



## Plastic conduits

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# GENERAL CLASSIFICATION OF PLASTIC CONDUITS ACCORDING TO THE STANDARD PN-EN 61386

First digit	Second digit	Third digit	Fourth digit
<b>Compressive strength</b>	<b>Resistance to the impact</b>	<b>The lowest allowed temperature</b>	<b>The highest allowed temperature</b>
1. very low 125 N	1. very low 0,5 J	1. + 5°C	1. + 60°C
2. low 320 N	2. low 1 J	2. - 5°C	2. + 90°C
3. average 750 N	3. average 2 J	3. -15°C	3. + 105°C
4. high 1250 N	4. high 6 J	4. - 25°C	4. + 120°C
5. very high 4000 N	5. very high 20,4 J	5. -45°C	5. + 150°C

## What product is halogen-free?

This is a product which does not contain in his chemical composition following elements: chlorine (Cl), bromine (Br), iodine(I), fluorine (F), astatine (As).

## Why halogen - free products?

Today, the essence of fire has changed fundamentally. The reason for this change is more recent and more complex terms of chemical materials, from which are built and from which are arranged housing. Now the fire smolder giving mainly caustic smoke, which consists of toxic and corrosive gases such as hydrogen chloride. They are dangerous to human beings, because even at low concentration invade into the respiratory system and prevent breathing. Invisible substance which can easily get into the places not covered by the fire causing serious poisoning. In conjunction with water or damp air, creates hydrochloric acid (HCL), which causes skin burns and corrosion and degradation of many materials, especially metals, causing damage to electronic equipment.

## Why halogen - free products manufactured from us?

RLHF and RGHF pipes are halogen-free flame retardant. They connect the properties of standard PVC-pipes flame retardant (V-0) and have additional advantage not emission the toxic and corrosive smoke during the fire. Both kind of pipes are made from raw material, which provides them with a wide range of temperatures:

- high mechanical strength,
- resistant for chemicals, atmospheric factors.
- 

## In conclusion RLHF and RGHF:

- not include halogen compounds
- are self-extinguishing
- flame retardant
- low smoke
- are low toxicity
- allow evacuation from places of fires, saving lives
- reduce the damage caused by fire (electronic equipment)
- no problems associated with disposal and environmental protection

## It is recommended to use halogen-free products in:

- places where it is difficult to evacuate people during the fire: underground communication, tunnels, ships, drilling platforms
- public places: hotels, hospitals, cinemas, museums, airports, schools

- places where is located electronic equipment

## HALOGEN-FREE PRODUCTS

### Accordance to the standards

All products are signed according to currently applicable standards.

Number of the standard	Title of the standard	RLHF	RGHF
PN-EN 61386	Conduit systems for cable management	+	+
PN-EN 61386-1	Part I - General Requirements	+	+
PN-EN 61386-21	Part II - Particular requirements for rigid conduit systems	+	+
PN-IEC/60754-1	Determination of the amount of hydrogen halides emitted from polymeric materials	+	
ZN-005/MARMAT/2004	Factory specification - System of electrical rigid conduits	+	

### Installation instructions for electrical rigid conduits

1. Conduit installation should take place when the temperature is higher than 10°C. In case that pipes were stocked below this temperature it is advised to leave them at the room temperature for about 10 hours.
2. After marking out the installation route, appropriate clamps (open or close) for the conduits should be attached to the surface using dowels. Recommended size of dowel Ø6 for pipe's diameters till Ø25 including and Ø10 for pipes with larger diameter. The distance between clamps maximum 40 cm.
3. The pipes should be cut into required length (standard unit 3m), having connected using compensating couplings - the length of bonding depends on the type of coupling.
4. The next step is to pull cables and wires through the pipe, install coupling, put pipe into the clamps. Follow similarly with the subsequent segments of conduits.

### Transportation and storage of electrical rigid conduits

1. Pipes should be transported and stored fl at at temperatures from +10°C till +40°C.
2. During transportation and storage should not be allowed to heat pipes under +40°C.
3. During transportation and storage the limit value of loading should not exceed 320 N.

## Rigid flame-resistant halogen-free plastic conduits flame-type RLHF – 2242

Rigid flame resistant halogen-free plastic conduits type RLHF according to the classification standards PN-EN 61 386 possess code 2242. The conduits meet the requirements of European Union Standards "Low Voltage Electrical Equipment" (directive no 2006/95/WE), possess sign CE. Rigid flame resistant halogen-free plastic conduits type RLHF are used in electrical installations laid on or under plaster.

