

# BSS



**Fire protection  
systems  
India**

**2019/2020**

**Building Connections**

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BETTERMANN



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# Planning and mounting aids

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# 1

## First protection aim: Maintenance of the fire sections



The division of buildings into fire sections protects unaffected building sections against the spread of fires for specific periods of time. Insulation maintains the fire sections, thus limiting the spread of fire and smoke. These constructive measures protect people and property, allowing fire brigades to prevent the spread of fires to other parts of the building through extinguishing measures.

### Function of fire walls

Fire walls should ensure that a fire cannot pass to neighbouring buildings or building sections. This creates so-called fire sections. The construction design of these fire walls (materials, fire resistance classes, stress values) is regulated by the building regulations and standards.

Electrical cables and pipes may only be run through walls and ceilings at the ends of rooms when there is a guarantee that they do not present an opportunity for fire and smoke to spread. Insulation systems reliably seal the ceiling and wall penetrations required for installations against fire and smoke.

### Special requirements

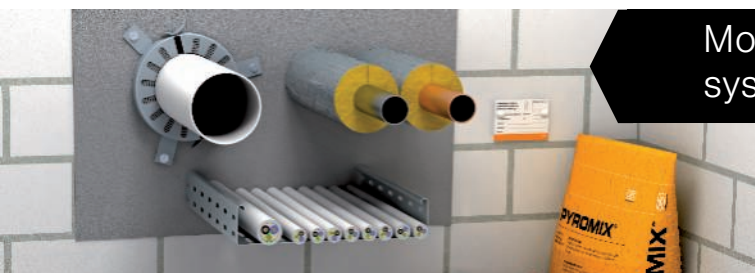
The following requirements apply to cable penetrations with cable insulation:

- The spread of fire and smoke must be prevented
- Room closure must be guaranteed
- On the side of the insulation away from the fire, the surfaces of cables, pipes, cable support systems and the surface of the insulation may not heat up to an impermissible level

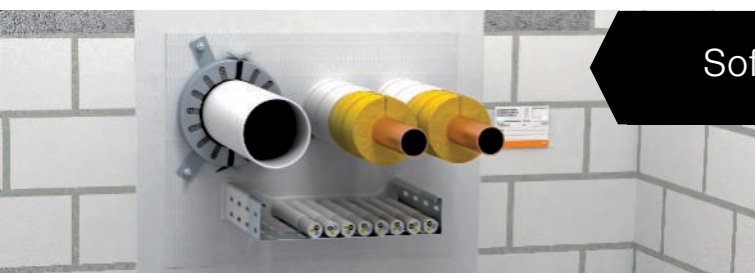
*Insulation systems reliably seal the ceiling and wall penetrations required for installations against fire and smoke.*



# Insulation systems



Mortar insulation systems



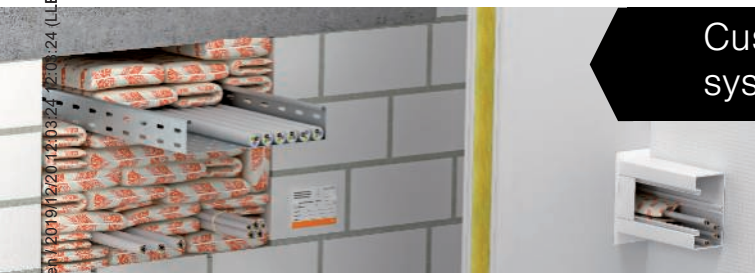
Soft insulation systems



Foam systems



Pipe shell systems



Cushion insulation systems

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# 2

## Second protection aim: Protection of escape routes



### What is an emergency and escape route?

According to the construction regulations, there must be routes in buildings which not only permit access to the building in a horizontal and vertical direction in normal situations, but which also offer the option of rescue in case of fire. It is therefore obligatory to equip buildings with at least one constructive emergency and escape route. Additional emergency and escape routes may also be necessary, depending on the type of building.

These include:

- Necessary staircases (vertical access)
- Connecting rooms between the necessary stairwells and exits to the outside
- Necessary corridors (horizontal access)

There must be a guarantee that, if there is a fire, these routes can be used to leave the building without any risk. In addition to evacuation, the emergency and escape routes also aid the local fire brigades as a point of attack.

In the area of emergency and escape routes, an installation may not pose an additional fire load. This requirement can be fulfilled using an appropriate type of installation:

- Concealed installation
- Installation in fire protection duct systems
- Installation above suspended fire protection ceilings
- Use of non-combustible materials
- Routing of cables with improved behaviour in case of fire

*Approximately 95% of all deaths during fires are caused by smoke poisoning! In case of fire, emergency and escape routes are the central lifeline of the building and must remain usable under all circumstances.*



# Escape route installations

False ceiling mounting



Fire protection ducts



Cable bandages



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# 3

## Third protection aim: Maintaining the function of electrical systems



If there is a fire, emergency and escape routes must remain usable and important technical equipment, such as emergency lighting, fire alarm systems and smoke extraction systems, continue to function. Therefore, it is essential that the power supply for these systems is specially protected. In addition, certain technical systems must support the fire brigades in fighting fires for a sufficiently long period of time.

Where is the maintenance of electrical function required?

Technical equipment that maintains electrical function is required for the following buildings and systems:

- Hospitals
- Hotels and restaurants
- Tower blocks
- Meeting points
- Commercial buildings
- Closed large garages
- Underground railway systems
- Chemicals industry
- Power stations
- Tunnels

This could be because these constructions are regularly frequented by many people. This creates an increased safety risk for gatherings of people. However, with certain systems, property and the environment must also be protected.

### E30

#### **30 minutes: Maintenance of electrical function for a safe evacuation and rescue**

The first 30 minutes after the start of a fire play an important role. For the affected building to be cleared quickly the maintenance of electrical function must be guaranteed for the following equipment during this time:

- Safety lighting systems
- Lifts with fire control
- Fire alarm systems
- Alarm systems and systems to issue instructions
- Fire extraction systems

### E90

#### **90 minutes: Maintenance of electrical function for effective fire-fighting**

To support fire-fighting operations, it is imperative that certain technical equipment is supplied with sufficient power even up to 90 minutes after a fire breaks out in a building. This equipment includes:

- Water pressure increase systems for fire water supply
- Mechanical smoke extraction systems and smoke protection pressure systems
- Fire brigade lifts
- Bed lifts in hospitals and similar equipment

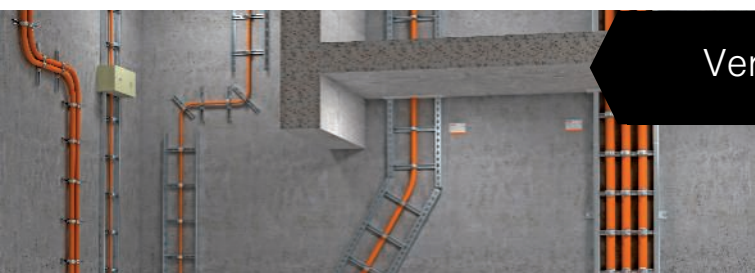




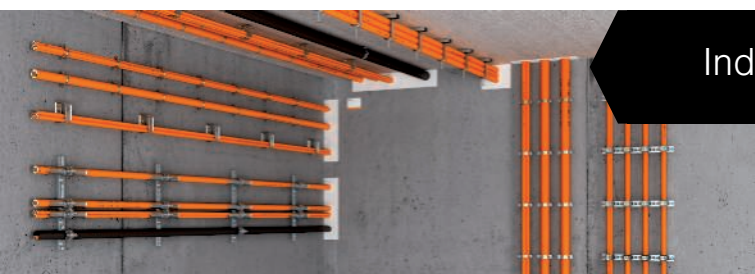
# Systems that maintain the electrical function



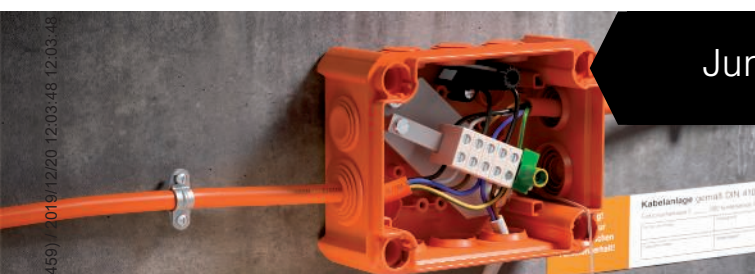
Cable trays and cable ladders



Vertical ladders



Individual routing



Junction boxes

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# Technical support

## Seminars

### **OBO BSS seminars: First-hand knowledge**

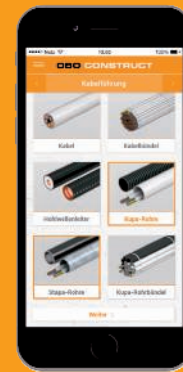
With a comprehensive programme of training courses and seminars on the subject of fire protection systems, OBO is able to support its customers with specialist knowledge from a single source. Alongside the basic theoretical principles, the programme also deals with practical implementation in everyday applications. Special calculation and application examples round off the comprehensive programme of knowledge transfer.





### Construct BSS Online Tool

Works on any computer with Internet access: The BSS software simplifies the planning of suitable fire protection systems. After the basic data has been entered, the user obtains an overview of the approved insulation systems, as well as of necessary and optional system accessories. Thus, they can create, edit and export a personal shopping list in a targeted manner. All the key information on standards and approvals can be found directly with the systems.



### BSS app

The Construct BSS app makes finding the right product even quicker. In only a short time, the app determines the fire protection systems required for the appropriate project. It offers the full scope of the Construct BSS module, allowing simple planning and material calculations in any location. Practical: The parts list can be sent directly by e-mail. Available for Android and Apple devices for Google Play Store and the iTunes App Store.



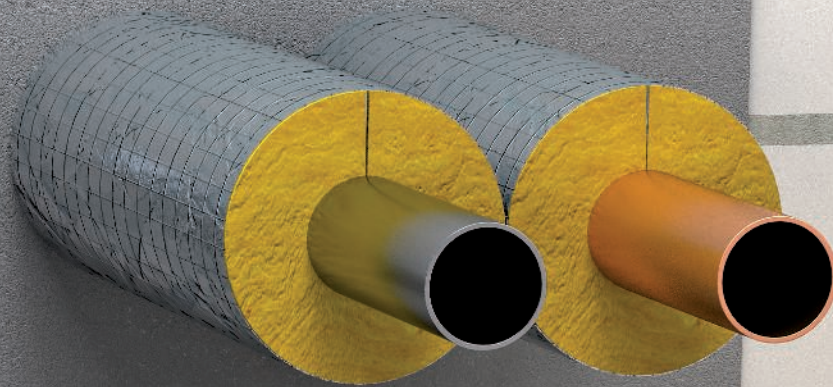
### Fire protection guide

In the guide, we wish to explain the interconnections of fire protection in technical building equipment. Perhaps you will find some new aspects which can help you in the planning or implementation of fire protection systems.



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Kabelabschottung  
Kombiabschottung  
Rohrabschottung

Exhaust / U.K. No.

Grundstandsklasse  Minuten

Zurückspaltung Nr. \_\_\_\_\_

System: \_\_\_\_\_

Erreichter: \_\_\_\_\_



Datum: \_\_\_\_\_



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# Mortar insulation PYROMIX®

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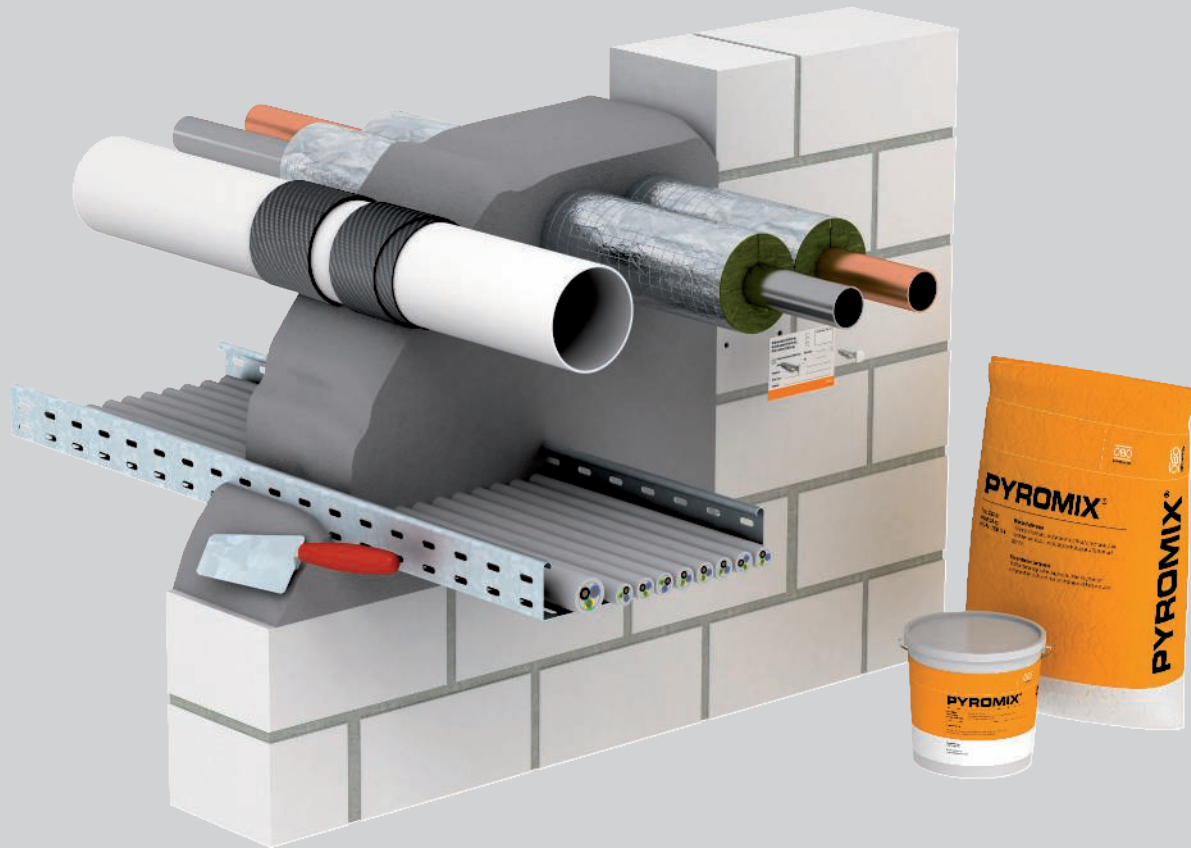
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## Mortar insulation PYROMIX®

### System description



The PYROMIX® system from OBO is used to create cable and combination insulation made of a mineral fibre-free special mortar. Depending on the amount of water added, the finished compound can be applied to openings by hand, with pumps or with presses. The high level of substrate adhesion makes lining un-

necessary for small insulation areas. The porous consistency of the mortar means that reinstallation is easy. If there is a fire, the fire protection mortar reliably prevents the spread of fire and smoke.

# Mortar insulation PYROMIX®

## Installation principle



Stir the mortar with water until the desired consistency is reached.



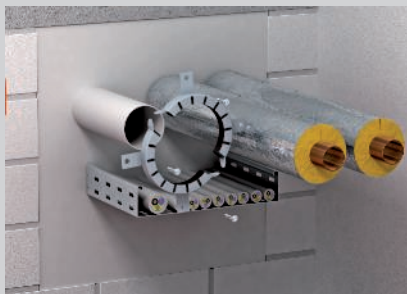
Apply mortar to the opening, use lining as necessary.



Use approved section insulation for metal pipes.



Section insulation should also be applied to steel electrical installation pipes.



Mount pipe sleeves for combustible pipes on both sides of the wall.



Apply labelling to combination insulation for various structures.

Classification to DIN

S30

S60

S90

Classification to EN

EI15

EI30

EI45

EI60

EI90

EI120



Erectors of combination insulation require training.

Always indicate the item number when ordering.





# Mortar insulation PYROMIX®


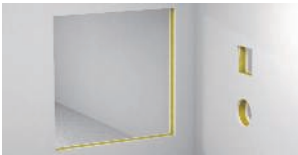




## Registration data

### Combination insulation in walls/ceilings

<b>Fire resistance class</b>	EI 180, EI 240
<b>Proof of application</b>	European Technical Assessment of DIBt, Berlin
<b>Approval number</b>	ETA-17/0472
<b>Testing standard</b>	EN 1366-3

## Installation locations

### Insulation in walls and ceilings

Component		Rigid walls	Flexible walls	Rigid floors
				
Min. component strength		15 cm (EI 60 / EI 90 / EI 120)	-	15 cm (S30 / S60 / S90)
Min. insulation thickness		15 cm (EI 60 / EI 90 / EI 120) 24 cm (EI 120)	-	15 cm (EI 60 / EI 90 / EI 120) 24 cm (EI 120)
Opening size		↔ ≤ 120 cm (for EI 120) ↕ ≤ 200 cm	-	↔ ≤ 100 cm ↕ Unlimited
		↔ 120 cm (for EI 120) ↕ ≤ 60 cm x ≤ 60 cm	-	↔ 120 cm (for EI 120) ↕ ≤ 60 cm x ≤ 60 cm



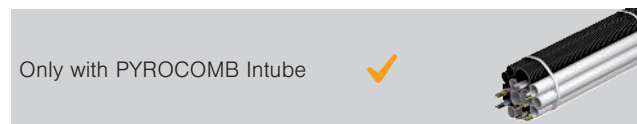


# Mortar insulation PYROMIX® Installations

## Cable



## Pipe bundle of electrical installation pipes



## Cable bundle



## Electrical installation pipe made of steel



## Individual lines for control purposes



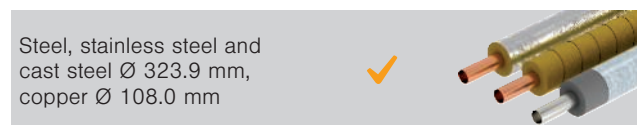
## Cable support systems



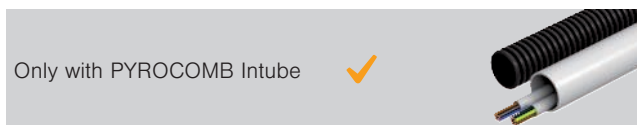
## Electrical installation pipe made of plastic, rigid



## Metal pipes with path insulation



## Electrical installation pipe made of plastic, flexible

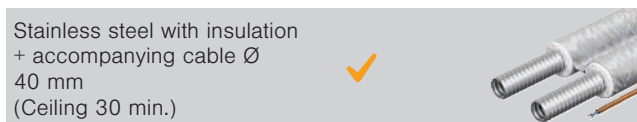


## Plastic pipes

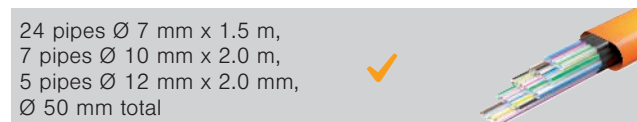


## Special installations

### Double solar pipes



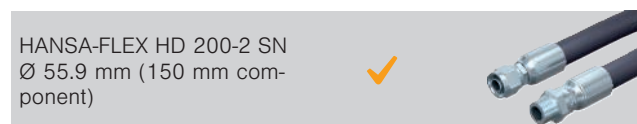
### Speed pipe



### Klimasplit



### Hydraulic hoses



Details on the version can be found in the proof of suitability or mounting instructions.  
All the stated dimensions are maximum values.



## Mortar insulation PYROMIX®

### PYROMIX® dry mortar in paper sack



Type	Contents	Pack Piece	Weight kg/100 pc.	Item no.
	kg			
<b>MSX-S1</b>	20	1	2,000.000	<b>7206104</b>

Special mortar

Mortar to create cable and combination insulation in solid walls and ceilings. Suitable for pumping, pressing and for manual installation. Adding approx. 6 litres of water to 20 kg of dry mortar produces about 20 litres of workable compound.

In dry, frost-free rooms, the dry mortar can be stored for at least 12 months in closed original containers.

### Insulation layer creator in a cartridge



Type	Contents	Pack Piece	Weight kg/100 pc.	Item no.
	ml			
<b>DSX-K</b>	300	1	50.000	<b>7202300</b>

Intumescent material

Dispersion-based fire protection compound for interior areas, to fill residual joints and close openings. Approved material for closing core drill holes for individual cable glands.

Material class DIN 4102 - B2, normally flammable.

In dry, frost-free rooms, the compound can be stored at temperatures from +5 °C to +25 °C for up to 18 months in closed, upright original containers.

### Insulation layer creator in a bucket



Type	Contents	Pack Piece	Weight kg/100 pc.	Item no.
	kg			
<b>DSX-E</b>	5	1	500.000	<b>7202302</b>

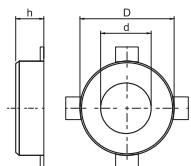
Intumescent material

Dispersion-based fire protection compound for interior areas, to fill residual joints and close openings. Approved material for closing core drill holes for individual cable glands.

Material class DIN 4102 - B2, normally flammable.

In dry, frost-free rooms, the compound can be stored at temperatures from +5 °C to +25 °C for up to 18 months in closed, upright original containers.

### Pipe sleeve with 2 fastening straps



Type	Pipe Ø	Dimension h	Dimension D	Dimension d	Pack Piece	Weight kg/100 pc.	Item no.
	mm	mm	mm	mm			
<b>TCX-032</b>	32 - 34	26	50	36	1	6.500	<b>7202200</b>
<b>TCX-040</b>	40 - 42	26	58	44	1	7.000	<b>7202201</b>
<b>TCX-050</b>	50 - 52	26	68	54	1	8.000	<b>7202203</b>

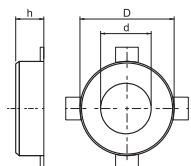
Intumescent material

Pipe sleeve for combustible pipes.

If there is a fire, fire protection inserts inside the sheet steel housing expand, exerting a very great pressure onto the burning thermoplastic pipes.

Fastening with anchors or M6 threaded rods.

### Pipe sleeve with 4 fastening straps



Type	Pipe Ø	Dimension h	Dimension D	Dimension d	Pack Piece	Weight kg/100 pc.	Item no.
	mm	mm	mm	mm			
<b>TCX-063</b>	63 - 65	26	94	67	1	15.500	<b>7202204</b>
<b>TCX-075</b>	75 - 77	26	106	79	1	19.000	<b>7202205</b>
<b>TCX-090</b>	90 - 92	26.6	132	94	1	37.000	<b>7202206</b>
<b>TCX-110</b>	110 - 112	26.6	155	114	1	46.000	<b>7202207</b>
<b>TCX-125</b>	125 - 127	40	172	129	1	70.000	<b>7202208</b>

Intumescent material

Pipe sleeve for combustible pipes.

If there is a fire, fire protection inserts inside the sheet steel housing expand, exerting a very great pressure onto the burning thermoplastic pipes.

Fastening with anchors of M6 threaded rods up to size 75 mm, then M8.

## Pipe sleeve with 6 fastening straps

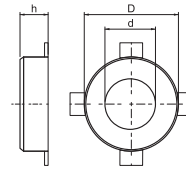
Type	Pipe Ø mm	Dimension h mm	Dimension D mm	Dimension d mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>TCX-140</b>	140 - 142	40	200	144	1	106.000	<b>7202209</b>
<b>TCX-160</b>	160 - 162	40	220	164	1	107.000	<b>7202210</b>

Intumescent material

Pipe sleeve for combustible pipes.

If there is a fire, fire protection inserts inside the sheet steel housing expand, exerting a very great pressure onto the burning thermoplastic pipes.

Fastening with anchors or M8 threaded rods.

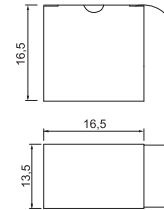


## Coil for insulation

Type	Contents kg	Length mm	Width mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>FSB-WB 1.5</b>	2.26	10000	125	1	220.000	<b>7203163</b>

Fire protection bandage coated with a substance on one side that foams up in the event of fire. It can be used to wrap installations in PYROMIX® dry mortar or PYROPLATE® Fibre plate insulations.

The bandage can be used as an additional measure according to the specific proofs of usability for cables, cable bundles, lengths, Klimaspit, Speedpipes, hydraulic pipes or empty tubes.



## Threaded rod

Type	Thread	Dimension d mm	Dimension L mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>TR M8 1M G</b>	M8	8	1000	10	30.000	<b>3141128</b>

**St** Steel

**G** Electrogalvanised

Threaded rod to DIN 976.



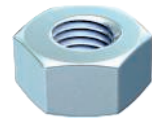
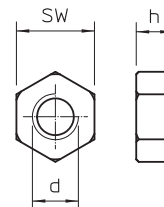
## Hexagonal nut DIN 934

Type	Thread	SW mm	Dimension h mm	Dimension d mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>HN M8 G</b>	M8	13	6.8	8	100	0.500	<b>3400085</b>

**St** Steel

**G** Electrogalvanised

Hexagonal nut to DIN 934 with metric thread.



## Mineral wool

Type	Dimension	Pack Piece	Weight kg/100 pc.	Item no.
<b>MIW-S</b>	25 litres	1	250.000	<b>7202306</b>

Mineral fibres

Universal filling wool for various fire protection applications, packed in compressed form.

Material class EN 13 501 - A1, non-combustible; melting point  $\geq 1,000$  °C.



## Retrofit wedge

Type	Dimension	Pack Piece	Weight kg/100 pc.	Item no.
<b>NIK-S</b>	25x25/75x300	1	32.000	<b>7206210</b>

Calcium silicate

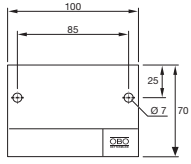
Retrofit wedges for mortar insulation, to mount in the fresh insulation. 1 set comprises 4 slanted calcium silicate strips. Material class EN 13501 - A1, non-combustible.





## Mortar insulation PYROMIX®

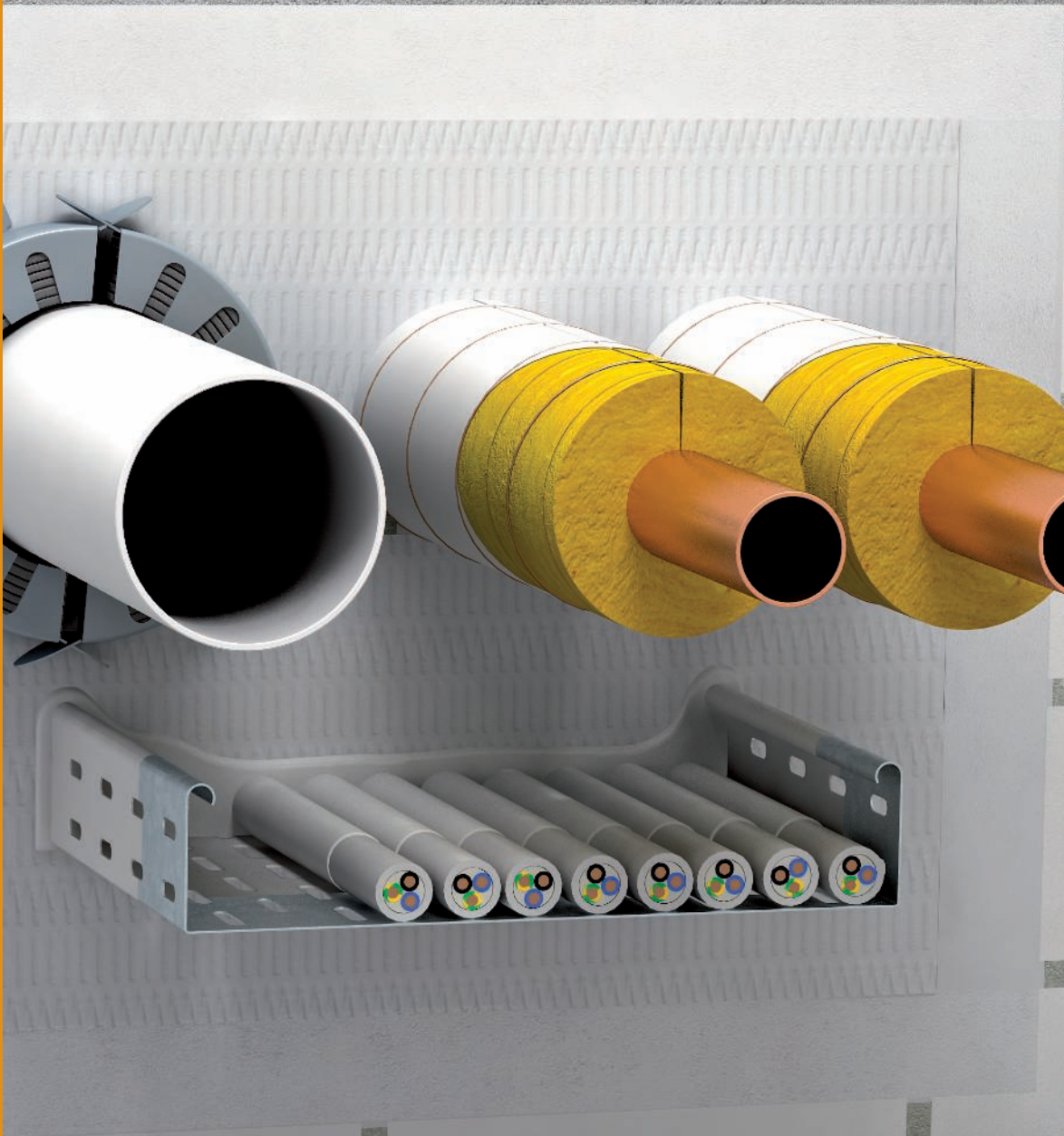
### Identification plate



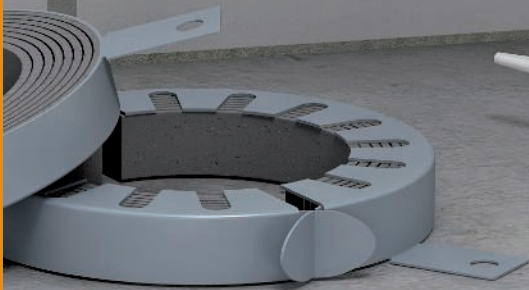
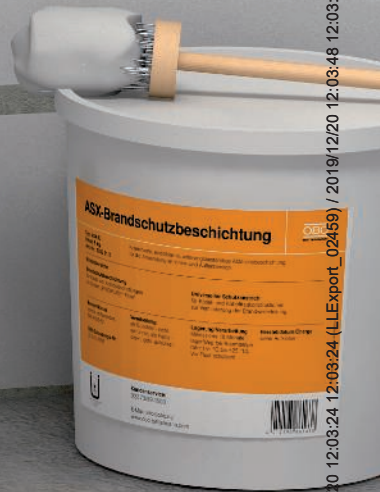
Type	Language	Pack	Weight	Item no.
<b>KS-S EN</b>	English	1	2.400	<b>7205429</b>
<b>PS</b> Polystyrene				

Universal identification plate to be written on with waterproof and light-resistant felt-tip pen for all types of OBO insulation. For approved identification, including two push-fit anchors.







