánky
Electrical Network Department

Client: KOPOS KOLÍN a.s., Havlíčkova 432, 280 94 Kolín

Manufacturer's contract number: 8 136
52 002

DOCUMENTS FOR DESIGNING

PLASTIC CABLE DUCTS

Prepared by: Ing. Petr Lehký
Helena Kváčová

Head of Department: Ing. Petr Lehký

Director: Ing. Zdeněk Špaček, CDc.

INTRODUCTION

Maximum load value determined in the document for the projection of plastic cable ducts is based on “Dimensioning Cable Ducts” methodology that has been prepared for the sphere of power engineering.

Following tables specify the total load values for individual types of surface loading, including the influence of dynamic effects and the load resulting from the soil weight.

The cases of exceeding the permissible load (for the assortment of cable ducts offered) are printed in bold and shaded.

The load capacity of cable ducts has been determined with regard to max. 5% deformation. According to the preliminary negotiations with ČD, cable ducts passing through a track bed may not be deformed by more than 3%. It implies that the load may not exceed the value of permissible stress at the deformation of 3 %.

The permissible load on cable ducts has been determined based on their ring stiffness set in accordance with ČSN EN ISO 9969.

Cable ducts KOPOS KOLÍN a.s.

type designation	outside diameter (mm)	inside diameter (mm)	wall thickness (mm)	ring stiffness (kPa)	permissible stress at	
					the deformation of 3% (kPa)	the deformation of 5% (kPa)
KF 09040	40	32	4	20,9	187,0	311,69
KF 09050	50	41	4,5	20	181,8	303,01
KF 09063	63	52	5,5	19,4	145,3	246,3
KF 09075	75	61	7	14,1	132,4	226,8
KF 09090	90	75	7,5	10,1	134	216
KF 09110	110	94	8	9,2	119,4	198,92
KF 09120	120	100	10	8,6	115,3	189,8
KF 09125	125	108	8,5	8,4	112,4	180,2
KF 09160	160	136	12	7,1	108,8	178,67
KF 09175	175	150	12,5	6,2	102,3	171,4
KD 09050	50	41	4,5	27,2	223,5	372,41
KD 09063	63	52	5,5	22,3	192,4	326,8
KD 09075	75	61	7	16,8	165,3	272,1
KD 09090	90	75	7,5	13,1	148,7	240,3
KD 09110	110	94	8	11,4	132,1	220,12
KD 09120	120	100	10	9,6	126,2	211,3
KD 09125	125	108	8,5	9,4	120,8	195,1
KD 09160	160	136	12	7,2	107,8	179,64
KD 09175	175	150	12,5	6,2	102,4	171,3
KD 09200	200	175	12,5	5,3	96,8	161,33
06040	40	33	3,5	59,2	680,8	408,5
06110/2	110	100	5	9,8	122,8	204,7
06160/2	160	138	11	15	152,9	254,8

The use of ducts depends on the value of permissible load and the method of installation. The cases, when ducts fail to meet the requirements or their use is on the limit of permissible load, are printed in white bold type and shaded in the table.

The data in the tables are results of theoretical calculation.

Corrugated double-wall cable duct KOPOFLEX

KF 09040

Ring stiffness in accordance with ČSN EN ISO 9969 S = 20,9 kPa

Permissible load at the deformation of 3%: Q = 187 kPa

Permissible load at the deformation of 5%: Q = 311,7 kPa

type of load	load by soil weight									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	8,55	11,40	14,25	17,10	19,95	22,80	25,65	28,50	31,35	
type of load	road load class A									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**857,6**	**489,6**	**315,3**	223,6	170,6	138,1	117,1	103,3	93,9	
type of load	road load class B									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**604,7**	**340,2**	221,2	159,1	123,5	102,0	88,6	79,9	74,4	
type of load	drive load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	297,4	170,4	113,8	84,9	68,8	59,6	54,3	51,4	50,1	
type of load	pavement and cycling track load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	63,4	42,0	33,7	30,5	29,8	30,3	31,6	33,3	35,4	
type of load	tram load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**365,6**	211,1	141,8	106,1	86,3	74,9	68,4	64,8	63,1	
type of load	single rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	137,0	105,4	85,7	90,2	98,3	107,9	118,4	129,6	141,4	153,7
type of load	double rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	137,4	106,2	87,4	93,0	101,9	111,8	122,4	133,5	145,1	157,2

XXXX Highlighting the cases, when ducts fail to meet the requirements or their use is on the limit of permissible load.