Type	RLHF 16*	RLHF 20*	RLHF 28*	RLHF 37*	RLHF 47*
Outer diameter (mm)	16	20	28	37	47
Packaging in meters	60	60	60	30	30
Quantity pieces in packaging	20	20	20	10	10
Catalogue number	68135	68136	68172	68173	68174

\* dimensions under special order

Product's characteristic:

Type: RLHF

Material: Special plastic

Compressive strength: min 320 N

Impact resistance: 1J

Temperature range: transportation, installation: from +10°C; operation: from -25°C till +90°C

Color: white

## Closing clamps halogen-free type UZHF

Closing clamps halogen-free type UZHF for rigid conduits are used to fixing conduits to the stable surface. Main advantages of these clamps are:

- halogen-free material
- low temperatures resistance
- certainty of fitting
- easiness to install pipes

Type	UZHF 16*	UZHF 20*	UZHF 28*	UZHF 37*	UZHF 47*
Quantity pieces in packaging	100	100	100	50	50
Catalogue number	68330	68331	68333	68335	68337

\* dimensions under special order

Product's characteristic:

Type: UZHF

Material: Modified plastic

Temperature range: transportation, installation: from +10°C; operation: from -25°C till +90°C

Color: white

## Flexible couplings type ZCLHF for rigid conduits

Flexible halogen-free couplings ZCLHF are used for connecting the rigid flame-resistant halogen-free plastic conduit. Main advantages on the above-mentioned couplings are:

- possibility to connect pipes at various angles
- high compressive in a wide range of temperature
- flame – resistant

Type	ZCLHF 16*	ZCLHF 20*	ZCLHF 28*	ZCLHF 37*	ZCLHF 47*
Quantity pieces In packaging	100	100	100	75	60
Catalogue number	68024	68026	68029	68031	68033

\* dimensions under special order

Product's characteristic:

Type: ZCLHF

Material: Modified plastic

Compressive strength: min 320 N

Temperature range: transportation, installation: from +10°C; operation: from -25°C till +90°C

Color: white

## Corrugated flame-resistant halogen-free plastic conduit type RGHF – 2242

Corrugated flame resistant halogen-free plastic conduit type RGHF according to the classification standard PN-EN 61 386 possess code 2242. These pipes are used as Wiring protection in the installations. It is recommended to use them in the electrical installation under the plaster, in the plaster, as well as in the wood. This pipes possess sign CE.

Type	RGHF 16	RGHF 20	RGHF 25	RGHF 32	RGHF 40	RGHF 50
Outer diameter	16	20	25	32	40	50
Inner diameter	11	14	19	24,5	32	42
Quantity pieces In packaging	100	50	50	25	25	25
Catalogue number	68121	68122	68123	68124	68125	68126

Product's characteristic:

Type: RGHF

Material: Special plastic

Compressive strength: min 320 N

Impact resistance: 1J

Temperature range: transportation, installation: from +10°C; operation: from -25°C till +90°C

Color: black

# SYSTEM OF RIGID FLAME-RESISTANT PLASTIC CONDUITS FOR ELECTRICAL INSTALLATIONS

Rigid flame resistant plastic conduits are made of polyvinyl chloride (modified PVC), material which provides in a wide range of temperature: high compressive, chemical, atmospheric and solar radiation resistance. The conduits meet the requirements of European Union Standards "Low Voltage Electrical Equipment" (directive no 2006/95/WE) possess sign. Among rigid pipes we may distinguish types of the conduits:

- RLM - sockets rigid flame-resistant plastic conduits possess code 2221 according to the standard PN-EN 61386
- RL - rigid flame-resistant plastic conduits possess code 2221 according to the standard PN-EN 61386
- RS - rigid flame-resistant plastic conduits possess code 3321 according to the standard PN-EN 61386

Accessories:

- Flexible flame-resistant couplings
- Rigid flame-resistant couplings
- Open clamps
- Closing clamps
- Wiring boxes

## Accordance to the standards

All products are signed according to currently applicable standards.

Number of the standard	Title of the standard	RLm	RL	RS
PN-EN 61386	Conduit systems for cable management	+	+	+
PN-EN 61386-1:2005	Part I - General Requirements	+	+	+
PN-EN 61386-21:2005	Part II - Particular requirements for rigid conduit systems	+	+	+
ZN-005/MARMAT/2004	Factory specification - System of electrical rigid conduits	+	+	+

## Installation instructions for electrical rigid conduits

1. Conduit installation should take place when the temperature is higher than 10°C. In case that pipes were stocked below this temperature it is advised to leave them at the room temperature for about 10 hours.
2. After marking out the installation route, appropriate clamps (open or close) for the conduits should be attached to the surface using dowels. Recommended size of dowel Ø6 for pipe's diameters till Ø25 including and Ø10 for pipes with larger diameter. The distance between clamps maximum 40 cm.
3. The pipes should be cut into required length (standard unit 3m), having connected using compensating couplings - the length of bonding depends on the type of coupling.

- The next step is to pull cables and wires through the pipe, install coupling, put pipe into the clamps.

Follow similarly with the subsequent segments of conduits.

## Transportation and storage of electrical rigid conduits

- Pipes should be transported and stored fl at at temperatures from +10°C till +40°C.
- During transportation and storage should not be allowed to heat pipes under +40°C.
- During transportation and storage the limit value of loading should not exceed 320 N.

## Rigid flame - resistant plastic flame conduits type RLM – 2221

Sockets rigid flame-resistant plastic conduits type RLM according to the classification standard PN-EN 61 386 possess code 2221. Rigid flame-resistant plastic conduits type RLM are used in electrical installations laid on or under plaster.