Kabelabschottung	<input type="checkbox"/>	Exaktwert / Uhr / Nr.
Kombiabschottung	<input type="checkbox"/>	
Rohrabschottung	<input type="checkbox"/>	
Brandstundenzahl	Minuten	
Abmessung	Nr.	
Item		
Gr.		



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## Soft insulation, PYROPLATE® Fibre

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## Soft insulation, PYROPLATE® Fibre System description



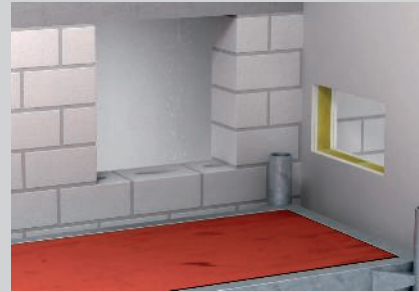
The PYROPLATE® Fibre system from OBO is used to create cable and combination insulation. The core of the system is the mineral fibre plate coated with a moisture-resistant ablation coating. When there is a fire, the fire protection coating creates an insulating carbon foam and, in combination with the mineral fibre plate, prevents the spread of fire and smoke. According to the European Technical Assessment, in ad-

dition to the cables, pipes made of steel, copper or various plastics may also be run through the same insulation. For pipelines, additional fire protection measures, such as section insulation and pipe sleeves, are required. The mortar or soft insulation made of PYROPLATE® Fibre is thus combination insulation which is appropriate for diverse structures.



# Soft insulation, PYROPLATE® Fibre

## Installation principle



The installation is possible in light-duty partition walls or in solid walls.



Moisten the component layer and apply the coating to the cut edges for adhesion.



The plates can be inserted carefully with a hammer and board.



Use approved section insulation for metal pipes.



Apply the final coating to the surface and the installations.



Secure soft insulation in ceilings against footfall.



Cut the plates for mounting.



Finished installation in a light-duty partition wall.

Classification to DIN

**S30**   **S60**   **S90**

Classification to EN

**EI15**   **EI30**   **EI45**   **EI60**   **EI90**   **EI120**   **EI180**   **EI240**



Erectors of combination insulation require training.

Always indicate the item number when ordering.



## Soft insulation, PYROPLATE® Fibre Registration data

### Combination insulation in walls and ceilings

<b>Fire resistance class</b>	EI 15, EI 30, EI 45, EI 60, EI 90, EI 120, EI 180, EI 240
<b>Proof of application</b>	European Technical Assessment of DIBt, Berlin
<b>Approval number</b>	ETA-17/0364
<b>Testing standard</b>	DIN EN 1366 Part 3

## Installation locations

### Insulation in walls and ceilings

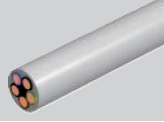
Component		Rigid walls	Flexible walls	Rigid floors
Min. component strength				
		10 cm (EI 15 / EI 30 / EI 60 / EI 90) 10 cm (EI 15 / EI 30 / EI 60 / EI 90 / EI 120) 20 cm (EI 15 / EI 30 / EI 60 / EI 90 / EI 120 / EI 180 / EI 240)	10 cm (EI 15 / EI 30 / EI 60 / EI 90 / EI 120)	12.5 cm (EI 15 / EI 30 / EI 60 / EI 90) 15 cm (EI 15 / EI 30 / EI 60 / EI 90 / EI 120) 20 cm (EI 15 / EI 30 / EI 60 / EI 90 / EI 120 / EI 180 / EI 240)
Min. insulation thickness		6 cm (EI 15 / EI 30 / EI 60 / EI 90) 12 cm (EI 15 / EI 30 / EI 60 / EI 90 / EI 120) 24 cm (EI 15 / EI 30 / EI 60 / EI 90 / EI 120 / EI 180 / EI 240)	6 cm (EI 15 / EI 30 / EI 60 / EI 90) 12 cm (EI 15 / EI 30 / EI 60 / EI 90 / EI 120)	6 cm (EI 15 / EI 30 / EI 60 / EI 90) 12 cm (EI 15 / EI 30 / EI 60 / EI 90 / EI 120) 24 cm (EI 15 / EI 30 / EI 60 / EI 90 / EI 120 / EI 180 / EI 240)
Opening size for 6 cm insulation thickness		$\leftrightarrow \leq 117.5$ cm $\updownarrow \leq 120$ cm	$\leftrightarrow \leq 117.5$ cm $\updownarrow \leq 120$ cm	$\leftrightarrow \leq 120$ cm x $\leq 240$ cm $\updownarrow \leq 80$ cm x $\leq$ unlimited
Opening size for 12 cm insulation thickness		$\leftrightarrow \leq 140$ cm $\updownarrow \leq 200$ cm	$\leftrightarrow \leq 140$ cm $\updownarrow \leq 200$ cm	$\leftrightarrow \leq 140$ cm $\updownarrow \leq 200$ cm
Opening size for 24 cm insulation thickness		$\leftrightarrow \leq 60$ cm $\updownarrow \leq 60$ cm	-	$\leftrightarrow \leq 60$ cm $\updownarrow \leq$ Unlimited



## Soft insulation, PYROPLATE® Fibre Installations

### Cable

Cable Ø 80 mm



### Pipe bundle of electrical installation pipes

Ø 100 mm, IR Ø 32 mm, cable Ø 21 mm

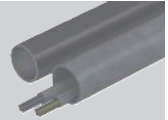


### Cable bundle

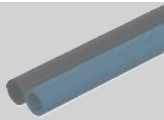
Ø 100 mm, cable Ø 21 mm



### Electrical installation pipe made of steel



### Individual lines for control purposes



### Cable support systems

Steel profiles



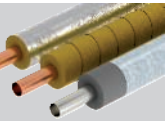
### Electrical installation pipe made of plastic, rigid

Ø 16 mm



### Metal pipes with path insulation

Steel, stainless steel and cast steel Ø 332.9 mm, copper Ø 108.0 mm



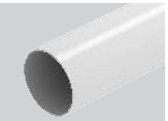
### Electrical installation pipe made of plastic, flexible

Ø 32 mm, cable Ø 21 mm



### Plastic pipes

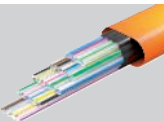
Ø 160 mm



## Special installations

### Speed pipe

24 pipes Ø 7 mm x 1.5 m,  
7 pipes Ø 10 mm x 2.0 m,  
5 pipes Ø 12 mm x 2.0 mm,  
Ø 50 mm total



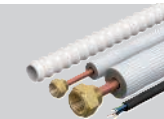
### Double solar pipes

"NanoSUN" DN 16 to DN 40



### Klimasplit

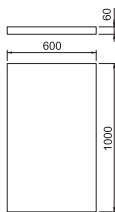
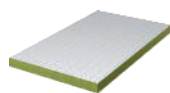
"Tubolit DuoSplit", "Tubolit Split" or comparable  
6.0 mm–22.0 mm



Details on the version can be found in the proof of suitability or mounting instructions. All the stated dimensions are maximum values.

## Soft insulation, PYROPLATE® Fibre

### Mineral fibre plate, pre-coated



Type	Length mm	Width mm	Height mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>PSX-P60</b>	1000	600	60	4	540.000	<b>7202297</b>

Mineral fibres

Mineral fibre plate, pre-coated with the ablation coating ASX, as the basis for the soft insulation.

### Ablation coating in a cartridge



Type	Contents ml	Pack Piece	Weight kg/100 pc.	Item no.
<b>ASX-K</b>	310	1	50.000	<b>7202310</b>

Intumescent material

Combined, endothermic and weatherproof coating for internal and external areas. Universal protection coating for cable and cable support structures. Use as direct filler, and as paint when stirred.

Material class DIN 4102 - B2, normally flammable.

In dry, frost-free rooms, the coating can be stored at temperatures from +5 °C to +25 °C for up to 18 months in closed, upright original containers.

### Ablation coating in a bucket



Type	Contents kg	Pack Piece	Weight kg/100 pc.	Item no.
<b>ASX-E</b>	5	1	500.000	<b>7202312</b>

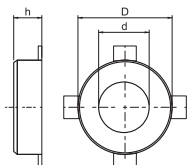
Intumescent material

Combined, endothermic and weatherproof coating for internal and external areas. Universal protection coating for cable and cable support structures. Use as direct filler, and as paint when stirred. Sufficient for an area of 4 m<sup>2</sup>.

Material class DIN 4102 - B2, normally flammable.

In dry, frost-free rooms, the coating can be stored at temperatures from +5 °C to +25 °C for up to 18 months in closed, upright original containers.

### Pipe sleeve with 2 fastening straps



Type	Pipe Ø mm	Dimen- sion h mm	Dimen- sion D mm	Dimen- sion d mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>TCX-032</b>	32 - 34	26	50	36	1	6.500	<b>7202200</b>
<b>TCX-040</b>	40 - 42	26	58	44	1	7.000	<b>7202201</b>
<b>TCX-050</b>	50 - 52	26	68	54	1	8.000	<b>7202203</b>

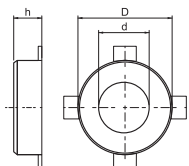
Intumescent material

Pipe sleeve for combustible pipes.

If there is a fire, fire protection inserts inside the sheet steel housing expand, exerting a very great pressure onto the burning thermoplastic pipes.

Fastening with anchors or M6 threaded rods.

### Pipe sleeve with 4 fastening straps



Type	Pipe Ø mm	Dimen- sion h mm	Dimen- sion D mm	Dimen- sion d mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>TCX-063</b>	63 - 65	26	94	67	1	15.500	<b>7202204</b>
<b>TCX-075</b>	75 - 77	26	106	79	1	19.000	<b>7202205</b>
<b>TCX-090</b>	90 - 92	26.6	132	94	1	37.000	<b>7202206</b>
<b>TCX-110</b>	110 - 112	26.6	155	114	1	46.000	<b>7202207</b>
<b>TCX-125</b>	125 - 127	40	172	129	1	70.000	<b>7202208</b>

Intumescent material

Pipe sleeve for combustible pipes.

If there is a fire, fire protection inserts inside the sheet steel housing expand, exerting a very great pressure onto the burning thermoplastic pipes.

Fastening with anchors of M6 threaded rods up to size 75 mm, then M8.

## Pipe sleeve with 6 fastening straps

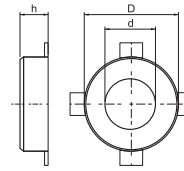
Type	Pipe Ø mm	Dimension h mm	Dimension D mm	Dimension d mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>TCX-140</b>	140 - 142	40	200	144	1	106.000	<b>7202209</b>
<b>TCX-160</b>	160 - 162	40	220	164	1	107.000	<b>7202210</b>

Intumescent material

Pipe sleeve for combustible pipes.

If there is a fire, fire protection inserts inside the sheet steel housing expand, exerting a very great pressure onto the burning thermoplastic pipes.

Fastening with anchors or M8 threaded rods.

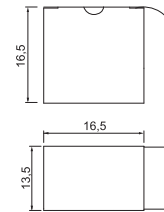


## Coil for insulation

Type	Contents kg	Length mm	Width mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>FSB-WB 1.5</b>	2.26	10000	125	1	220.000	<b>7203163</b>

Fire protection bandage coated with a substance on one side that foams up in the event of fire. It can be used to wrap installations in PYROMIX® dry mortar or PYROPLATE® Fibre plate insulations.

The bandage can be used as an additional measure according to the specific proofs of usability for cables, cable bundles, lengths, Klimasplit, Speedpipes, hydraulic pipes or empty tubes.



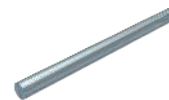
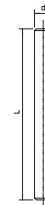
## Threaded rod

Type	Thread	Dimension d mm	Dimension L mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>TR M8 1M G</b>	M8	8	1000	10	30.000	<b>3141128</b>

**St** Steel

**G** Electrogalvanised

Threaded rod to DIN 976.



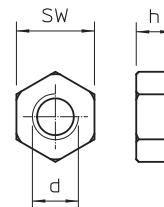
## Hexagonal nut DIN 934

Type	Thread	SW mm	Dimension h mm	Dimension d mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>HN M8 G</b>	M8	13	6.8	8	100	0.500	<b>3400085</b>

**St** Steel

**G** Electrogalvanised

Hexagonal nut to DIN 934 with metric thread.



## Mineral wool

Type	Dimension	Pack Piece	Weight kg/100 pc.	Item no.
<b>MIW-S</b>	25 litres	1	250.000	<b>7202306</b>

Mineral fibres

Universal filling wool for various fire protection applications, packed in compressed form.

Material class EN 13 501 - A1, non-combustible; melting point  $\geq 1,000$  °C.

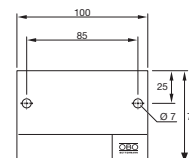


## Identification plate

Type	Language	Pack Piece	Weight kg/100 pc.	Item no.
<b>KS-S EN</b>	English	1	2.400	<b>7205429</b>

**PS** Polystyrene

Universal identification plate to be written on with waterproof and light-resistant felt-tip pen for all types of OBO insulation. For approved identification, including two push-fit anchors.





Kabelabschottung  
Kombiabschottung  
Rohrabschottung

Produkt-Nr. \_\_\_\_\_

Hersteller: \_\_\_\_\_

Produkt-Nr. \_\_\_\_\_

System: \_\_\_\_\_



Erkter: \_\_\_\_\_

Datum: \_\_\_\_\_



# Bag insulation PYROBAG®

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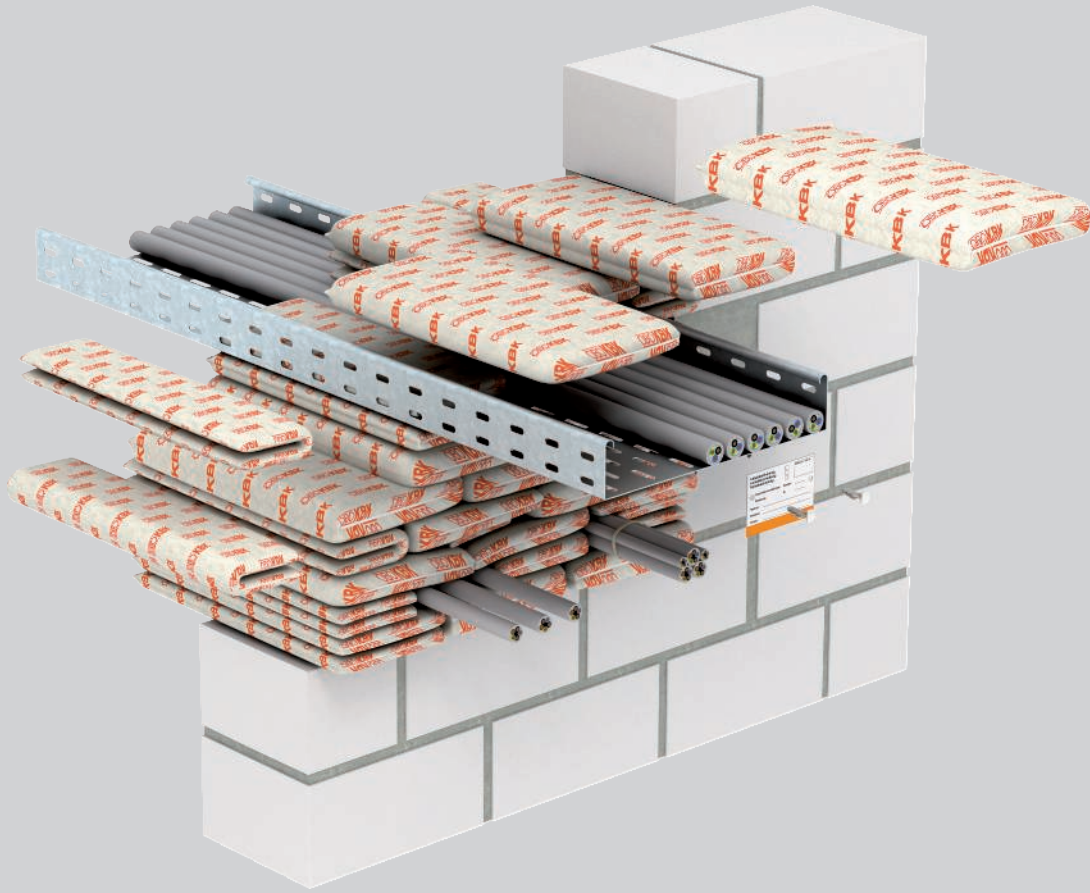
	<b>System description</b>	32
	<b>Products</b>	36

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## Bag insulation PYROBAG®

### System description



The PYROBAG® system from OBO is used to create cable insulation from fire protection cushions. The fire protection cushions, which can be shaped in any way, are stacked simply and quickly on top of each other, allowing absolutely tidy and dust-free mounting. The cushions can be used for permanent or temporary insulation in walls and ceilings, e.g. during renovations. The fire protection cushions are an ideal solution for frequent retroinstallations. Additional cables can be in-

stalled quickly, neatly and economically at a later date because the cushions can be used several times over. The cushions consist of a close-knit, dense and mechanically solid glass fabric with a special filling. The shell and the filling are free of mineral fibres and are also weatherproof and waterproof. Neither painting nor the use of filler are required.



# Bag insulation PYROBAG®

## Installation principle



Closing of the opening with cushions – without filler or coating.



Panels as mounting aid for the last cushion layer.



Lock against falling out during ceiling mounting.



Lock against slippage above the floor.



Cushions arranged in the trunking.



Retaining profile to prevent slippage in vertical arrangements.



Discreet attachment of the identification plate.

Classification to DIN



Erectors of combination insulation require training.

Always indicate the item number when ordering.

# Bag insulation PYROBAG®

## Registration data

### Insulation in walls/ceilings

<b>Fire resistance class</b>	S30, S60, S90
<b>Proof of application</b>	General construction approval of DIBt, Berlin
<b>Approval number</b>	Z- 19. 15-1115
<b>Testing standard</b>	DIN 4102 Part 9







### Insulation in cable trunking

<b>Fire resistance class</b>	S90
<b>Proof of application</b>	General construction approval of DIBt, Berlin
<b>Approval number</b>	Z- 19. 15-1119
<b>Testing standard</b>	DIN 4102 Part 9


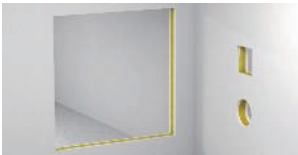

Note: For this insulation, only a general construction approval of the DIBt, Berlin, is available. In countries where a European Technical Assessment (ETA/ETB) is required, the possible use of these components must be agreed with the local fire protection authorities!

## Installation locations

### Insulation in walls and ceilings

Component		Rigid walls	Flexible walls	Rigid floors
				
Min. component strength		10 cm (S30/S60/S90)	10 cm (S30/S60/S90)	15 cm (S30 / S60 / S90)
Min. insulation thickness		35 cm (S30 / S60 / S90)	35 cm (S30 / S60 / S90)	35 cm (S30 / S60 / S90)
Opening size		↔ ≤ 100 cm, ↕ ≤ 150 cm	↔ ≤ 100 cm, ↕ ≤ 100 cm	↔ ≤ 60 cm, ↕ unlimited

### Insulation in cable ducts

Component		Rigid walls	Flexible walls	Rigid floors
				
Min. insulation thickness		10 cm (S30 / S60 / S90)	10 cm (S30 / S60 / S90)	15 cm (S30 / S60 / S90)
Duct size		35 cm (S30 / S60 / S90)	35 cm (S30 / S60 / S90)	35 cm (S30 / S60 / S90)
Plastic ducts		21 cm x 10 cm	21 cm x 10 cm	21 cm x 10 cm
Metal ducts		21 cm x 8 cm	21 cm x 8 cm	21 cm x 8 cm



## Bag insulation PYROBAG® Installations

### Cable



### Pipe bundle of electrical installation pipes



### Cable bundle



### Electrical installation pipe made of steel



### Individual lines for control purposes



### Cable support systems



### Electrical installation pipe made of plastic, rigid



### Metal pipes with path insulation



### Electrical installation pipe made of plastic, flexible

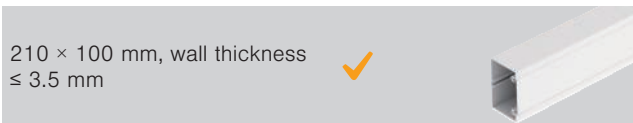


### Plastic pipes

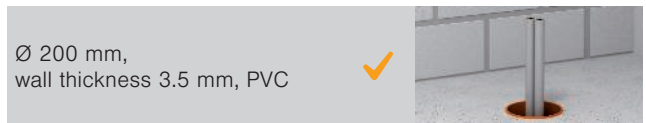


## Special installations

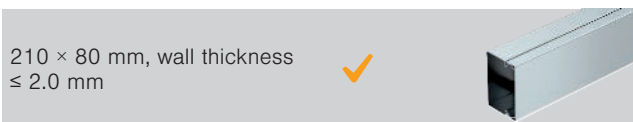
### Plastic ducts



### Insulation in the lining pipe

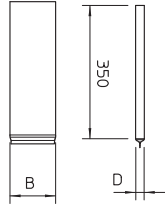


### Metal ducts



Details on the version can be found in the proof of suitability or mounting instructions.  
All the stated dimensions are maximum values.

## PYROBAG® fire protection cushion



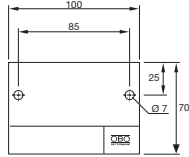
Type	Dimension		Pack Piece	Weight kg/100 pc.	Item no.
	B mm	D mm			
<b>KBK-1</b>	120	10	5	18.000	<b>7202709</b>
<b>KBK-2</b>	170	23	5	33.000	<b>7202725</b>
<b>KBK-3</b>	170	40	5	63.000	<b>7202741</b>

Glass mesh with special fire protection filling

Cable fire protection cushions made of dense, closely knit and mechanically solid glass mesh with a special filling. Free from mineral fibres, weatherproof and water-resistant.

Can be stored for an unlimited period of time in dry, frost-free rooms.

## Identification plate

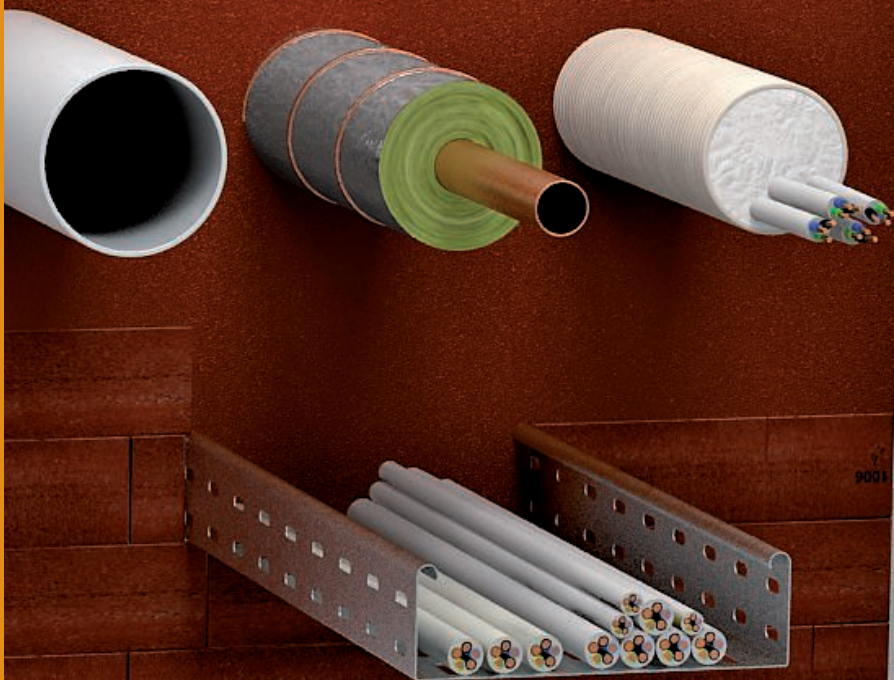


Type	Language	Pack Piece	Weight kg/100 pc.	Item no.

**PS** Polystyrene

Universal identification plate to be written on with waterproof and light-resistant felt-tip pen for all types of OBO insulation. For approved identification, including two push-fit anchors.





Kabelschutzleitung	<input type="checkbox"/>	Hersteller: OB BA
Kabelschutzleitung	<input type="checkbox"/>	
Polystyrolschutzleitung	<input type="checkbox"/>	
Abmessung	mm	
Material		
Datum		
Umsatz		
Umsatz		





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# Fire protection foam PYROSIT® NG

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## Fire protection foam PYROSIT® NG System description



The PYROPLATE® NG system from OBO is used to create cable and combination insulation made of fire protection foam. The special recipe of the 2-component foam allows simple, "pinpointed" processing. The good substrate adhesion prevents the foam from running out of the opening. Work can easily be interrupted to carry out checks. The system can be installed without dust and fibres. Surface coating is not necessary. According to the construction approval, in addi-

tion to the cables, pipes made of steel, copper or various plastics may also be run through the same insulation. The PYROSIT® NG insulation is suitable as combination insulation for different units. Due to the soft consistency, the insulation made of PYROSIT® NG can be reassigned simply. The insulation system can be combined with the PYROPLUG® Block foam block.





# Fire protection foam PYROSIT® NG

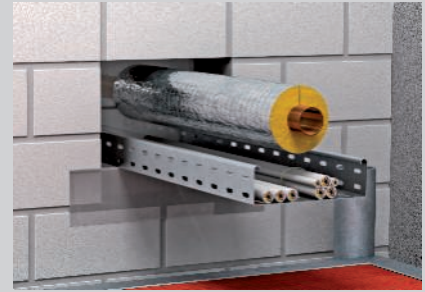
## Installation principle



Clean the layer and attach the lining aids, e.g. adhesive tape.



Apply the foam from the rear to the front, and remove residues as necessary.



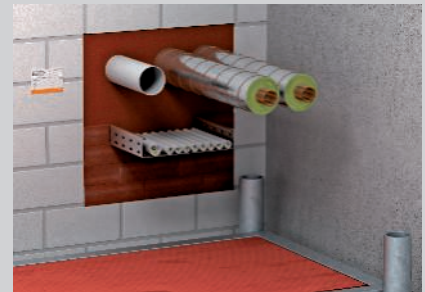
Use approved section insulation for metal pipes.



Electrical installation pipes up to M40, filled with cables or empty.



Combustible pipes up to Ø 50 mm can be run through without additional measures.



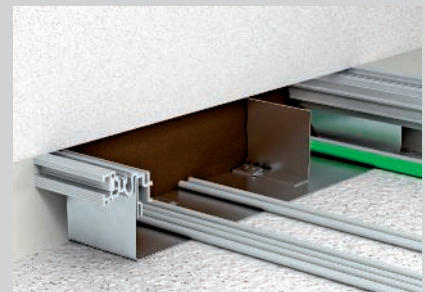
Combination insulation for various structures with labelling.



Application of the fire protection foam directly under the wall.



Labelled underfloor insulation with reserve empty pipe.



Empty pipes with tension wires can be foamed in for assignment at a later date.

Classification to EN

- EI15
- EI30
- EI45
- EI60
- EI90
- EI120



Erectors of combination insulation require training.

Always indicate the item number when ordering.





# Fire protection foam PYROSIT® NG

## Registration data

### Combination insulation in walls/ceilings








<b>Fire resistance class</b>	EI 15, EI 30, EI 45, EI 60, EI 90, EI 120
<b>Proof of application</b>	European Technical Assessment of OIB, Vienna
<b>Approval number</b>	ETA-11/0527
<b>Testing standard</b>	EN 1366-3

### Additive proofs

<b>Heat permeation</b>	Fraunhofer IBP Stuttgart, P1-002/2012
<b>Air permeation/pressure resistance</b>	ift Rosenheim, 11-003694-PR03
<b>Noise insulation</b>	HfT Stuttgart, 122-007-04P-186a

## Installation locations

### Insulation in walls and ceilings

Component		Rigid walls	Flexible walls	Rigid floors
				
Min. component strength		10 cm (EI30 / EI60 / EI90 / EI120)	10 cm (EI30 / EI60 / EI90 / EI120)	15 cm (EI30 / EI60 / EI90 / EI120)
Min. insulation thickness		14.4 cm (EI 30, EI 45 /EI 60 / EI 90 ) 20 cm (EI 90 / EI 120)	14.4 cm (EI 30, EI 45 /EI 60 / EI 90 ) 20 cm (EI 90 / EI 120)	14.4 cm (EI 30, EI 45 /EI 60 / EI 90 ) 20 cm (EI 90 / EI 120)
Opening size for 14.4 cm insulation thickness		↔ ≤ 45 cm ↕ ≤ 50 cm	↔ ≤ 45 cm ↕ ≤ 50 cm	↔ ≤ 45 cm ↕ ≤ 45 cm
Opening size for 20cm insulation thickness		↔ ≤ 45 cm ↕ ≤ 50 cm	↔ ≤ 45 cm ↕ ≤ 50 cm	↔ ≤ 45 cm ↕ ≤ 45 cm

# Fire protection foam PYROSIT® NG Installations

## Cable



## Pipe bundle of electrical installation pipes



## Cable bundle



## Electrical installation pipe made of steel



## Individual lines for control purposes



## Cable support systems



## Electrical installation pipe made of plastic, rigid



## Metal pipes with path insulation



## Electrical installation pipe made of plastic, flexible

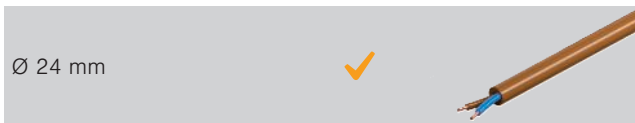


## Plastic pipes



## Special installations

### Cables



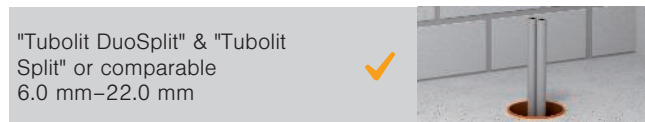
### Open underfloor ducts



### Screed-covered underfloor ducts



### Klimasplit



Details on the version can be found in the proof of suitability or mounting instructions.  
All the stated dimensions are maximum values.



## Fire protection foam PYROSIT® NG

### 2-component fire protection foam PYROSIT® NG



Type	Contents ml	Pack Weight		Item no.
		Piece	kg/100 pc.	
<b>FBS-S</b>	380	1	64.600	<b>7203800</b>

PYROSIT® NG 2-component fire protection foam in a cartridge, including 2 mixing tubes.

To create cable and combination insulation; always process with the cartridge pistols FBS-PH or FBS-PA.

In dry, frost-free rooms, the cartridge can be stored closed and standing upright at temperatures from +5 °C to +30 °C for up to 12 months.

