

Plastic Conduits **for Electrical Installation**



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— innovative conduit systems for advanced and efficient applications.

EVOPIPES offers innovative products for electrical installation, cable protection, gravity sewer system, as well as water and gas conduits and fittings for infrastructure system construction.

EVOPIPES products are designed for safe electrical installation systems and aimed at increasing customer efficiency and decreasing the total costs of construction work.



EVOPIPES SMART product line is an innovative solution in the protection of electrical installation which ensures a higher degree of safety of people in case of fire and offers an essential saving of resources to electrical installation companies during the installation work.



EVOEL SMART corrugated halogen-free conduits for electrical installation

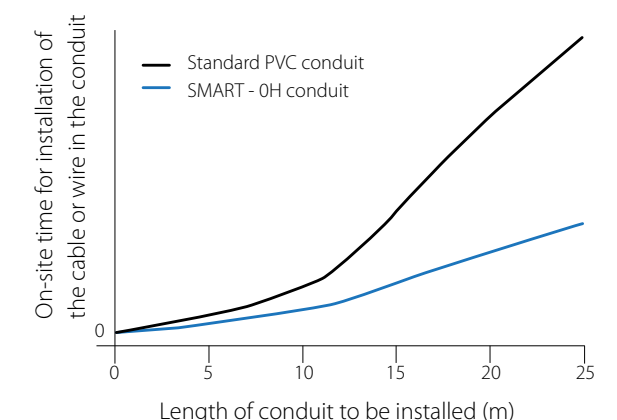
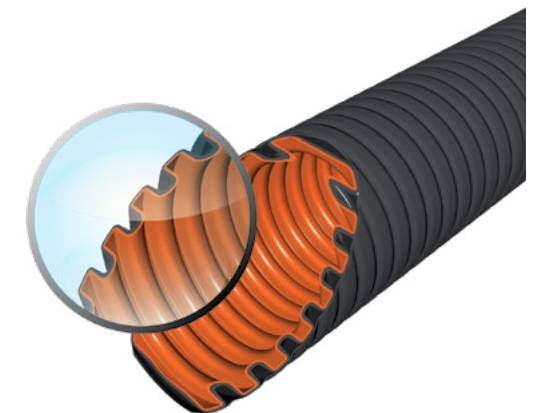


SMART is an Evopipes label for multiple-layer halogen-free conduits. These conduits consist of 2 or 3 layers which supplement each other to ensure conduit properties which satisfy the highest demands. SMART conduits are made of a special, halogen-free material.

SmArT

SMART conduits have a co-extruded inner gliding layer made of a special material with very high gliding properties.

This layer considerably reduces friction between the cable and the inner surface of the conduit, allowing to pull the cable for larger distances. Cable-pulling is thereby more efficient, and the time necessary for the installation and the costs of labour are decreased. An additional benefit is decreased costs of transportation, construction technology and tool rental, administration, and on-site time.

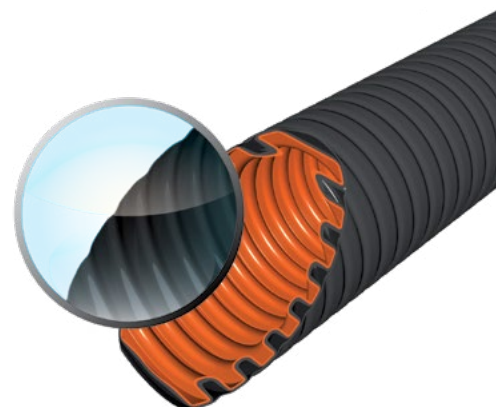




EVOEL SMART corrugated halogen-free conduits for electrical installation

SmArT

The flexible outer sheath provides extra protection to conduits installed in concrete or subject to intensive UV rays.



SMART conduits are halogen-free. During combustion, they create almost no smoke. For this reason, they are extensively used in poorly ventilated places, in places with a high concentration of people, limited number of escape routes, and areas where protection of sensitive and valuable hardware needs to be guaranteed. SMART conduits are designed for installation in public buildings: schools, kindergartens, hospitals, hotels, theatres, cinemas, museums, stadiums, arenas, shopping-centres, airports, railway terminals, and office buildings. Due to the fire-safety requirements for protection against smoke, halogen-free conduits are also recommended for use in multi-apartment buildings.

HAZARDS OF MATERIALS CONTAINING HALOGENS

Halogens are five non-metallic elements of Group 7 in the Periodic System. The term "halogen" means "creating salts", and elements which contain halogens are "salts". Halogens are: fluorine, chlorine, bromine, iodine, astatine.