Type	RLm 16	RLm 18	RLm 20	RLm 22	RLm 25*	RLm 28	RLm 32*	RLm 37	RLm 40*	RLm 47	RLm 50*
Outer diameter	16	18	20	22	25	28	32	37	40	47	50
Packaging in meters	60	60	60	60	60	60	60	30	30	30	30
Quantity pieces in	20	20	20	20	20	20	20	10	10	10	10
Catalogue number	68284	68285	68733	68286	68734	68287	68735	68288	68736	68289	68737

Product's characteristic:

Type: RLM

Material: Modified polyvinyl chloride

Compressive strength: min 320 N

Impact resistance: 1J

Temperature range: transportation, installation: from +10°C; operation: from -5°C till +60°C

Color: white RAL 9003

## Rigid flame-resistant plastic conduits type RL - 2221

Rigid flame - resistant plastic conduits type RL according to the classification standard PN-EN 61 386 possess code 2221. These pipes are used as wiring protection in the installations. It is recommended to use them in the electrical installations under the plaster, in the plaster, as well as in the wood.

Type	RL 16	RL 18	RL 20	RL 22	RL 25	RL 28	RL 32	RL 37	RL 40	RL 47	RL 50
Outer diameter (mm)	16	18	20	22	25	28	32	37	40	47	50
Packaging in meters	60	60	60	60	60	60	60	30	30	30	30
Quantity pieces in packaging	20	20	20	20	20	20	20	10	10	10	10
Catalogue number	68013	68014	68015	68016	68017	68018	68019	68020	68021	68022	68023

Product's characteristic:

Type: RL

Material: Modified polyvinyl chloride

Compressive strength: min 320 N

Impact resistance: 1J



Temperature range: transportation, installation: from +10°C; operation: from -5°C till +60°C  
 Color: white RAL 9003

## Rigid flame – resistant plastic conduits type RS – 3321

Rigid flame - resistant plastic conduits type RS according to the classification standard PN-EN 61 386 possess code 3321. These pipes are used as wiring protection in the installations. It is recommended to use them in the electrical installations under the plaster, in the plaster, as well as in the wood - where is required higher mechanical strength.

Type	RS 18	RS 20	RS 22	RS 28	RS 37	RS 47
Outer diameter	18,6	20	22	28	37	47
Packaging in meters	60	60	60	60	30	30
Quantity pieces in packaging	20	20	20	20	10	10
Catalogue number	68151	68175	68152	68153	68154	68155

Product's characteristic:

Type: RS; Material: Modified polyvinyl chloride

Compressive strength: min 750 N

Impact resistance: 2J

Temperature range: transportation, installation: from +10°C; operation: from -5°C till +60°C

Color: white RAL 9003

## Flexible coupling type ZCL for rigid conduits

Flexible couplings type ZCL are used for connecting the rigid flame - resistant plastic conduit.

Main advantages on the above - mentioned couplings are:

- possibility to connect pipes at various angles
- high compressive in a wide range of temperature
- flame – resistant

Type	ZCL 16	ZCL 18	ZCL 20	ZCL 22	ZCL 25	ZCL 28	ZCL 16	ZCL 16	ZCL 16	ZCL 16	ZCL 16
Quantity pieces in packaging	100	100	100	100	100	100	50	75	50	60	50
Catalogue number	68024	68025	68026	68027	68028	68029	68030	68031	68032	68033	68034

Product's characteristic:

Type: ZCL

Material: Modified polyvinyl chloride

Compressive strength: min 320 N

Temperature range: transportation, installation: from +10°C; operation: from -5°C till +60°C

Color: white RAL 9003

## Angle couplings type ZKL for rigid conduits

Angle couplings type ZKL are used for connecting the rigid flame - resistant plastic conduit.

Main advantages on the above - mentioned couplings are:

- possibility to connect conduits in angle 90°
- high compressive in a wide range of temperature
- flame – resistant

Type	ZKL 16	ZKL 18	ZKL 20	ZKL 22	ZKL 25	ZKL 28	ZKL 32	ZKL 37	ZKL 40	ZKL 47	ZKL 50
Quantity pieces in packaging	50	50	50	50	50	50	50	50	50	50	50
Catalogue number	68339	68340	68341	68342	68343	68344	68345	68346	68347	68348	68349

Product's characteristic:

Type: ZKL

Material: Modified polyvinyl chloride

Compressive strength: min 320 N

Temperature range: transportation, installation: from +10°C; operation: from -5°C till +60°C

Color: white RAL 9003

## Open clamps type U

Open clamps type U for rigid conduits are used to fixing conduits to the stable surface.

Main advantages of these clamps are:

- low temperatures resistance
- possibility of parallel connection clamps
- easiness to install pipes

Type	U 16	U 18	U 20	U 22	U 28
Quantity pieces in packaging	100	100	100	100	100
Catalogue number	68035	68036	68037	68038	68040

Product's characteristic:

Type: U

Material: Modified polypropylene

Temperature range: transportation, installation: from +10°C; operation: from -5°C till +60°C

Color: white RAL 9003

## Closing clamps type UZ

Closing clamps type UZ for rigid conduits are used to fixing conduits to the stable surface.