Corrugated double-wall cable duct KOPOFLEX

KF 09050

Ring stiffness in accordance with ČSN EN ISO 9969 S = 20 kPa

Permissible load at the deformation of 3%: Q = 181,8 kPa

Permissible load at the deformation of 5%: Q = 303,1 kPa

type of load	load by soil weight									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	8,55	11,40	14,25	17,10	19,95	22,80	25,65	28,50	31,35	
type of load	road load class A									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**857,6**	**489,6**	**315,3**	223,6	170,6	138,1	117,1	103,3	93,9	
type of load	road load class B									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**604,7**	**340,2**	221,2	159,1	123,5	102,0	88,6	79,9	74,4	
type of load	drive load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	297,4	170,4	113,8	84,9	68,8	59,6	54,3	51,4	50,1	
type of load	pavement and cycling track load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	63,4	42,0	33,7	30,5	29,8	30,3	31,6	33,3	35,4	
type of load	tram load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**365,6**	211,1	141,8	106,1	86,3	74,9	68,4	64,8	63,1	
type of load	single rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	137,0	105,4	85,7	90,2	98,3	107,9	118,4	129,6	141,4	153,7
type of load	double rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	137,4	106,2	87,4	93,0	101,9	111,8	122,4	133,5	145,1	157,2

XXXX Highlighting the cases, when ducts fail to meet the requirements or their use is on the limit of permissible load.

Corrugated double-wall cable duct KOPOFLEX

KF 09063

Ring stiffness in accordance with ČSN EN ISO 9969 S = 19,4 kPa

Permissible load at the deformation of 3%: Q = 145,3 kPa

Permissible load at the deformation of 5%: Q = 246,3 kPa

type of load	load by soil weight									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	8,55	11,40	14,25	17,10	19,95	22,80	25,65	28,50	31,35	
type of load	road load class A									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**857,6**	**489,6**	**315,3**	223,6	170,6	138,1	117,1	103,3	93,9	
type of load	road load class B									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**604,7**	**340,2**	221,2	159,1	123,5	102,0	88,6	79,9	74,4	
type of load	drive load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**297,4**	170,4	113,8	84,9	68,8	59,6	54,3	51,4	50,1	
type of load	pavement and cycling track load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	63,4	42,0	33,7	30,5	29,8	30,3	31,6	33,3	35,4	
type of load	tram load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**365,6**	211,1	141,8	106,1	86,3	74,9	68,4	64,8	63,1	
type of load	single rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	137,0	105,4	85,7	90,2	98,3	107,9	118,4	129,6	141,4	**153,7**
type of load	double rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	137,4	106,2	87,4	93,0	101,9	111,8	122,4	133,5	145,1	**157,2**

XXXX Highlighting the cases, when ducts fail to meet the requirements or their use is on the limit of permissible load.

Corrugated double-wall cable duct KOPOFLEX

KF 09075

Ring stiffness in accordance with ČSN EN ISO 9969 S = 14,1 kPa

Permissible load at the deformation of 3%: Q = 132,4 kPa

Permissible load at the deformation of 5%: Q = 226,8 kPa

type of load	load by soil weight									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	8,55	11,40	14,25	17,10	19,95	22,80	25,65	28,50	31,35	
type of load	road load class A									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**857,6**	**489,6**	**315,3**	223,6	170,6	138,1	117,1	103,3	93,9	
type of load	road load class B									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**604,7**	**340,2**	221,2	159,1	123,5	102,0	88,6	79,9	74,4	
type of load	drive load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**297,4**	170,4	113,8	84,9	68,8	59,6	54,3	51,4	50,1	
type of load	pavement and cycling track load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	63,4	42,0	33,7	30,5	29,8	30,3	31,6	33,3	35,4	
type of load	tram load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**365,6**	211,1	141,8	106,1	86,3	74,9	68,4	64,8	63,1	
type of load	single rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	**137,0**	105,4	85,7	90,2	98,3	107,9	118,4	129,6	**141,4**	**153,7**
type of load	double rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	**137,4**	106,2	87,4	93,0	101,9	111,8	122,4	**133,5**	**145,1**	**157,2**

XXXX Highlighting the cases, when ducts fail to meet the requirements or their use is on the limit of permissible load.