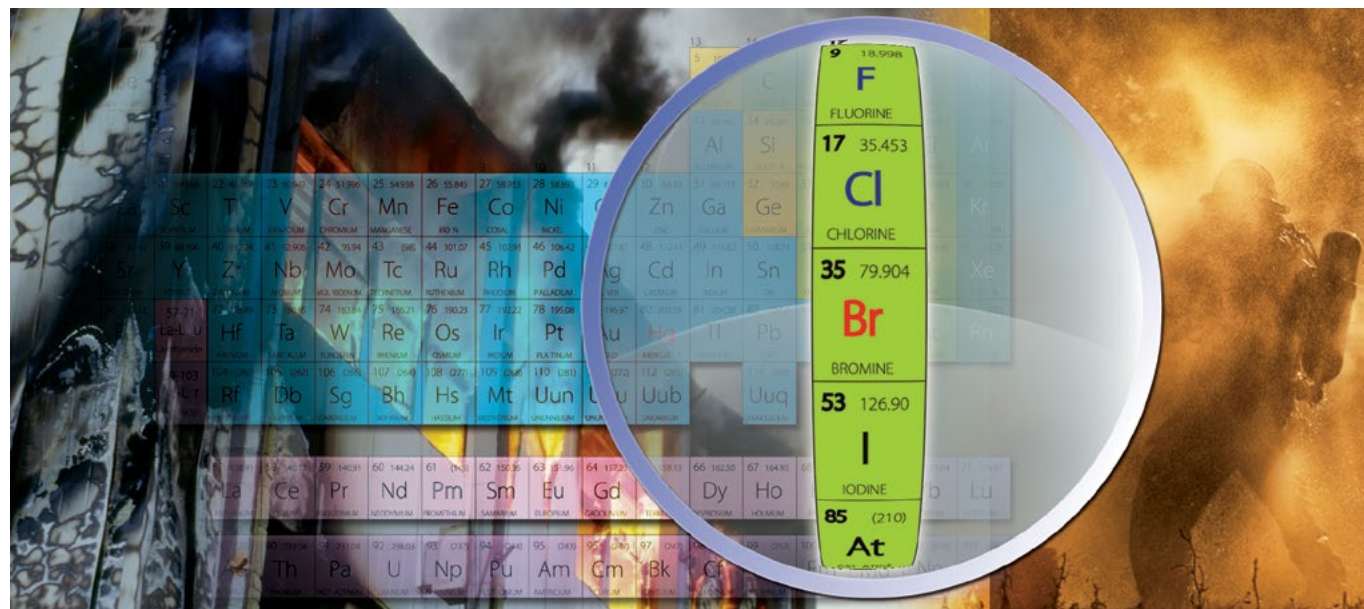
During fire, materials which contain halogens discharge hydrogen chloride, a colourless and corrosive gas. In contact with water, it creates hydrochloric acid, a corrosive which presents serious hazards to human eyes, respiratory system, and internal organs.

When inhaled, hydrogen chloride causes spasms and suffocation.

The bearing structures of the building are also affected – if corrosion reaches the reinforcement of the concrete, the structures lose their strength and are no longer able to withstand the designed load.

PVC smoke causes corrosion in the microchips of the electrical system, resulting in permanent damage to some data and telecommunication control centres.

The smoke of burning PVC is very thick and considerably reduces visibility. Thereby, finding escape routes is difficult.



EVOEL SMART PRE-WIRED corrugated halogen-free conduits for electrical installation

SMART PRE-WIRED are conduits with pre wired power or telecommunication cables or wires. The installation of the conduits is much quicker and simpler because cables are already pre wired at the factory and do not need to be pulled on-site. This reduces the total costs of installation. Due to the halogen-free material, SMART PRE-WIRED are suitable for installation in public buildings: schools, kindergartens, hospitals, hotels, theatres, cinemas, museums, stadiums, arenas, shopping-centres, airports, railway terminals, office buildings. Due to the fire-safety requirements for protection against smoke, halogen-free conduits are also recommended for use in multi-apartment buildings.

The SMART conduits are manufactured in compliance with standards EN 61386-22; EN 50267-2-2; EN 61034-2; 60332-1-2, and EN 60332-1-3.

Advantages:

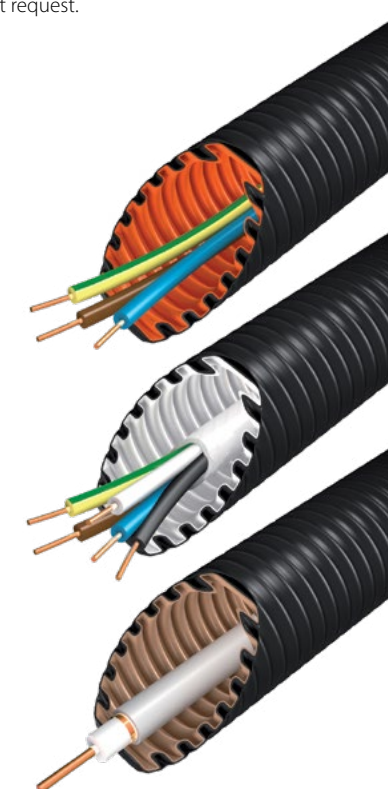
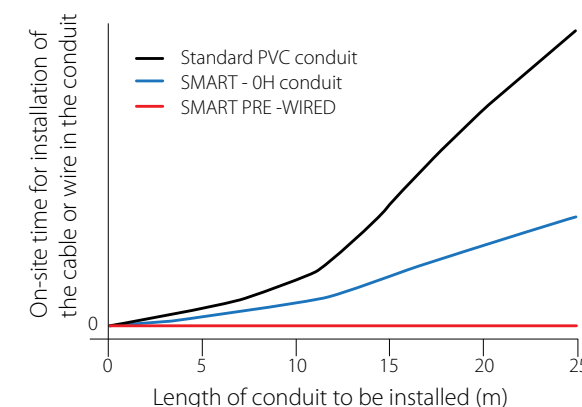
- Time saving (no pulling of cables into conduits required)
- Cost saving (less man-hours required for the work)
- Halogen-free material for conduits and cables
- The gliding inner layer allows quick and easy addition of wires or cables also after installation
- Due to better heat exchange, more load can be applied to the wires

Technical information:

- Wires: 3x1.5mm²; 4x1.5mm²; 3x2.5mm²; 5x1.5mm²; 5x2.5 mm², etc.
- Cables: 3x1.5mm²; 3x2.5mm²; 5x1.5mm²; 5x2.5 mm²; telecommunication cables
- Easy identification of wires due to the colour coding according to the European standard
- Temperature resistance of the conduit: from -25°C to +105°C
- Available sizes: 16, 20, 25, 32, 40, 50 mm
- Available in rolls of 100 m and 50 m, depending on the diameter of the conduit

* Cable and wire specification available on request.