Main advantages of these clamps are:

- low temperature resistance
- possibility of parallel connection clamps
- a certainty of assembly
- easiness to install pipes

Type	UZ 16	UZ 18	UZ 20	UZ 22	UZ 25	UZ 28	UZ 32	UZ 37	UZ 40	UZ 47	UZ 50
Quantity pieces in packaging	100	100	100	100	100	100	50	50	50	50	50
Catalogue number	68041	68042	68043	68044	68045	680246	68047	68048	68049	68050	68051

Product's characteristic:

Type: UZ

Material: Modified polypropylene

Temperature range: transportation, installation: from +10°C; operation: from -5°C till +60°C  
Color: white RAL 9003

## Wiring boxes

Wiring boxes are complements to the system of rigid flame - resistant plastic conduits. They are used for wires connections in electrical installations.

Type	PK-2	PK-4	P-5	POH 37	POH 47
Dimension (mm) [ high x width x length]	58x100x100	53x130x130	32x80x80	60x150x150	60x150x150
Quantity of inputs	4	4	4	4	4
Input holes	OJ 16 - OJ 22	OJ 16 - OJ 22	OJ 16	OJ 37	OJ 47
Catalogue number	68269	68270	68271	68272	68273

Product's characteristic:

Material: Modified polypropylene

Temperature range: transportation, installation: from +10°C; operation: from -5°C till +60°C

Color: white RAL 9003

## Rigid flame – resistant plastic conduit type RL - 2221 red for alarm installations and fire alarm systems

Rigid flame - resistant plastic conduit type RL according to the classification standard PN-EN 61 386 possess code 2221. These pipes are used as wiring protection in the installations. It is recommended to use them in the electrical installations under the plaster, in the plaster, as well as in the wood.

Type	RL18
Outer diameter (mm)	18
Packaging in meters	60
Quantity pieces in packaging	20
Catalogue number	68014

Product's characteristic:

Type: RL; Material: Modified polyvinyl chloride

Compressive strength: min 320 N

Impact resistance: 1J

Temperature range: transportation, installation: from +10°C; operation: from -5°C till +60°C

Color: red

## SYSTEM OF CORRUGATED FLAME - RESISTANT PLASTIC CONDUITS

Corrugated flame - resistant plastic conduits are made of polyvinyl chloride (modified PVC), material which provide in a wide range of temperature: high compressive, chemical, atmospheric and solar radiation resistance.

The conduits meet the requirements of European Union Standards "Low Voltage Electrical Equipment" (directive no 2006/95/WE) possess sign . Among corrugated pipes we may distinguished types of the conduits:

- RG - corrugated flame-resistant plastic conduits possess code 2221 according to the standard PN-EN 61 386
- RGp - corrugated flame-resistant plastic conduits with wire inside possess code 2221 according to the standard PN-EN 61 386
- RGS - corrugated flame-resistant plastic conduits possess code 3321 according to the standard PN-EN 61 386
- RGSp - corrugated flame-resistant plastic conduits with wire inside possess code 3321 according to the standard PN-EN 61 386
- RGCp - corrugated flame-resistant plastic conduits with wire inside possess code 3434 according to the standard PN-EN 61 386
- RSF - corrugated flame - resistant plastic conduits reinforced by coil from rigid PVC

Fittings for conduits type RSF:

- Isolating bushing type PRSF

Insulating corrugated conduits are made of modified polypropylene. Thanks to the material they characterize with high tensile strength, high impact factor and temperature resistance. Among this pipes we may distinguished types:

- RK - insulating corrugated conduits

### Accordance to the standards

Number of the standard	Title of the standard	RG RGp	RGS RGSp	RGCp	RK
PN-EN 61386	Conduit systems for cable management	+	+	+	
PN-EN 61386-1	Part I - General Requirements	+	+	+	
PN-EN 61386-22:2005	Part II - Particular requirements for corrugated conduit system	+	+	+	

PN-IEC 60423/2000	Conduits for electrical installations - conduits diameters for installations, conduit threads and equipment					+
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## Transportation, installation and storage of electrical corrugated conduits

1. Pipes should be transported and stored fl at at temperatures from +10°C till +40°C.
2. During transportation and storage should not be allowed to heat pipes under +40°C.
3. During transportation and storage the limit value of loading should not exceed 320 N.
4. Conduit installation should take place when the temperature is higher than 10°C. In case that pipes were stocked below this temperature it is advised to leave them at the room temperature for about 10 hours.

## Corrugated flame- resistant plastic flame - conduits type RG - 2221

Corrugated flame - resistant plastic conduits type RG according to the classification standard PN-EN 61 386 possess code 2221. These pipes are used as wiring protection in the electrical installations. It is recommended to use them in the electrical installations under the plaster, in the plaster, as well as in the wood. These pipes possess sign CE.