Corrugated double-wall cable duct KOPOFLEX

KF 09090

Ring stiffness in accordance with ČSN EN ISO 9969 S = 10,1 kPa

Permissible load at the deformation of 3%: Q = 134 kPa

Permissible load at the deformation of 5%: Q = 216 kPa

type of load	load by soil weight									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	8,55	11,40	14,25	17,10	19,95	22,80	25,65	28,50	31,35	
type of load	road load class A									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**857,6**	**489,6**	**315,3**	**223,6**	170,6	138,1	117,1	103,3	93,9	
type of load	road load class B									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**604,7**	**340,2**	**221,2**	159,1	123,5	102,0	88,6	79,9	74,4	
type of load	drive load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**297,4**	170,4	113,8	84,9	68,8	59,6	54,3	51,4	50,1	
type of load	pavement and cycling track load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	63,4	42,0	33,7	30,5	29,8	30,3	31,6	33,3	35,4	
type of load	tram load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**365,6**	211,1	141,8	106,1	86,3	74,9	68,4	64,8	63,1	
type of load	single rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	**137,0**	105,4	85,7	90,2	98,3	107,9	118,4	129,6	**141,4**	**153,7**
type of load	double rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	**137,4**	106,2	87,4	93,0	101,9	111,8	122,4	**133,5**	**145,1**	**157,2**

XXXX Highlighting the cases, when ducts fail to meet the requirements or their use is on the limit of permissible load.

Corrugated double-wall cable duct KOPOFLEX

KF 09110

Ring stiffness in accordance with ČSN EN ISO 9969 S = 9,2 kPa

Permissible load at the deformation of 3%: Q = 119,4 kPa

Permissible load at the deformation of 5%: Q = 198,9 kPa

type of load	load by soil weight									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	8,55	11,40	14,25	17,10	19,95	22,80	25,65	28,50	31,35	
type of load	road load class A									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**857,6**	**489,6**	**315,3**	**223,6**	170,6	138,1	117,1	103,3	93,9	
type of load	road load class B									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**604,7**	**340,2**	**221,2**	159,1	123,5	102,0	88,6	79,9	74,4	
type of load	drive load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**297,4**	170,4	113,8	84,9	68,8	59,6	54,3	51,4	50,1	
type of load	pavement and cycling track load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	63,4	42,0	33,7	30,5	29,8	30,3	31,6	33,3	35,4	
type of load	tram load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**365,6**	**211,1**	141,8	106,1	86,3	74,9	68,4	64,8	63,1	
type of load	single rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	**137,0**	105,4	85,7	90,2	98,3	107,9	118,4	129,6	141,4	153,7
type of load	double rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	**137,4**	106,2	87,4	93,0	101,9	111,8	122,4	133,5	145,1	157,2

XXXX Highlighting the cases, when ducts fail to meet the requirements or their use is on the limit of permissible load.

Corrugated double-wall cable duct KOPOFLEX

KF 09120

Ring stiffness in accordance with ČSN EN ISO 9969 S = 8,6 kPa

Permissible load at the deformation of 3%: Q = 115,3 kPa

Permissible load at the deformation of 5%: Q = 189,8 kPa

type of load	load by soil weight									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	8,55	11,40	14,25	17,10	19,95	22,80	25,65	28,50	31,35	
type of load	road load class A									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**857,6**	**489,6**	**315,3**	**223,6**	**170,6**	138,1	117,1	103,3	93,9	
type of load	road load class B									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**604,7**	**340,2**	**221,2**	159,1	123,5	102,0	88,6	79,9	74,4	
type of load	drive load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**297,4**	170,4	113,8	84,9	68,8	59,6	54,3	51,4	50,1	
type of load	pavement and cycling track load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	63,4	42,0	33,7	30,5	29,8	30,3	31,6	33,3	35,4	
type of load	tram load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**365,6**	**211,1**	141,8	106,1	86,3	74,9	68,4	64,8	63,1	
type of load	single rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	**137,0**	**105,4**	85,7	90,2	98,3	107,9	**118,4**	**129,6**	**141,4**	**153,7**
type of load	double rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	**137,4**	**106,2**	87,4	93,0	**101,9**	**111,8**	**122,4**	**133,5**	**145,1**	**157,2**

XXXX Highlighting the cases, when ducts fail to meet the requirements or their use is on the limit of permissible load.