** Lengths of 500-3000 m (depending on the diameter of the conduit) on wooden reels can be produced at request.



EVOEL SMART PRE-WIRED corrugated halogen-free conduits for electrical installation

Halogen-free corrugated conduits

Product types

FL-0H-SMART

Type of conduit	Recommended application	Type	DN16	DN20	DN25	DN32
FL-0H-SMART base layer + gliding layer	- In hollow walls - Under plastering - In suspended ceilings	Wires	2;3x1,5	3x1,5	3x2,5	3x2,5
			3x2,5	4x1,5	3x4	5x2,5
			4;5x1,5	5x1,5	5x2,5	
			4x2,5	7x1,5		
		Cables	3x1,5	3x1,5	3x2,5	3x4
			2x1,5	5x1,5	5x2,5	7x2,5
		Communications	On request			

FM-0H-SMART

Type of conduit	Recommended application	Type	DN16	DN20	DN25	DN32
FM-0H-SMART base layer + gliding layer	- Installation on plastering - In floors - In dry concrete - In keramzite concrete	Wires	2;3x1,5	3x1,5	3x2,5	3x2,5
			3x2,5	4x1,5	3x4	5x2,5
			4;5x1,5	5x1,5	5x2,5	
			4x2,5	7x1,5		
		Cables	3x1,5	3x1,5	3x2,5	3x4
			2x1,5	5x1,5	5x2,5	7x2,5
		Communications	On request			

FMs-0H-SMART

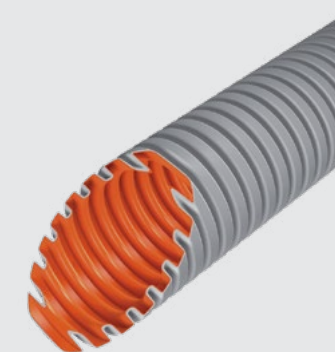
Type of conduit	Recommended application	Type	DN16	DN20	DN25	DN32
FMs-0H-SMART base layer + gliding layer + sheath	- In all types of concrete	Wires	2;3x1,5	3x1,5	3x2,5	3x2,5
			3x2,5	4x1,5	3x4	5x2,5
			4;5x1,5	5x1,5	5x2,5	
			4x2,5	7x1,5		
		Cables	3x1,5	3x1,5	3x2,5	3x4
			2x1,5	5x1,5	5x2,5	7x2,5
		Communications	On request			

FHs-UV-0H-SMART

Type of conduit	Recommended application	Type	DN16	DN20	DN25	DN32
FHs-UV-0H-SMART base layer + gliding layer + sheath	- Outside, in direct UV rays	Wires	2;3x1,5	3x1,5	3x2,5	3x2,5
			3x2,5	4x1,5	3x4	5x2,5
			4;5x1,5	5x1,5	5x2,5	
			4x2,5	7x1,5		
		Cables	3x1,5	3x1,5	3x2,5	3x4
			2x1,5	5x1,5	5x2,5	7x2,5
		Communications	On request			

*At request it is possible to produce conduits (from DN16-DN50) with any client indicated cables or wires (up to 4mm²).

* Wire and cable technical specification is available at request.



Compression strength:
320 N/5cm

EN 61386-22

EN 50267-2-2

EN 61034-2

Classification: 22432

EVOEL FL-0H-SMART low compression strength corrugated halogen-free conduits

Classification: 22432

A flexible, halogen-free electrical installation conduit made of a special light grey (RAL 7035) plastic material, with an orange inner gliding layer.

The conduit features a low mechanical resistance, a high thermal resistance, and a high flexibility at constant cross-section parameters. The special structure of the inner surface of the conduit with outstanding gliding properties allows to considerably extend the cablepulling distances and reduce the length of installation work.

Physical properties:

Material: a special plastic, low compression strength, low impact strength, temperatureresistance from -25°C to +105°C, self-extinguishing, halogen-free, corrosion-resistant.

Application area:

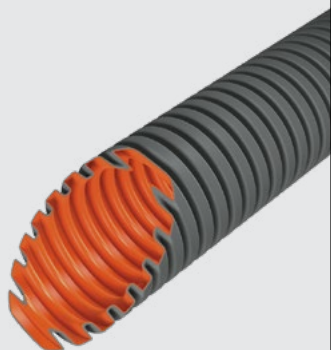
Due to the use of the halogen-free, thermally resistant material, the conduits are suitable for simple concealed installation as well as for installation in hollow walls, partitions, and suspended ceilings in public buildings: schools, kindergartens, hospitals, hotels, theatres, cinemas, museums, stadiums, arenas, shopping-centres, airports, railway terminals, and office buildings

* Available with a metal wire for pulling of cables.

	Code	16	20	25	32	40	50
Outer Ø [mm]		16.0	20.0	25.0	32.0	40.0	50.0
Inner Ø [mm]		10.1	14.4	19.1	24.6	31.5	40.2
Roll [m]		100	50	50	50	25	25
On palette [m]		3800	2100	1500	800	500	400
Bend radius ≥ [mm]		60	80	100	130	170	220
Colour: light grey	11111...	...016100LTGY	...02050LTGY	...02550LTGY	...03250LTGY	...04025LTGY	...05025LTGY



Halogen-free corrugated conduits



EVOEL FM-0H-SMART medium compression strength corrugated halogen-free conduits

Classification: 33432

A flexible, reinforced, halogen-free electrical installation conduit made of a special grey (RAL 7037) plastic material, with an orange inner gliding layer. The conduit features a medium mechanical resistance, a high thermal resistance, and a very high flexibility at constant cross-section parameters. The special structure of the inner surface of the conduit with outstanding gliding properties allows to considerably extend the cable-pulling distances and reduce the length of installation work.