Type	RG 16	RG 20	RG 25	RG 32	RG 40	RG50
Outer diameter	16	20	25	32	40	50
Inner diameter	11	14	19	24,5	32	42
Packaging in meters	100	50	50	25	25	25
Catalogue number	68052	68053	68054	68055	68056	68057

Product's characteristic:

Type: RG; Material: Modified polyvinyl chloride

Compressive strength: min 320 N

Impact resistance: 1J

Temperature range: transportation, installation: from +10°C; operation: from -5°C till +60°C

Color: grey RAL 7035

## Corrugated flame - resistant plastic conduits type RGp – 2221

Corrugated flame - resistant plastic conduits with wire inside type RGp according to the classification standard PN-EN 61 386 possess code 2221. These pipes are used as wiring protection in the electrical installations. Thanks to the wire inside the pipe, cable laying becomes faster and easier. These pipes possess sign CE.

Type	RGp 16	RGp 20	RGp 25	RGp 32	RGp 40	RGp 50
Outer diameter	16	20	25	32	40	50
Inner diameter	11	14	19	24,5	32	42
Packaging in meters	100	50	50	25	25	25
Catalogue number	68278	68279	68280	68281	68282	68283

Product's characteristic:

Type: RGp

Material: Modified polyvinyl chloride

Compressive strength: min 320 N

Impact resistance: 1J

Temperature range: transportation, installation: from +10°C; operation: from -5°C till +60°C

Color: grey RAL 7035

## Corrugated flame - resistant plastic conduits type RGS – 3321

Corrugated flame - resistant plastic conduits type RGS according to the classification standard PN-EN 61386 possess code 3321. These pipes are used as wiring protection in installations conducted in concrete floors and wherever the installation is exposed to mechanical damage. These pipes possess sign CE.

Type	RGS 16	RGS 20	RGS 25	RGS 32	RGS 40	RGS 50
Outer diameter	16	20	25	32	40	50
Inner diameter	11	14	19	24,5	32	42
Packaging in meters	100	50	50	25	25	25
Catalogue number	68166	68167	68168	68169	68170	68171

Product's characteristic:

Type: RGS

Material: Modified polyvinyl chloride

Compressive strength: min 750 N

Impact resistance: 2J

Temperature range: transportation, installation: from +10°C; operation: from -5°C till +60°C

Color: grey

## Corrugated flame - resistant plastic conduits flame type RGSp - 3321

Corrugated flame - resistant plastic conduits type RGSp according to the classification standard PN-EN 61386 possess code 3321. These pipes are used as wiring protection in installations which are exposed to mechanical damage. It is recommended to use them in the electrical installations under the plaster, in the plaster, as well as in the wood. These pipes possess sign CE

Type	RGSp 16	RGSp 20	RGSp 25	RGSp 32	RGSp 40	RGSp 50
Outer diameter	16	20	25	32	40	50
Inner diameter	11	14	19	24,5	32	42
Packaging in meters	100	50	50	25	25	25
Catalogue number	68295	68296	68297	68298	68299	68300

Product's characteristic:

Type: RGSp

Material: Modified polyvinyl chloride

Compressive strength: min 750 N

Impact resistance: 2J

Temperature range: transportation, installation: from +10°C; operation: from -5°C till +60°C

Color: grey

## Corrugated flame - resistant plastic conduits type RGCp – 3434

Corrugated flame - resistant plastic conduits type RGCp according to the classification standard PN-EN 61386 possess code 3434. These pipes are used as wiring protection in installations which are exposed to mechanical damage. It is recommended to use them in the electrical installations under the plaster, in the plaster, as well as in the wood. Corrugated flame – resistant plastic conduits type RGCp thanks to their own properties, are recommended to use in installations which are flooded concrete also vibrated. These pipes possess code CE.

Type	RGCp 16*	RGCp 20*	RGCp 25*	RGCp 32*	RGCp 40*	RGCp 50*
Outer diameter	16	20	25	32	40	50
Inner diameter	11	14	19	24,5	32	42
Packaging in meters	100	50	50	25	25	25
Catalogue number	68323	68324	68325	68326	68327	68328

Product's characteristic:

Type: RGCp

Material: Modified polyvinyl chloride

Compressive strength: min 750 N

Impact resistance: 6J

Temperature range: transportation, installation: from +10°C; operation: from -25°C till +120°C

Color: grey RAL 7035

## Corrugated conduits type RK

Corrugated conduits type RK are made from modified polypropylene. Thanks to the raw material they are made, they characterized high tensile strength, high factor to the impact strength and temperature resistance from -15°C till +80°C. Corrugated conduits type RK are used as wiring protection in the electrical installations.

Type	RK 16*	RK 20*	RK 25*	RK 32*	RK 40*	RK 50*
Outer diameter	16	20	25	32	40	50
Inner diameter	11	14	19	24,5	32	42
Packaging in meters	100	50	50	25	25	25
Catalogue number – natural color	68070	68071	68072	68073	68074	68075

<b>Catalogue number – red color</b>	68076	68077	68078	68079	68080	68081
<b>Catalogue number – blue color</b>	68064	68065	68066	68067	68068	68069

\* under special order

Product's characteristic:

Type: RK

Material: Modified polypropylene

Temperature range: transportation, installation: from +10°C; operation: from -15°C till +80°C

Color: natural, red, blue

## Corrugated flame – resistant plastic conduits reinforced by coil type RSF

Corrugated flame - resistant plastic conduits reinforced by coil made of rigid PCV. The advantage is smooth internal surface and very good resistance to the impact during guaranteed flexibility. Recommended for cable protection in machines that have moving components.