Corrugated double-wall cable duct KOPOFLEX

KF 09125

Ring stiffness in accordance with ČSN EN ISO 9969 S = 8,4 kPa

Permissible load at the deformation of 3%: Q = 112,4 kPa

Permissible load at the deformation of 5%: Q = 180,2 kPa

type of load	load by soil weight									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	8,55	11,40	14,25	17,10	19,95	22,80	25,65	28,50	31,35	
type of load	road load class A									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**857,6**	**489,6**	**315,3**	**223,6**	170,6	138,1	117,1	103,3	93,9	
type of load	road load class B									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**604,7**	**340,2**	**221,2**	159,1	123,5	102,0	88,6	79,9	74,4	
type of load	drive load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**297,4**	170,4	113,8	84,9	68,8	59,6	54,3	51,4	50,1	
type of load	pavement and cycling track load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	63,4	42,0	33,7	30,5	29,8	30,3	31,6	33,3	35,4	
type of load	tram load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**365,6**	**211,1**	141,8	106,1	86,3	74,9	68,4	64,8	63,1	
type of load	single rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	**137,0**	105,4	85,7	90,2	98,3	107,9	**118,4**	**129,6**	**141,4**	**153,7**
type of load	double rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	**137,4**	106,2	87,4	93,0	101,9	111,8	**122,4**	**133,5**	**145,1**	**157,2**

XXXX Highlighting the cases, when ducts fail to meet the requirements or their use is on the limit of permissible load.

Corrugated double-wall cable duct KOPOFLEX

KF 09160

Ring stiffness in accordance with ČSN EN ISO 9969 S = 7,1 kPa

Permissible load at the deformation of 3%: Q = 108,8 kPa

Permissible load at the deformation of 5%: Q = 178,7 kPa

type of load	load by soil weight									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	8,55	11,40	14,25	17,10	19,95	22,80	25,65	28,50	31,35	
type of load	road load class A									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**857,6**	**489,6**	**315,3**	**223,6**	170,6	138,1	117,1	103,3	93,9	
type of load	road load class B									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**604,7**	**340,2**	**221,2**	159,1	123,5	102,0	88,6	79,9	74,4	
type of load	drive load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**297,4**	170,4	113,8	84,9	68,8	59,6	54,3	51,4	50,1	
type of load	pavement and cycling track load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	63,4	42,0	33,7	30,5	29,8	30,3	31,6	33,3	35,4	
type of load	tram load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**365,6**	**211,1**	141,8	106,1	86,3	74,9	68,4	64,8	63,1	
type of load	single rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	**137,0**	105,4	85,7	90,2	98,3	107,9	**118,4**	**129,6**	**141,4**	**153,7**
type of load	double rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	**137,4**	106,2	87,4	93,0	101,9	**111,8**	**122,4**	**133,5**	**145,1**	**157,2**

XXXX Highlighting the cases, when ducts fail to meet the requirements or their use is on the limit of permissible load.

Corrugated double-wall cable duct KOPOFLEX

KF 09175

Ring stiffness in accordance with ČSN EN ISO 9969 S = 6,2 kPa

Permissible load at the deformation of 3%: Q = 102,3 kPa

Permissible load at the deformation of 5%: Q = 171,4 kPa

type of load	load by soil weight									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	8,55	11,40	14,25	17,10	19,95	22,80	25,65	28,50	31,35	
type of load	road load class A									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**857,6**	**489,6**	**315,3**	**223,6**	170,6	138,1	117,1	103,3	93,9	
type of load	road load class B									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**604,7**	**340,2**	**221,2**	159,1	123,5	102,0	88,6	79,9	74,4	
type of load	drive load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**297,4**	170,4	113,8	84,9	68,8	59,6	54,3	51,4	50,1	
type of load	pavement and cycling track load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	63,4	42,0	33,7	30,5	29,8	30,3	31,6	33,3	35,4	
type of load	tram load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**365,6**	**211,1**	141,8	106,1	86,3	74,9	68,4	64,8	63,1	
type of load	single rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	**137,0**	**105,4**	85,7	90,2	98,3	**107,9**	**118,4**	**129,6**	**141,4**	**153,7**
type of load	double rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	**137,4**	**106,2**	87,4	93,0	101,9	**111,8**	**122,4**	**133,5**	**145,1**	**157,2**

XXXX Highlighting the cases, when ducts fail to meet the requirements or their use is on the limit of permissible load.

Corrugated double-wall cable duct KOPODUR

KD 09050

Ring stiffness in accordance with ČSN EN ISO 9969 S = 27,2 kPa

Permissible load at the deformation of 3%: Q = 223,5 kPa

Permissible load at the deformation of 5%: Q = 372,4 kPa

type of load	load by soil weight									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	8,55	11,40	14,25	17,10	19,95	22,80	25,65	28,50	31,35	
type of load	road load class A									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**857,6**	**489,6**	315,3	223,6	170,6	138,1	117,1	103,3	93,9	
type of load	road load class B									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**604,7**	340,2	221,2	159,1	123,5	102,0	88,6	79,9	74,4	
type of load	drive load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	297,4	170,4	113,8	84,9	68,8	59,6	54,3	51,4	50,1	
type of load	pavement and cycling track load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	63,4	42,0	33,7	30,5	29,8	30,3	31,6	33,3	35,4	
type of load	tram load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	365,6	211,1	141,8	106,1	86,3	74,9	68,4	64,8	63,1	
type of load	single rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	137,0	105,4	85,7	90,2	98,3	107,9	118,4	129,6	141,4	153,7
type of load	double rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	137,4	106,2	87,4	93,0	101,9	111,8	122,4	133,5	145,1	157,2

XXXX Highlighting the cases, when ducts fail to meet the requirements or their use is on the limit of permissible load.