### 2-component fire protection foam PYROSIT® NG



Type	Contents ml	Pack Weight		Item no.
		Piece	kg/100 pc.	
<b>FSU-F</b>	380	1	63.700	<b>7203900</b>

PYROSIT® Foam 2-component fire protection foam in a cartridge, including 2 mixing tubes.

To create cable and combination insulation; always process with the cartridge pistols FBS-PH or FBS-PA.

In dry, frost-free rooms, the cartridge can be stored closed and standing upright at temperatures from +5 °C to +30 °C for up to 12 months.

### Mixer pipe set



Type	Pack Weight		Item no.
	PU	kg/100 PUs	
<b>FBS-M</b>	1	10.000	<b>7203803</b>

10 mixing tubes and 5 extension tubes in the set for PYROSIT® NG fire protection foam.

### Fire protection case



Type	Pack Weight		Item no.
	Piece	kg/100 pc.	
<b>FBS-K</b>	1	420.000	<b>7203809</b>

The PYROSIT® NG fire protection case contains all the required products to create foam insulations. The complete set consists of: 3 x FBS-S, 1 x FBS-PH, 6 mixing and 5 extension pipes.

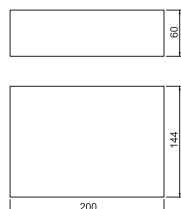
### Professional cartridge pistol



Type	Pack Weight		Item no.
	Piece	kg/100 pc.	
<b>FBS-PH</b>	1	120.000	<b>7203806</b>

High-quality 2-component cartridge pistol for use with the PYROSIT® NG fire protection foam. The parallel movement of the outlet to the holding grip ensures easy working.

### PYROPLUG® Block foam block



Type	Dimension mm	Pack Weight		Item no.
		Piece	kg/100 pc.	
<b>FBA-B200-14</b>	200x144x60	4	44.800	<b>7202505</b>

Permanently elastic, closed-pore foam

Foam block for cable and combination insulation, can also be used as a filler block in the PYROSIT® NG fire protection foam system.

The blocks must be protected against water in order to guarantee safe expansion in the case of fire.



### Cable coil

Type	Width	Length	Pack	Weight	Item no.
	mm	mm	Piece	kg/100 pc.	
<b>FBA-WI</b>	150	5000	1	384.000	<b>7202510</b>

Intumescent material

Self-adhesive, intumescent cable protector, 5 mm thick, for the use with large cable diameters and penetrated cable support systems, applicable in PYROPLUG® systems and PYROSIT® NG.

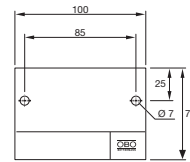


### Identification plate

Type	Language	Pack	Weight	Item no.
		Piece	kg/100 pc.	
<b>KS-S EN</b>	English	1	2.400	<b>7205429</b>






**PS** Polystyrene

Universal identification plate to be written on with waterproof and light-resistant felt-tip pen for all types of OBO insulation. For approved identification, including two push-fit anchors.



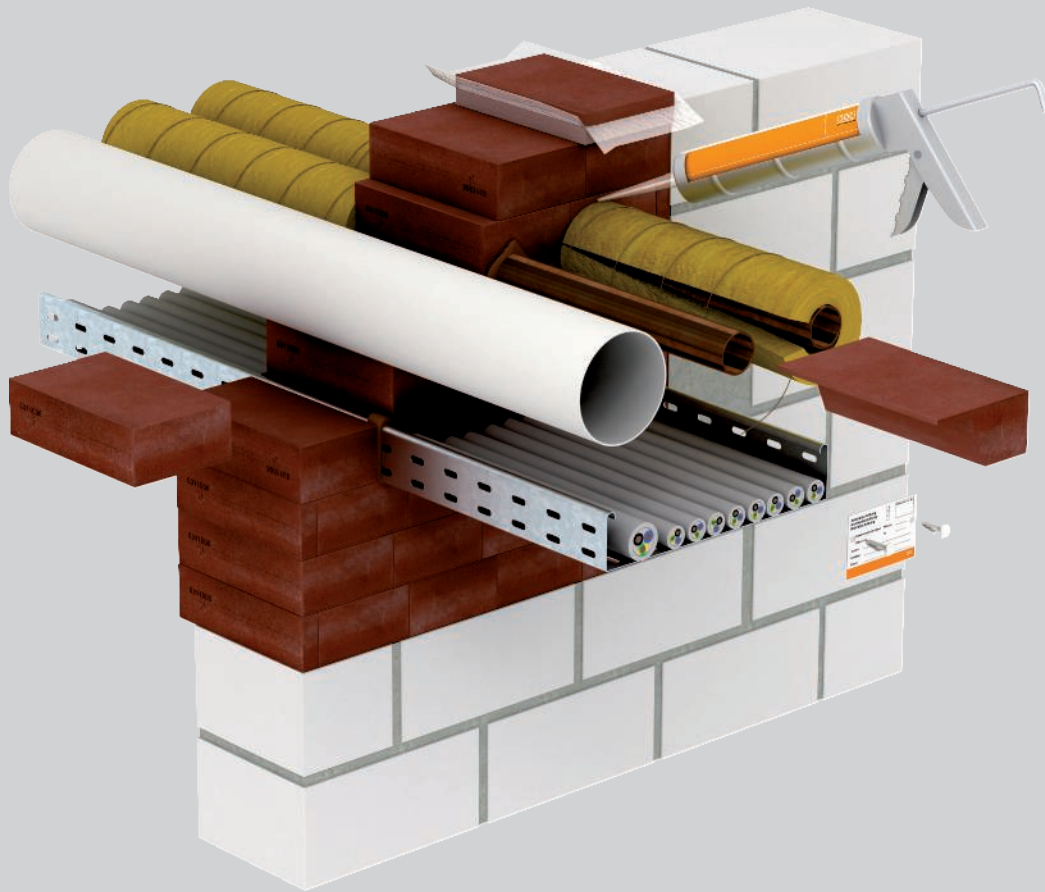


## Foam series PYROPLUG®

	<b>System description, PYROPLUG® BLOCK</b>	48
	<b>System description, PYROPLUG® PEG plugs</b>	52
	<b>System description, PYROPLUG® BOX box insulation</b>	56
	<b>System description, PYROMIX® Mini small insulation</b>	60
	<b>Products</b>	64



## PYROPLUG® Block System description



The OBO PYROPLUG® Block combination insulation is created from foam blocks, which, if there is a fire, expand without any noticeable pressure creation. In so doing, they form an insulating carbon foam. This reliably prevents the penetration of fire and smoke through the cable insulation. Combustible pipes can be run in this insulation without an additional sleeve.

Copper and steel pipes can be insulated either with or without section insulation. All the PYROPLUG® Block insulation is completely dust and fibre-free. This also applies to any installations at a later date. This is an aspect, which is particularly important for installation in IT and laboratory rooms.





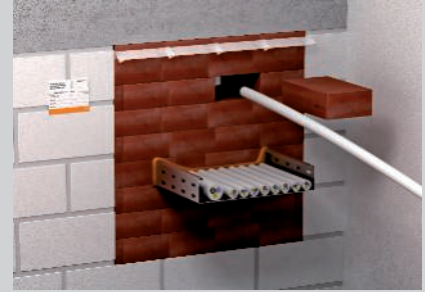
# PYROPLUG® Block Installation principle



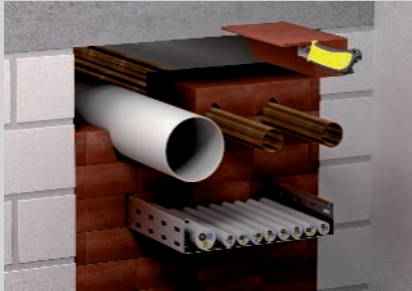
Mounting of the cut blocks.



Vacuum blocks for simple residual gap closing.



Simple reinstallation through removal of individual blocks.



Running of combustible pipes without additional measures.



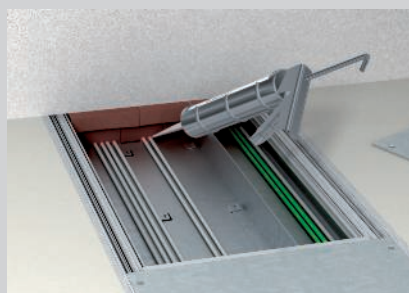
Run-through, non-combustible pipes with section insulation.



Tight-fitting installation of the blocks in the ceiling penetration.



Cut thin strips for the duct compartments.



Close the joints and spandrels between the installed cables and the blocks with a layer of the FBA-SP fire protection compound of at least 2 cm deep.



Close the residual joints between cables and blocks with the FBA-SP filler.

Classification to DIN

**S30**   **S60**   **S90**

Classification to EN

**EI15**   **EI30**   **EI45**   **EI60**   **EI90**   **EI120**



Erectors of combination insulation require training.

Always indicate the item number when ordering.



**Registration data**

**Combination insulation in walls/ceilings**

<b>Fire resistance class</b>	EI 15, EI 30, EI 45, EI 60, EI 90, EI 120
<b>Proof of application</b>	European Technical Assessment of OIB, Vienna
<b>Approval number</b>	ETA-15/0803
<b>Testing standard</b>	EN 1366-3


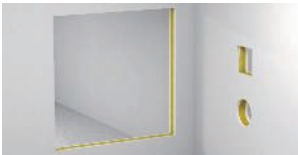


































**Additive proofs**

<b>Heat permeation</b>	Fraunhofer IBP Stuttgart, P1-001/2012
<b>Air permeation/pressure resistance</b>	ift Rosenheim, 11-003694-PR02
<b>Noise insulation</b>	HfT Stuttgart, 122-007-04P-186a



**Installation locations**

Insulation in walls and ceilings

Component	Rigid walls	Flexible walls	Rigid floors
			
Min. component strength 	10 cm (EI 30 / EI 60 / EI 90 / EI 120)	10 cm (EI 30 / EI 60 / EI 90 / EI 120)	15 cm (EI 30 / EI 60 / EI 90 / EI 120)
Min. insulation thickness 	14.4 cm (EI 30 / EI 60) 20 cm (EI 90 / EI 120)	14.4 cm (EI 30 / EI 60) 20 cm (EI 90 / EI 120)	14.4 cm (EI 30 / EI 60) 20 cm (EI 90 / EI 120)
Opening size for 14.4 cm insulation thickness 	 ≤ 100 cm  ≤ 60 cm	 ≤ 100 cm  ≤ 60 cm	 ≤ 37.5 cm Unlimited  ≤ 40 cm  ≤ 60 cm
	 ≤ 60 cm  ≤ 100 cm	 ≤ 60 cm  ≤ 100 cm	 ≤ 100 cm  ≤ 60 cm  ≤ 45 cm  ≤ 225 cm
Opening size for 20cm insulation thickness 	 ≤ 100 cm  ≤ 60 cm	 ≤ 100 cm  ≤ 60 cm	 ≤ 37.5 cm Unlimited  ≤ 40 cm Unlimited
	 ≤ 60 cm  ≤ 100 cm	 ≤ 60 cm  ≤ 100 cm	 ≤ 60 cm  ≤ 130 cm  ≤ 70 cm  ≤ 100 cm

# PYROPLUG® Block Installations

## Cable

Ø 80 mm



## Pipe bundle of electrical installation pipes

Ø 80 mm cable,  
pipes max. Ø 40 mm



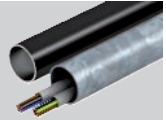
## Cable bundle

Ø 100 mm,  
cable Ø 21 mm

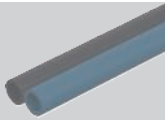


## Electrical installation pipe made of steel

Ø 16 mm

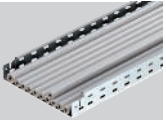


## Individual lines for control purposes



## Cable support systems

Steel profiles



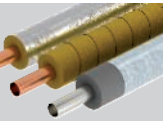
## Electrical installation pipe made of plastic, rigid

Ø 40 mm



## Metal pipes with path insulation

Steel, stainless steel and  
cast steel Ø 88.9 mm,  
copper Ø 88.9 mm



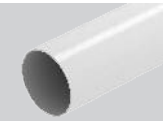
## Electrical installation pipe made of plastic, flexible

Ø 40 mm



## Plastic pipes

Ø 50 mm



## Special installations

### Cables

Ø 24 mm

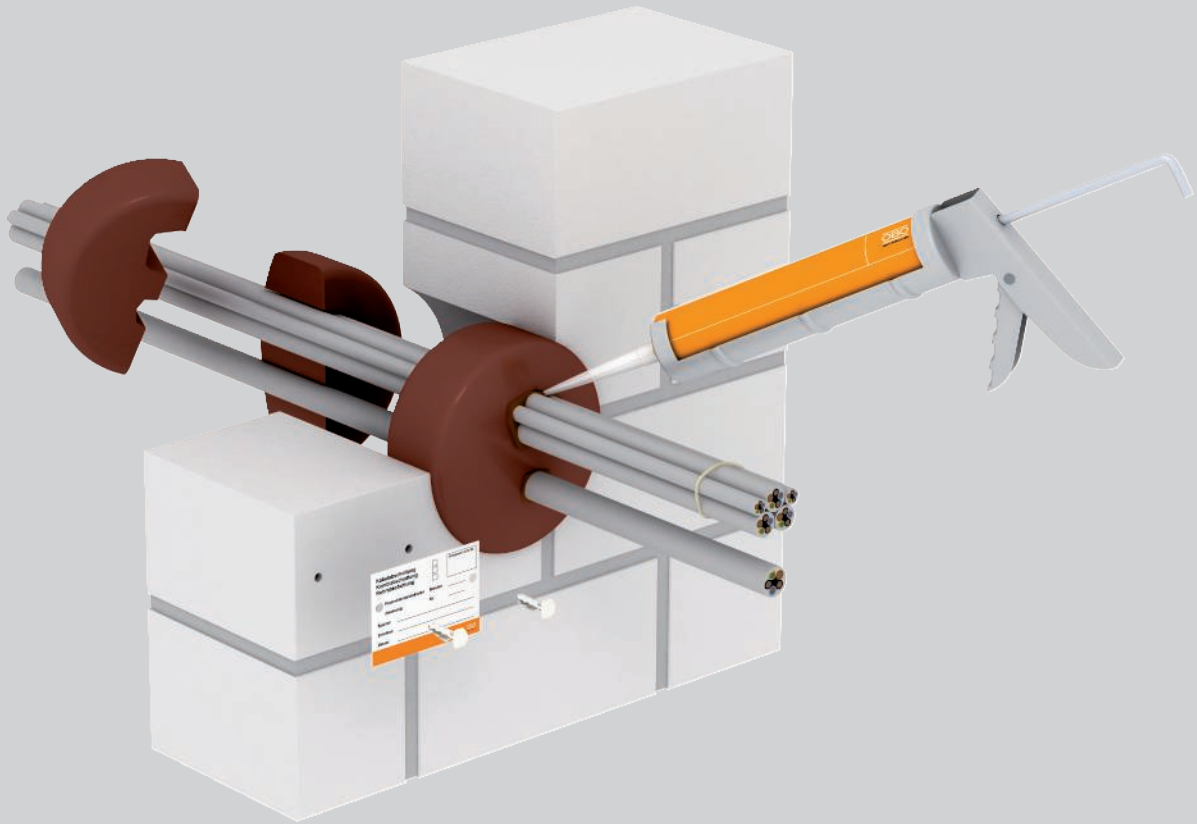


Details on the version can be found in the proof of suitability or mounting instructions.  
All the stated dimensions are maximum values.



## PYROPLUG® Peg foam series

### System description



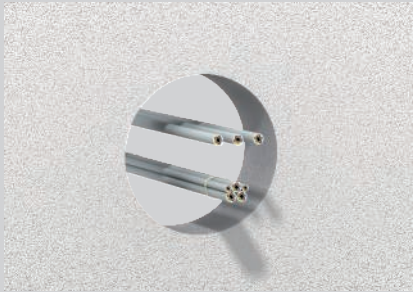
The PYROPLUG® Peg system from OBO is used to create cable insulation with fire protection foam plugs. The foam plugs are ideal for closing core drill holes in solid walls and concrete ceilings. The foam plugs are made of permanently elastic, closed-pore foam, which expands in the event of fire without any significant pressure build-up, thus creating an insulating plastic foam. This reliably prevents the penetration of fire and

smoke through the cable insulation. The PYROPLUG® Peg insulation system can be used without difficulty in areas of data processing and in laboratories, as mounting is completely clean and is free of dust and fibres. This also applies to any necessary cable installations at a later date. Special tools are not required for processing, a knife is sufficient.

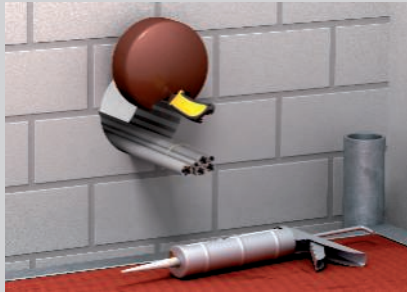


# PYROPLUG® Peg foam series

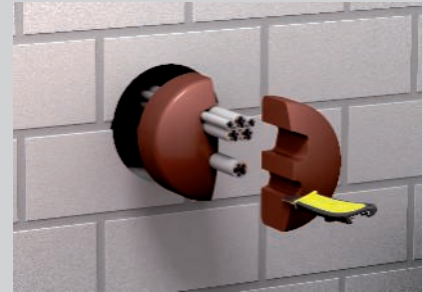
## Installation principle



Ideal for core drill holes of 55 mm to 240 mm.



Cutting of the plugs for cable assignment on the edge of the core hole.



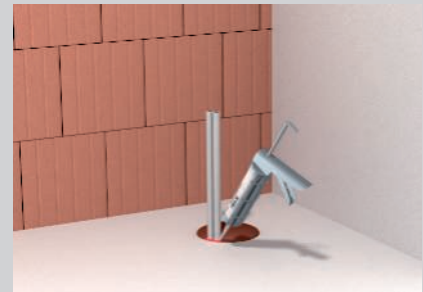
Push cut plugs into the core hole.



Due to the elastically material a quick mounting is possible.



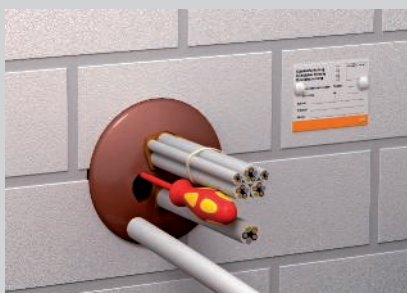
Cutting and mounting of the plugs in ceilings.



Residual joints are closed off with the filler FBA-SP.



Small distance to next core drill hole possible.



With retroinstallations, carefully cut or drill the plugs.

Classification to DIN



Classification to EN



Erectors of combination insulation require training.

Always indicate the item number when ordering.



# PYROPLUG® Peg foam series

## Registration data

### Combination insulation in walls/ceilings

<b>Fire resistance class</b>	EI 30, EI 45, EI 60, EI 90, EI 120
<b>Proof of application</b>	European Technical Assessment of OIB, Vienna
<b>Approval number</b>	ETA-15/0701
<b>Testing standard</b>	EN 1366-3

### Additive proofs

<b>Heat permeation</b>	Fraunhofer IBP Stuttgart, P1-001/2012
<b>Air permeation/pressure resistance</b>	ift Rosenheim, 11-003694-PR01
<b>Noise insulation</b>	HfT Stuttgart, 122-007-04P-186a

## Installation locations

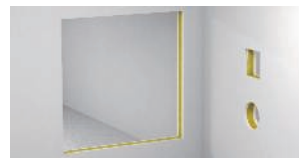
### Insulation in walls and ceilings

#### Component F30

#### Rigid walls



#### Flexible walls



#### Rigid floors



		Rigid walls	Flexible walls	Rigid floors
Min. component strength		10 cm (EI 30 / EI 60 / EI 90) 20 cm (EI 90 / EI 120)	10 cm (EI 30 / EI 60 / EI 90) 20 cm (EI 90 / EI 120)	15 cm (EI 30 / EI 60 / EI 90) 20 cm (EI 90 / EI 120)
Min. insulation thickness		>17 cm–<20 cm (EI 30 / EI 60 / EI 90) 20 cm (EI 90 / EI 120)	>17 cm–<20 cm (EI 30 / EI 60 / EI 90) 20 cm (EI 90 / EI 120)	>17 cm–<20 cm (EI 30 / EI 60 / EI 90) 20 cm (EI 90 / EI 120)
Opening size		Ø 55 mm, Ø 68 mm, Ø 97 mm, Ø 112 mm, Ø 124 mm, Ø 155 mm, Ø 190 mm, Ø 240 mm	Ø 55 mm, Ø 68 mm, Ø 97 mm, Ø 112 mm, Ø 124 mm, Ø 155 mm, Ø 190 mm, Ø 240 mm	Ø 55 mm, Ø 68 mm, Ø 97 mm, Ø 112 mm, Ø 124 mm, Ø 155 mm, Ø 190 mm, Ø 240 mm

# PYROPLUG® Peg foam series Installations

## Cable



## Pipe bundle of electrical installation pipes



## Cable bundle



## Electrical installation pipe made of steel



## Individual lines for control purposes



## Cable support systems



## Electrical installation pipe made of plastic, rigid



## Metal pipes with path insulation



## Electrical installation pipe made of plastic, flexible

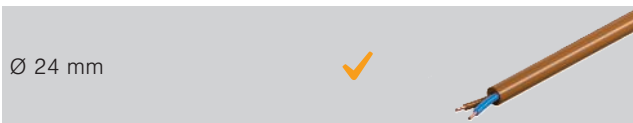


## Plastic pipes



## Special installations

### Cables



### Insulation in the lining pipe



Details on the version can be found in the proof of suitability or mounting instructions.  
All the stated dimensions are maximum values.



## PYROPLUG® Box box insulation

### System description



The PYROPLUG® Box system from OBO is used to create cable insulation with boxes made of foam. The system is particularly suitable for simple mounting of cable insulation in light-duty partitions. No layering is required. Installation in solid walls and solid ceilings is also possible and approved. The insulation system consists of a two-part frame and two matching internal pieces. The permanently elastic, closed-pore foam

material expands in the event of fire without any significant pressure build-up, thus creating an insulating plastic foam. This reliably prevents the penetration of fire and smoke through the cable insulation. The usable area of the boxes corresponds to the maximum approval cable assignment area of 60%. It is thus impossible to over assign it with cables.





# PYROPLUG® Box box insulation

## Installation principle



Insertion of the split frame in light-duty partitions, without additional layering.



Mounting of the frame with previously installed cables.



Exact cutting of the internal pieces and then insertion in the frame.



Closing joint component on full assignment with FBA-SP filler.



Grouped arrangement of the boxes.

Classification to DIN



Erectors of combination insulation require training.

Always indicate the item number when ordering.



# PYROPLUG® Box box insulation

## Registration data

### Insulation in wall/ceiling

<b>Fire resistance class</b>	S30, S60, S90
<b>Proof of application</b>	General construction approval of DIBt, Berlin
<b>Approval number</b>	Z-19. 15-1557
<b>Testing standard</b>	DIN 4102 Part 9

## Installation locations

### Insulation in walls and ceilings

#### Component F30

##### Rigid walls



##### Flexible walls



##### Rigid floors



Min. component strength



5 cm  
(S30 / S60 / S90)

7.5 cm  
(S30 / S60 / S90)

15 cm  
(S30 / S60 / S90)

Min. insulation thickness



20 cm  
(S30 / S60 / S90)

20 cm  
(S30 / S60 / S90)

20 cm  
(S30 / S60 / S90)

Opening size



↔ ≤ 50 cm  
↕ ≤ 50 cm

↔ ≤ 50 cm  
↕ ≤ 50 cm

↔ ≤ 50 cm  
↕ ≤ 50 cm

#### Component F90

##### Screed-covered



##### Flexible walls



##### Rigid floors



Min. component strength



10 cm  
(S30 / S60 / S90)

10 cm  
(S30 / S60 / S90)

15 cm  
(S30 / S60 / S90)

Min. insulation thickness



20 cm  
(S30 / S60 / S90)

20 cm  
(S30 / S60 / S90)

20 cm  
(S30 / S60 / S90)

Opening size



↔ ≤ 50 cm  
↕ ≤ 50 cm

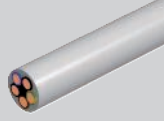
↔ ≤ 50 cm  
↕ ≤ 50 cm

↔ ≤ 50 cm  
↕ ≤ 50 cm

# PYROPLUG® Box box insulation Installations

## Cable

All Ø



## Pipe bundle of electrical installation pipes

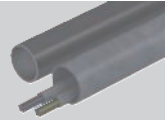


## Cable bundle

Ø 100 mm,  
cable Ø 21 mm

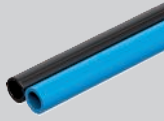


## Electrical installation pipe made of steel



## Individual lines for control purposes

Ø 15 mm



## Cable support systems

Profiles made of steel, aluminium or plastic



## Electrical installation pipe made of plastic, rigid

Ø 20 mm



## Metal pipes with path insulation

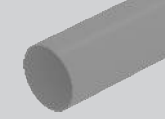


## Electrical installation pipe made of plastic, flexible

Ø 20 mm



## Plastic pipes

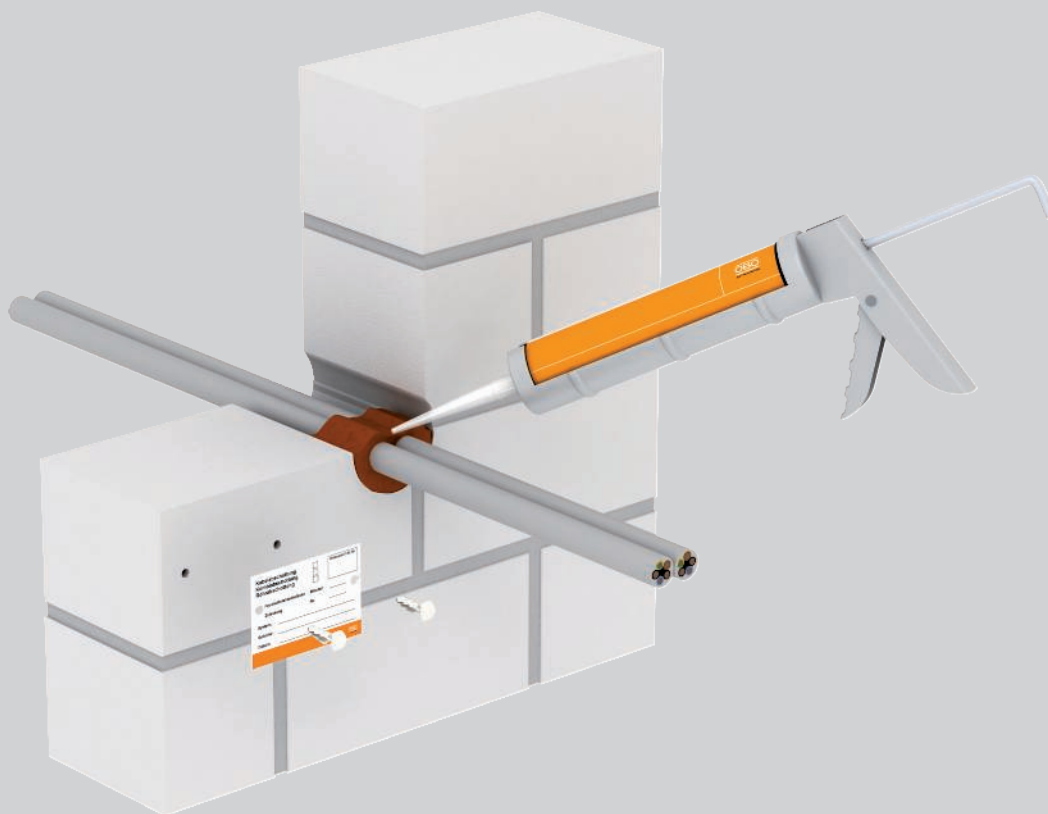


Details on the version can be found in the proof of suitability or mounting instructions. All the stated dimensions are maximum values.



## PYROPLUG® Mini filler

### System description



The OBO PYROPLUG® Mini system is ideal for small, round cable insulations up to a diameter of 8 cm. It only consists of the one-component filler PYROPLUG® Screed. In light-duty partitions, the empty mini pipe shell of the PYROPLUG® Shell system is used as lay-

ering. The interior of these pipe shells may be completely assigned. Only the residual joints must be filled with the filler.



## PYROPLUG® Mini filler Installation principle



Closing of the opening with the filler FBA-SP.



In light-duty partitions, use of the mini pipe shell FBA-DR.



Complete assignment of the mini pipe shell.



Classification to DIN

S30

S60

S90



Erectors of combination insulation require training.

Always indicate the item number when ordering.

# PYROPLUG® Mini filler

## Registration data

### Insulation in wall/ceiling

<b>Fire resistance class</b>	S30, S60, S90
<b>Proof of application</b>	General construction approval of DIBt, Berlin
<b>Approval number</b>	Z-19. 15-1851
<b>Testing standard</b>	DIN 4102 Part 9

## Installation locations

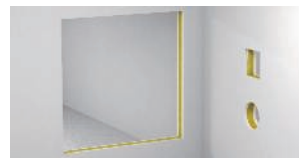
### Insulation in walls and ceilings

#### Component F90

#### Rigid walls



#### Flexible walls



#### Rigid floors



Min. component strength		10 cm (S30 / S60 / S90)	10 cm (S30 / S60 / S90)	15 cm (S30 / S60 / S90)
Min. insulation thickness		10 cm (S30 / S60 / S90)	10 cm (S30 / S60 / S90)	15 cm (S30 / S60 / S90)
Opening size		≤ Ø 8 cm	≤ Ø 8 cm	≤ Ø 8 cm

# PYROPLUG® Mini filler

## Installations

### Cable



### Pipe bundle of electrical installation pipes



### Cable bundle



### Electrical installation pipe made of steel



### Individual lines for control purposes



### Cable support systems



### Electrical installation pipe made of plastic, rigid



### Metal pipes with path insulation



### Electrical installation pipe made of plastic, flexible



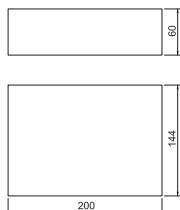
### Plastic pipes



Details on the version can be found in the proof of suitability or mounting instructions. All the stated dimensions are maximum values.



### PYROPLUG® Block foam block



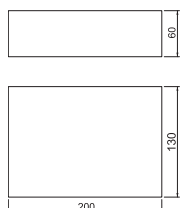
Type	Dimension mm	Pack Piece	Weight kg/100 pc.	Item no.

Permanently elastic, closed-pore foam

Foam block for cable and combination insulation, can also be used as a filler block in the PYROSIT® NG fire protection foam system.

The blocks must be protected against water in order to guarantee safe expansion in the case of fire.