Physical properties:

Material: a special plastic, medium compression strength, medium impact strength, temperature-resistance from - 25°C to +105°C, self-extinguishing, halogen-free, corrosionresistant.

Application area:

Due to the use of the halogen-free, thermally resistant material, the conduits are suitable for simple concealed installation as well as for installation in hollow walls, partitions, and suspended ceilings in public buildings: schools, kindergartens, hospitals, hotels, theatres, cinemas, museums, stadiums, arenas, shopping-centres, airports, railway terminals, and office buildings.

* Available with a metal wire for pulling of cables.

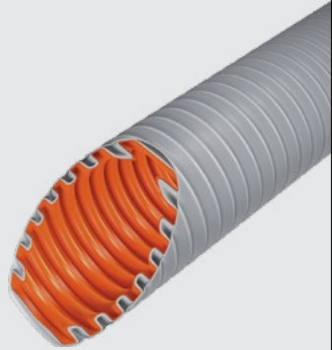
	Code	16	20	25	32	40	50
Outer Ø [mm]		16.0	20.0	25.0	32.0	40.0	50.0
Inner Ø [mm]		11.4	14.2	18.4	23.9	30.7	39.4
Roll [m]		100	50	50	50	25	25
On palette [m]		3800	2100	1500	800	500	400
Bend radius ≥ [mm]		70	90	110	130	170	220
Colour: grey	11112...	...016100GY	...02050GY	...02550GY	...03250GY	...04025GY	...05025GY

Compression strength:
750 N/5cm

EN 61386-22
EN 50267-2-2
EN 61034-2
Classification: 33432



Halogen-free corrugated conduits



EVOEL FMs-0H-SMART sheathed medium compression strength corrugated halogen-free conduits

Classification: 33432

A flexible conduit made of a special, halogen-free material, ideally suitable for installation in concrete. The conduit has a sheath made of a plasticised material and therefore features a medium impact strength and water resistance. The special structure of the inner surface of the conduit with outstanding gliding properties allows to considerably extend the cablepulling distances and reduce the length of installation work. The colour of the cable sheath is light grey (RAL 7035) with an orange inner gliding layer.

Physical properties:

Material: a special plastic, medium compression strength, medium impact strength, temperature-resistance from - 25°C to +105°C, self-extinguishing, halogen-free.

Application area:

The conduits are specifically recommended for installation in concrete, can be used for installation in hollow walls, partitions, or suspended ceilings. Conduits of this type are the best solution for exposed and concealed installation, underground installation, connection of equipment or machine tools in schools, kindergartens, hospitals, hotels, theatres, cinemas, museums, stadiums, arenas, shopping-centres, airports, railway terminals, and office buildings.

* Available with a metal wire for pulling of cables.

	Kods	16	20	25	32	40	50
Outer Ø [mm]		16.0	20.0	25.0	32.0	40.0	50.0
Inner Ø [mm]		11.4	14.2	18.4	23.9	30.7	39.4
Roll [m]		50	50	50	50	25	25
On palette [m]		2400	1500	1000	600	350	300
Bend radius ≥ [mm]		70	90	110	130	170	220
Colour: light grey	11202...	...016050LTGY	...020050LTGY	...025050LTGY	...032025LTGY	...040025LTGY	...050025LTGY

Compression strength:
750 N/5cm

EN 61386-22
EN 50267-2-2
EN 61034-2
Classification: 33432



Halogen-free corrugated conduits



EVOEL FMs-UV-0H-SMART corrugated halogen-free conduits with UV-stabilisation

Classification: 33432



A flexible electrical installation conduit made of a special, halogen-free material and ideally suitable for outdoor installation exposed to direct sunlight. The conduit has a sheath made of a plasticised material which is specially modified for resistance against UV radiation. The conduit features medium degree of impact strength. The special structure of the inner surface of the conduit with outstanding gliding properties allows to considerably extend the cable-pulling distances and reduce the length of installation work. The colour of the sheath of the conduits is black (RAL 9004), with an orange inner gliding layer.

Physical properties:

Material: a special, halogen-free material, medium limit load, medium impact strength, temperature resistance from - 25°C to +105°C, UV-stabilised, self-extinguishing, corrosion-resistant.

Application area:

The conduits are specifically recommended for outdoor installation, can be used for installation in hollow walls, partitions, or suspended ceilings in public buildings: schools, kindergartens, hospitals, hotels, theatres, cinemas, museums, stadiums, arenas, shopping centres, airports, railway stations, and office buildings. The conduit withstands long-term exposure to sunlight. UV-resistance is guaranteed for 10 years. Especially suitable for protection of facade lighting cables.

	Code	16	20	25	32	40	50
Outer Ø [mm]		16.0	20.0	25.0	32.0	40.0	50.0
Inner Ø [mm]		10.8	13.6	17.8	23.1	30.0	38.4
Roll [m]		50	50	50	50	25	25
On palette [m]		2400	1500	1000	600	350	300
Bend radius ≥ [mm]		110	140	160	180	200	300
Colour: black	11243...	...01650BK	...02050BK	...02550BK	...03225BK	...04025BK	...05025BK

Compression strength:
750 N/5cm

EN 61386-22
EN 50267-2-2
EN 61034-2
Classification: 33432



Halogen-free corrugated conduits



EVOEL FHs-UV-0H-SMART corrugated halogen-free conduits with UV-stabilisation

Classification: 44432



A flexible electrical installation conduit made of a special, halogen-free material and ideally suitable for outdoor installation exposed to direct sunlight. The conduit has a sheath made of a plasticised material which is specially modified for resistance against UV radiation. The conduit features the highest degree of impact strength. The special structure of the inner surface of the conduit with outstanding gliding properties allows to considerably extend the cable-pulling distances and reduce the length of installation work. The colour of the sheath of the conduits is black (RAL 9004), with an orange inner gliding layer.