Corrugated double-wall cable duct KOPODUR

KD 09063

Ring stiffness in accordance with ČSN EN ISO 9969 S = 22,3 kPa

Permissible load at the deformation of 3%: Q = 192,4 kPa

Permissible load at the deformation of 5%: Q = 326,8 kPa

type of load	load by soil weight									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	8,55	11,40	14,25	17,10	19,95	22,80	25,65	28,50	31,35	
type of load	road load class A									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**857,6**	**489,6**	315,3	223,6	170,6	138,1	117,1	103,3	93,9	
type of load	road load class B									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**604,7**	**340,2**	221,2	159,1	123,5	102,0	88,6	79,9	74,4	
type of load	drive load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	297,4	170,4	113,8	84,9	68,8	59,6	54,3	51,4	50,1	
type of load	pavement and cycling track load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	63,4	42,0	33,7	30,5	29,8	30,3	31,6	33,3	35,4	
type of load	tram load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	365,6	211,1	141,8	106,1	86,3	74,9	68,4	64,8	63,1	
type of load	single rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	137,0	105,4	85,7	90,2	98,3	107,9	118,4	129,6	141,4	153,7
type of load	double rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	137,4	106,2	87,4	93,0	101,9	111,8	122,4	133,5	145,1	157,2

XXXX Highlighting the cases, when ducts fail to meet the requirements or their use is on the limit of permissible load.

Corrugated double-wall cable duct KOPODUR

KD 09075

Ring stiffness in accordance with ČSN EN ISO 9969 S = 16,8 kPa

Permissible load at the deformation of 3%: Q = 165,3 kPa

Permissible load at the deformation of 5%: Q = 272,1 kPa

type of load	load by soil weight									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	8,55	11,40	14,25	17,10	19,95	22,80	25,65	28,50	31,35	
type of load	road load class A									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**857,6**	**489,6**	315,3	223,6	170,6	138,1	117,1	103,3	93,9	
type of load	road load class B									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**604,7**	**340,2**	221,2	159,1	123,5	102,0	88,6	79,9	74,4	
type of load	drive load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	297,4	170,4	113,8	84,9	68,8	59,6	54,3	51,4	50,1	
type of load	pavement and cycling track load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	63,4	42,0	33,7	30,5	29,8	30,3	31,6	33,3	35,4	
type of load	tram load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	365,6	211,1	141,8	106,1	86,3	74,9	68,4	64,8	63,1	
type of load	single rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	137,0	105,4	85,7	90,2	98,3	107,9	118,4	129,6	141,4	153,7
type of load	double rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	137,4	106,2	87,4	93,0	101,9	111,8	122,4	133,5	145,1	157,2

XXXX Highlighting the cases, when ducts fail to meet the requirements or their use is on the limit of permissible load.

Corrugated double-wall cable duct KOPODUR

KD 09090

Ring stiffness in accordance with ČSN EN ISO 9969 S = 13,1 kPa

Permissible load at the deformation of 3%: Q = 148,7 kPa

Permissible load at the deformation of 5%: Q = 240,3 kPa

type of load	load by soil weight									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	8,55	11,40	14,25	17,10	19,95	22,80	25,65	28,50	31,35	
type of load	road load class A									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**857,6**	**489,6**	**315,3**	223,6	170,6	138,1	117,1	103,3	93,9	
type of load	road load class B									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**604,7**	**340,2**	221,2	159,1	123,5	102,0	88,6	79,9	74,4	
type of load	drive load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	297,4	170,4	113,8	84,9	68,8	59,6	54,3	51,4	50,1	
type of load	pavement and cycling track load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	63,4	42,0	33,7	30,5	29,8	30,3	31,6	33,3	35,4	
type of load	tram load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	365,6	211,1	141,8	106,1	86,3	74,9	68,4	64,8	63,1	
type of load	single rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	137,0	105,4	85,7	90,2	98,3	107,9	118,4	129,6	141,4	**153,7**
type of load	double rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	137,4	106,2	87,4	93,0	101,9	111,8	122,4	133,5	145,1	**157,2**

XXXX Highlighting the cases, when ducts fail to meet the requirements or their use is on the limit of permissible load.