Type	<b>RSF 16</b>	<b>RSF 20</b>	<b>RSF 25</b>	<b>RSF 32</b>
<b>Inner diameter (mm)</b>	16	20	25	32
<b>Outer diameter (mm)</b>	20,7	24,7	30,6	38,0
<b>Packaging in meters</b>	30	30	30	30
<b>Catalogue number</b>	68351	68352	68353	68354

Product's characteristic:

Type: RSF

Material: Modified polyvinyl chloride

Compressive strength: min 320 N

Temperature range: transportation, installation: from +10°C; operation: from -5°C till +60°C

Color: grey

## Isolating bushing type PRSF

Isolating bushing type PRSF is used to connect corrugated flame - resistant plastic conduit reinforced by coil type RSF with construction elements.

Type	<b>PRSF 16</b>	<b>PRSF 20</b>	<b>PRSF 25</b>	<b>PRSF 32</b>
<b>Inner diameter (mm)</b>	16	20	25	32
<b>Quantity pieces in packaging</b>	1	1	1	1
<b>Catalogue number</b>	68356	68357	68358	68259



## SYSTEM OF FLAME - RESISTANT WALL TRUNKINGS

Wall trunkings type LS made of rigid PCV, are suitable for electrical, telecommunications installations and etc. to protect cables from mechanical damage. Construction of trunkings ensures fast and aesthetic installation, exchange and modernization. The spots of connection trunkings can be covered applying connecting equipment, using the joint covers, angular covers, flat bend, internal bends, external bends and end caps - all depends on needs. The LS system interacts with all kind of on-plaster equipment which is offered by polish manufacturers. The trunkings meet the requirements of European Union standards "Low Voltage Electrical Equipment" (directive no 2006/95/WE), possess sign CE. The trunkings comply with the applicable standard PN-EN 50 085-1.

Product's characteristic:

Type: LS

Material: Modified polyvinyl chloride

Compressive strength: min 320 N

Temperature range:

- transportation, installation: from +10°C

- operation: -5°C - +60°C

Color: white RAL 9003

### Installation instructions for wall trunkings

Wall trunkings „LS” characterize with high quality and aesthetic design which makes installation much more easy.

1. Trunking installation should take place when the temperature is higher than 10°C. In case that ducts were stocked below this temperature it is advised to leave them at the room temperature for about 10 hours.
2. After marking out the installation route ducts should be cut into required pieces (the standard length of a duct is 2m).
3. The 1 hole in the bottom part should be drilled no closer than 50 mm from the edge of the trunking, then drill the holes at approximately 400 mm along the axis of the base.
4. The bottom part of trunking should be connected to the wall with dowels - up to 60x40 mm ducts it is recommended to use Ø6 dowel, for the ducts with bigger diameter Ø10 dowel.

5. When it is possible to divide the duct into separate chambers you are able to use a partition wall.
6. The next step is to cut the top part of the duct for appropriate length considering installing electrical equipment and junctions of the trunking.
7. Place the cables inside and connect necessary electrical equipment.
8. If the duct is equipped in spacers, install them. Place the top part of the duct and install coupling and covering equipment.

## Transportation and storage of wall trunkings

1. The trunkings should be transported and stored fl at at temperatures till 60°C.
2. During transportation and storage should not be allowed to heat trunking under 60°C.
3. During transportation and storage the limit value of loading should not exceed 320 N.

## Wall trunkings LS

<b>WALL TRUNKINGS</b>	<b>15 x 10</b>	<b>17 x 15</b>	<b>20 x 12</b>	<b>25 x 15</b>	<b>35 x 15</b>
Size width x height [mm]	15x10	17x15	20x12	25x15	35x15
Quantity meters in packaging	120	64	70	96	32
Usable profile [mm <sup>2</sup> ]	90	150	140	230	340
Example no. of wires ftp / YDY3x2,5	2 / 0	3 / 1	4 / 1	6 / 1	9 / 2
Catalogue number	68329	68001	68002	68003	68004

<b>WALL TRUNKINGS</b>	<b>40 x 25</b>	<b>40 x 40</b>	<b>40 x 40 1/2 *</b>	<b>50 x 18</b>	<b>50 x 18 1/2 **</b>
Size width x height [mm]	40x25	40x40	40x40	50x18	50x18
Quantity meters in packaging	42	24	24	40	40
Usable profile [mm <sup>2</sup> ]	630	1060	1060	580	580
Example no. of wires ftp / YDY3x2,5	20 / 3	34 / 8	30 / 6	15 / 5	14 / 4
Catalogue number	68274	68005	68120	68006	68007