### PYROPLUG® Block foam block

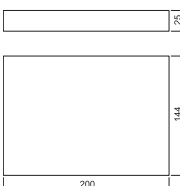


Type	Dimension mm	Length mm	Width mm	Height mm	Pack Piece	Weight kg/100 pc.	Item no.

Foam block for cable and combination insulation, can also be used as a filler block in the PYROSIT® NG fire protection foam system.

The blocks must be protected against water in order to guarantee safe expansion in the case of fire.

### PYROPLUG® Block vacuum block



Type	Dimension mm	Pack Piece	Weight kg/100 pc.	Item no.

Permanently elastic, closed-pore foam

Vacuum block for cable and combination insulation.

After cutting into the foil, the vacuum block expands to its original size. It can be used with or without foil.

The blocks must be protected against water in order to guarantee safe expansion in the case of fire.

### 2-component fire protection foam PYROSIT® NG



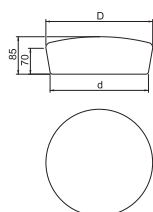
Type	Contents ml	Pack Piece	Weight kg/100 pc.	Item no.

PYROSIT® NG 2-component fire protection foam in a cartridge, including 2 mixing tubes.

To create cable and combination insulation; always process with the cartridge pistols FBS-PH or FBS-PA.

In dry, frost-free rooms, the cartridge can be stored closed and standing upright at temperatures from +5 °C to +30 °C for up to 12 months.

### PYROPLUG® Peg plugs



Type	For opening Ø mm	Dimen- sion D mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>FSU-P3</b>	76	78	4	18.700	7203912
<b>FSU-P4</b>	101	107	4	33.000	7203915
<b>FSU-P4.5</b>	114	122	4	43.000	7203919
<b>FSU-P5</b>	127	134	4	49.500	7203921

Plug for cable insulation

Protect the FBA plugs against water in order to guarantee safe foaming in case of fire.

### PYROPLUG® screed filler



Type	Contents ml	Pack Piece	Weight kg/100 pc.	Item no.

Intumescent material

Fire protection filler in a cartridge.

Usable as small insulation and as joint closing compound in all insulation of the PYROPLUG® series.

In dry, frost-free rooms, the fire protection filler can be stored for up to 12 months at a temperature of +5 °C to +30 °C.



**PYROPLUG® screed filler**

Type	Contents		Pack Piece	Weight		Item no.
	ml			kg/100 pc.		
<b>FSU-M</b>	310		1	50.000		<b>7203906</b>



Fire protection filler in a cartridge.

Usable as small insulation and as joint closing compound in all insulation of the PYROPLUG® series.

In dry, frost-free rooms, the fire protection filler can be stored for up to 12 months at a temperature of +5 °C to +30 °C.

**Cable coil**

Type	Width	Length	Pack Piece	Weight		Item no.
	mm	mm		kg/100 pc.		
<b>FBA-WI</b>	150	5000	1	384.000		<b>7202510</b>

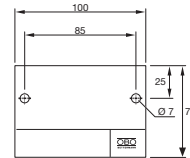


Intumescent material

Self-adhesive, intumescent cable protector, 5 mm thick, for the use with large cable diameters and penetrated cable support systems, applicable in PYROPLUG® systems and PYROSIT® NG.

**Identification plate**

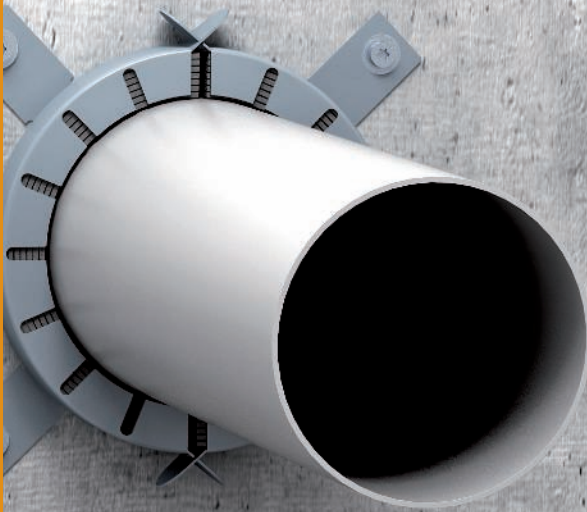
Type	Language	Pack Piece	Weight		Item no.
			kg/100 pc.		
<b>KS-S EN</b>	English	1	2.400		<b>7205429</b>
<b>FSU-IP</b>	English	10	2.000		<b>7203924</b>



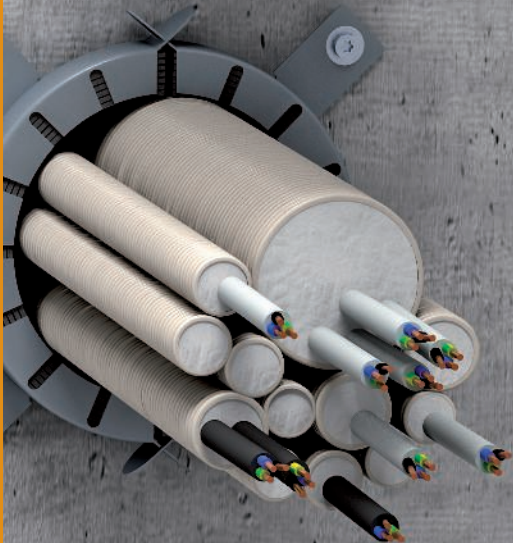
**PS** Polystyrene

Universal identification plate to be written on with waterproof and light-resistant felt-tip pen for all types of OBO insulation. For approved identification, including two push-fit anchors.

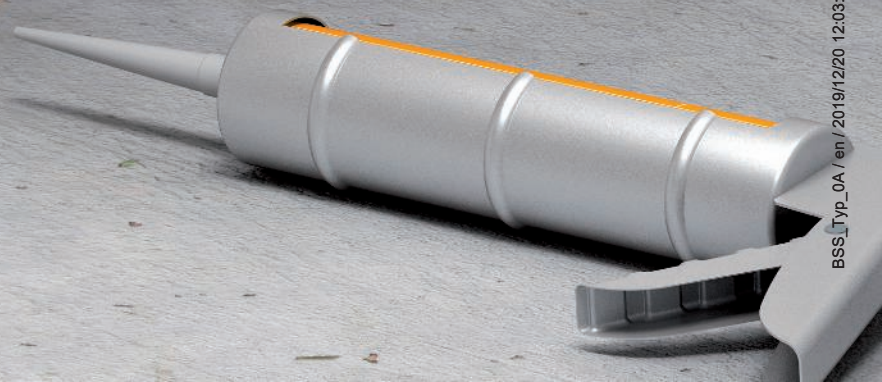







Kabelabschottung	<input type="checkbox"/>	Einbaust. / LV. Nr.
Kombiabschottung	<input type="checkbox"/>	
Rohrabschottung	<input type="checkbox"/>	
Widerstandsklasse	Minuten	
Zufassung	Nr.	
System:		
Erichter:		
Datum:		



Kabelabschottung	<input type="checkbox"/>	Einbaust. / LV. Nr.
Kombiabschottung	<input type="checkbox"/>	
Rohrabschottung	<input type="checkbox"/>	
Widerstandsklasse	Minuten	
Zufassung	Nr.	
System:		
Errichter:		
Datum:		



## Pipe seal PYROCOMB® Tubes

	<b>System description, PYROCOMB® Tubes cable insulation</b>	68
	<b>System description, PYROCOMB® pipe insulation</b>	72
	<b>Products</b>	76

## PYROCOMB® Tubes pipe sleeve System description



The PYROCOMB® Tubes system is used to create cable insulation with pipe sleeves. The system comprises multiple sizes of the pipe sleeve, type TCX. This allows simple insulation of bundles of plastic electrical installation pipes, rigid or flexible, up to a size of M63. It is irrelevant whether the pipes are filled with cables or are empty. In the event of fire, the fire

protection material inserted within the seal foams up after a few minutes under high pressure, closing the softened bundles at a high pressure. This safely prevents the spread of fire and smoke, should a fire occur.



# PYROCOMB® Tubes pipe sleeve

## Installation principle



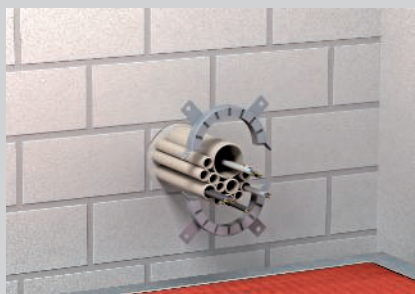
Two-sided arrangement of the pipe sleeves for wall mounting.



Mounting on the underside of the ceiling with metal anchors.



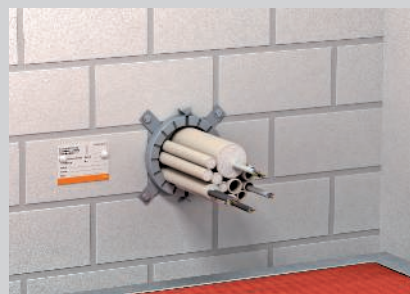
Closing of the ring gap with the insulation layer creator DSX.



Combination of the sleeve halves and fastening on the wall.



Closing of the pipe ends with the insulation layer creator DSX.



Labelled insulation of installation pipe bundles.



Classification to DIN

S30

S60

S90

Classification to EN

EI15

EI30

EI45

EI60

EI90

EI120



Erectors of combination insulation require training.

Always indicate the item number when ordering.



# PYROCOMB® Tubes pipe sleeve







## Registration data

### Combination insulation in walls and ceilings

<b>Fire resistance class</b>	EI 15, EI 30, EI 45, EI 60, EI 90, EI 120
<b>Proof of application</b>	General construction approval of OIB, Vienna
<b>Approval number</b>	ETA-12/0207
<b>Testing standard</b>	EN 1366-3

## Installation locations

### Insulation in walls and ceilings

Component		Rigid walls	Flexible walls	Rigid floors
				
Min. component strength		10 cm (EI 30 / EI 60 / EI 90 / EI 120)	10 cm (EI 30 / EI 60 / EI 90 / EI 120)	15 cm (EI 30 / EI 60 / EI 90 / EI 120)
Min. insulation thickness		10 cm (EI 60 / EI 90 / EI 120)	10 cm (EI 60 / EI 90 / EI 120)	15 cm (EI 60 / EI 90 / EI 120)
Opening size		Ø 32 mm, Ø 40 mm, Ø 50 mm, Ø 63 mm, Ø 75 mm, Ø 90 mm, Ø 110 mm, Ø 125 mm	Ø 32 mm, Ø 40 mm, Ø 50 mm, Ø 63 mm, Ø 75 mm, Ø 90 mm, Ø 110 mm, Ø 125 mm	Ø 32 mm, Ø 40 mm, Ø 50 mm, Ø 63 mm, Ø 75 mm, Ø 90 mm, Ø 110 mm, Ø 125 mm

# PYROCOMB® Tubes pipe sleeve Installations

**Cable**



**Pipe bundle of electrical installation pipes**



**Cable bundle**



**Electrical installation pipe made of steel**



**Individual lines for control purposes**



**Cable support systems**



**Electrical installation pipe made of plastic, rigid**



**Metal pipes with path insulation**



**Electrical installation pipe made of plastic, flexible**



**Plastic pipes**



Details on the version can be found in the proof of suitability or mounting instructions. All the stated dimensions are maximum values.



## PYROCOMB® pipe sleeve

### System description



The PYROCOMB® system can be used as independent pipe sealing for combustible pipes (e.g. sanitary wastewater pipes). It is primarily made up of the pipe sleeves, type TCX. In the event of fire, the fire protection material inserted within the seal foams up after a few minutes under high pressure, closing the soft plastic pipes. This safely prevents the spread of fire

and smoke, should a fire occur. With wall mounting, the pipe sleeves are mounted on both sides of the wall with metal anchors. Ceiling penetrations only have a tube seal from the underside. In light-duty partitions, the pipe sleeves are fastened on passed-through threaded rods and connected together.





# PYROCOMB® pipe sleeve

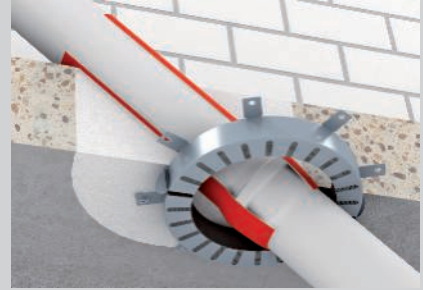
## Installation principle



Two-sided arrangement of the pipe sleeves for wall mounting.



Mounting on the underside of the ceiling with metal anchors.



Sloping pipe penetration up to an angle of 39°.



Pipe sleeves in the area of the penetration.



Eccentric arrangement with max. 3 levels of larger pipe sleeves.



Pipe post systems with 2 accompanying cables.



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Classification to DIN

- S30
- S60
- S90

Classification to EN

- EI15
- EI30
- EI45
- EI60
- EI90
- EI120
- EI180
- EI240



Erectors of combination insulation require training.

Always indicate the item number when ordering.



# PYROCOMB® pipe sleeve


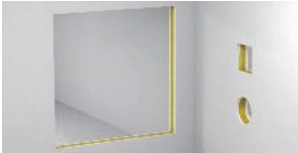




## Registration data

### Pipe insulation in underfloor ducts

<b>Fire resistance class</b>	EI 15, EI 30, EI 45, EI 60, EI 90, EI 120, EI 180, EI 240
<b>Proof of application</b>	General construction approval of OIB, Vienna
<b>Approval number</b>	ETA-12/0182
<b>Testing standard</b>	EN 1366-3

## Installation locations

### Pipe insulation in walls and ceilings

Component	Rigid walls	Flexible walls	Rigid floors
			
Min. component strength 	10 cm (EI 30 / EI 60 / EI 90 / EI 120 / EI 240)	10 cm (EI 30 / EI 60 / EI 90 / EI 120)	15 cm (EI 30 / EI 60 / EI 90 / EI 120) 30 cm (EI 180 / EI 240)
Min. insulation thickness 	10 cm (EI 30 / EI 60 / EI 90 / EI 120 / EI 240)	10 cm (EI 60 / EI 90 / EI 120)	15 cm (EI 30 / EI 60 / EI 90 / EI 120) 30 cm (EI 180 / EI 240)
Opening size 	Ø 32 mm, Ø 40 mm, Ø 50 mm, Ø 63 mm, Ø 75 mm, Ø 90 mm, Ø 110 mm, Ø 125 mm, Ø 140 mm, Ø 160 mm, Ø 180 mm, Ø 200 mm, Ø 225 mm, Ø 250 mm, Ø 280 mm, Ø 300 mm, Ø 315 mm, Ø 355 mm, Ø 400 mm	Ø 32 mm, Ø 40 mm, Ø 50 mm, Ø 63 mm, Ø 75 mm, Ø 90 mm, Ø 110 mm, Ø 125 mm, Ø 140 mm, Ø 160 mm, Ø 180 mm, Ø 200 mm, Ø 225 mm, Ø 250 mm, Ø 280 mm, Ø 300 mm, Ø 315 mm, Ø 355 mm, Ø 400 mm	Ø 32 mm, Ø 40 mm, Ø 50 mm, Ø 63 mm, Ø 75 mm, Ø 90 mm, Ø 110 mm, Ø 125 mm, Ø 140 mm, Ø 160 mm, Ø 180 mm, Ø 200 mm, Ø 225 mm, Ø 250 mm, Ø 280 mm, Ø 300 mm, Ø 315 mm, Ø 355 mm, Ø 400 mm

# PYROCOMB® pipe sleeve Installations

Cable



Pipe bundle of electrical installation pipes



Cable bundle



Electrical installation pipe made of steel



Individual lines for control purposes



Cable support systems



Electrical installation pipe made of plastic, rigid



Metal pipes with path insulation



Electrical installation pipe made of plastic, flexible



Plastic pipes



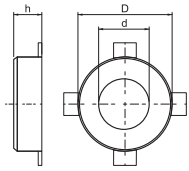
Ø 400 mm



Details on the version can be found in the proof of suitability or mounting instructions. All the stated dimensions are maximum values.



### Pipe sleeve with 2 fastening straps



Type	Pipe Ø mm	Dimension h mm	Dimension D mm	Dimension d mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>TCX-032</b>	32 - 34	26	50	36	1	6.500	<b>7202200</b>
<b>TCX-040</b>	40 - 42	26	58	44	1	7.000	<b>7202201</b>
<b>TCX-050</b>	50 - 52	26	68	54	1	8.000	<b>7202203</b>

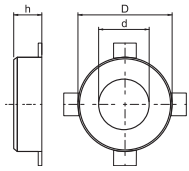
Intumescent material

Pipe sleeve for combustible pipes.

If there is a fire, fire protection inserts inside the sheet steel housing expand, exerting a very great pressure onto the burning thermoplastic pipes.

Fastening with anchors or M6 threaded rods.

### Pipe sleeve with 4 fastening straps



Type	Pipe Ø mm	Dimension h mm	Dimension D mm	Dimension d mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>TCX-063</b>	63 - 65	26	94	67	1	15.500	<b>7202204</b>
<b>TCX-075</b>	75 - 77	26	106	79	1	19.000	<b>7202205</b>
<b>TCX-090</b>	90 - 92	26.6	132	94	1	37.000	<b>7202206</b>
<b>TCX-110</b>	110 - 112	26.6	155	114	1	46.000	<b>7202207</b>
<b>TCX-125</b>	125 - 127	40	172	129	1	70.000	<b>7202208</b>

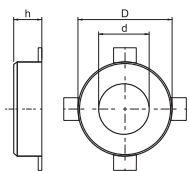
Intumescent material

Pipe sleeve for combustible pipes.

If there is a fire, fire protection inserts inside the sheet steel housing expand, exerting a very great pressure onto the burning thermoplastic pipes.

Fastening with anchors of M6 threaded rods up to size 75 mm, then M8.

### Pipe sleeve with 6 fastening straps



Type	Pipe Ø mm	Dimension h mm	Dimension D mm	Dimension d mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>TCX-140</b>	140 - 142	40	200	144	1	106.000	<b>7202209</b>
<b>TCX-160</b>	160 - 162	40	220	164	1	107.000	<b>7202210</b>

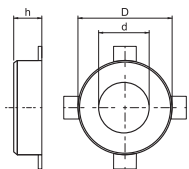
Intumescent material

Pipe sleeve for combustible pipes.

If there is a fire, fire protection inserts inside the sheet steel housing expand, exerting a very great pressure onto the burning thermoplastic pipes.

Fastening with anchors or M8 threaded rods.

### Pipe sleeve with 8 fastening straps



Type	Pipe Ø mm	Dimension h mm	Dimension D mm	Dimension d mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>TCX-180</b>	180 - 182	40	264	184	1	175.000	<b>7202212</b>
<b>TCX-200</b>	200 - 202	40	284	204	1	242.000	<b>7202214</b>

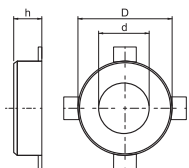
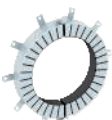
Intumescent material

Pipe sleeve for combustible pipes.

If there is a fire, fire protection inserts inside the sheet steel housing expand, exerting a very great pressure onto the burning thermoplastic pipes.

Fastening with anchors or M8 threaded rods.

### Pipe sleeve with 10 fastening straps



Type	Pipe Ø mm	Dimension h mm	Dimension D mm	Dimension d mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>TCX-225</b>	225 - 227	51.5	328	239	1	306.000	<b>7202213</b>
<b>TCX-250</b>	250 - 252	51.5	353	264	1	346.000	<b>7202215</b>

Intumescent material

**FS** Strip galvanised

Pipe sleeve for combustible pipes.

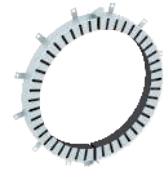
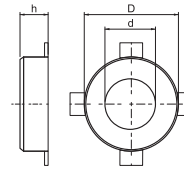
If there is a fire, fire protection inserts inside the sheet steel housing expand, exerting a very great pressure onto the burning thermoplastic pipes.

Fastening with anchors or M8 threaded rods.



## Pipe sleeve with 12 fastening straps

Type	Pipe Ø mm	Dimension h mm	Dimension D mm	Dimension d mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>TCX-280</b>	280 - 282	51.5	378	289	1	398.000	<b>7202216</b>
<b>TCX-300</b>	300 - 302	51.5	403	314	1	405.000	<b>7202217</b>
<b>TCX-315</b>	315 - 317	51.5	417	328	1	425.000	<b>7202218</b>
<b>TCX-355</b>	355 - 357	51.5	459	370	1	460.000	<b>7202219</b>
<b>TCX-400</b>	400 - 402	51.5	504	415	1	520.000	<b>7202220</b>



Intumescent material

**FS** Strip galvanised

Pipe sleeve for combustible pipes.

If there is a fire, fire protection inserts inside the sheet steel housing expand, exerting a very great pressure onto the burning thermoplastic pipes.

Fastening with anchors or M8 threaded rods.

## Insulation layer creator in a cartridge

Type	Contents ml	Pack Piece	Weight kg/100 pc.	Item no.
<b>DSX-K</b>	300	1	50.000	<b>7202300</b>

Intumescent material

Dispersion-based fire protection compound for interior areas, to fill residual joints and close openings. Approved material for closing core drill holes for individual cable glands.

Material class DIN 4102 - B2, normally flammable.

In dry, frost-free rooms, the compound can be stored at temperatures from +5 °C to +25 °C for up to 18 months in closed, upright original containers.



## Mineral wool

Type	Dimension	Pack Piece	Weight kg/100 pc.	Item no.
<b>MIW-S</b>	25 litres	1	250.000	<b>7202306</b>

Mineral fibres

Universal filling wool for various fire protection applications, packed in compressed form.

Material class EN 13 501 - A1, non-combustible; melting point ≥ 1,000 °C.



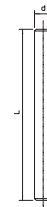
## Threaded rod

Type	Thread	Dimension d mm	Dimension L mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>TR M8 1M G</b>	M8	8	1000	10	30.000	<b>3141128</b>

**St** Steel

**G** Electrogalvanised

Threaded rod to DIN 976.



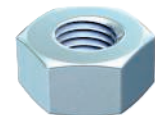
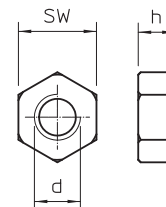
## Hexagonal nut DIN 934

Type	Thread	Dimension SW mm	Dimension h mm	Dimension d mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>HN M8 G</b>	M8	13	6.8	8	100	0.500	<b>3400085</b>

**St** Steel

**G** Electrogalvanised

Hexagonal nut to DIN 934 with metric thread.

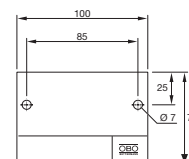


## Identification plate

Type	Language	Pack Piece	Weight kg/100 pc.	Item no.
<b>KS-S EN</b>	English	1	2.400	<b>7205429</b>


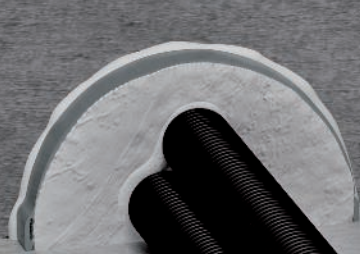
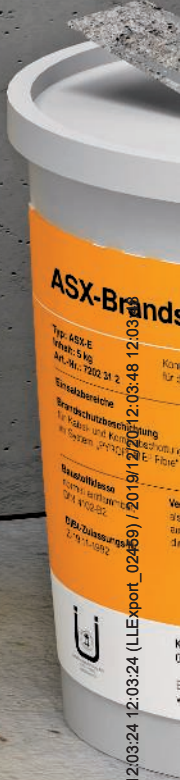
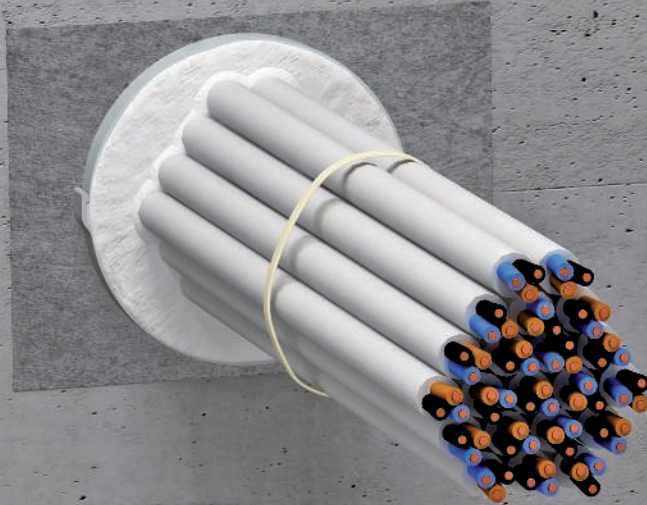
**PS** Polystyrene

Universal identification plate to be written on with waterproof and light-resistant felt-tip pen for all types of OBO insulation. For approved identification, including two push-fit anchors.



Kabelabschottung  
 Kombiabschottung  
 Rohrabschottung

Entwurf / LM. Nr. \_\_\_\_\_  
 Widerstandsklasse: \_\_\_\_\_ Minuten  
 Zulassung Nr.: \_\_\_\_\_  
 System: \_\_\_\_\_  
 Erichter: \_\_\_\_\_  
 Datum: \_\_\_\_\_

# PYROCOMB® Intube pipe shell



## System description

80



## Products

84



## PYROCOMB® Intube pipe shell

### System description



The PYROCOMB® Intube system is used to create cable insulation with pipe shells or half shells. The pipe shell is particularly suitable for core drill holes and can very easily be installed in solid ceilings or walls and also light-duty partitions. For this, two half pipe sleeves are clicked together and bedded in mortar in the core hole. Then the pipe sleeves are closed with seals and the surface is sealed with ASX ablation coating. The cables don't require any coating. The half shell can be used particularly well in the under-

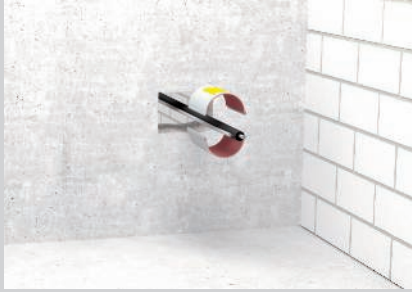
floor area. It is sealed on one side with fire protection plugs and sealed with ASX ablation coating. In case of a fire, the inner coating of the pipe shells or the half shell expands and, in so doing, closes the opening cross-section completely. The transfer of fire and smoke is thus safely prevented. With the PYROCOMB® Intube system, 100% assignment of the interior is possible.





# PYROCOMB® Intube pipe shell

## Installation principle



Mounting of the pipe shell by clicking the half shells together around the existing installation.



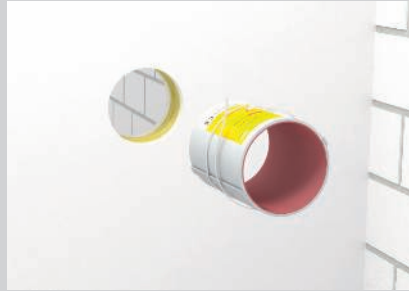
Closing of the opening with PYROMIX® mortar.



Adjust the foam plugs to installations using a knife and create smoke gas-tight sealing of the sealings using the ASX coating compound.



With ceiling mounting, use a lined body to prevent the pipe shell from falling out.



In certain applications, security with metal tensioning straps in light-duty partitions is necessary.



Pipe shells with full assignment with cable bundles and electrical installation pipes.



Mounting of the half shell.



Adjusting the foam plug to the cables.



Fully installed half shell in PYROPLATE® Fibre soft insulation.

Classification to DIN

- EI15
- EI30
- EI45
- EI60
- EI90
- EI120



Erectors of combination insulation require training.

Always indicate the item number when ordering.



# PYROCOMB® Intube pipe shell








## Registration data

### Insulation in wall/ceiling

<b>Fire resistance class</b>	EI 60, EI 90, EI 120
<b>Proof of application</b>	General construction approval of OIB, Vienna
<b>Approval number</b>	ETA - 13/0904
<b>Testing standard</b>	EN 1366-3

## Installation locations

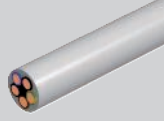
### Insulation in walls and ceilings

Component		Rigid walls	Flexible walls	Rigid floors
				
Min. component strength		10 cm - 15 cm (EI 30 / EI 60 / EI 90) CTS-150	10 cm - 15 cm (EI 30 / EI 60 / EI 90) CTS-150	12.5 cm (EI 30 / EI 45 / EI 60) CTS-150
		15 cm - 30 cm (EI 30 / EI 60 / EI 90 / EI 120) CTS-300	10 cm - 15 cm (EI 30 / EI 60 / EI 90 / EI 120) CTS-300	15 cm (EI 30 / EI 60 / EI 90 / EI 120) CTS-300
Min. insulation thickness		10 cm - 15 cm (EI 30 / EI 60 / EI 90) CTS-150	10 cm - 15 cm (EI 30 / EI 60 / EI 90) CTS-150	12.5 cm (EI 30 / EI 45 / EI 60) CTS-150
		15 cm - 30 cm (EI 30 / EI 60 / EI 90 / EI 120) CTS-300	10 cm - 15 cm (EI 30 / EI 60 / EI 90 / EI 120) CTS-300	15 cm (EI 30 / EI 60 / EI 90 / EI 120) CTS-300
Opening size		Ø 125 mm	Ø 125 mm	Ø 125 mm
		55 mm x 116 mm	55 mm x 116 mm	55 mm x 116 mm

# PYROCOMB® Intube pipe shell Installations

## Cable

Ø 80 mm



## Pipe bundle of electrical installation pipes

Ø 107 mm

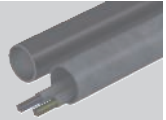


## Cable bundle

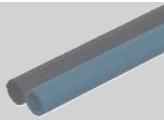
Ø 107 mm,  
cable Ø 21 mm



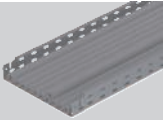
## Electrical installation pipe made of steel



## Individual lines for control purposes



## Cable support systems



## Electrical installation pipe made of plastic, rigid



## Metal pipes with path insulation



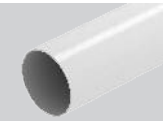
## Electrical installation pipe made of plastic, flexible

Ø 32 mm,  
cable Ø 21 mm



## Plastic pipes

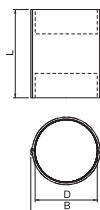
2 × Ø 32 mm



Details on the version can be found in the proof of suitability or mounting instructions.  
All the stated dimensions are maximum values.



## Pipe shell PYROCOMB® Intube



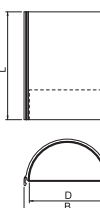
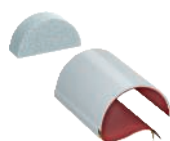
Type	Dimen- sion D mm	Dimen- sion L mm	Dimen- sion B mm	For opening Ø mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>CTS-150</b>	106	150	122	125 - 165	1	35.200	<b>7204300</b>
<b>CTS-300</b>	106	300	122	125 - 165	1	70.000	<b>7204304</b>

**PVC** Polyvinylchloride

Internally coated pipe shells with click lock. The inner space can be fitted with cables and electrical installation pipes completely. Approved in Europe with ETA-13/0904. Fire resistance classes to EI 120.