Physical properties:

Material: a special, halogen-free material, high limit load, high impact strength, temperature resistance from - 25°C to +105°C, UV-stabilised, self-extinguishing, corrosion-resistant.

Application area:

The conduits are specifically recommended for outdoor installation, can be used for installation in hollow walls, partitions, or suspended ceilings in public buildings: schools, kindergartens, hospitals, hotels, theatres, cinemas, museums, stadiums, arenas, shopping centres, airports, railway stations, and office buildings. The conduit withstands long-term exposure to sunlight. UV-resistance is guaranteed for 10 years. Especially suitable for protection of facade lighting cables.

	Code	16	20	25	32	40	50
Outer Ø [mm]		16.0	20.0	25.0	32.0	40.0	50.0
Inner Ø [mm]		10.8	13.6	17.8	23.1	30.0	38.4
Roll [m]		50	50	50	50	25	25
On palette [m]		2400	1500	1000	600	350	300
Bend radius ≥ [mm]		110	140	160	180	200	300
Colour: black	11223...	...01650BK	...02050BK	...02550BK	...03225BK	...04025BK	...05025BK

Compression strength:
1250 N/5cm

EN 61386-22
EN 50267-2-2
EN 61034-2
Classification: 44432



Halogen-free corrugated conduits



Corrugated halogen-free conduits with UV-stabilisation EVOCAB FLEX FR UV 0H

Corrugated one-wall and double-wall pipes EVOCAB FLEX FR UV 0H for power cables and wires protection and insulation in direct UV exposure and inside the buildings.

Application area:

Mechanical protection and insulation of power cables and wires during the establishment of:

- Safe connections and installation at electric power substations;
- Cable connections between storeys;
- Connections of buildings to electrical power networks;
- Transition of overhead lines to underground cable networks;
- Mechanical protection of power cables inside buildings.

Product properties:

- Long term UV resistance (more than 10 years);
- Self-extinguishing, designed for installation in public buildings;
- Increased fire resistance;
- Low smoke emission;
- Made from flame retarding PP-based compound;
- Temperature resistance from -40° C to +90° C
- Long-term durability and abrasion resistance;
- Pipes provide long-lasting, corrosion-free service;
- No need for servicing (repainting, removal of rust);
- Quick and cheap installation;
- With pulling wire.

EVOCAB FLEX FR UV is corrugated double-wall pliable pipe produced in coil lengths of 25 and 50 metres with pre-installed pulling wire. Each coil is fixated with polypropylene band. Coils are positioned on pallets and stretch-packed for comfortable handling. The product is additionally labeled with a yellow stripe and product identification information: "FR UV 0H, 750N EN 61386-22".

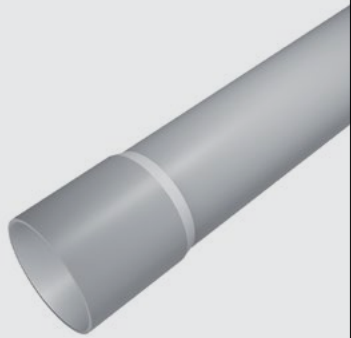
	Code	75	110	160
Outer Ø [mm]		75.0	110.0	160.0
Inner Ø [mm]		62.1	93.1	136.9
Roll [m]		50	50	25
Bend raidus min. [m]		0.23	0.23	0.28
Colour: black	122...	...075050FRUV	...110050FRUV	...160025FRUV
Truck load [m]		7800	3900	1800

Compression strength:
750N/5cm

EN 61386-22
EN 61386-1
IEC 60754-1
UL94 V2



Plastic conduits for electrical installation



EVOEL SL smooth low compression strength conduits

Classification: 22211

A rigid electrical installation conduit made of light grey (RAL 7035), non-plasticised PVC. The conduit is manufactured in straight 3 m bars, with a moulded-on coupling for quick connection. The conduit features a low mechanical resistance.

Physical properties:

Material: PVC-U, low compression strength, low impact strength, temperature resistance from - 5°C to +60°C, withstands temperature (temporarily) up to +70°C, self-extinguishing, corrosion-resistant.

Application area:

The conduits are recommended for simple exposed installation.

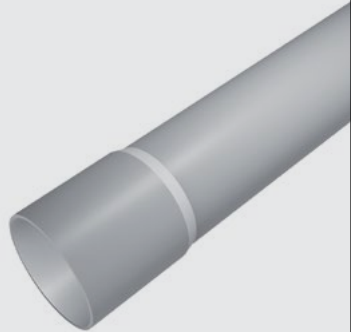
Compression strength:
320 N/5cm

EN 61386-21
Classification: 22211

	Code	16	20	25	32	40	50	63
Outer Ø [mm]		16.0	20.0	25.0	32.0	40.0	50.0	63.0
Inner Ø [mm]		14.3	18.3	22.6	29.4	36.8	46.0	59.0
Pack [m]		111	111	57	57	21	21	21
On palette [m]		7992	4995	3135	2052	1407	798	504
Colour: light grey	11301...	...016003LTGY	...020003LTGY	...025003LTGY	...032003LTGY	...040003LTGY	...050003LTGY	...063003LTGY



Plastic conduits for electrical installation



EVOEL SM smooth medium compression strength conduits

Classification: 33411

A rigid, increased-load electrical installation conduit made of light grey (RAL 7035), non-plasticised PVC. The conduit is manufactured in straight 3 m bars, with a moulded-on coupling for quick connection. The conduit features a medium mechanical resistance.