\* possibility to install baffle wall 1/2

\*\* with fixed symmetric baffle wall 1/2

<b>WALL TRUNKINGS</b>	<b>50 x 18 1/3 *</b>	<b>60 x 40 **</b>	<b>90 x 40 ***</b>	<b>90 x 60 ***</b>	<b>90 x 60 MS-45****</b>
Size width x height [mm]	50x18	60x40	90x40	90x60	90x60
Quantity meters in packaging	40	18	12	8	8
Usable profile [mm <sup>2</sup> ]	580	1680	2490	3710	3710
Example no. of wires ftp / YDY3x2,5	14 / 4	40 / 10	62 / 17	94 / 28	94 / 28
Catalogue number	68008	68009	68010	68011	68179

\* with fixed baffle wall 1/3

\*\* possibility to install baffle wall 1/2

\*\*\* with possibility to install separation duct/possibility to install till 3 baffle walls

\*\*\*\* possibility to install 1 baffle wall

<b>WALL TRUNKINGS</b>	<b>110 x 60 *</b>	<b>110 x 60 MS-45 *</b>	<b>130 x 60 **</b>	<b>130 x 60 MS-45 **</b>	<b>200 x 60 ***</b>
Size width x height [mm]	110x60	110x60	130x60	130x60	200x60
Quantity meters in packaging	6	6	6	6	6
Usable profile [mm <sup>2</sup> ]	3960	3960	5400	5400	7200

Example no. of wires ftp / YDY3x2,5	115 / 34	115 / 34	144 / 38	144 / 38	200 / 58
Catalogue number	68360	68013	68012	68277	68361

\* possibility to install 1 baffle wall

\*\* possibility to install till 2 baffle walls

\*\*\* possibility to install till 6 baffle walls

Type	Straight adapter	Flat bend	Internal bend	External bend	Adapter	Straight adapter for cover
LS 15 x 10	-	-	-	-	-	-
LS 17 x 15	ŁP 1715	NP 1715	NW 1715	NZ 1715	TL 1715	-
LS 20 x 12	ŁP 2012	NP 2012	NW 2012	NZ 2012	TL 2012	-
LS 25 x 15	ŁP 2515	NP 2515	NW 2515	NZ 2515	TL 2515	-
LS 35 x 15	ŁP 3515	NP 3515	NW 3515	NZ 3515	TL 3515	-
LS 40 x 25		NP 4025	NW 4025	NZ 4025	-	-
LS 40 x 40		NP 4040	NW 4040	NZ 4040	TL 4040	-
LS 40 x 40 1/2		NP 4040	NW 4040	NZ 4040	TL 4040	-
LS 50 x 18		NP 5018	NW 5018	NZ 5018	TL 5018	-
LS 50 x 18 1/2		NP 5018	NW 5018	NZ 5018	TL 5018	-
LS 50 x 18 1/3		NP 5018	NW 5018	NZ 5018	TL 5018	-
LS 60x 40	ŁP 6040	NP 6040	NW 6040	NZ 6040	-	-

<b>LS 90 x 40</b>	ŁP 9040	NP 9040 adjustable angle	NW 9040 adjustable angle	NZ 9040 adjustable angle	-	ŁPP 90
<b>LS 90 x 60</b>	ŁP 9060	NP 9060 adjustable angle	NW 9060 adjustable angle	NZ 9060 adjustable angle	-	ŁPP 90
<b>LS 90 x 60 MS-45</b>	ŁP 9060	NP 9060 adjustable angle	NW 9060 adjustable angle	NZ 9060 adjustable angle	-	ŁPP 90
<b>LS 110 x 60</b>	ŁP 11060	NP 11060	NW 11060	NZ 11060	-	-
<b>LS 110 x 60 MS-45</b>	ŁP 11060	NP 11060	NW 11060	NZ 11060	-	-
<b>LS 130 x 60</b>	ŁP 13060	NP 13060	NW 13060	NZ 13060	-	ŁPP 13060
<b>LS 130 x 60 MS-45</b>	ŁP 13060	NP 13060	NW 13060	NZ 13060	-	ŁPP 13060
<b>LS 200 x 60</b>	ŁP 20060	NP 20060	NW 20060	NZ 20060	-	-

Type	Baffle wall	Baffle wall to install modules	Bracket	End cap	Socket without lock	Socket with lock
<b>LS 15 x 10</b>	-	-	-	-	-	-
<b>LS 17 x 15</b>	-	-	-	ZL 1715	-	-
<b>LS 20 x 12</b>	-	-	-	ZL 2012	-	-
<b>LS 25 x 15</b>	-	-	-	ZL 2515	-	-
<b>LS 35 x 15</b>	-	-	-	ZL 3515	-	-
<b>LS 40 x 25</b>	-	-	-	ZL 4025	-	-
<b>LS 40 x 40</b>	-	-	-	ZL 4040	-	-
<b>LS 40 x 40 1/2</b>	P-40	-	-	ZL 4040	-	-
<b>LS 50 x 18</b>	-	-	-	ZL 5018	-	-
<b>LS 50 x 18 1/2</b>	-	-	-	ZL 5018	-	-
<b>LS 50 x 18 1/3</b>	-	-	-	ZL 5018	-	-
<b>LS 60x 40</b>	P-40	-	ROZ-60	ZL 6040	-	-