Closing with 2 foam plugs included in the delivery. The surface seal is done with ASX coating. In some applications, the use of metallic tightening strips is prescribed to secure the pipe shells in light-duty partitions. Details can be found in the mounting instructions/approval.

## PYROCOMB® Intube half shell



Type	Diameter mm	Length mm	For opening Ø mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>CTS-HP200</b>	120	200	125 - 165	1	20.000	<b>7204306</b>

**PVC** Polyvinylchloride

Internally coated half shell, the inner space of which can be fully assigned with cables and electrical installation pipes. Approved in Europe with ETA-13/0904. Fire resistance classes to EI 120.

Closing with foam plug included in the delivery. The surface seal is done with ASX coating. The system is particularly suitable for underfloor areas. Details can be found in the mounting instructions/approval.

## Ablation coating in a cartridge



Type	Contents ml	Pack Piece	Weight kg/100 pc.	Item no.
<b>ASX-K</b>	310	1	50.000	<b>7202310</b>

Intumescent material

Combined, endothermic and weatherproof coating for internal and external areas. Universal protection coating for cable and cable support structures. Use as direct filler, and as paint when stirred.

Material class DIN 4102 - B2, normally flammable.

In dry, frost-free rooms, the coating can be stored at temperatures from +5 °C to +25 °C for up to 18 months in closed, upright original containers.

## Ablation coating in a bucket



Type	Contents kg	Pack Piece	Weight kg/100 pc.	Item no.
<b>ASX-E</b>	5	1	500.000	<b>7202312</b>

Intumescent material

Combined, endothermic and weatherproof coating for internal and external areas. Universal protection coating for cable and cable support structures. Use as direct filler, and as paint when stirred. Sufficient for an area of 4 m².

Material class DIN 4102 - B2, normally flammable.

In dry, frost-free rooms, the coating can be stored at temperatures from +5 °C to +25 °C for up to 18 months in closed, upright original containers.

## PYROMIX® dry mortar in paper sack



Type	Contents kg	Pack Piece	Weight kg/100 pc.	Item no.
<b>MSX-S1</b>	20	1	2,000.000	<b>7206104</b>

Special mortar

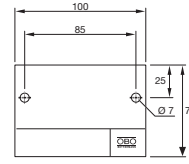
Mortar to create cable and combination insulation in solid walls and ceilings. Suitable for pumping, pressing and for manual installation. Adding approx. 6 litres of water to 20 kg of dry mortar produces about 20 litres of workable compound.

In dry, frost-free rooms, the dry mortar can be stored for at least 12 months in closed original containers.

## Identification plate

Type	Language	Pack Piece	Weight kg/100 pc.	Item no.
<b>KS-S EN</b>	English	1	2.400	<b>7205429</b>
<b>PS</b>	Polystyrene			

Universal identification plate to be written on with waterproof and light-resistant felt-tip pen for all types of OBO insulation. For approved identification, including two push-fit anchors.





Kabelabschottung  
 Kombiabschottung  
 Rohrabschottung

Substrat / L.S. Nr. \_\_\_\_\_

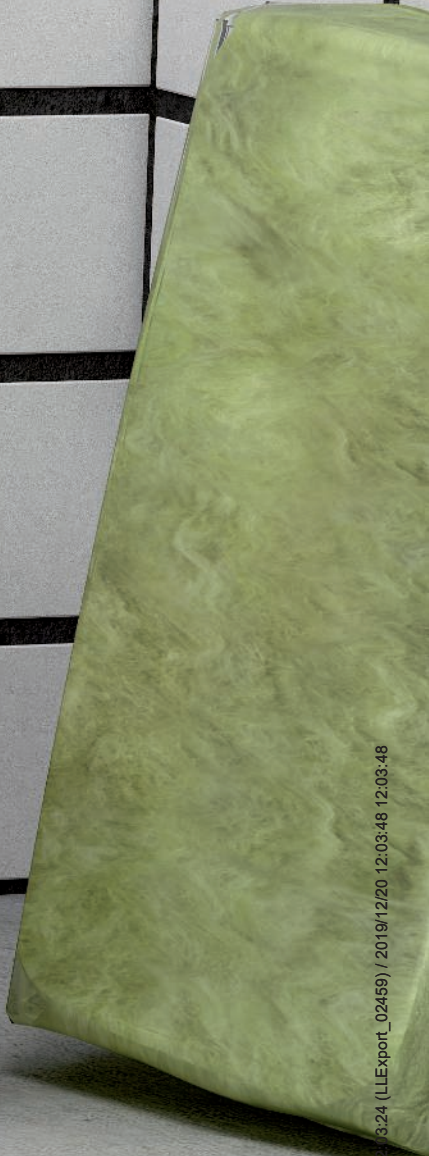
Leistungskategorie:  Mischon

Zurückgang: \_\_\_\_\_ Nr.: \_\_\_\_\_

System: \_\_\_\_\_





Hersteller: \_\_\_\_\_

Datum: \_\_\_\_\_





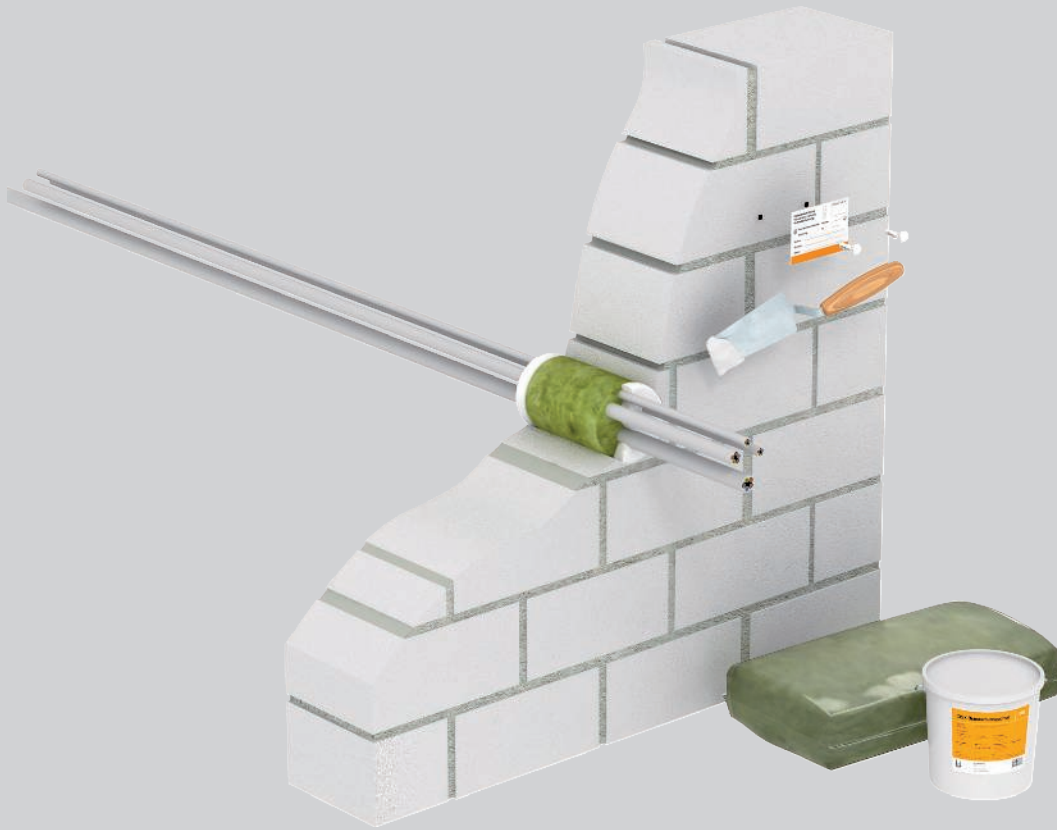
## Bandage, small insulation and individual cables acc. to MLAR

	<b>System description, PYROMIX® Screed small insulation</b>	88
	<b>System description, Conlit® Bandage cable insulation</b>	92
	<b>System description, insulation layer creator for single cables</b>	96
	<b>Products</b>	98



## PYROMIX® Screed® small insulation

### System description



Small insulation for cables is created using the PYROMIX® Screed system. It consists of OBO's insulation forming material, type DSX, and the MIW mineral wool. As the insulation basis, the opening is first filled using the non-combustible mineral wool (melting point  $\geq 1,000$  °C). Then, both sides of the opening

are sealed with the DSX insulation creator. If there is a fire, the filler foams up, preventing penetration by fire and smoke. When the material foams up, heat is also drawn from the cables, thus considerably reducing the transfer of heat via the copper cores.





## PYROMIX Screed® small insulation Installation principle



Mineral wool with melting point  $\geq 1,000$  °C to plug the opening.



Closure of the surfaces on both sides with the DSX insulation layer creator.  
(Minimum thickness 1 cm on each side.)



Labelling of the small insulation.



Classification to DIN

S30

S60

S90



Erectors of combination insulation require training.

Always indicate the item number when ordering.



# PYROMIX Screed® small insulation













## Registration data

### Insulation in wall/ceiling

<b>Fire resistance class</b>	S30, S60, S90
<b>Proof of application</b>	General construction approval of DIBt, Berlin
<b>Approval number</b>	ETA - Z-19. 15-2044
<b>Testing standard</b>	DIN 4102 Part 9

## Installation locations

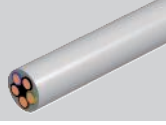
### Insulation in walls and ceilings

Component		Rigid walls	Flexible walls	Rigid floors
				
Min. component strength		15 cm (S30 / S60 / S90)	-	15 cm (S30 / S60 / S90)
Min. insulation thickness		15 cm (S30 / S60 / S90)	-	15 cm (S30 / S60 / S90)
Opening size		 ≤ 10 cm  ≤ 10 cm  ≤ Ø 10 cm	-	 ≤ 10 cm  ≤ 10 cm  ≤ Ø 10 cm

# PYROMIX Screed® small insulation Installations

## Cable

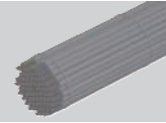
All Ø



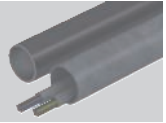
## Pipe bundle of electrical installation pipes



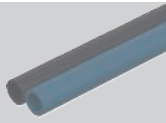
## Cable bundle



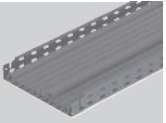
## Electrical installation pipe made of steel



## Individual lines for control purposes



## Cable support systems



## Electrical installation pipe made of plastic, rigid



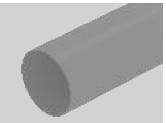
## Metal pipes with path insulation



## Electrical installation pipe made of plastic, flexible



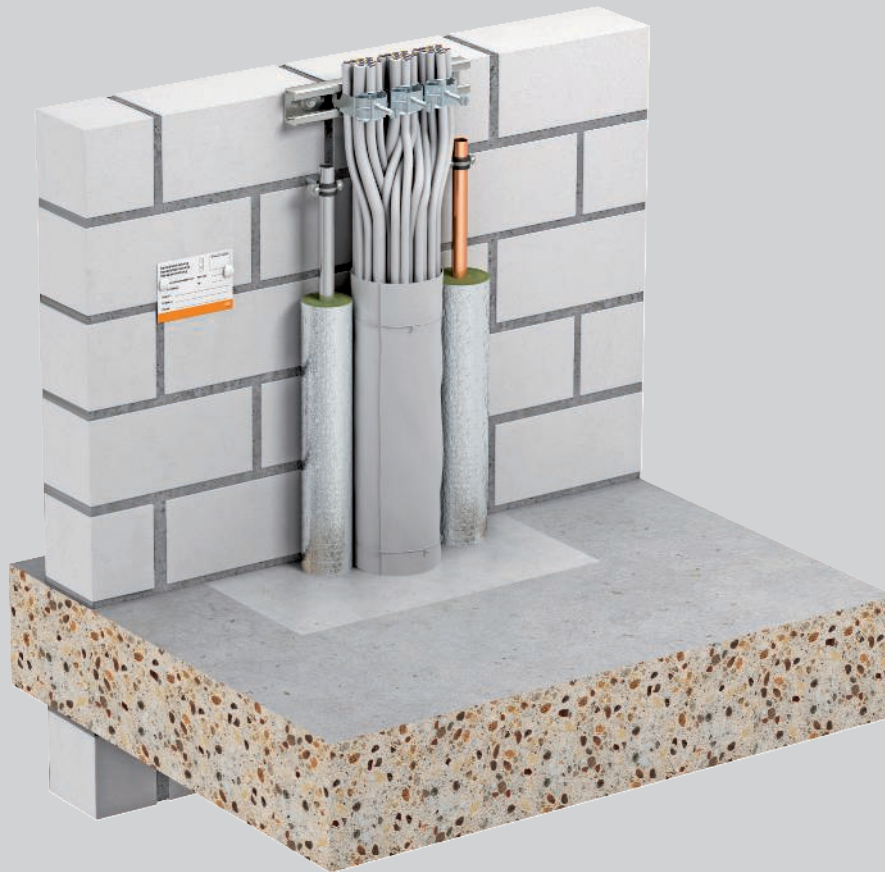
## Plastic pipes



Details on the version can be found in the proof of suitability or mounting instructions.  
All the stated dimensions are maximum values.



## Cable insulation Conlit® Bandage System description



The Conlit® system, consisting of the fire protection bandage, type CL-KS, is used within buildings as cable insulation for individual cables, cable and electrical installation pipe bundles (EIP). The flexible bandage is simply laid around the installations and fixed with a wire. Cable bundles and rigid EIPs must be wound with at least two layers of the bandage and flexible EIPs with at least three layers. In case of a

fire, the material foams up and closes the opening cross-section. The fire protection bandage is suitable for cable and electrical installation pipe bundles up to 100 mm diameter. No spacing is required to many insulated pipes. The system insulates fire sections for a period of max. 90 minutes.



## Cable insulation Conlit® Bandage Installation principle



Preparation of the cable insulation.



Installation of the fire protection bandage.



Fixing of the bandage using winding wire.



Using mortar, close off the residual insulation opening and mount the identification plate.



Installation of the fire protection bandage with no distance to the Rockwool Conlit pipe insulation.

Classification to DIN

S30

S60

S90



Erectors of combination insulation require training.

Always indicate the item number when ordering.





# Cable insulation Conlit® Bandage

## Registration data

### Insulation in walls/ceilings

<b>Fire resistance class</b>	S30, S60, S90
<b>Proof of application</b>	General construction approval of DIBt, Berlin
<b>Approval number</b>	Z-19.15-1877
<b>Testing standard</b>	DIN 4102 Part 9

## Installation locations

### Insulation in walls and ceilings

#### Component F30

##### Rigid walls



##### Flexible walls



##### Rigid floors



Min. component strength		5 cm (S30 / S60 / S90)	7.5 cm (S30 / S60 / S90)	15 cm (S30 / S60 / S90)
Min. insulation thickness		10 cm (S30 / S60 / S90)	10 cm (S30 / S60 / S90)	10 cm (S30 / S60 / S90)
Opening size		≤ Ø 10 cm	≤ Ø 10 cm	≤ Ø 10 cm

#### Component F90

##### Screed-covered



##### Flexible walls



##### Rigid floors

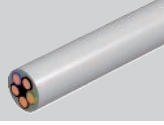


Min. component strength		10 cm (S30 / S60 / S90)	10 cm (S30 / S60 / S90)	15 cm (S30 / S60 / S90)
Min. insulation thickness		10 cm (S30 / S60 / S90)	10 cm (S30 / S60 / S90)	10 cm (S30 / S60 / S90)
Opening size		≤ Ø 10 cm	≤ Ø 10 cm	≤ Ø 10 cm

# Cable insulation Conlit® Bandage Installations

## Cable

All Ø



## Pipe bundle of electrical installation pipes

Ø 100 mm



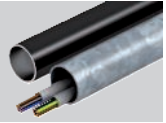
## Cable bundle

Ø 100 mm,  
cable all Ø



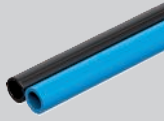
## Electrical installation pipe made of steel

Ø 50 mm,  
cable all Ø

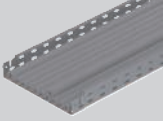


## Individual lines for control purposes

Ø 15 mm



## Cable support systems



## Electrical installation pipe made of plastic, rigid

Ø 40 mm,  
Cable Ø 32 mm



## Metal pipes with path insulation

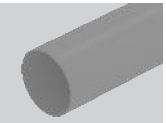


## Electrical installation pipe made of plastic, flexible

Ø 40 mm,  
cable Ø 22 mm



## Plastic pipes

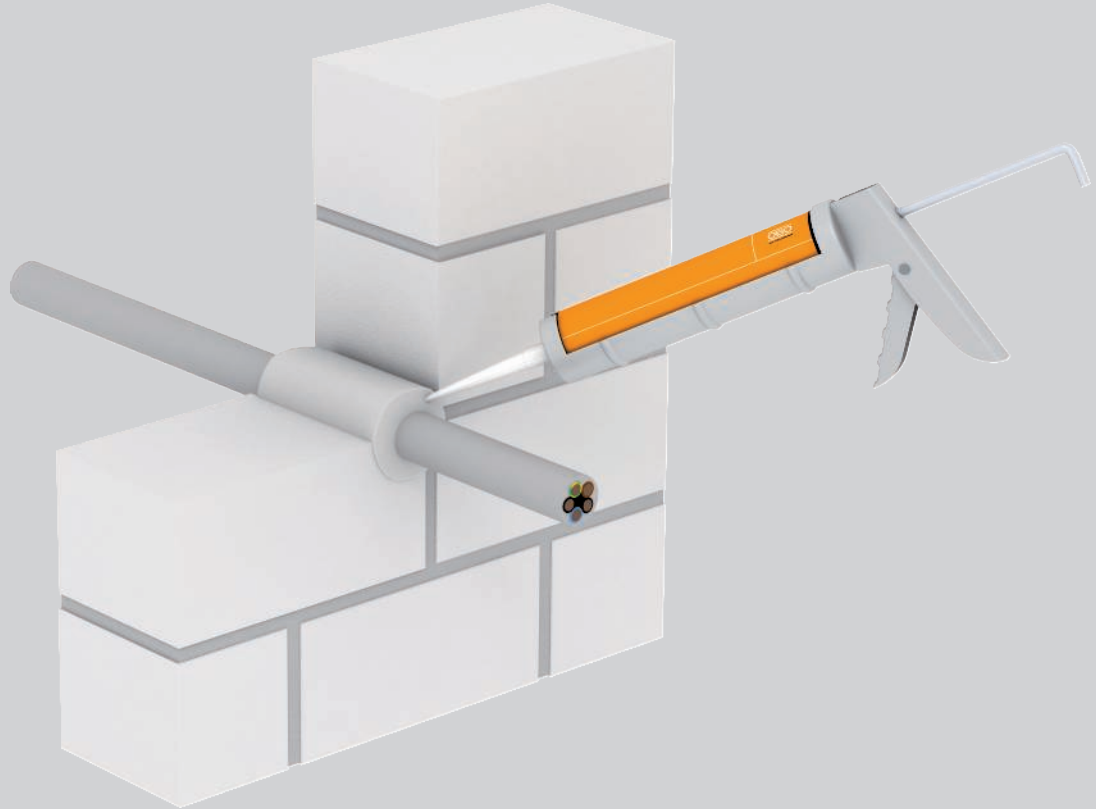


Details on the version can be found in the proof of suitability or mounting instructions. All the stated dimensions are maximum values.



## Individual cables according to MLAR with insulating layer forming agent

### System description



The type DSX insulation forming material from OBO can be used to fill ring gaps around individual cables or multiple cables of a small cross-section routed alongside one another. The ring gap around the cable must be filled with fire protection filler along the entire wall thickness. If there is a fire, the filler foams up,

preventing penetration by fire and smoke. When the material foams up, heat is also drawn from the cables, thus considerably reducing the transfer of heat via the copper cores.



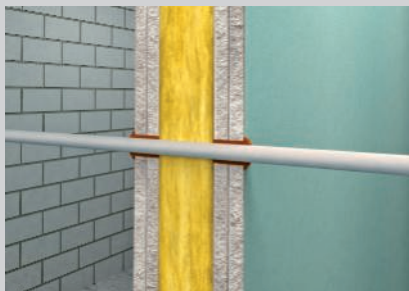


# Individual cables according to MLAR with insulating layer forming agent

## Installation principle



DSX insulation layer creator, suitable for full-wall ring gap closure in solid walls and ceilings.



With light-duty partitions, filling the double plates to both sides is sufficient.



Classification to DIN 4102

**F30**

**F60**

**F90**

### Insulation layer creator on dispersion basis

<b>Material class</b>	B2 – normally flammable
<b>Proof of application</b>	General construction approval of DIBt, Berlin
<b>Approval number</b>	Z-19.11-1991
<b>Testing standard</b>	DIN 4102

### Minimum dimensions of components and their fire resistance period

<b>Min. solid component strength</b>	60	70	80
<b>Fire resistance class</b>	F30	F60	F90
<b>Ring gap max.</b>	15	15	15

All data in mm. The data in the named proofs of applicability applies.



Erectors of combination insulation require training.

Always indicate the item number when ordering.

## Insulation layer creator in a cartridge



Type	Contents ml	Pack Piece	Weight		Item no.
			kg/100 pc.		
<b>DSX-K</b>	300	1	50.000		<b>7202300</b>

Intumescent material

Dispersion-based fire protection compound for interior areas, to fill residual joints and close openings. Approved material for closing core drill holes for individual cable glands.

Material class DIN 4102 - B2, normally flammable.

In dry, frost-free rooms, the compound can be stored at temperatures from +5 °C to +25 °C for up to 18 months in closed, upright original containers.

## Insulation layer creator in a bucket



Type	Contents kg	Pack Piece	Weight		Item no.
			kg/100 pc.		
<b>DSX-E</b>	5	1	500.000		<b>7202302</b>

Intumescent material

Dispersion-based fire protection compound for interior areas, to fill residual joints and close openings. Approved material for closing core drill holes for individual cable glands.

Material class DIN 4102 - B2, normally flammable.

In dry, frost-free rooms, the compound can be stored at temperatures from +5 °C to +25 °C for up to 18 months in closed, upright original containers.

## Mineral wool



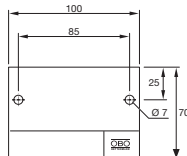
Type	Dimension 25 litres	Pack Piece	Weight		Item no.
			kg/100 pc.		
<b>MIW-S</b>	25 litres	1	250.000		<b>7202306</b>

Mineral fibres

Universal filling wool for various fire protection applications, packed in compressed form.

Material class EN 13 501 - A1, non-combustible; melting point  $\geq 1,000$  °C.

## Identification plate



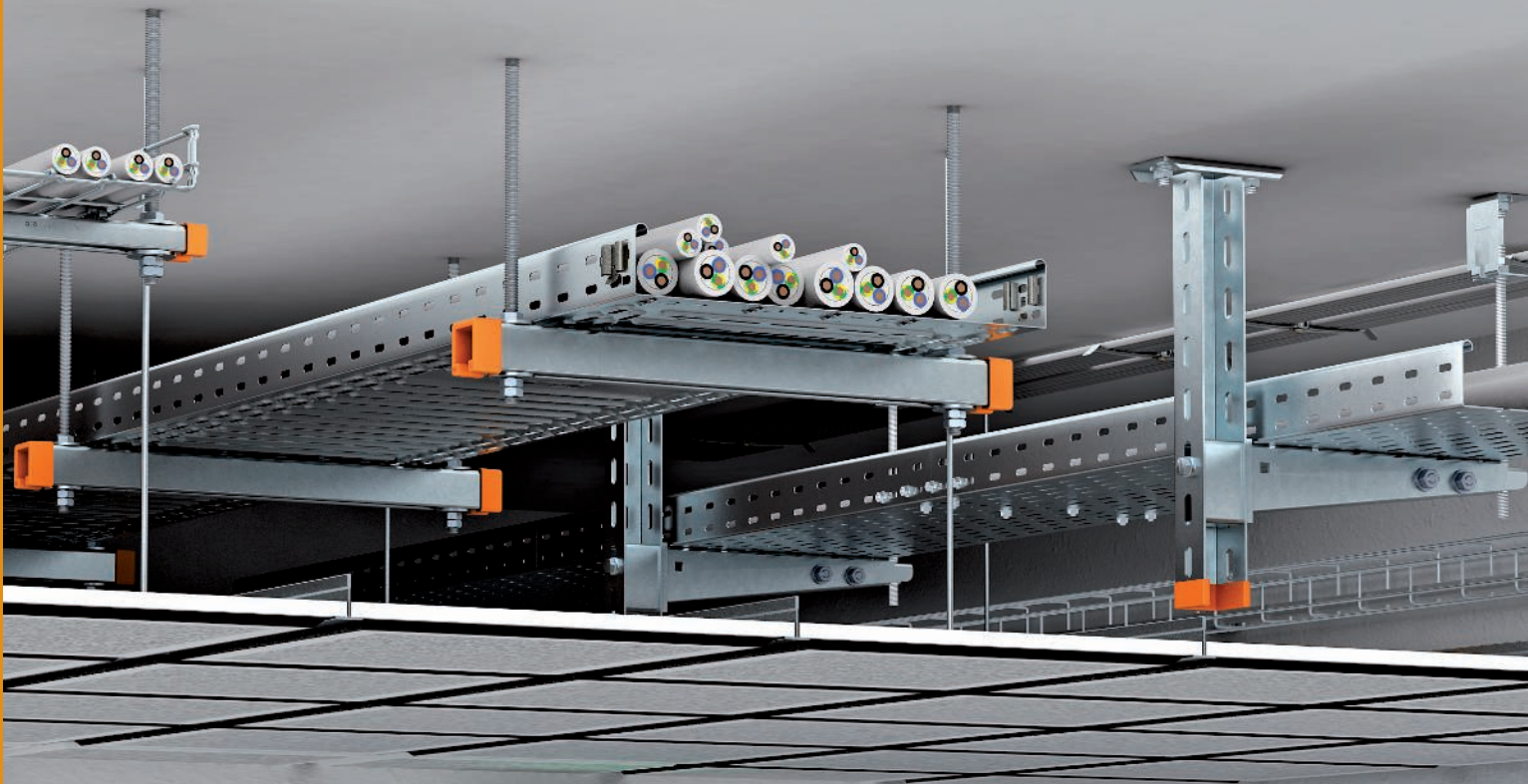
Type	Language English	Pack Piece	Weight		Item no.
			kg/100 pc.		
<b>KS-S EN</b>	English	1	2.400		<b>7205429</b>

**PS** Polystyrene

Universal identification plate to be written on with waterproof and light-resistant felt-tip pen for all types of OBO insulation. For approved identification, including two push-fit anchors.









## Escape route installations for hollow ceilings



**System description, SKS-Magic® cable tray**

102

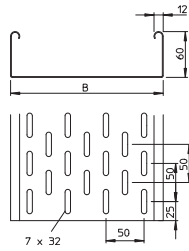
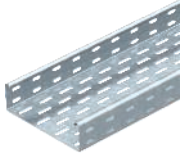


**Products cable trays, mesh cable trays and mounting components**

103



## Cable tray SKS 60



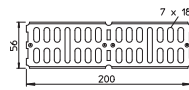
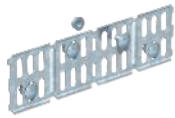
Type	Width mm	Metal thickness mm	Dimen- sion B		Pack m	Weight kg/100 m	Item no.
			mm	BS			
<b>SKS 610 FS</b>	100	1.50	100	—	3	239.400	<b>6056105</b>
<b>SKS 620 FS</b>	200	1.50	200	—	3	364.000	<b>6056202</b>
<b>SKS 630 FS</b>	300	1.50	300	—	3	463.670	<b>6056296</b>
<b>SKS 640 FS</b>	400	1.50	400	—	3	564.340	<b>6056407</b>
<b>SKS 650 FS</b>	500	1.50	500	—	3	663.340	<b>6056504</b>
<b>SKS 660 FS</b>	600	1.50	600	—	3	762.340	<b>6056601</b>

**St** Steel

**FS** Strip galvanised

SKS 60 = Heavy-duty cable tray system with 60 mm side height.

## Straight and angle connector 60



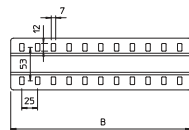
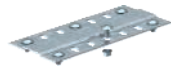
Type	Dimension mm	Pack Piece	Weight kg/100 pc.	Item no.

**St** Steel

**FS** Strip galvanised

Straight and angle connector for cable trays and fittings with a side height of 60 mm.

## Joint plate SSLB



Type	Dimen- sion B mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>SSLB 200 FS</b>	200	20	16.700	<b>7070213</b>
<b>SSLB 300 FS</b>	300	20	25.700	<b>7070217</b>
<b>SSLB 400 FS</b>	400	20	34.700	<b>7070221</b>
<b>SSLB 500 FS</b>	500	20	43.700	<b>7070225</b>
<b>SSLB 600 FS</b>	600	20	52.700	<b>7070233</b>

**St** Steel

**FS** Strip galvanised

Wide joint plate for use in all cable trays and wide span cable trays.

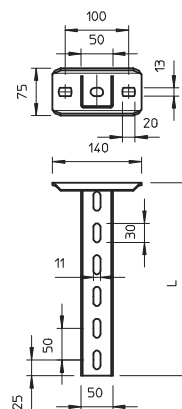
### US 5 support

Type	Length mm	Material thickness mm	Dimen- sion L mm	BS	Pack Piece	Weight kg/100 pc.	Item no.
US 5 K 20 FT	200	2.5	200	—	1	85.000	6341527
US 5 K 30 FT	300	2.5	300	—	1	110.000	6341535
US 5 K 40 FT	400	2.5	400	—	1	136.000	6341543
US 5 K 50 FT	500	2.5	500	—	1	161.000	6341551
US 5 K 60 FT	600	2.5	600	—	1	185.000	6341578
US 5 K 70 FT	700	2.5	700	—	1	210.000	6341586
US 5 K 80 FT	800	2.5	800	—	1	236.000	6341594
US 5 K 90 FT	900	2.5	900	—	1	261.000	6341608
US 5 K 100 FT	1000	2.5	1000	—	1	286.000	6341616
US 5 K 110 FT	1100	2.5	1100	—	1	311.000	6341624
US 5 K 120 FT	1200	2.5	1200	—	1	337.000	6341632

St Steel

FT Hot-dip galvanised

U support of dimensions 50 x 50 mm with welded head plate.