Physical properties:

Material: PVC-U, medium compression strength, medium impact strength, temperature resistance from - 25°C to +60°C, withstands temperature (temporarily) up to +70°C, self-extinguishing, corrosion-resistant.

Application area:

The conduits are recommended for safe exposed installation in industrial buildings as well as for use in engineering and anywhere with aggressive substances in the atmosphere.

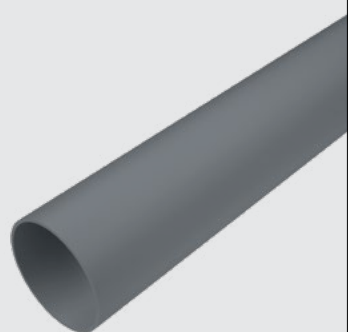
	Code	16	20	25	32	40	50	63
Outer Ø [mm]		16.0	20.0	25.0	32.0	40.0	50.0	63.0
Inner Ø [mm]		13.4	17.2	21.6	28.4	36.0	46.0	59.0
Pack [m]		111	111	57	57	21	21	21
On palette [m]		7992	4995	3135	2052	1407	798	504
Colour: light grey	11302...	...016003LTGY	...020003LTGY	...025003LTGY	...032003LTGY	...040003LTGY	...050003LTGY	...063003LTGY

Compression strength:
750 N/5cm

EN 61386-21
Classification: 33411



Plastic conduits for electrical installation



EVOEL SM-0H smooth medium compression strength halogen-free conduits

Classification: 33431

A rigid, halogen-free electrical installation conduit made of a special, grey (RAL 7037) plastic. The conduit is manufactured in straight 3 m bars. The conduit features a medium compression strength.

Physical properties:

Material: a special plastic, medium compression strength, medium impact strength, temperature resistance from - 25°C to +105°C, self-extinguishing, halogen-free, corrosion-resistant.

Application area:

The conduits are recommended for safe exposed installation in industrial buildings as well as for use in engineering and anywhere with aggressive substances in the atmosphere. The conduits are specifically recommended for use in low temperatures as well as in public buildings: schools, kindergartens, hospitals, hotels, theatres, cinemas, museums, stadiums, arenas, shopping-centres, airports, railway terminals, and office buildings.

	Code	20	25	32	40	50	63
Outer Ø [mm]		20.0	25.0	32.0	40.0	50.0	63.0
Inner Ø [mm]		16.8	21.5	28.0	35.5	45.2	57.8
Pack [m]		111	57	57	21	21	21
On palette [m]		4440	2850	1995	1386	777	630
Colour: grey	11312...	...020003GY	...025003GY	...032003GY	...040003GY	...050003GY	...063003GY

Compression strength:
750 N/5cm

EN 61386-21

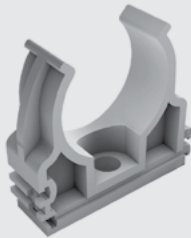
Classification: 33431



Cable conduit accessories



Information



Holding clamp OH This holding clamp is made of a special plastic and designed for use with installation conduits of all types, except UV-stabilised conduits.

Type		16	20	25	32	40	50	63
Minimum order quantity [pcs]		100	100	100	50	50	25	10
Code	11400...	...1016	...1020	...1025	...1032	...1040	...1050	...1063



Holding clamp UV This holding clamp is made of a special plastic and designed for use with UV-stabilised installation conduits of all types.

Type		16	20	25	32	40	50	63
Minimum order quantity [pcs]		100	100	100	50	50	25	10
Code	11420...	...1016	...1020	...1025	...1032	...1040	...1050	...1063

Elbow OH This elbow is made of a special plastic and designed for use with EVOEL SL-OH, and SM-OH installation conduits.

Type		16	20	25	32	40	50	63
Minimum order quantity [pcs]		50	50	40	20	25	10	5
Code	11400...	...3016	...3020	...3025	...3032	...3040	...3050	...3063



Coupling HF This coupling is made of a special plastic and designed for use with SMART corrugated halogen-free installation conduits of all types.

Type		16	20	25	32	40	50	63
Minimum order quantity [pcs]		100	100	40	40	20	10	10
Code	11400...	...4016	...4020	...4025	...4032	...4040	...4050	...4063



Flexible coupling (long) This corrugated coupling is made of PVC and designed for coupling straight EVOEL SL, EVOEL SM conduits in places where obstacles need to be bypassed or unconventional bends are to be made.

Type		16	20	25	32
Minimum order quantity [pcs]		40	40	40	20
Length [mm]		200	275	365	350
Code	1140081...	...016	...020	...025	...032

EVOEL classification codes according to EN 61386

Digit in the classification code										
1		2		3		4		5		
Compression strength		Impact strength		Minimum operating temperature		Maximum operating temperature		Flexibility		
Codification number	1	125N very low	1	0,5J (0,5 kg/100mm) very low	1	+5°C	1	+ 60°C	1	Rigid
	2	320N low	2	1J (1,0 kg/100mm) low	2	- 5°C	2	+ 90°C	2	Pliable
	3	750N medium	3	2J (2,0 kg/100mm) medium	3	- 15°C	3	+ 105°C	3	Pliable/Self-recovering
	4	1250N high	4	6J (2,0 kg/300mm) high	4	- 25°C	4	+ 125°C	4	Flexible
	5	4000N very high	5	20,4J (6,8 kg/300mm) very high	5	- 45°C	5	+ 150°C		
							6	+ 250°C		
							7	+ 400°C		
3 3 4 1 2										

Example: electrical installation conduit with **medium** compression strength (3), **medium** impact strength (3), **minimum** operating temperature -25°C (4), **maximum** operating temperature +60°C (1), **pliable** (2).