<b>LS 90 x 40</b>	P-40	-	ROZ-90	ZL 9040	-	-
<b>LS 90 x 60</b>	P-60	-	ROZ-90	ZL 9060	-	-
<b>LS 90 x 60 MS-45</b>	P-60	-	-	ZL 9060	GN-45	GN-B-45
<b>LS 110 x 60</b>	P11060	-	-	ZL 11060	-	-
<b>LS 110 x 60 MS-45</b>	P11060	-	-	ZL 11060	GN-45	GN-B-45
<b>LS 130 x 60</b>	P-60	P 13060	-	ZL 13060	-	-
<b>LS 130 x 60 MS-45</b>	P-60	P 13060	-	ZL 13060	GN-45	GN-B-45
<b>LS 200 x 60</b>	P20060	-	-	ZL 20060	-	-

## WARNING BANDS

### Warning band for power engineering industry

Warning bands used in power engineering are blue or red. Warning bands are produced according to the classification standard N-SEP 004. The blue ones are suited for marking electric networks with voltage till 1 kV, and the red ones inform about the network with voltage higher than 1 kV. To produce these products we use a high quality material, which causes good mechanical durability and aggressive soil conditions resistance. It is possible to have any lettering on the warning bands.

Type	20/0,09	30/0,09*	40/0,09*	20/0,30*	30/0,30*	40/0,30*	20/0,50*	30/0,50*	40/0,50*
Width [mm]	200	300	400	200	300	400	200	300	400
Packaging [mb]	100	100	100	100	100	100	100	100	100
Catalogue number - blue color	68082	68083	68084	68091	68092	68093	68159	68148	68160
Catalogue number - red color	68094	68095	68096	68103	68104	68105	68156	68157	68158

\* under special order

Product's characteristic:

Type: TO

Material: Modified polythene

Temperature range: from -20°C till +60°C;

Color: blue, red

Lettering: possibility to make any lettering

### Warning band and locating band for telecommunication

Warning bands and locating bands for telecommunication are orange. To produce these products we use a high quality material, which causes good mechanical durability and aggressive soil conditions resistance.

The steel core used in locating bands allows locating telecommunication lines in easy and unquestionable way. Warning and locating bands possess lettering:

ATTENTION TELECOMMUNICATION CABLE, ATTENTION OPTOTELECOMMUNICATION CABLE

Type	TO 10	TO 25	TOL 10	TOL 25	TOL 10	TOL 25
Lettering			Attention telecommunication wire		Attention light pipe wire	
Width [mm]	100	250	100	250	100	250
Color	orange					
Packaging [mb]	500	500	100	100	100	100
Catalogue number	68315	68316	68317	68318	68319	68320

Product's characteristic:

Type: TO, TOL

Material: Modified polythene

Temperature range: from -20°C till +60°C;

Color: orange

Lettering: possibility to make any lettering

## Warning band and locating band for water supply and sewage system

Warning bands and locating bands used for water supply and sewage system are blue or brown. To produce these products we use a high quality material, which causes good mechanical durability and aggressive soil conditions resistance. The steel core used in locating bands allows locating water supply in easy and unquestionable way.

It is possible to have any lettering for example: ATTENTION WATER SUPPLY.

Type	TO 20	TO 20	TOL 20	TOL 20
Width [mm]	200	200	200	200
Color	blue	brown	blue	brown
Packaging [mb]	100	100	100	100
Catalogue number	68082	68180	68118	

Product's characteristic:

Type: TO, TOL

Material: Modified polythene

Temperature range: from -20°C till +60°C

Color: blue, brown

Lettering: possibility to make any lettering

## Warning band and locating band for gas system

Warning bands and locating bands for gas system are yellow. To produce these products we use a high quality material, which causes good mechanical durability and aggressive soil conditions resistance. The steel core used in locating bands allows locating gas system in easy and unquestionable way. It is possible to have any lettering for example: ATTENTION GAS SYSTEM.

Type	TO 20	TOL 20
Width [mm]	200	200
Color	yellow	yellow
Packaging [mb]	100	10
Catalogue number	68107	68181

Product's characteristic:

Type: TO, TOL

Material: Modified polythene

Temperature range: from -20°C till +60°C;

Color: yellow

Lettering: possibility to make any lettering

### Marking band "Dangerous area"

To produce these products we use a high quality material, which causes good mechanical durability and resistance to the external factors. White and red maring band is suitable for marking dangerous places such as deep trenches or earthworks. Moreover there in possibility to make the marking band in other colors for example yellow - black, blue - white, etc.np.

Type	"Dangerous area"
Width [mm]	80
Color	white and red
Packaging [mb]	100
Catalogue number	68127

Product's characteristic:

Type: TO

Material: Modified polythenen

Temperature range: from -20°C till +60°C

Color: white and red, possibility to make other colors

Lettering: possibility to make any lettering

It is possible to have any lettering on the warning bands for example the name of the company, etc.