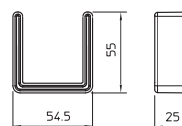


### End cap

Type	Colour	Pack Piece	Weight kg/100 pc.	Item no.
US 5 KS OR	Pastel orange	20	1.300	6338462

PE Polyethylene

End cap to cover the ends of US 5 supports.



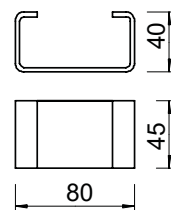
### Spacer DSK 45

Type	Pack Piece	Weight kg/100 pc.	Item no.
DSK 45 FT	20	18.000	6416500

St Steel

FT Hot-dip galvanised

Spacer for use in U 5 support and in the head plate, type KU 7 VQP.



### Threaded rod

Type	Thread	Dimen- sion d mm	Dimen- sion L mm	Pack Piece	Weight kg/100 pc.	Item no.
TR M12 1M G	M12	12	1000	10	62.000	3141306

St Steel

G Electrogalvanised

Threaded rod to DIN 976.



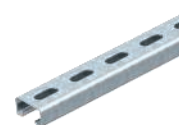
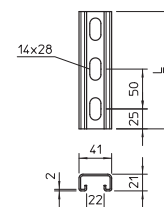
### MS4121 mounting rail, slot width 22 mm, perforated

Type	Length mm	Dimension W x H mm	Material thickness mm	Dimen- sion L mm	Pack m	Weight kg/100 m	Item no.
MS4121P2000FS	2000	41x21	2	2000	2	175.000	1122918
MS4121P3000FS	3000	41x21	2	3000	3	141.900	1122920
MS4121P2000FT	2000	41x21	2	2000	2	183.000	1122923
MS4121P3000FT	3000	41x21	2	3000	3	151.300	1122924

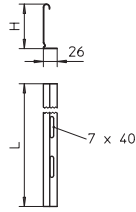
St Steel

FS Strip galvanised FT Hot-dip galvanised

Heavy-duty C profile rail for individual installation of support constructions, e.g. for cable trays or as a panel for switchgear cabinets. Can also be used for cable routing, in conjunction with clamp clips with a U foot.



### Separating retainer 45

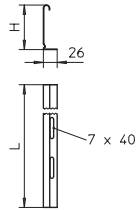
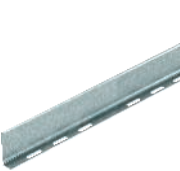


Type	Dimension H mm	Metal thickness mm	Dimension L mm	Pack m	Weight kg/100 m	Item no.
<b>TSG 45 FS</b>	45	0.75	3000	3	46.700	<b>6062033</b>

- St** Steel
- FS** Strip galvanised

Separating retainer for separation of cables of different voltages or functions.

### Separating retainer 60

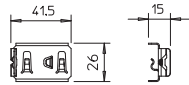


Type	Dimension H mm	Metal thickness mm	Dimension L mm	Pack m	Weight kg/100 m	Item no.
<b>TSG 60 FS</b>	60	0.75	3000	3	55.700	<b>6062068</b>

- St** Steel
- FS** Strip galvanised

Separating retainer for separation of cables of different voltages or functions.

### Hold-down clamp for separating retainer fastening

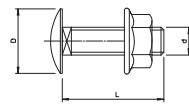
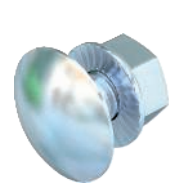


Type	Pack Piece	Weight kg/100 pc.	Item no.
<b>KS GR A2</b>	30	0.830	<b>6062282</b>

- A2** Stainless steel, rustproof
- 2B** Bright, reworked

Hold-down clamp for fastening separating retainer in mesh cable trays.

### Truss-head bolt with flange nut

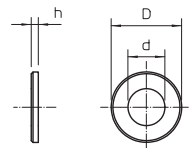
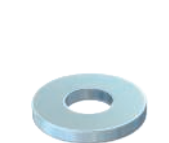


Type	Dimension mm	Dimension L mm	Dimension d mm	Dimension D mm	Resistance class	Pack Piece	Weight kg/100 pc.	Item no.
<b>FRSB 6x12 F</b>	M 6 x 12	12	6	13.5	5.6	100	0.812	<b>6406122</b>
<b>FRSB 6x20 F</b>	M 6 x 20	20	6	13.5	5.6	100	0.965	<b>6406203</b>

- St** Steel
- F** Hot galvanised

Truss-head bolt with square neck including flange nut.

### Washer

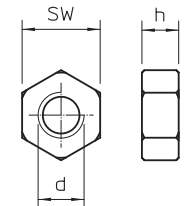


Type	Thread	Dimension d mm	Dimension D mm	Dimension h mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>WS M12 D24 G</b>	M12	13	24	2.5	100	0.570	<b>3402126</b>

- St** Steel
- G** Electrogalvanised

Washer according to DIN 125, shape A, for universal use.

### Hexagonal nut DIN 934



Type	Thread	Dimension SW mm	Dimension h mm	Dimension d mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>HN M12 G</b>	M12	19	10.8	12	100	1.730	<b>3400123</b>

- St** Steel
- G** Electrogalvanised

Hexagonal nut to DIN 934 with metric thread.



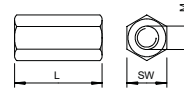
## Connection sleeve

Type	Thread	Dimension		Pack Piece	Weight kg/100 pc.	Item no.
		L mm	SW mm			
<b>CSTR M12 G</b>	M12	40	19	25	7.000	<b>6410111</b>

**St** Steel

**G** Electrogalvanised

Connection sleeve with continuous internal thread.








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## Cable bandages

	<b>System description, PYROWRAP® Wet FSB-WLS</b>	108
	<b>System description, PYROWRAP® Wet FSB-WB</b>	110
	<b>Products</b>	112

# PYROWRAP® Wet FSB-WLS

## Application in interior areas and wet rooms

### System description



The PYROWRAP® Wet FSB-WLS system can be used to wrap large cable bundles or cable support systems within the fire sections, in order to prevent the spread of a fire. The mesh possesses a fire protection coating, which stops a fire in its tracks at an early stage, e.g. in the case of a short circuit. If there is fire coming in from the outside, the material is not involved in the course of the fire, effectively preventing the spread of the fire, both in vertical and horizontal directions.

In the escape and rescue routes of small buildings, the mounting of a cable bandage is permitted, as only low smoke development is to be expected and only a small number of people must be evacuated. In larger buildings, the residual risk of smoke development is accepted, even if considerably more people must be evacuated. Here, the fire protection bandage frequently presents the only economic solution compared to fire protection ceilings or panelling with plate materials.

# PYROWRAP® Wet FSB-WLS

## Application in interior areas and wet rooms

### Installation principle



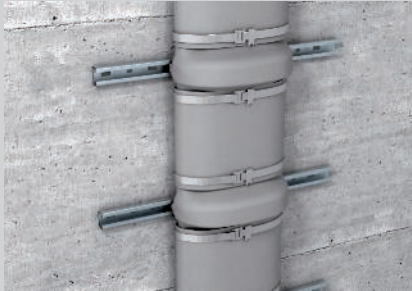
Complete encasement of the suspended cable run.



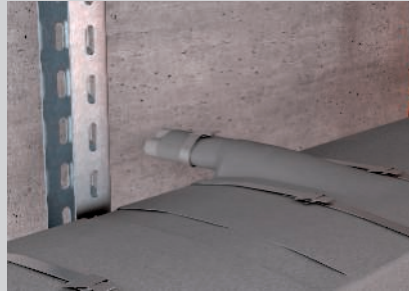
Complete encasement of the cables in a cable run as wall mounting.



Bandage fastening with metallic rails in a single-clip installation.



Bandage fastening with metallic tightening straps in a rail installation.



Cable exit with bandaging.



Bandaging of the cable bundles on support systems.

#### Cable jacketing to prevent fire spread

<b>Proof of application</b>	Application approval of DIBt Berlin Material approval of DIBt Berlin
<b>Documents</b>	Z-56.217-3600 Z-19.11-2183
<b>Prevention of fire spread</b>	min. 90 minutes
<b>Material properties</b>	Exterior grey glass fibre mesh, interior light grey materials class C-s2, d0 according to EN 13501-1 – hardly flammable
<b>Max. fastening spacing</b>	0.5 m
<b>Cable types and cross-sections</b>	No restriction

#### Caution!

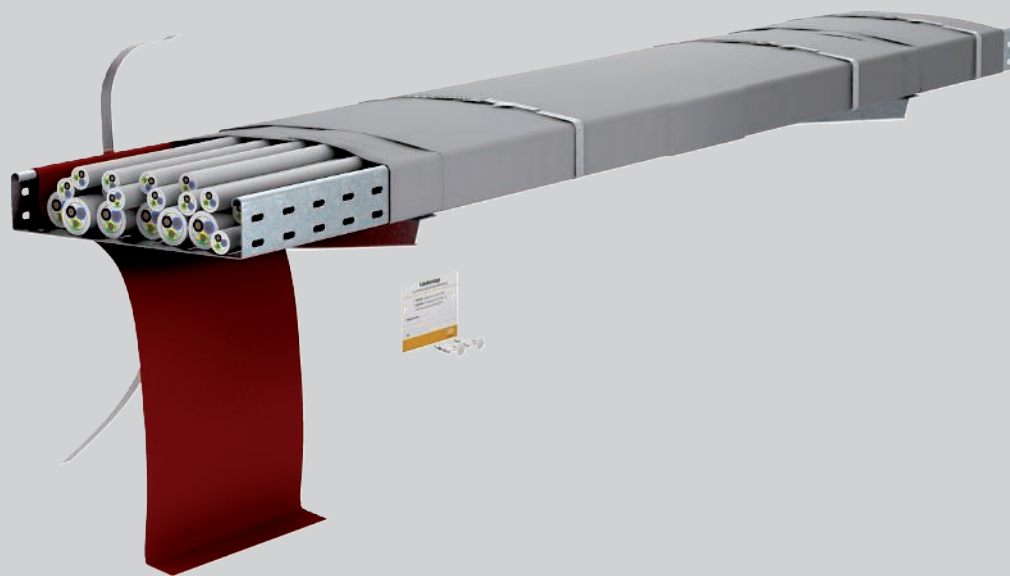
Use in emergency and escape routes of building classes 4 and 5 may require the approval of the construction supervision, e.g. through a fire protection concept.



## PYROWRAP® Wet FSB-WB

### Application in industrial areas/outdoors

### System description



The PYROWRAP® Wet FSB-WB system comprises a fire protection bandage, which is used in areas with special environmental conditions. The fire protection bandage can be used to wrap large cable bundles or cable support systems, in order to prevent the spread of fire. The bandage is made of a weatherproof material, which is insensitive to various chemicals and oils.

It has construction approval from the DIBt as a highly flame-resistant material according to DIN EN 13501-1. When the fire protection coating foams up in the event of fire, this safely prevents the spread of fire via the cables.

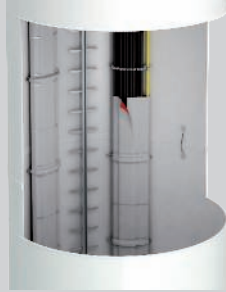
# PYROWRAP® Wet FSB-WB

## Application in industrial areas/outdoors

### Installation principle



Use of the bandage in aggressive environments, e.g. offshore.



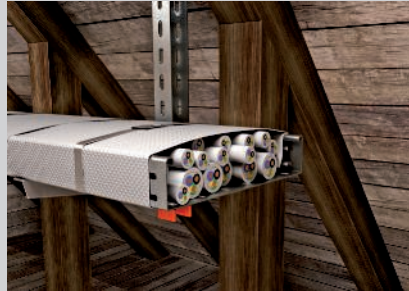
Bandaged rising section in the tower of a wind power plant.



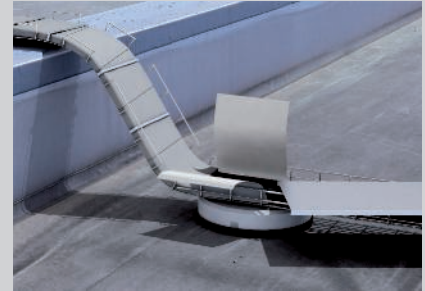
Use on support systems in supply rooms or production halls.



Cable tunnel with bandages in power stations.



Bandaged cable support systems in areas with many combustible materials.



Use for photovoltaic cables run over a fire wall.

### Cable jacketing to prevent fire spread

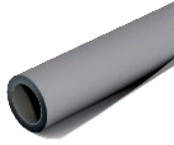
<b>Proof of application</b>	IEC test report of the iBMB MPA materials testing institute, Braunschweig National and European material approval of DIBt Berlin
<b>Document no.</b>	IEC-3630/081/10-AR Z-19.11-1971 ETA-13/0158
<b>Prevention of fire spread</b>	min. 120 minutes
<b>Material properties</b>	Exterior grey glass fibre mesh, interior red Materials class EN 13501-1: B1, d0,s1 – hardly flammable Weather-resistant, resistant to various chemicals and oils
<b>Max. fastening spacing</b>	0.5 m
<b>Cable types and cross-sections</b>	No restriction

### Caution!

The use of photovoltaic cables over fire walls may require the approval of the local construction authorities. A positive special report is available.



## Cable bandage for dry areas

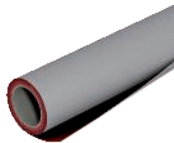


Type	Width	Length	Pack Piece	Weight	Item no.
	mm	mm		kg/100 pc.	
<b>FSB-WLS</b>	1100	10000	1	1,000.000	<b>7203170</b>

Intumescent material

Fire protection jacketing made of flexible mesh with fire protection coating to prevent fire spreading via cables and cable support systems. If there is a fire, the bandage only creates very little smoke, and is thus approved by the MBO building regulations as a measure for improved behaviour in case of fire in building classes 1 to 3. Hardly-flammable substance, according to EN 13501-1 - Class C-s2, d0). External side grey, internal side light grey. Can be moist wiped, use in interiors and wet rooms. One roll contains 11 m<sup>2</sup>, nominal thickness 0.7 mm.

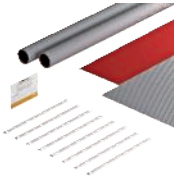
## Cable bandage for wet areas



Type	Width	Length	Pack Piece	Weight	Item no.
	mm	mm		kg/100 pc.	
<b>FSB-WB</b>	1100	20000	1	2,200.000	<b>7203160</b>

Waterproof fire protection jacketing made of flexible mesh with fire protection coating to prevent fire spreading via cables and cable support systems. External side grey, internal side red. One roll contains 22 m<sup>2</sup>.

## Complete set



Type	Length	Width	Pack Piece	Weight	Item no.
	mm	mm		kg/100 pc.	
<b>FSB-K32</b>	550	380	1	96.000	<b>7203150</b>
<b>FSB-K82</b>	550	880	1	213.000	<b>7203154</b>

Intumescent material

Complete set for covering cable bundles or cable support systems without lid to prevent fire spreading. Application in outdoor areas. Each of the sets contains 4 sections of the weather-resistant cable bandage FSB-WB, 8 metal strip clips and an identification plate. Sufficient for approx. 2 m length.

Dimension data: sections of the bandage FSB-WB

Scope of the surrounding cable support systems:  
 FSB-K32 maximum 320 mm  
 FSB-K82 maximum 820 mm  
 (including min. 5 cm bandage overlap)

## Metal strip clips, narrow



Type	Length	Width	Pack Piece	Weight	Item no.
	mm	mm		kg/100 pc.	
<b>MBS 015</b>	150	7	100	0.230	<b>7203100</b>
<b>MBS 030</b>	300	7	100	0.399	<b>7203102</b>
<b>MBS 045</b>	450	7	50	0.602	<b>7203104</b>
<b>MBS 061</b>	610	7	50	0.806	<b>7203106</b>

A2 Stainless steel, rustproof 1.4301

2B Bright, reworked

Metal strip clip in ladder form with single lock. For high-temperature and weatherproof fixing.

## Metal strip clips, wide



Type	Length	Width	Pack Piece	Weight	Item no.
	mm	mm		kg/100 pc.	
<b>MBS 075</b>	750	12	25	2.300	<b>7203108</b>
<b>MBS 100</b>	1000	12	25	3.000	<b>7203110</b>
<b>MBS 120</b>	1200	12	25	3.600	<b>7203112</b>
<b>MBS 150</b>	1500	12	25	4.400	<b>7203114</b>

A2 Stainless steel, rustproof 1.4301

2B Bright, reworked

Metal strip clip in ladder form with single lock. For high-temperature and weatherproof fixing.



## Pliers for metal strip clips

Type	Pack Piece	Width mm	Height mm	Pack Weight		Item no.
				Piece	kg/100 pc.	
<b>MBS-Z</b>	1			55.500		<b>7203120</b>

St Steel

High-quality spring chuck with cutting tool for metal strip clips, type MBS.

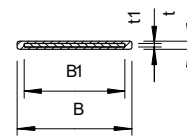


## Tightening strap for fastening of cable bandages

Type	Pack Piece	Width mm	Height mm	Pack Weight		Item no.
				Piece	kg/100 pc.	
<b>FSB-SB 100</b>	1	15		220.000		<b>7203131</b>

St Steel

100 m roll of lightweight, galvanised tightening strap, for universal fastening.

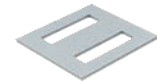


## Tightening strap lock

Type	Pack Piece	Length mm	Width mm	Pack Weight		Item no.
				Piece	kg/100 pc.	
<b>FSB-SV</b>	50	26	24	0.340		<b>7203132</b>

St Steel

Tightening strap lock with buckle, for simple fixing of the tightening straps FSB-SB.



## Securing clip

Type	Pack Piece	Width mm	Height mm	Pack Weight		Item no.
				Piece	kg/100 pc.	
<b>FSB-SC</b>	50	16	34	0.180		<b>7203134</b>

A2 Stainless steel, rustproof 1.4301

Stainless steel clip to secure the bend tightening strap. Provides prevention of removal from the lock.








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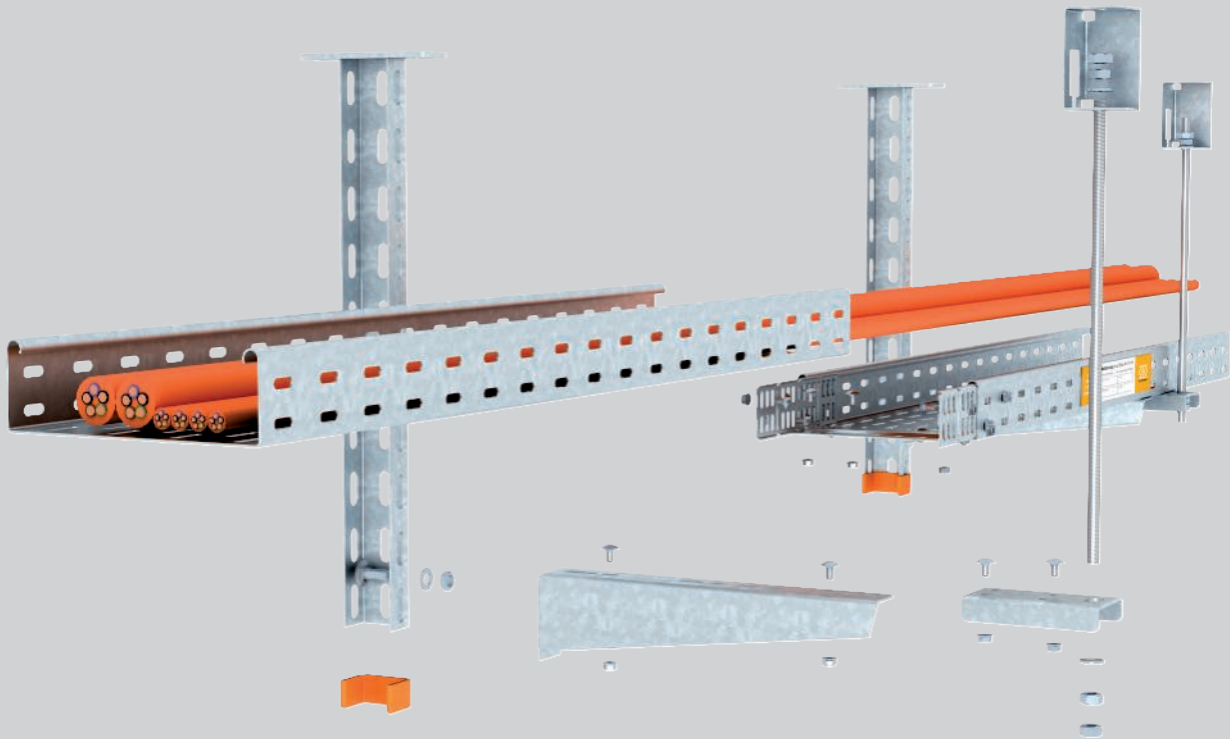


## Maintaining electrical function – standard support structures, vertical ladders – strain relief

	<b>System description, cable tray SKS</b>	116
	<b>System description, SKS cable tray, wall mounting</b>	120
	<b>Products cable trays, mesh cable trays and mounting components</b>	124

## Cable trays SKS6..., ceiling mounting

### System description



The routing type under the ceiling of cable trays of types SKS with U suspended supports and SKS on U transverse profiles fulfils all the requirements of DIN 4102 Part 12 as a standard support structure for the maintenance of electrical functionality classes E 30 to E 90.

The cable trays can be mounted on the U suspended support on one or both sides with up to six tray layers. The threaded rod lock is fastened with a maximum spacing of 100 mm beside the bracket. For this, the ABR connection component should be screwed under the tray base.

Due to the low construction height of the U transverse profiles of just 30 mm, the routing variant with U transverse profile and threaded rod suspension on both sides saves a lot of space. Versions with one or two-layer mounting variants are approved.

With both types, the position of the joints between the individual support points can be chosen freely. The cable trays are screwed on using connectors in the side rail and an additional joint plate in the base of the tray.

## Cable trays SKS6..., ceiling mounting

### Installation principle



Ceiling suspension with bracket arrangement on one side.



Ceiling suspension with bracket arrangement on both sides.



Mounting under sloping ceiling with variable head plate.



Bracket mounting on suspended support with truss-head bolt.



Fasten straight connectors and joint plate using truss-head bolts.



Threaded rod fastening on the tray with multi-layer arrangement.

Classification according to DIN 4102 Part 12

E30

E60

E90






## Cable trays SKS6..., ceiling mounting

### Proof



#### Maintenance of electrical functionality system according to DIN 4102 Part 12

<b>Routing type</b>	Standard support system
<b>Test certificate no.</b>	GS 3.2/17-436-2
<b>Maintenance of electrical functionality classes</b>	E30 to E90
<b>Testing standard</b>	DIN 4102 Part 12
<b>Mounting variants</b>	Ceiling mounting with suspended support, bracket and threaded rod lock Ceiling mounting with transverse profile and threaded rod lock on both sides
<b>Material version</b>	Galvanised steel

#### Support spacing for ceiling mounting with suspended support, bracket and threaded rod lock






Cable tray width	Cable load per cable tray					
100 mm	max. 10 kg/m	max. 1.20 m	max. 1.20 m	max. 1.20 m	max. 1.20 m	max. 1.20 m
200 mm	max. 10 kg/m	max. 1.20 m	max. 1.20 m	max. 1.20 m	max. 1.20 m	max. 1.20 m
300 mm	max. 10 kg/m	max. 1.20 m	max. 1.20 m	max. 1.20 m	max. 1.20 m	max. 1.20 m

#### Support spacing for ceiling mounting with transverse profile and threaded rod suspension on both sides



Cable tray width	Cable load per cable tray		
100 mm	max. 10 kg/m	max. 1.20 m	max. 1.20 m
200 mm	max. 10 kg/m	max. 1.20 m	max. 1.20 m
300 mm	max. 10 kg/m	max. 1.20 m	max. 1.20 m

## Cable trays SKS6..., ceiling mounting

### Components used

Component	Type					
Cable tray	SKS 6... FS	1	2	3	2	3
Connector	RWVL 60 FS	2	4	6	4	6
Joint plate	SSLB ... FS	1	2	3	2	3
Support	US 3 K ... FT	1	1	1	1	1
Protective cap	US 3 KS OR	1	1	1	1	1
Wall and support brackets	MWA12... FS	1	2	3	2	3
Truss-head bolt	FRSB 6x 15 F	2	4	6	4	6
Connection component	ABR FT	1	2	3	2	3
Threaded rod	2078 M10 G	1	2	3	2	3
Hexagonal nut	DIN 934 M10 G	4	5	6	8	9
Washer	966 M10 G	2	3	4	4	5
Connection sleeve	12005 M10 G	0	1	2	0	1
Fire protection clamp	BSB	1	1	1	2	2

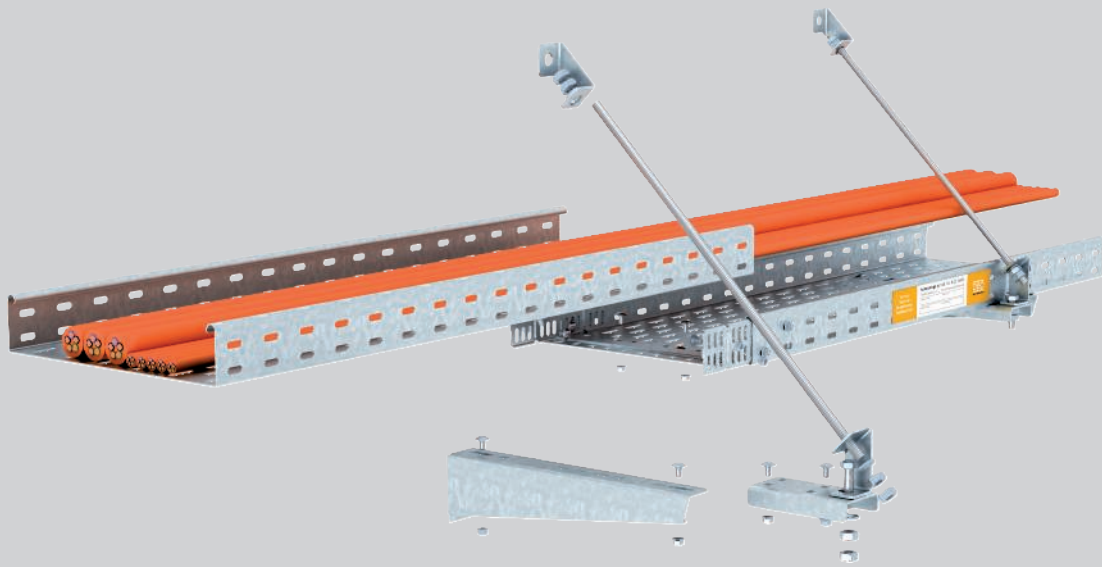
Choose the fastening anchors according to the substrate

Component	Type		
Cable tray	SKS 6... FS	1	2
Connector	RWVL 60 FS	2	4
Joint plate	SSLB ... FS	1	2
Support	US 3 ... FS	1	2
Protective cap	US 3 KS OR	2	4
Threaded rod	2078 M10 G	2	4
Hexagonal nut	DIN 934 M10 G	6	10
Large washer	DIN440 11 F	4	8
Connection sleeve	12005 M10 G	0	2
Truss-head bolt	FRSB 6x 20 F	2	4
Large washer	DIN440 7 F	2	4

Choose the fastening anchors according to the substrate

## Cable trays SKS6..., wall mounting

### System description



The routing type of cable trays of type SKS with wall brackets on the wall fulfils all the requirements of DIN 4102 Part 12 as a standard support structure for the maintenance of electrical functionality classes E 30 to E 90. When the cable trays are mounted on the wall, up to three tray layers can be arranged vertically. The threaded rod lock is fastened vertically under the ceiling with a maximum spacing of 100 mm beside the bracket using an ABR connection component

screwed on beneath the tray base. In the case of one-layer section mounting, the threaded rod lock can alternatively be created using sloping connection components at an angle of 45° to the wall. Joints can be positioned freely between the individual support points. Connectors are screwed into the side rails and an additional joint plate to the base, in order to connect the cable trays.



## Cable trays SKS6..., wall mounting

### Installation principle



Wall mounting, multi-layer, with vertical threaded rod locking.



Wall mounting with diagonal threaded rod locking.



Ceiling fastening of the threaded rods with fire protection clamps.



Threaded rod fastening on the cable tray with multilayer arrangement.



Fastening of the vertical threaded rod on the lowest cable tray.



Mounting of the brackets and the sloping connection components on a wall.



Fastening of the sloping connection component.

Classification according to DIN 4102 Part 12

E30

E60




E90

## Cable trays SKS6..., wall mounting Proof


### Maintenance of electrical functionality system according to DIN 4102 Part 12

<b>Routing type</b>	Standard support system
<b>Test certificate no.</b>	GS 3.2/17-436-2
<b>Maintenance of electrical functionality classes</b>	E30 to E90
<b>Testing standard</b>	DIN 4102 Part 12
<b>Mounting variants</b>	Wall mounting with bracket and vertical threaded rod lock Wall mounting with bracket and diagonal threaded rod lock
<b>Material version</b>	Galvanised steel

### Support spacing for wall mounting with bracket and vertical threaded rod lock



Cable tray width	Cable load per cable tray			
100 mm	max. 10 kg/m	max. 1.20 m	max. 1.20 m	max. 1.20 m
200 mm	max. 10 kg/m	max. 1.20 m	max. 1.20 m	max. 1.20 m
300 mm	max. 10 kg/m	max. 1.20 m	max. 1.20 m	max. 1.20 m

### Support spacing for wall mounting with bracket and diagonal threaded rod lock


Cable tray width	Cable load per cable tray	
100 mm	max. 10 kg/m	max. 1.20 m
200 mm	max. 10 kg/m	max. 1.20 m
300 mm	max. 10 kg/m	max. 1.20 m

## Cable trays SKS6..., wall mounting

### Components used

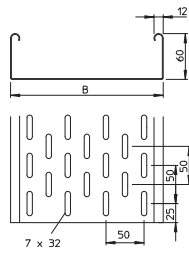
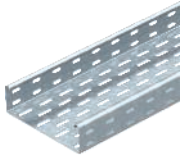
Component	Type		
Cable tray	SKS 6... FS	1	2
Connector	RWVL 60 FS	2	4
Joint plate	SSLB ... FS	1	2
Support	US 3 K ... FT	1	1
Protective cap	US 3 KS OR	1	1
Wall and support brackets	MWA12... FS	1	2
Truss-head bolt	FRSB 6x 15 F	2	4
Connection component	ABR FT	1	2
Threaded rod	2078 M10 G	1	2
Hexagonal nut	DIN 934 M10 G	4	5
Washer	966 M10 G	2	3
Connection sleeve	12005 M10 G	0	1
Fire protection clamp	BSB	1	1

Choose the fastening anchors according to the substrate

Component	Type	
Cable tray	SKS 6... FS	1
Connector	RWVL 60 FS	2
Joint plate	SSLB ... FS	1
Wall and support brackets	MWA12... FS	1
Truss-head bolt	FRSB 6x 15 F	2
Connection component	ABR FT	1
Connection component	ABS FS	2
Hexagonal bolt	SKS M10x40 F	1
Threaded rod	2078 M10 G	1
Hexagonal nut	DIN 934 M10 G	5
Washer	966 M10 G	2

Choose the fastening anchors according to the substrate

### Cable tray SKS 60



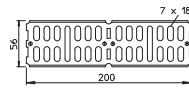
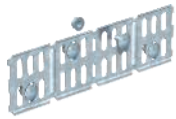
Type	Metal		Dimension B		Pack	Weight	Item no.
	Width	thickness	mm	BS			
<b>SKS 610 FS</b>	100	1.50	100	—	3	239.400	<b>6056105</b>
<b>SKS 620 FS</b>	200	1.50	200	—	3	364.000	<b>6056202</b>
<b>SKS 630 FS</b>	300	1.50	300	—	3	463.670	<b>6056296</b>

**St** Steel

**FS** Strip galvanised

SKS 60 = Heavy-duty cable tray system with 60 mm side height.