Standards applicable to cable conduit systems

Number	Title
EN 61386-1	Conduit systems for cable management - Part 1: General requirements.
EN 61386-21	Conduit systems for cable management - Part 21: Particular requirements. Rigid conduit systems.
EN 61386-22	Conduit systems for cable management - Part 22: Particular requirements. Pliable conduit systems.
EN 61386-23	Conduit systems for cable management - Part 23: Particular requirements. Flexible conduit systems.
EN 50267-2-2	Common test methods for cables under fire conditions - Test on gases evolved during combustion of materials from cables. Part 2-2: Procedures. Determination of degree of acidity of gases for materials by measuring pH and conductivity.
EN 61034-2	Measurement of smoke density of cables burning under defined conditions. Part 2: Test procedure and requirements.
EN 60332-1-2	Tests on electric and optical fibre cables under fire conditions. Part 1-2: Test for vertical flame propagation for a single insulated wire or cable. Procedure for 1 kW pre-mixed flame.
EN 60332-1-3	Tests on electric and optical fibre cables under fire conditions. Part 1-3: Test for vertical flame propagation for a single insulated wire or cable. Procedure for determination of flaming droplets/particles.
EN 61386-24	Conduit systems for cable management - Parts 24: Particular requirements for conduit systems buried underground.



Information

Properties and application of electrical installation conduits

Parameters	EVOEL FL-OH-SMART	EVOEL FM-OH-SMART	EVOEL FM-S-OH-SMART	EVOEL FH-S-UV-OH-SMART	EVOEL FM-S-UV-OH-SMART	EVOEL FLEX FR UV OH	EVOEL SL	EVOEL SM	EVOEL SM-OH
Classification according to EN 61386	22432	33432	33432	44432	33432	33424	22211	33411	33431
Material properties									
Material	SpPlas	SpPlas	SpPlas	SpPlas	SpPlas	SpPlas	PVC-U	PVC-U	SpPlas
Halogen-free (according to IEC 60754-1)	⓪	⓪	⓪	⓪	⓪	⓪	-	-	⓪
Behaviour in fire (according to EN 61386)	Non-flame propagating, self-extinguishing								
Additional properties									
Guaranteed UV-resistance	-	-	-	10 years	10 years	10 years	-	-	-
Outer sheath	-	-	⓪	⓪	-	-	-	-	-
Inner gliding layer	⓪	⓪	⓪	⓪	-	⓪	-	-	-
Mechanical properties									
Impact resistance, J at °C	>1J, -25°C	>2J, -25°C	>2J, -25°C	>6J, -25°C	>2J, -25°C	>2J, -25°C	>1J, -5°C	>2J, -25°C	>2J, -25°C
Compression strength, N/5cm	>320	>750	>750	>1250	>750	>750	>320	>750	>750
Flexibility	Pliable	Pliable	Pliable	Pliable	Pliable	Pliable	Rigid	Rigid	Rigid
Thermal properties									
Temp. MAX, °C	+105	+105	+105	+105	+105	+90	+60	+60	+105
Temp. MIN., °C	-25	-25	-25	-25	-25	-40	-5	-25	-25
Application areas									
Installations in hollow walls	⓪	⓪	⓪	⓪	⓪	⓪	⓪	⓪	⓪
Concealed installations	⓪	⓪	⓪	⓪	⓪	⓪	⓪	⓪	⓪
Exposed installations	-	⓪	⓪	⓪	⓪	⓪	-	⓪	⓪
Installations in wooden floors	-	⓪	⓪	⓪	⓪	⓪	-	⓪	⓪
Installations in dry concrete	-	⓪	⓪	⓪	⓪	⓪	-	⓪	⓪
Installations in keramzite	-	⓪	⓪	⓪	⓪	⓪	-	⓪	⓪
Installations in concrete of all types	-	-	⓪	⓪	⓪	⓪	-	-	-
Outdoor installations exposed to direct UV radiation	-	-	-	⓪	⓪	⓪	-	-	-
Power distribution rooms and substations	⓪	⓪	⓪	⓪	⓪	⓪	⓪	⓪	⓪
Private buildings	⓪	⓪	⓪	⓪	⓪	⓪	⓪	⓪	⓪
Multi-apartment buildings, up to 5 floors	⓪	⓪	⓪	⓪	⓪	⓪	⓪	⓪	⓪
Industrial buildings	-	⓪	⓪	⓪	⓪	⓪	-	⓪	⓪
Public buildings	⓪	⓪	⓪	⓪	⓪	⓪	-	-	⓪
Multi-apartment buildings, more than 5 floors	⓪	⓪	⓪	⓪	⓪	⓪	-	-	⓪

Legend:
SpPlas – Special plastic material
PVC-U – Unplasticized polyvinyl-chloride