Corrugated double-wall cable duct KOPODUR

KD 09110

Ring stiffness in accordance with ČSN EN ISO 9969 S = 11,4 kPa

Permissible load at the deformation of 3%: Q = 132,1 kPa

Permissible load at the deformation of 5%: Q = 220,1 kPa

type of load	load by soil weight									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	8,55	11,40	14,25	17,10	19,95	22,80	25,65	28,50	31,35	
type of load	road load class A									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**857,6**	**489,6**	**315,3**	**223,6**	170,6	138,1	117,1	103,3	93,9	
type of load	road load class B									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**604,7**	**340,2**	**221,2**	159,1	123,5	102,0	88,6	79,9	74,4	
type of load	drive load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**297,4**	170,4	113,8	84,9	68,8	59,6	54,3	51,4	50,1	
type of load	pavement and cycling track load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	63,4	42,0	33,7	30,5	29,8	30,3	31,6	33,3	35,4	
type of load	tram load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**365,6**	211,1	141,8	106,1	86,3	74,9	68,4	64,8	63,1	
type of load	single rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	**137,0**	105,4	85,7	90,2	98,3	107,9	118,4	129,6	**141,4**	**153,7**
type of load	double rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	**137,4**	106,2	87,4	93,0	101,9	111,8	122,4	**133,5**	**145,1**	**157,2**

XXXX Highlighting the cases, when ducts fail to meet the requirements or their use is on the limit of permissible load.

Corrugated double-wall cable duct KOPODUR

KD 09120

Ring stiffness in accordance with ČSN EN ISO 9969 S = 9,6 kPa

Permissible load at the deformation of 3%: Q = 126,2 kPa

Permissible load at the deformation of 5%: Q = 211,3 kPa

type of load	load by soil weight									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	8,55	11,40	14,25	17,10	19,95	22,80	25,65	28,50	31,35	
type of load	road load class A									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**857,6**	**489,6**	**315,3**	**223,6**	170,6	138,1	117,1	103,3	93,9	
type of load	road load class B									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**604,7**	**340,2**	**221,2**	159,1	123,5	102,0	88,6	79,9	74,4	
type of load	drive load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**297,4**	170,4	113,8	84,9	68,8	59,6	54,3	51,4	50,1	
type of load	pavement and cycling track load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	63,4	42,0	33,7	30,5	29,8	30,3	31,6	33,3	35,4	
type of load	tram load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	365,6	211,1	141,8	106,1	86,3	74,9	68,4	64,8	63,1	
type of load	single rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	**137,0**	105,4	85,7	90,2	98,3	107,9	118,4	**129,6**	**141,4**	**153,7**
type of load	double rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	**137,4**	106,2	87,4	93,0	101,9	111,8	122,4	**133,5**	**145,1**	**157,2**

XXXX Highlighting the cases, when ducts fail to meet the requirements or their use is on the limit of permissible load.

Corrugated double-wall cable duct KOPODUR

KD 09125

Ring stiffness in accordance with ČSN EN ISO 9969	S = 9,4 kPa
Permissible load at the deformation of 3%:	Q = 120,8 kPa
Permissible load at the deformation of 5%:	Q = 195,1 kPa

type of load	load by soil weight									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	8,55	11,40	14,25	17,10	19,95	22,80	25,65	28,50	31,35	
type of load	road load class A									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**857,6**	**489,6**	**315,3**	**223,6**	170,6	138,1	117,1	103,3	93,9	
type of load	road load class B									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**604,7**	**340,2**	**221,2**	159,1	123,5	102,0	88,6	79,9	74,4	
type of load	drive load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**297,4**	170,4	113,8	84,9	68,8	59,6	54,3	51,4	50,1	
type of load	pavement and cycling track load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	63,4	42,0	33,7	30,5	29,8	30,3	31,6	33,3	35,4	
type of load	tram load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**365,6**	**211,1**	141,8	106,1	86,3	74,9	68,4	64,8	63,1	
type of load	single rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	**137,0**	105,4	85,7	90,2	98,3	107,9	118,4	**129,6**	**141,4**	**153,7**
type of load	double rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	**137,4**	106,2	87,4	93,0	101,9	111,8	**122,4**	**133,5**	**145,1**	**157,2**

XXXX Highlighting the cases, when ducts fail to meet the requirements or their use is on the limit of permissible load.