### Straight and angle connector 60



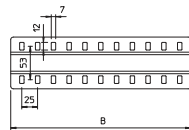
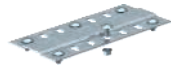
Type	Dimension	Pack	Weight	Item no.
<b>RWVL 60 FS</b>	200 x 56	10	16.400	<b>6067115</b>

**St** Steel

**FS** Strip galvanised

Straight and angle connector for cable trays and fittings with a side height of 60 mm.

### Joint plate SSLB



Type	Dimension	Pack	Weight	Item no.
<b>SSLB 100 FS</b>	100	20	7.700	<b>7070205</b>
<b>SSLB 200 FS</b>	200	20	16.700	<b>7070213</b>
<b>SSLB 300 FS</b>	300	20	25.700	<b>7070217</b>

**St** Steel

**FS** Strip galvanised

Wide joint plate for use in all cable trays and wide span cable trays.

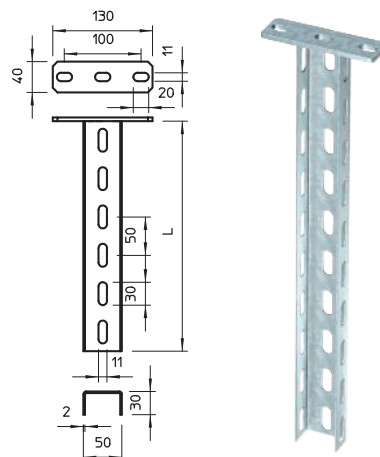
### US 3 support

Type	Length mm	Material thickness mm	Dimen- sion L mm	BS	Pack Piece	Weight kg/100 pc.	Item no.
US 3 K 20 FT	200	2	200	—	1	50.500	6342351
US 3 K 30 FT	300	2	300	—	1	64.400	6342353
US 3 K 40 FT	400	2	400	—	1	78.300	6342355
US 3 K 50 FT	500	2	500	—	1	92.300	6342357
US 3 K 60 FT	600	2	600	—	1	106.200	6342359
US 3 K 70 FT	700	2	700	—	1	120.200	6342362
US 3 K 80 FT	800	2	800	—	1	134.100	6342364
US 3 K 90 FT	900	2	900	—	1	147.800	6342366
US 3 K 100 FT	1000	2	1000	—	1	162.000	6342368
US 3 K 110 FT	1100	2	1100	—	1	175.900	6342370
US 3 K 120 FT	1200	2	1200	—	1	189.900	6342372

St Steel

FT Hot-dip galvanised

Suspended support (U profile) of dimensions 50 x 30 mm with welded head plate.



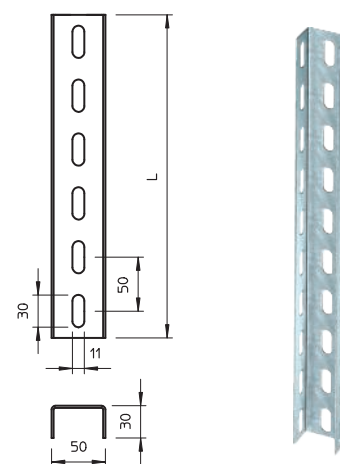
### US 3 support

Type	Length mm	Material thickness mm	Dimen- sion L mm	BS	Pack Piece	Weight kg/100 pc.	Item no.
US 3 20 FS	200	2	200	—	1	27.000	6342302
US 3 30 FS	300	2	300	—	1	40.000	6342304
US 3 40 FS	400	2	400	—	1	53.000	6342306
US 3 50 FS	500	2	500	—	1	67.000	6342308
US 3 60 FS	600	2	600	—	1	80.000	6342310
US 3 70 FS	700	2	700	—	1	93.000	6342312
US 3 80 FS	800	2	800	—	1	107.000	6342314
US 3 90 FS	900	2	900	—	1	120.000	6342316
US 3 100 FS	1000	2	1000	—	1	133.000	6342318
US 3 150 FS	1500	2	1500	—	1	200.000	6342328
US 3 200 FS	2000	2	2000	—	1	266.000	6342338

St Steel

FS Strip galvanised

U support in fixed lengths. Dimensions 30 x 50 mm.



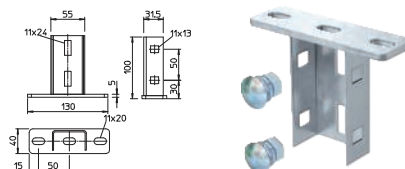
### Head plate

Type	Pack Piece	Weight kg/100 pc.	Item no.
KU 3 FT	10	42.300	6348874

St Steel

FT Hot-dip galvanised

Head plate for mounting on US 3 supports.

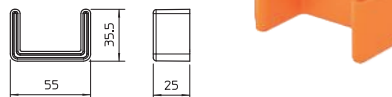


### End cap

Type	Colour	Pack Piece	Weight kg/100 pc.	Item no.
US 3 KS OR	Pastel orange	20	1.068	6338458

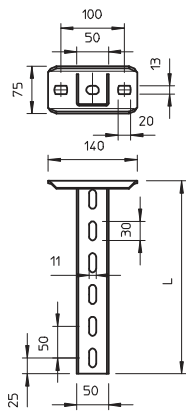
PE Polyethylene

End cap to cover the ends of US 3 supports.



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## US 5 support



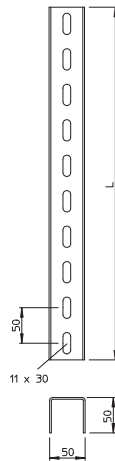
Type	Length mm	Material thickness mm	Dimen- sion L		Pack Piece	Weight kg/100 pc.	Item no.
			mm	BS			
US 5 K 20 FT	200	2.5	200	—	1	85.000	6341527
US 5 K 30 FT	300	2.5	300	—	1	110.000	6341535
US 5 K 40 FT	400	2.5	400	—	1	136.000	6341543
US 5 K 50 FT	500	2.5	500	—	1	161.000	6341551
US 5 K 60 FT	600	2.5	600	—	1	185.000	6341578
US 5 K 70 FT	700	2.5	700	—	1	210.000	6341586
US 5 K 80 FT	800	2.5	800	—	1	236.000	6341594
US 5 K 90 FT	900	2.5	900	—	1	261.000	6341608
US 5 K 100 FT	1000	2.5	1000	—	1	286.000	6341616
US 5 K 110 FT	1100	2.5	1100	—	1	311.000	6341624
US 5 K 120 FT	1200	2.5	1200	—	1	337.000	6341632

St Steel

FT Hot-dip galvanised

U support of dimensions 50 x 50 mm with welded head plate.

## US 5 support



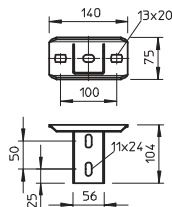
Type	Length mm	Material thickness mm	Dimen- sion L		Pack Piece	Weight kg/100 pc.	Item no.
			mm	BS			
US 5 30 FT	300	2.5	300	—	1	79.000	6340903
US 5 40 FT	400	2.5	400	—	1	106.000	6340911
US 5 50 FT	500	2.5	500	—	1	133.000	6340938
US 5 60 FT	600	2.5	600	—	1	160.000	6340946
US 5 70 FT	700	2.5	700	—	1	175.000	6340950
US 5 80 FT	800	2.5	800	—	1	200.000	6340954
US 5 90 FT	900	2.5	900	—	1	227.000	6340958
US 5 100 FT	1000	2.5	1000	—	1	265.000	6340962
US 5 150 FT	1500	2.5	1500	—	1	395.000	6340966
US 5 200 FT	2000	2.5	2000	—	1	506.000	6340970

St Steel

FT Hot-dip galvanised

U support in fixed lengths. Dimensions 50 x 50 mm.

## Head plate US 5



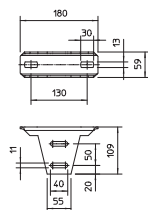
Type	Pack Piece	Weight kg/100 pc.	Item no.

St Steel

FT Hot-dip galvanised

Head plate for installation in US 5 support.

## Head plate, variable FT



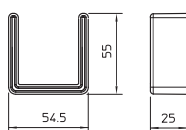
Type	Pack Piece	Weight kg/100 pc.	Item no.

St Steel

FT Hot-dip galvanised

Variable head plate for installation on US 5 support.

## End cap



Type	Colour	Pack Piece	Weight kg/100 pc.	Item no.

PE Polyethylene

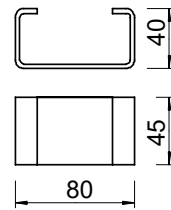
End cap to cover the ends of US 5 supports.

### Spacer DSK 45

Type	Pack Piece	Weight kg/100 pc.	Item no.
<b>DSK 45 FT</b>	20	18.000	<b>6416500</b>

- St Steel
- FT Hot-dip galvanised

Spacer for use in U 5 support and in the head plate, type KU 7 VQP.

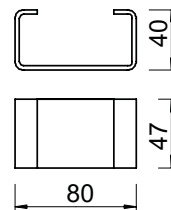


### Spacer

Type	Pack Piece	Weight kg/100 pc.	Item no.
<b>DSK 47 FT</b>	20	19.000	<b>6416504</b>

- St Steel
- FT Hot-dip galvanised

Spacer for use in head plate, type KU 5 V.

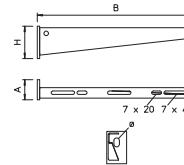


### Wall and support bracket AW 15

Type	Width mm	Dimension H mm	Dimension A mm	Dimension B mm	Hole Ø mm	BS	Pack Piece	Weight kg/100 pc.	Item no.
<b>AW 15 11 FT</b>	110	50	40	110	11	—	30	13.100	<b>6420656</b>
<b>AW 15 21 FT</b>	210	60	40	210	11	—	30	24.000	<b>6420680</b>
<b>AW 15 31 FT</b>	310	65	40	310	11	—	30	39.900	<b>6420710</b>
<b>AW 15 41 FT</b>	410	70	40	410	11	—	30	54.000	<b>6420745</b>

- St Steel
- FT Hot-dip galvanised

Light-duty wall and support bracket with welded head plate.

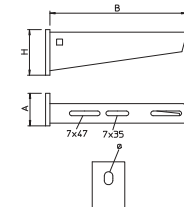


### Wall and support bracket AW 30

Type	Width mm	Dimension H mm	Dimension A mm	Dimension B mm	Hole Ø mm	BS	Pack Piece	Weight kg/100 pc.	Item no.
<b>AW 30 21 FT</b>	210	70	50	210	13	—	1	39.300	<b>6419720</b>
<b>AW 30 31 FT</b>	310	80	50	310	13	—	1	63.000	<b>6419747</b>
<b>AW 30 41 FT</b>	410	80	50	410	13	—	1	89.000	<b>6419763</b>

- St Steel
- FT Hot-dip galvanised

Medium-duty wall and support bracket with welded head plate.

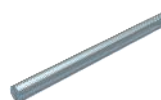
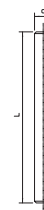


### Threaded rod

Type	Thread	Dimension d mm	Dimension L mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>TR M8 1M G</b>	M8	8	1000	10	30.000	<b>3141128</b>
<b>TR M10 1M G</b>	M10	10	1000	10	49.000	<b>3141209</b>
<b>TR M12 1M G</b>	M12	12	1000	10	62.000	<b>3141306</b>

- St Steel
- G Electrogalvanised

Threaded rod to DIN 976.

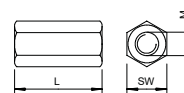


### Connection sleeve

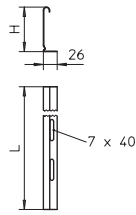
Type	Thread	Dimension L mm	SW mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>CSTR M8 G</b>	M8	24	13	50	1.880	<b>6410081</b>
<b>CSTR M10 G</b>	M10	30	17	50	4.150	<b>6410103</b>
<b>CSTR M12 G</b>	M12	40	19	25	7.000	<b>6410111</b>

- St Steel
- G Electrogalvanised

Connection sleeve with continuous internal thread.



### Separating retainer 45

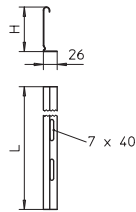
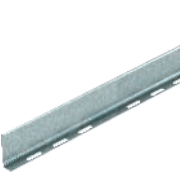


Type	Dimension H mm	Metal thickness mm	Dimension L mm	Pack m	Weight kg/100 m	Item no.
<b>TSG 45 FS</b>	45	0.75	3000	3	46.700	<b>6062033</b>

- St** Steel
- FS** Strip galvanised

Separating retainer for separation of cables of different voltages or functions.

### Separating retainer 60

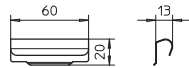


Type	Dimension H mm	Metal thickness mm	Dimension L mm	Pack m	Weight kg/100 m	Item no.
<b>TSG 60 FS</b>	60	0.75	3000	3	55.700	<b>6062068</b>

- St** Steel
- FS** Strip galvanised

Separating retainer for separation of cables of different voltages or functions.

### Separating retainer connector

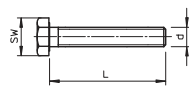


Type	Pack Piece	Weight kg/100 pc.	Item no.
<b>TSGV A2</b>	10	0.899	<b>6067970</b>

- A2** Stainless steel, rustproof
- 2B** Bright, reworked

Separating retainer connector for screwless connection of the TSG separating retainer in all side heights.

### Hexagonal bolt with nut and washer

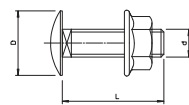
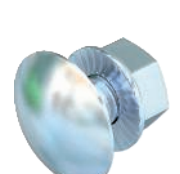


Type	Dimension mm	Dimension L mm	Dimension d mm	SW mm	Resistance class	Pack Piece	Weight kg/100 pc.	Item no.
<b>SKS 10x80 F</b>	M 10 x 80	80	10	17	8.8	20	6.865	<b>6418250</b>

- St** Steel
- F** Hot galvanised

Hexagonal bolt for universal fixing of structure components.

### Truss-head bolt with flange nut

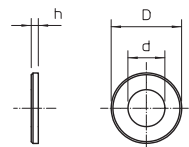
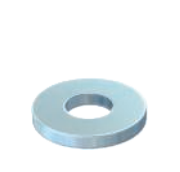


Type	Dimension mm	Dimension L mm	Dimension d mm	Dimension D mm	Resistance class	Pack Piece	Weight kg/100 pc.	Item no.
<b>FRSB 6x12 F</b>	M 6 x 12	12	6	13.5	5.6	100	0.812	<b>6406122</b>
<b>FRSB 6x20 F</b>	M 6 x 20	20	6	13.5	5.6	100	0.965	<b>6406203</b>

- St** Steel
- F** Hot galvanised

Truss-head bolt with square neck including flange nut.

### Washer



Type	Thread	Dimension d mm	Dimension D mm	Dimension h mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>WS M8 D16 G</b>	M8	8.4	16	1.6	100	0.156	<b>3402088</b>
<b>WS M10 D20 G</b>	M10	10.5	20	2	100	0.408	<b>3402096</b>
<b>WS M12 D24 G</b>	M12	13	24	2.5	100	0.570	<b>3402126</b>

- St** Steel
- G** Electrogalvanised

Washer according to DIN 125, shape A, for universal use.



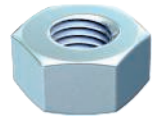
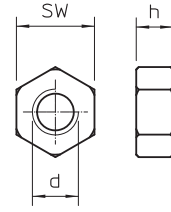
## Hexagonal nut DIN 934

Type	Thread	SW mm	Dimen- sion h mm	Dimen- sion d mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>HN M8 G</b>	M8	13	6.8	8	100	0.500	<b>3400085</b>
<b>HN M10 G</b>	M10	17	8.4	10	100	1.014	<b>3400107</b>
<b>HN M12 G</b>	M12	19	10.8	12	100	1.730	<b>3400123</b>

**St** Steel

**G** Electrogalvanised





Hexagonal nut to DIN 934 with metric thread.





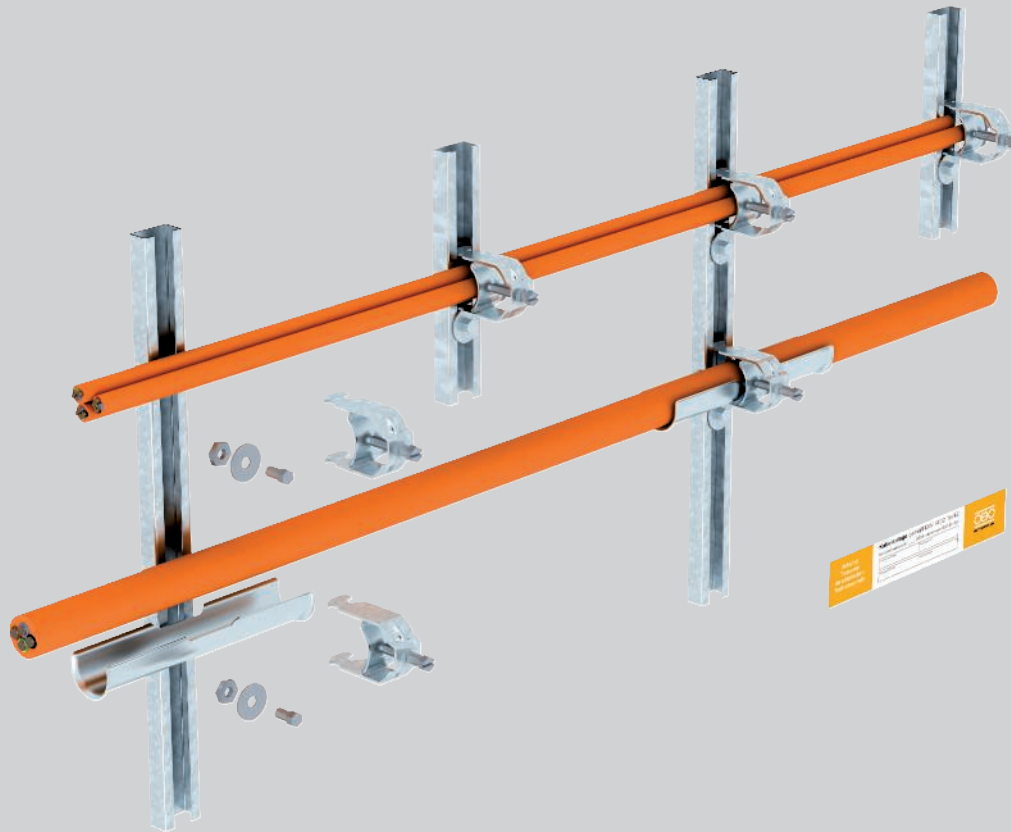


## Maintaining electrical function – Junction boxes, individual routing, pipes and metal ducts

	<b>System description, rail and clamp clips</b>	132
	<b>Products</b>	134
	<b>System description, screw-in spacer clips</b>	136
	<b>Products</b>	138

## Clamp clips with profile rails

### System description



The routing types with clamp clips fulfil all the requirements of DIN 4102 Part 12 as a standard support structure for the maintenance of electrical functionality classes E30 and E90. Mounting as a cable-specific routing type is possible, depending on the specifications of the cable manufacturer. The clamp clips can be used for horizontal cable routing on walls and ceilings and vertical routing on walls. The clamp clips are made of sheet steel with a riveted metal pressure trough. Long troughs made of galvanised sheet steel

can be used to increase the support area for the cables. These are inserted loosely between the cables and the metal pressure troughs of the clamp clips. Bundling of up to three cables in a clamp clip is possible. The individual diameter of the bundled cables may not exceed 25 mm. If only individual cables are installed, then there is no limit to the cable diameter.

# Clamp clips with profile rails

## Installation principle



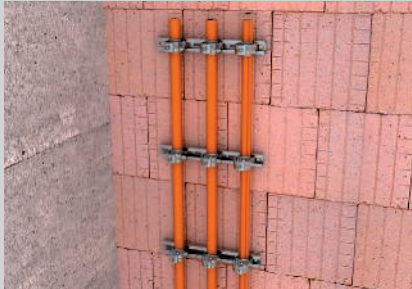
Horizontal mounting with clamp clips and long troughs on the wall and under the ceiling.



Horizontal cable mounting with clamp clips on the wall.



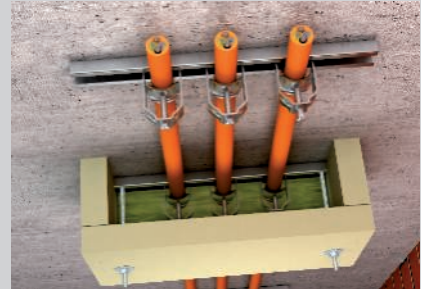
Horizontal cable mounting with clamp clips under the ceiling.



Vertical cable mounting with clamp clips on the wall.



Installation of the cables, either individually or as a bundle.



Effective support measure with ZSE90 strain relief.

Classification according to DIN 4102 Part 12



### System description

<b>Routing type</b>	Standard support structure Cable-specific support construction
<b>Surveyor's report no.</b>	3038/625/11-3-CM (standard)
<b>Maintenance of electrical functionality classes</b>	E30 to E90
<b>Testing standard</b>	DIN 4102 Part 12

### Approved data

<b>Rail fastening distance, max.</b>	0.3 m (without long trough) as standard support structure
<b>Rail fastening distance, max.</b>	0.6 m (with long trough) as standard support structure
<b>Max. anchor spacing in rail</b>	0.25 m
<b>Max. individual cable diameter</b>	62 mm with long trough, 100 mm without long trough
<b>Max. cable bundle</b>	3x Ø 25 mm as standard support structure
<b>Cable-specific</b>	Cable types and mounting parameters dependent on the cable manufacturer

#### Standard routing type:

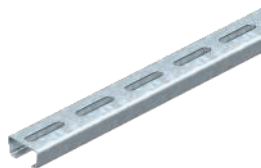
The data of the surveyor's report applies, together with a valid, general construction test certificate of a materials testing institute for the cable type to be used.

#### Cable-specific routing type:

A general construction test certificate of a materials testing institute for the cable type to be used is sufficient as proof.

With regard to the fastening distance and cable assignment, the details from the appropriate test certificate must be taken into account.

## Profile rail 2068, slot width 16.5, perforated

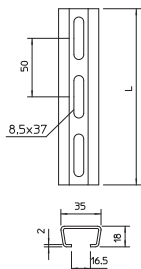


Type	Dimension		Material	Dimension L	Pack	Weight	Item no.
	Length	W x H					
<b>AML3518P2000FT</b>	2000	35 x 18	1.5	2000	20	89.000	<b>1119656</b>

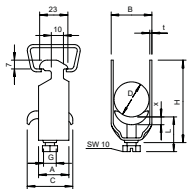
**St** Steel

**FT** Hot-dip galvanised

Central C profile rail for cable routing, in conjunction with clamp clips with a hammerhead foot. Can also be used as suspension construction for cable support systems.



## Clamp clip, single, metal pressure trough



Type	Clamping range D	Pack	Weight	Item no.
	mm	Piece	kg/100 pc.	
<b>2056 M 12 FT</b>	8 - 12	100	3.200	<b>1156004</b>
<b>2056 M 16 FT</b>	12 - 16	100	3.500	<b>1156012</b>
<b>2056 M 22 FT</b>	16 - 22	100	4.400	<b>1156020</b>
<b>2056 M 28 FT</b>	22 - 28	100	6.100	<b>1156039</b>
<b>2056 M 34 FT</b>	28 - 34	100	7.700	<b>1156047</b>
<b>2056 M 40 FT</b>	34 - 40	100	8.600	<b>1156055</b>
<b>2056 M 46 FT</b>	40 - 46	100	9.600	<b>1156063</b>
<b>2056 M 52 FT</b>	46 - 52	100	10.400	<b>1156071</b>
<b>2056 M 58 FT</b>	52 - 58	100	13.100	<b>1156098</b>
<b>2056 M 64 FT</b>	58 - 64	100	14.500	<b>1156101</b>
<b>2056 M 70 FT</b>	64 - 70	50	16.100	<b>1156128</b>
<b>2056 M 76 FT</b>	70 - 76	25	18.300	<b>1156136</b>
<b>2056 M 82 FT</b>	76 - 82	25	19.100	<b>1156144</b>
<b>2056 M 90 FT</b>	82 - 90	25	23.300	<b>1156152</b>
<b>2056 M 100 FT</b>	90 - 100	25	24.500	<b>1156160</b>

**St** Steel

**FT** Hot-dip galvanised

Suitable for all C profile rails with slot width 16–17 mm.

Clip, bolt and pressure trough made of hot-dip galvanised steel.

### Dimensions

D	A	B	C	G	d	x	H	L
mm	mm	mm	mm		mm	mm	mm	mm
8 - 12	23	16	30	M6	1.5	3.5	40	32.5
12 - 16	23	20	30	M6	1.5	3.5	44	32.5
16 - 22	23	27	30	M6	1.5	4.5	50	46.5
22 - 28	23	33	30	M6	2	4.5	58	46.5
28 - 34	23	39	35	M8	2	5	66	44
34 - 40	23	45	35	M8	2	5	72	44
40 - 46	23	51	35	M8	2	5	79	44
46 - 52	23	57	35	M8	2	5	86	44
52 - 58	23	64	35	M8	2.5	5	93	44
58 - 64	23	70	35	M8	2.5	5	99	56
64 - 70	25	76	35	M8	2.5	5	106	56
70 - 76	25	82	40	M8	2.5	5	114	56
76 - 82	25	88	40	M8	2.5	5	121	56
82 - 90	25	97	40	M8	3	5	130	56
90 - 100	25	107	40	M8	3	5	140	56

## Ablation coating in a cartridge

Type	Contents ml	Pack Piece	Weight kg/100 pc.	Item no.

Intumescent material

Combined, endothermic and weatherproof coating for internal and external areas. Universal protection coating for cable and cable support structures. Use as direct filler, and as paint when stirred.

Material class DIN 4102 - B2, normally flammable.

In dry, frost-free rooms, the coating can be stored at temperatures from +5 °C to +25 °C for up to 18 months in closed, upright original containers.



## Screw-in spacer clips

### System description



The routing types with single clips fulfil all the requirements of DIN 4102 Part 12 as a standard support structure for the maintenance of electrical functionality classes E 30, E 60 and E 90. In addition, mounting of the single clips as a cable-specific routing type is possible, depending on the specifications of the cable manufacturer. The screw-in spacer clips can be used for horizontal cable routing on walls and ceilings and vertical routing on walls. The closed screw-in spacer clips are made of galvanised sheet steel. Mounting is

carried out either by pushing through the slots of the clips or by screwing onto a fire protection anchor with threaded tip M6. Bundling of up to three cables together in a single clamp clip is possible for mounting as a standard support structure. The individual diameter of the bundled cables may not exceed 25 mm. There is no limit to the diameter of installed individual cables with screw-in spacer clips.



# Screw-in spacer clips

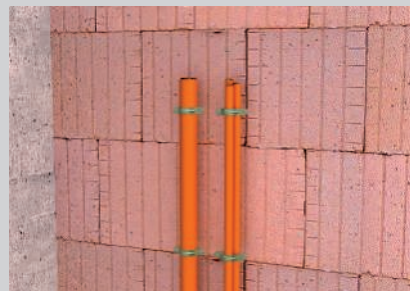
## Installation principle



Horizontal cable mounting on the wall.



Mounting under the ceiling.



Vertical cable installation as individual and bundle routing on the wall.



Bundled cable routing under the ceiling.



Effective support measure with ZSE90 strain relief.

Classification according to DIN 4102 Part 12



### System description

<b>Routing type</b>	Standard support structure Cable-specific support construction
<b>Surveyor's report no.</b>	3038/625/11-3-CM (standard)
<b>Maintenance of electrical functionality classes</b>	E30 to E90
<b>Testing standard</b>	DIN 4102 Part 12

### Approved data

<b>Max. fastening spacing</b>	0.3 m as standard support structure
<b>Max. individual cable diameter</b>	63 mm
<b>Max. cable bundle</b>	3x Ø 25 mm
<b>Cable-specific</b>	Cable types and mounting parameters dependent on the cable manufacturer

#### Standard routing type:

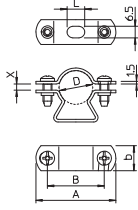
The data of the surveyor's report applies, together with a valid, general construction test certificate of a materials testing institute for the cable type to be used.

#### Cable-specific routing type:

A general construction test certificate of a materials testing institute for the cable type to be used is sufficient as proof.

With regard to the fastening distance and cable assignment, the details from the appropriate test certificate must be taken into account.