Information

Resistance of plastic materials against chemical substances

Chemical substances	°C	Unplasticized poly(vinyl chloride)	Polyethylene	Polypropylene	Polycarbonate	Polyamide
	°C	PVC-U	PE	PP	PC	PA
Acetaldehyde, in water (40%)	40	d	*	*	-	d
Acetic acid (10%)	40	*	*	*	-	d
Acetic acid (10%-85%)	60	*	*	*	-	-
Acetic acid (85%-95%)	40	*	*	*	-	-
Acetic acid (>95%)	20	*	*	*	-	-
Acetone (small amount)	20	-	*	*	-	*
Ammonia, water liquid (20%)	40	*	*	*	-	*
Ammonia, dry gas	60	*	*	*	-	*
Ammonium chloride (20%)	20	*	d	d	d	-
Ammonium fluoride (2%)	20	*	d	d	d	-
Ammonium nitrate (20%)	20	*	d	d	d	-
Aniline (saturated liquid)	60	d	-	-	-	d
Orthoarsenic acid (<20%)	60	*	*	*	*	d
Beer	60	*	*	*	d	*
Benzene	20	-	d	d	-	*
Bleach (13%)	40	*	*	*	d	d
Borax, saturated liquid	60	*	*	*	d	d
Bromine acid, liquid (10%)	20	*	*	*	-	-
Butane, gas		*	-	-	*	*
Carbonic acid, dry	40	*	*	*	*	*
Carbonic acid, dry or moist	40	*	*	*	d	*
Carbon tetrachloride	20	-	-	-	-	*
Carbon disulphide	20	d	d	d	-	d
Sodium hydroxide (<40%)	40	*	*	*	-	*
Sodium hydroxide (40%-60%)	60	*	*	*	-	*
Cement, dry	20	*	*	*	*	*
Cement, mixture	20	*	*	*	-	*
Chlorine, dry or moist gas	20	d	d	d	-	-
Chlorine, water liquid	20	d	-	-	-	-
Chlorinated carbohydrate		-	-	-	-	*
Chlorosulphuric acid (100%)	20	d	d	d	-	-
Chromic acid, water liquid (<50%)	50	*	*	*	-	-
Chromic acid (20%)		d	d	d	*	-
Chromosulphuric acid (20%)		d	d	d	-	-
Citric acid, saturated liquid	60	*	*	*	*	*
Cresol, liquid (<90%)	45	d	d	d	-	-
Copper sulphate, saturated liquid	60	*	*	*	*	d
Copper chloride, saturated liquid	60	*	*	*	*	d
Diesel fuel	20	*	*	*	d	*
Photo developers	40	*	*	*	d	*
Dextrin (18%)	20	*	*	*	d	*
Esther		-	-	-	-	*
Ethyl alcohol (<40%)	40	*	*	*	d	*
Ethyl ether	20	-	d	d	d	*
Butyric acid	20	*	d	d	d	*
Butyric acid	40	*	*	*	d	*
Chlorinated fluorocarbohydrate		*	d	d	*	*
Formaldehyde, liquid	30	*	*	*	d	*
Formic acid (<30%)	40	*	*	*	d	-
Formic acid, concentrate	20	*	*	*	-	-

Legend:
* The plastic product is resistant against the chemical substance in the standard burying conditions
d The plastic product is partially resistant against the chemical substance in the standard burying conditions
- The plastic product does not withstand the chemical substance

Chemical substances	°C	Unplasticized poly(vinyl chloride)	Polyethylene	Polypropylene	Polycarbonate	Polyamide
	°C	PVC-U	PE	PP	PC	PA
Glycerine, liquid	60	*	*	*	d	*
Hydrochloric acid, liquid	40	*	*	*	d	-
Hydrochloric acid, concentrate	60	*	*	*	-	-
Hydrofluoric acid (40%)	20	*	*	*	-	-
Hydrofluoric acid (60%)	20	*	*	*	-	-
Hydrofluoric acid (100%)	20	*	*	*	-	-
Hydrogen (100%)	60	*	*	*	*	*
Hydrogen peroxide (20%)	20	*	*	*	d	d
Hydrogen sulphide, dry or moist	60	*	*	*	d	d
Hydrogen sulphide, liquid	40	*	*	*	d	d
Ketone		-	-	-	-	*
Lactic acid (10%-90%)	40	*	*	*	*	*
Methyl alcohol, liquid	40	*	*	*	-	*
Mineral oil	20	*	*	*	d	*
Sodium chlorate, liquid	20	*	*	*	d	*
Sodium hydroxide (<10%)	20	*	*	*	d	*
Nitric acid (<30%)	40	*	*	*	-	-
Nitric acid (<30%-45%)	45	*	*	*	-	-
Nitric acid (<50%-60%)	20	*	d	d	-	-
Nitrogen gases, dry or moist	60	d	d	d	-	d
Oils and fats	60	*	*	*	-	*
Oxalic acid, liquid (10%)	40	*	*	*	*	d
Oxalic acid, liquid (concentrate)	60	*	*	*	-	-
Oxygen	60	*	*	*	d	*
Ozone	20	*	d	d	-	d
Perchloric acid (10%)	20	*	*	*	d	*
Perchloric acid (70%)	60	-	d	d	-	d
Permanganate (<6%)	20	*	*	*	d	-
Gasoline	60	*	d	d	-	*
Petroleum	20	*	*	*	d	*
Phenol (<90%)	45	d	d	d	-	-
Orthophosphoric acid, liquid (<30%)	40	*	*	*	-	-
Orthophosphoric acid, liquid (>30%)	60	*	*	*	-	-
Potassium nitrate	60	*	*	*	-	*
Potassium chloride	60	*	*	*	-	*
Propane, liquid		*	-	-	*	*
Saline liquid	40	*	*	*	*	*
Seawater	40	*	*	*	d	*
Sulphur dioxide (all states)	40	*	*	*	d	d
Sulphuric acid, liquid (<40%)	40	*	*	*	d	-
Sulphuric acid, liquid (40%-80%)	60	*	*	*	-	-
Sulphuric acid, liquid (80%-90%)	40	*	*	*	-	-
Sulphuric acid, liquid (90%-96%)	20	*	*	*	-	-
Sodium chloride liquid (weak)	40	*	*	*	*	*
Tartaric acid (10%)	60	*	*	*	*	*
Urine	40	*	*	*	*	*
Water	60	*	*	*	*	*
Xylene (100%)	20	-	d	d	-	*
Zinc chloride, liquid (all types)	60	d	*	*	d	-
Zinc chloride, liquid (weak)	60	*	*	*	d	-



Notes

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Notes

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