Corrugated double-wall cable duct KOPODUR

KD 09160

Ring stiffness in accordance with ČSN EN ISO 9969 S = 7,2 kPa

Permissible load at the deformation of 3%: Q = 107,8 kPa

Permissible load at the deformation of 5%: Q = 179,6 kPa

type of load	load by soil weight									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	8,55	11,40	14,25	17,10	19,95	22,80	25,65	28,50	31,35	
type of load	road load class A									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**857,6**	**489,6**	**315,3**	**223,6**	170,6	138,1	117,1	103,3	93,9	
type of load	road load class B									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**604,7**	**340,2**	**221,2**	159,1	123,5	102,0	88,6	79,9	74,4	
type of load	drive load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**297,4**	170,4	113,8	84,9	68,8	59,6	54,3	51,4	50,1	
type of load	pavement and cycling track load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	63,4	42,0	33,7	30,5	29,8	30,3	31,6	33,3	35,4	
type of load	tram load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**365,6**	**211,1**	141,8	106,1	86,3	74,9	68,4	64,8	63,1	
type of load	single rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	**137,0**	105,4	85,7	90,2	98,3	**107,9**	**118,4**	**129,6**	**141,4**	**153,7**
type of load	double rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	**137,4**	106,2	87,4	93,0	101,9	**111,8**	**122,4**	**133,5**	**145,1**	**157,2**

XXXX Highlighting the cases, when ducts fail to meet the requirements or their use is on the limit of permissible load.

Corrugated double-wall cable duct KOPODUR

KD 09175

Ring stiffness in accordance with ČSN EN ISO 9969	S = 6,2 kPa
Permissible load at the deformation of 3%:	Q = 102,4 kPa
Permissible load at the deformation of 5%:	Q = 171,3 kPa

type of load	load by soil weight									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	8,55	11,40	14,25	17,10	19,95	22,80	25,65	28,50	31,35	
type of load	road load class A									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**857,6**	**489,6**	**315,3**	**223,6**	170,6	138,1	117,1	103,3	93,9	
type of load	road load class B									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**604,7**	**340,2**	**221,2**	159,1	123,5	102,0	88,6	79,9	74,4	
type of load	drive load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**297,4**	170,4	113,8	84,9	68,8	59,6	54,3	51,4	50,1	
type of load	pavement and cycling track load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	63,4	42,0	33,7	30,5	29,8	30,3	31,6	33,3	35,4	
type of load	tram load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**365,6**	**211,1**	141,8	106,1	86,3	74,9	68,4	64,8	63,1	
type of load	single rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	**137,0**	**105,4**	85,7	90,2	98,3	**107,9**	**118,4**	**129,6**	**141,4**	**153,7**
type of load	double rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	**137,4**	**106,2**	87,4	93,0	101,9	**111,8**	**122,4**	**133,5**	**145,1**	**157,2**

XXXX Highlighting the cases, when ducts fail to meet the requirements or their use is on the limit of permissible load.

Corrugated double-wall cable duct KOPODUR

KD 09200

Ring stiffness in accordance with ČSN EN ISO 9969 S = 5,3 kPa

Permissible load at the deformation of 3%: Q = 96,8 kPa

Permissible load at the deformation of 5%: Q = 161,3 kPa

type of load	load by soil weight									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	8,55	11,40	14,25	17,10	19,95	22,80	25,65	28,50	31,35	
type of load	road load class A									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**857,6**	**489,6**	**315,3**	**223,6**	**170,6**	138,1	117,1	103,3	93,9	
type of load	road load class B									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**604,7**	**340,2**	**221,2**	159,1	123,5	102,0	88,6	79,9	74,4	
type of load	drive load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**297,4**	**170,4**	113,8	84,9	68,8	59,6	54,3	51,4	50,1	
type of load	pavement and cycling track load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	63,4	42,0	33,7	30,5	29,8	30,3	31,6	33,3	35,4	
type of load	tram load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**365,6**	**211,1**	141,8	106,1	86,3	74,9	68,4	64,8	63,1	
type of load	single rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	**137,0**	**105,4**	85,7	90,2	**98,3**	**107,9**	**118,4**	**129,6**	**141,4**	**153,7**
type of load	double rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	**137,4**	**106,2**	87,4	93,0	**101,9**	**111,8**	**122,4**	**133,5**	**145,1**	**157,2**

XXXX Highlighting the cases, when ducts fail to meet the requirements or their use is on the limit of permissible load.

HDPE communication cable duct

06040

Ring stiffness in accordance with ČSN EN ISO 9969 S = 59,2 kPa

Permissible load at the deformation of 3%: Q = 408,5 kPa

Permissible load at the deformation of 5%: Q = 680,8 kPa

type of load	load by soil weight									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	8,55	11,40	14,25	17,10	19,95	22,80	25,65	28,50	31,35	
type of load	road load class A									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**857,6**	489,6	315,3	223,6	170,6	138,1	117,1	103,3	93,9	
type of load	road load class B									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	604,7	340,2	221,2	159,1	123,5	102,0	88,6	79,9	74,4	
type of load	drive load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	297,4	170,4	113,8	84,9	68,8	59,6	54,3	51,4	50,1	
type of load	pavement and cycling track load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	63,4	42,0	33,7	30,5	29,8	30,3	31,6	33,3	35,4	
type of load	tram load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	365,6	211,1	141,8	106,1	86,3	74,9	68,4	64,8	63,1	
type of load	single rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	137,0	105,4	85,7	90,2	98,3	107,9	118,4	129,6	141,4	153,7
type of load	double rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	137,4	106,2	87,4	93,0	101,9	111,8	122,4	133,5	145,1	157,2

XXXX Highlighting the cases, when ducts fail to meet the requirements or their use is on the limit of permissible load.

Divided cable duct KOPOHALF

06110/2

Ring stiffness in accordance with ČSN EN ISO 9969 S = 9,8 kPa

Permissible load at the deformation of 3%: Q = 122,8 kPa

Permissible load at the deformation of 5%: Q = 204,7 kPa

type of load	load by soil weight									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	8,55	11,40	14,25	17,10	19,95	22,80	25,65	28,50	31,35	
type of load	road load class A									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**857,6**	**489,6**	**315,3**	**223,6**	170,6	138,1	117,1	103,3	93,9	
type of load	road load class B									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**604,7**	**340,2**	**221,2**	159,1	123,5	102,0	88,6	79,9	74,4	
type of load	drive load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**297,4**	170,4	113,8	84,9	68,8	59,6	54,3	51,4	50,1	
type of load	pavement and cycling track load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	63,4	42,0	33,7	30,5	29,8	30,3	31,6	33,3	35,4	
type of load	tram load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**365,6**	**211,1**	141,8	106,1	86,3	74,9	68,4	64,8	63,1	
type of load	single rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	**137,0**	105,4	85,7	90,2	98,3	107,9	118,4	**129,6**	**141,4**	**153,7**
type of load	double rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	**137,4**	106,2	87,4	93,0	101,9	111,8	122,4	**133,5**	**145,1**	**157,2**

XXXX Highlighting the cases, when ducts fail to meet the requirements or their use is on the limit of permissible load.

Divided cable duct KOPOHALF

06160/2

Ring stiffness in accordance with ČSN EN ISO 9969 S = 15 kPa

Permissible load at the deformation of 3%: Q = 152,9 kPa

Permissible load at the deformation of 5%: Q = 254,8 kPa

type of load	load by soil weight									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	8,55	11,40	14,25	17,10	19,95	22,80	25,65	28,50	31,35	
type of load	road load class A									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**857,6**	**489,6**	**315,3**	223,6	170,6	138,1	117,1	103,3	93,9	
type of load	road load class B									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**604,7**	**340,2**	221,2	159,1	123,5	102,0	88,6	79,9	74,4	
type of load	drive load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**297,4**	170,4	113,8	84,9	68,8	59,6	54,3	51,4	50,1	
type of load	pavement and cycling track load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	63,4	42,0	33,7	30,5	29,8	30,3	31,6	33,3	35,4	
type of load	tram load									
height of protection (m)	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,10	
total load (kPa)	**365,6**	211,1	141,8	106,1	86,3	74,9	68,4	64,8	63,1	
type of load	single rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	137,0	105,4	85,7	90,2	98,3	107,9	118,4	129,6	141,4	**153,7**
type of load	double rail load UIC 71 train									
height of protection (m)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
total load (kPa)	137,4	106,2	87,4	93,0	101,9	111,8	122,4	133,5	145,1	**157,2**

XXXX Highlighting the cases, when ducts fail to meet the requirements or their use is on the limit of permissible load.

KOPOS KOLÍN a.s.
Havlíčkova 432
CZ - 280 94 Kolín
tel.: +420 321 730 111
fax: +420 321 730 811
e-mail: kopos@kopos.cz
http://www.kopos.cz

KOPOS ELECTRO FZE
P.O.BOX 261 434
Jebel Ali Free Zone
United Arab Emirates
phone: +971 4 88 600 38
fax: +971 4 88 600 37
mobil: +971 50 550 88 23
e-mail: middle_east@kopos.cz
http://www.kopos.ae

04/08/1.2

www.kopos.com