## Cable and pipe spacer clip 733



Type	Clamping range D mm	Pack	Weight	Item no.
		Piece	kg/100 pc.	
<b>733 21 G</b>	19 - 21	50	2.730	<b>1361201</b>
<b>733 23 G</b>	21 - 23	50	2.870	<b>1361236</b>
<b>733 29 G</b>	24 - 29	50	3.480	<b>1361295</b>
<b>733 38 G</b>	30 - 38	25	4.040	<b>1361384</b>
<b>733 48 G</b>	39 - 48	25	4.810	<b>1361481</b>
<b>733 54 G</b>	48 - 54	25	5.800	<b>1361511</b>
<b>733 61 G</b>	53 - 61	20	6.370	<b>1361619</b>
<b>733 63 G</b>	63	20	6.940	<b>1361635</b>

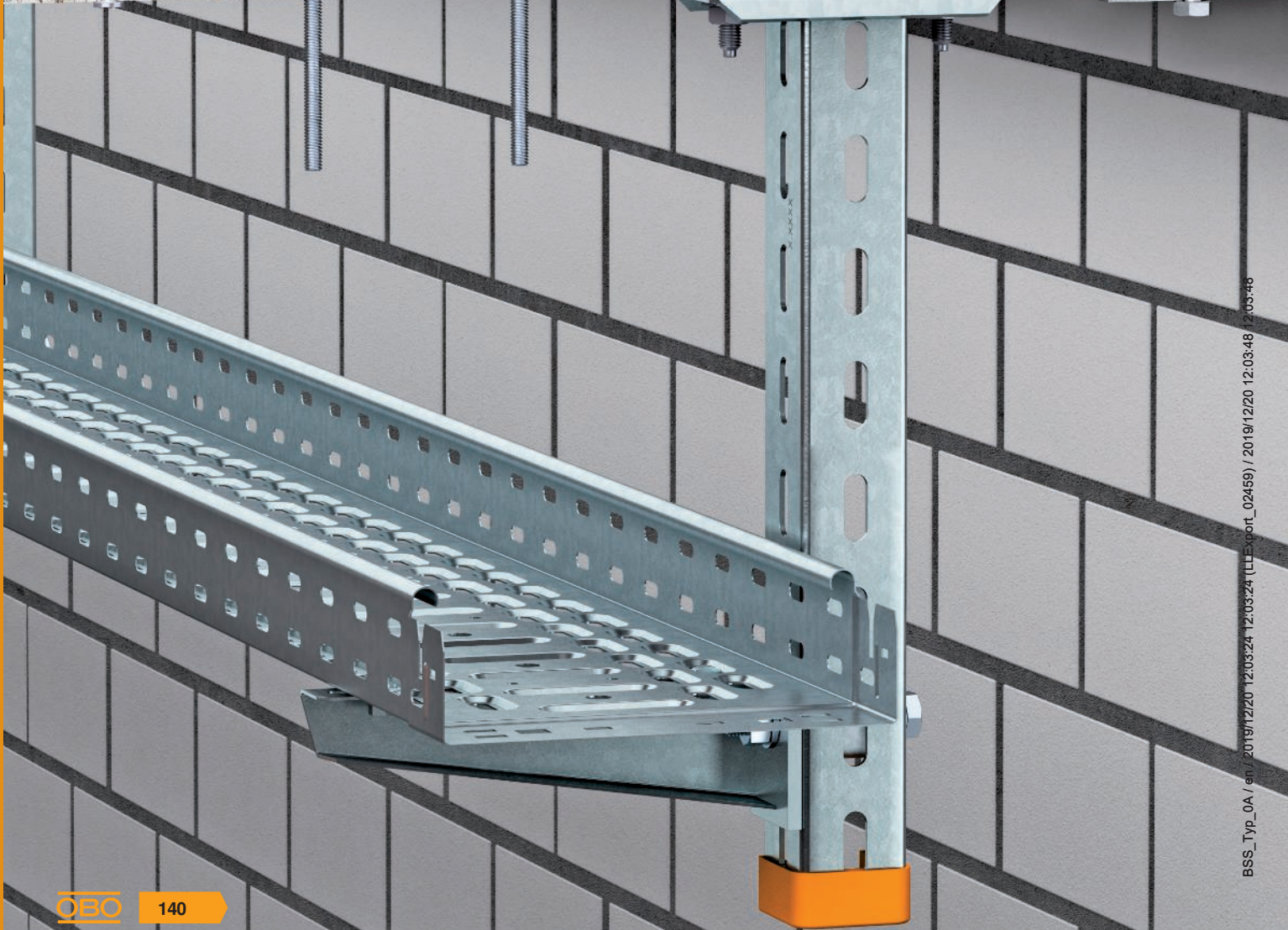
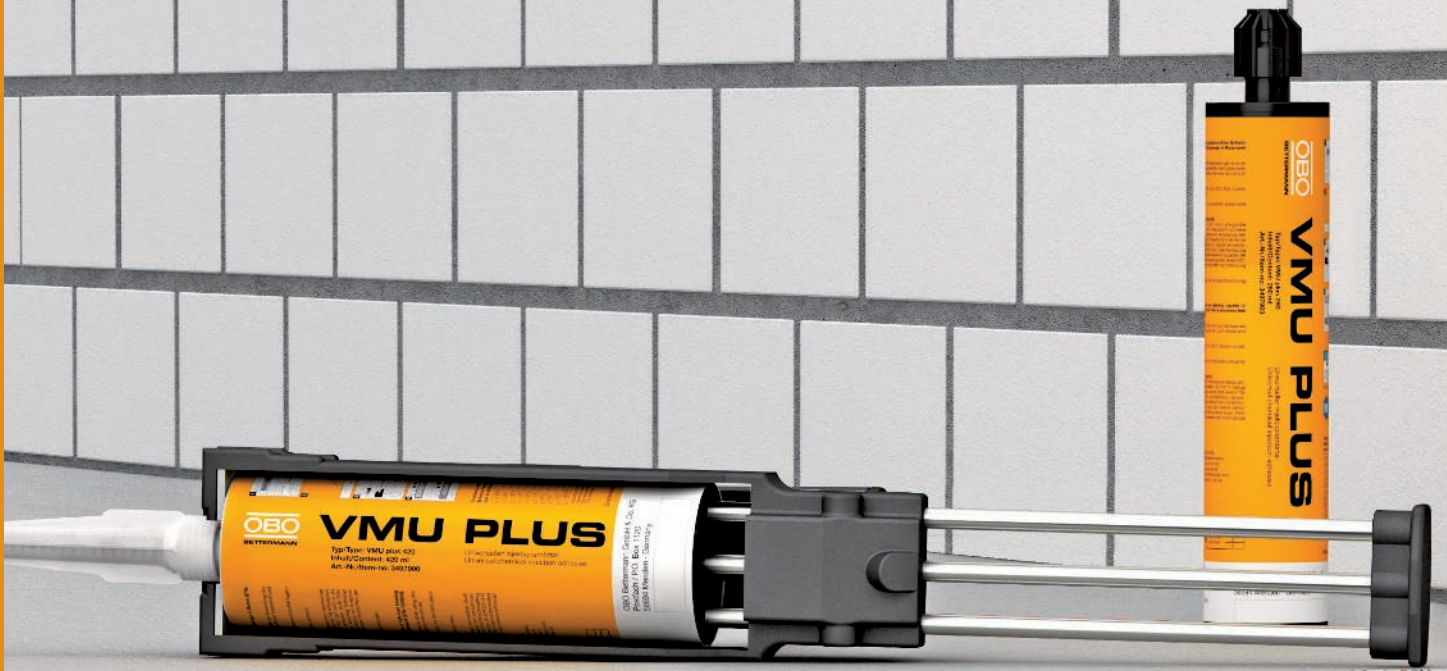
**St** Steel

**G** Electrogalvanised

### Dimensions

D mm	A mm	B mm	L mm	b mm	x mm
19-21	50	37	10	14	2
21-23	52	39	10	14	2.5
24-29	58	42	10	16	7
30-38	70	54	10	16	10
39-48	80	64	14	16	12.5
48-54	86	68	14	18	7.5
53-61	96	78	14	18	10
63	101	83	18	16	3








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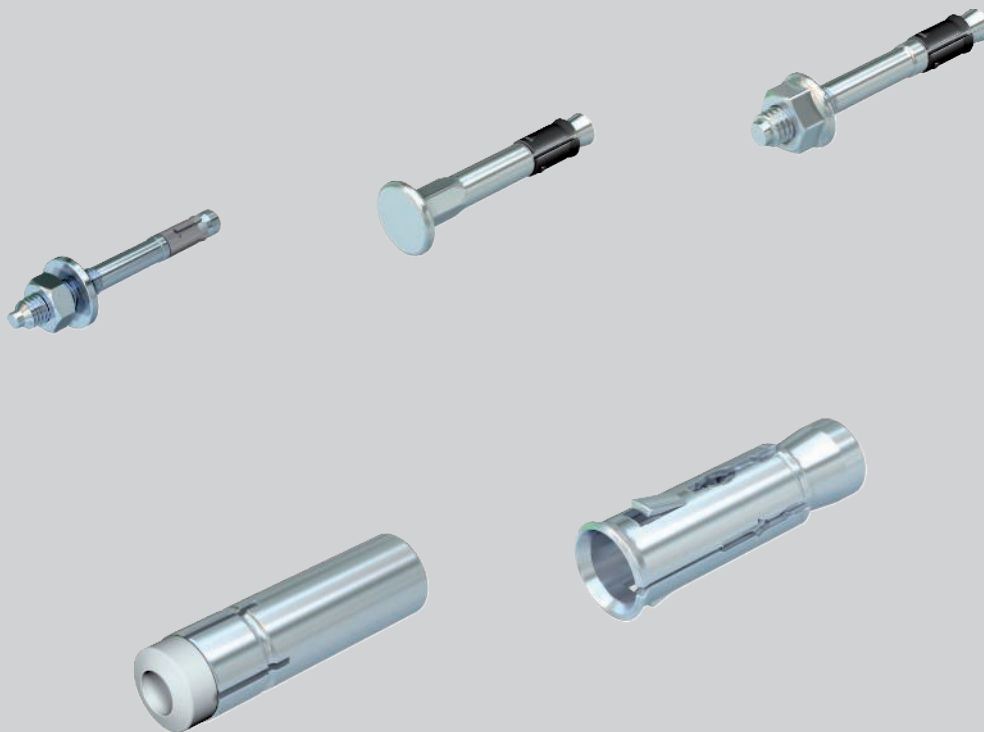
## Anchoring

	<b>System description, metal spreading anchor</b>	142
	<b>Products</b>	144
	<b>Mounting material for insulated ceilings</b>	145



## Metal spreading anchor

### System description



OBO Bettermann's metal spreading anchors for mounting in concrete components were tested for fire protection. Appropriate proofs are available for the tests carried out. Depending on the fire resistance length (up to 120 minutes), a maximum load capacity was determined when anchored in concrete. This load data is contained in the appropriate European Tech-

nical Assessments and appropriate test documentation. Although the load capacity of the anchors during a fire is below the load capacity when cold, this load capacity is completely sufficient for fireproof fastening of the different routing types. Special metal spreading anchors are offered for false ceilings.



## Metal spreading anchor Installation principle



Nail tie, type N 6, with thread end.



Nail tie, type N-K 6, with flat head.



Bolt tie, type BZ.



Bolt tie, type BZ-IG.



Hollow core anchor, Easy type.

Classification according to proof of application

R30

R60

R90

R120

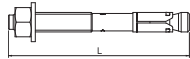
### System description

<b>Anchoring type</b>	Anchor with spreading metal cone
<b>Fire resistance classes</b>	To R120 according to European Technical Assessment ETA
<b>Substrate</b>	Concrete

The data of the approval documents and any fire testing reports apply



## Bolt tie BZ

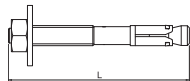


Type	Thread	Dimension L		Pack Piece	Weight kg/100 pc.	Item no.
		mm	mm			
<b>BZ 12-15-35/110</b>	M12	35	110	25	10.320	<b>3498350</b>

- St** Steel
- G** Electrogalvanised

Bolt tie BZ for the anchoring of medium-duty to heavy-duty loads, both in cracked and non-cracked concrete. It combines high approved loads with small edge distances and axial spacings. European Technical Approval ETA-99/0010, including characteristic values under fire exposure to fire resistance R 120. Proof of suitability in the case of seismic impacts, categories C1 and C2. Shock approval by the Federal Office for Civil Protection in Bern, Switzerland.

## Bolt tie BZ-U

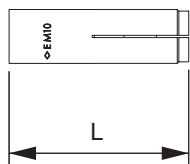


Type	Thread	Dimension L		Pack Piece	Weight kg/100 pc.	Item no.
		mm	mm			
<b>BZ-U 8-30-41/95</b>	M8	30	95	50	4.010	<b>3498326</b>
<b>BZ-U 10-10-30/90</b>	M10	10	90	50	6.720	<b>3498334</b>
<b>BZ-U10-30-50/110</b>	M10	30	110	25	7.900	<b>3498340</b>

- St** Steel
- G** Electrogalvanised

Bolt tie BZ for the anchoring of medium-duty to heavy-duty loads, both in cracked and non-cracked concrete. It combines high approved loads with small edge distances and axial spacings. European Technical Approval ETA-99/0010, including characteristic values under fire exposure to fire resistance R 120. Proof of suitability in the case of seismic impacts, categories C1 and C2. Shock approval by the Federal Office for Civil Protection in Bern, Switzerland.

## Drop-in anchor E



Type	Thread	Drill hole $\varnothing$	Bore hole depth mm	Dimension L mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>E M 10x40</b>	M10	12	40	40	50	2.140	<b>3492920</b>

- St** Steel
- G** Electrogalvanised

Anchor for small loads in steel version





### Threaded rod

Type	Thread	Dimension d mm	Dimension L mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>TR M8 1M G</b>	M8	8	1000	10	30.000	<b>3141128</b>
<b>TR M10 1M G</b>	M10	10	1000	10	49.000	<b>3141209</b>
<b>TR M12 1M G</b>	M12	12	1000	10	62.000	<b>3141306</b>

**St** Steel

**G** Electrogalvanised

Threaded rod to DIN 976.



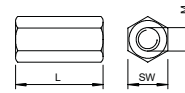
### Connection sleeve

Type	Thread	Dimension L mm	SW mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>CSTR M8 G</b>	M8	24	13	50	1.880	<b>6410081</b>
<b>CSTR M10 G</b>	M10	30	17	50	4.150	<b>6410103</b>
<b>CSTR M12 G</b>	M12	40	19	25	7.000	<b>6410111</b>

**St** Steel

**G** Electrogalvanised

Connection sleeve with continuous internal thread.



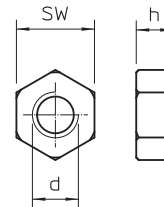
### Hexagonal nut DIN 934

Type	Thread	SW mm	Dimension h mm	Dimension d mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>HN M8 G</b>	M8	13	6.8	8	100	0.500	<b>3400085</b>
<b>HN M10 G</b>	M10	17	8.4	10	100	1.014	<b>3400107</b>
<b>HN M12 G</b>	M12	19	10.8	12	100	1.730	<b>3400123</b>

**St** Steel

**G** Electrogalvanised

Hexagonal nut to DIN 934 with metric thread.



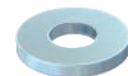
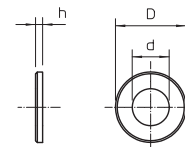
### Washer

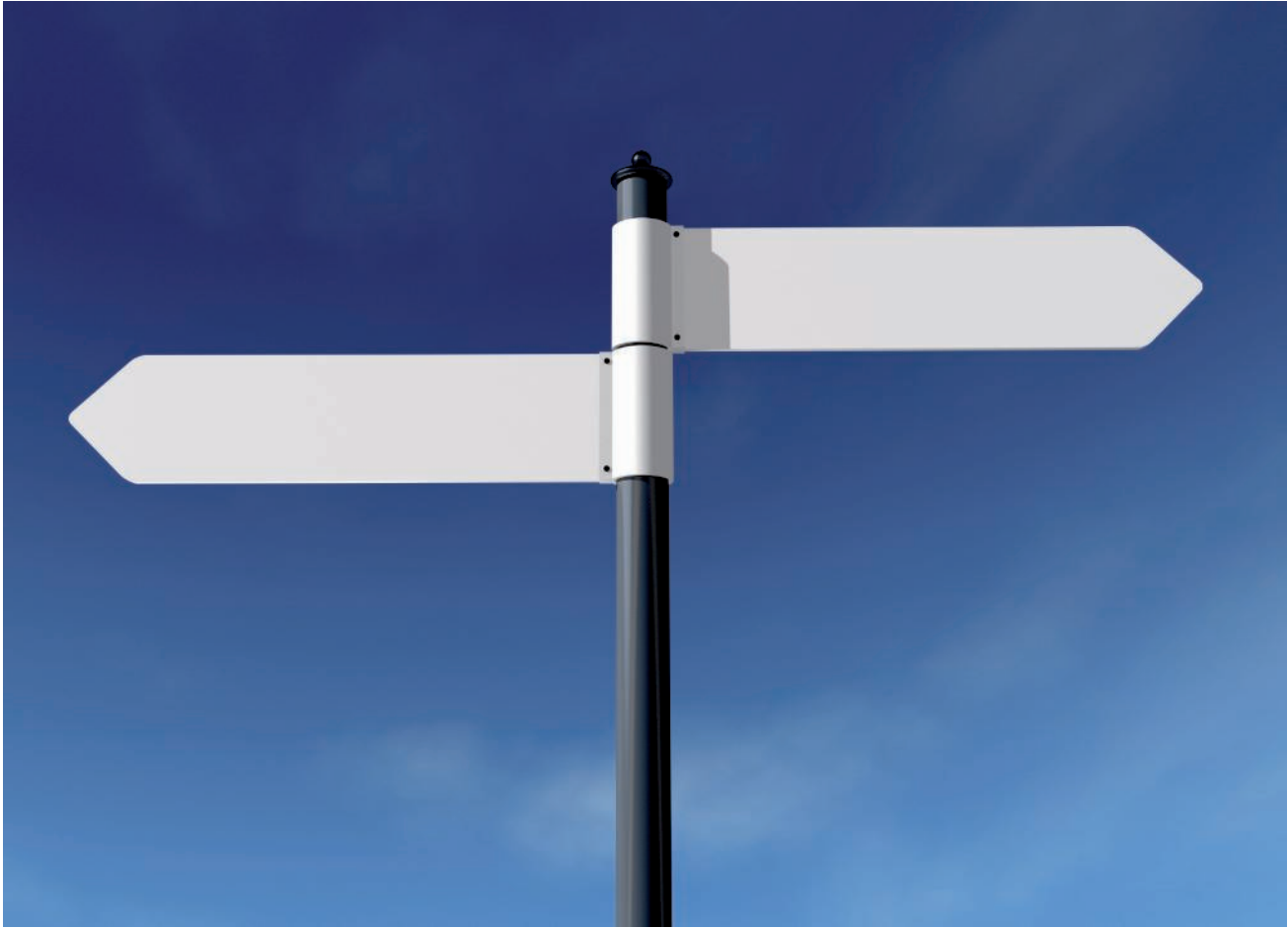
Type	Thread	Dimension d mm	Dimension D mm	Dimension h mm	Pack Piece	Weight kg/100 pc.	Item no.
<b>WS M8 D16 G</b>	M8	8.4	16	1.6	100	0.156	<b>3402088</b>
<b>WS M10 D20 G</b>	M10	10.5	20	2	100	0.408	<b>3402096</b>
<b>WS M12 D24 G</b>	M12	13	24	2.5	100	0.570	<b>3402126</b>

**St** Steel



**G** Electrogalvanised

Washer according to DIN 125, shape A, for universal use.





## Directories

	<b>Numeric directory</b>	148
	<b>Type listing</b>	149

GTIN	Item no.	Page	GTIN	Item no.	Page	GTIN	Item no.	Page
5047599	price/100 <b>1119656</b>	134	6536597	/pc. <b>6341551</b>	103	6086986	/pc. <b>7202218</b>	77
5686262	<b>1122918</b>	103	6536535	<b>6341578</b>	103	6086993	<b>7202219</b>	77
5686279	<b>1122920</b>	103	6536474	<b>6341586</b>	103	6087006	<b>7202220</b>	77
5697541	<b>1122923</b>	103	6536412	<b>6341594</b>	103	6649594	<b>7202297</b>	28
5686293	<b>1122924</b>	103	6536351	<b>6341608</b>	103		/pc.	
	/100 pc.		6536290	<b>6341616</b>	103	5850137	<b>7202300</b>	18
5062714	<b>1156004</b>	134	6536238	<b>6341624</b>	103	5850144	<b>7202302</b>	18
5062776	<b>1156012</b>	134	6536177	<b>6341632</b>	103	5918929	<b>7202306</b>	19
5062837	<b>1156020</b>	134				5850182	<b>7202310</b>	28
5062899	<b>1156039</b>	134	6221776	<b>6342302</b>	125	5850199	<b>7202312</b>	28
5062950	<b>1156047</b>	134	6222018	<b>6342304</b>	125	5428190	<b>7202322</b>	64
5063018	<b>1156055</b>	134	6222070	<b>6342306</b>	125	6434459	<b>7202505</b>	44
5063070	<b>1156063</b>	134	6222315	<b>6342308</b>	125	5428275	<b>7202510</b>	45
5063131	<b>1156071</b>	134	6222377	<b>6342310</b>	125	6434466	<b>7202515</b>	64
5063193	<b>1156098</b>	134	6222438	<b>6342312</b>	125	6460991	<b>7202709</b>	36
5063254	<b>1156101</b>	134	6222490	<b>6342314</b>	125	6460878	<b>7202725</b>	36
5063315	<b>1156128</b>	134	62223510	<b>6342316</b>	125	6460755	<b>7202741</b>	36
5063377	<b>1156136</b>	134	6223572	<b>6342318</b>	125		/100 pc.	
5063438	<b>1156144</b>	134	6223633	<b>6342328</b>	125	5693345	<b>7203100</b>	112
5063490	<b>1156152</b>	134	6224296	<b>6342338</b>	125	5693352	<b>7203102</b>	112
5063551	<b>1156160</b>	134	6224470	<b>6342351</b>	125	5693369	<b>7203104</b>	112
			6224531	<b>6342353</b>	125	5693376	<b>7203106</b>	112
5116110	<b>1361201</b>	138	6224593	<b>6342355</b>	125	5693383	<b>7203108</b>	112
5116172	<b>1361236</b>	138	6224654	<b>6342357</b>	125	5693390	<b>7203110</b>	112
5116233	<b>1361295</b>	138	6224715	<b>6342359</b>	125	5693406	<b>7203112</b>	112
5116295	<b>1361384</b>	138	6224777	<b>6342362</b>	125	5693413	<b>7203114</b>	112
5116356	<b>1361481</b>	138	6225019	<b>6342364</b>	125		/pc.	
5116417	<b>1361511</b>	138	6225071	<b>6342366</b>	125	5693420	<b>7203120</b>	113
5116479	<b>1361619</b>	138	6225132	<b>6342368</b>	125	5993056	<b>7203131</b>	113
5116530	<b>1361635</b>	138	6225378	<b>6342370</b>	125		/100 pc.	
			6225439	<b>6342372</b>	125	5693444	<b>7203132</b>	113
5253334	<b>3141128</b>	19	6340217	<b>6348874</b>	125	5726425	<b>7203134</b>	113
5253396	<b>3141209</b>	127	6168910	<b>6348904</b>	126		/pc.	
5253457	<b>3141306</b>	103	6901456	<b>6348920</b>	126	5921851	<b>7203150</b>	112
						5921868	<b>7203154</b>	112
5298151	<b>3400085</b>	19		/100 pc.		5706434	<b>7203160</b>	112
5298212	<b>3400107</b>	129	6199815	<b>6406122</b>	104	6608737	<b>7203163</b>	19
5298274	<b>3400123</b>	104	6199990	<b>6406203</b>	104	6475513	<b>7203170</b>	112
						5817499	<b>7203800</b>	44
5300076	<b>3402088</b>	128	6202218	<b>6410081</b>	127		price/pac	
5300137	<b>3402096</b>	128	6202270	<b>6410103</b>	127	5817505	<b>7203803</b>	44
5300199	<b>3402126</b>	104	6202331	<b>6410111</b>	105		/pc.	
						5817536	<b>7203806</b>	44
6411832	<b>3498326</b>	144		/pc.		5817543	<b>7203809</b>	44
6411856	<b>3498334</b>	144	6202812	<b>6416500</b>	103	6619504	<b>7203900</b>	44
6411870	<b>3498340</b>	144	6894253	<b>6416504</b>	127	6619511	<b>7203903</b>	64
6411894	<b>3498350</b>	144		/100 pc.		6619528	<b>7203906</b>	65
			6437474	<b>6418250</b>	128	6619535	<b>7203909</b>	64
	price/m					6619542	<b>7203912</b>	64
6060191	<b>6056105</b>	102		/pc.		6619559	<b>7203915</b>	64
6060252	<b>6056202</b>	102	6206711	<b>6419720</b>	127	6619566	<b>7203919</b>	64
6060313	<b>6056296</b>	102	6206773	<b>6419747</b>	127	6619573	<b>7203921</b>	64
6060375	<b>6056407</b>	102	6206834	<b>6419763</b>	127	6619580	<b>7203924</b>	65
6060436	<b>6056504</b>	102					/pc.	
6060498	<b>6056601</b>	102	6207077	<b>6420656</b>	127	6135752	<b>7204300</b>	84
			6207190	<b>6420680</b>	127	6135769	<b>7204304</b>	84
5694489	<b>6062033</b>	104	6207251	<b>6420710</b>	127	6448081	<b>7204306</b>	84
5694540	<b>6062068</b>	104	6207312	<b>6420745</b>	127			
	/100 pc.					5725695	<b>7205429</b>	20
5694625	<b>6062282</b>	104	6079971	<b>7070205</b>	102			
			6094882	<b>7070213</b>	102	5850076	<b>7206104</b>	18
	/pc.		6094943	<b>7070217</b>	102	6126897	<b>7206210</b>	19
6065530	<b>6067115</b>	102	6095001	<b>7070221</b>	102			
5694724	<b>6067970</b>	128	6095063	<b>7070225</b>	102			
			6095186	<b>7070233</b>	102			
5668039	<b>6338458</b>	125						
5668046	<b>6338462</b>	103	5856559	<b>7202200</b>	18			
			5856566	<b>7202201</b>	18			
6959068	<b>6340903</b>	126	5856597	<b>7202203</b>	18			
6959129	<b>6340911</b>	126	5856603	<b>7202204</b>	18			
6959181	<b>6340938</b>	126	5856610	<b>7202205</b>	18			
6601752	<b>6340946</b>	126	5856627	<b>7202206</b>	18			
6043927	<b>6340950</b>	126	5856665	<b>7202207</b>	18			
6044047	<b>6340954</b>	126	5856672	<b>7202208</b>	18			
6044160	<b>6340958</b>	126	5856689	<b>7202209</b>	19			
6284177	<b>6340962</b>	126	5856719	<b>7202210</b>	19			
6437597	<b>6340966</b>	126	6086917	<b>7202212</b>	76			
6437658	<b>6340970</b>	126	6086924	<b>7202213</b>	76			
			6053674	<b>7202214</b>	76			
6536771	<b>6341527</b>	103	6086931	<b>7202215</b>	76			
6536719	<b>6341535</b>	103	6086948	<b>7202216</b>	77			
6536658	<b>6341543</b>	103	6086979	<b>7202217</b>	77			

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		/100 pc.	
2056 M 100 FT	5063551	1156160	134
2056 M 12 FT	5062714	1156004	134
2056 M 16 FT	5062776	1156012	134
2056 M 22 FT	5062837	1156020	134
2056 M 28 FT	5062899	1156039	134
2056 M 34 FT	5062950	1156047	134
2056 M 40 FT	5063018	1156055	134
2056 M 46 FT	5063070	1156063	134
2056 M 52 FT	5063131	1156071	134
2056 M 58 FT	5063193	1156098	134
2056 M 64 FT	5063254	1156101	134
2056 M 70 FT	5063315	1156128	134
2056 M 76 FT	5063377	1156136	134
2056 M 82 FT	5063438	1156144	134
2056 M 90 FT	5063490	1156152	134
733 21 G	5116110	1361201	138
733 23 G	5116172	1361236	138
733 29 G	5116233	1361295	138
733 38 G	5116295	1361384	138
733 48 G	5116356	1361481	138
733 54 G	5116417	1361511	138
733 61 G	5116479	1361619	138
733 63 G	5116530	1361635	138
AML3518P2000FT	5047599	1119656	134
		price/100	
ASX-E	5850199	7202312	28
ASX-E	5850199	7202312	84
ASX-K	5850182	7202310	28
ASX-K	5850182	7202310	84
ASX-K	5850182	7202310	135
AW 15 11 FT	6207077	6420656	127
AW 15 21 FT	6207190	6420680	127
AW 15 31 FT	6207251	6420710	127
AW 15 41 FT	6207312	6420745	127
AW 30 21 FT	6206711	6419720	127
AW 30 31 FT	6206773	6419747	127
AW 30 41 FT	6206834	6419763	127
BZ 12-15-35/110	6411894	3498350	144
BZ-U 10-10-30/90	6411856	3498334	144
BZ-U 8-30-41/95	6411832	3498326	144
BZ-U10-30-50/110	6411870	3498340	144
CSTR M10 G	6202270	6410103	127
CSTR M10 G	6202270	6410103	145
CSTR M12 G	6202331	6410111	105
CSTR M12 G	6202331	6410111	127
CSTR M12 G	6202331	6410111	145
CSTR M8 G	6202218	6410081	127
CSTR M8 G	6202218	6410081	145
CTS-150	6135752	7204300	84
CTS-300	6135769	7204304	84
CTS-HP200	6448081	7204306	84
DSK 45 FT	6202812	6416500	103
DSK 45 FT	6202812	6416500	127
DSK 47 FT	6894253	6416504	127
DSX-E	5850144	7202302	18
DSX-E	5850144	7202302	98
DSX-K	5850137	7202300	18
DSX-K	5850137	7202300	77
DSX-K	5850137	7202300	98
E M 10x40	6411993	3492920	144
E M 8x40	6411979	3492910	144
FBA-B200-14	6434459	7202505	44
FBA-B200-14	6434459	7202505	64
FBA-BV200-14	6434466	7202515	64
FBA-SP	5428190	7202322	64
FBA-WI	5428275	7202510	45

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FBA-WI	5428275	7202510	65
		/pc.	
FBS-K	5817543	7203809	44
		price/pac	
FBS-M	5817505	7203803	44
		/pc.	
FBS-PH	5817536	7203806	44
FBS-S	5817499	7203800	44
FBS-S	5817499	7203800	64
		/100 pc.	
FRSB 6x12 F	6199815	6406122	104
FRSB 6x12 F	6199815	6406122	128
FRSB 6x20 F	6199990	6406203	104
FRSB 6x20 F	6199990	6406203	128
		/pc.	
FSB-K32	5921851	7203150	112
FSB-K82	5921868	7203154	112
FSB-SB 100	5993056	7203131	113
		/100 pc.	
FSB-SC	5726425	7203134	113
FSB-SV	5693444	7203132	113
		/pc.	
FSB-WB	5706434	7203160	112
FSB-WB 1.5	6608737	7203163	19
FSB-WB 1.5	6608737	7203163	29
FSB-WLS	6475513	7203170	112
FSU-B7.9	6619511	7203903	64
FSU-F	6619504	7203900	44
FSU-IP	6619580	7203924	65
FSU-M	6619528	7203906	65
FSU-P2.5	6619535	7203909	64
FSU-P3	6619542	7203912	64
FSU-P4	6619559	7203915	64
FSU-P4.5	6619566	7203919	64
FSU-P5	6619573	7203921	64
		/100 pc.	
HN M10 G	5298212	3400107	129
HN M10 G	5298212	3400107	145
HN M12 G	5298274	3400123	104
HN M12 G	5298274	3400123	129
HN M12 G	5298274	3400123	145
HN M8 G	5298151	3400085	19
HN M8 G	5298151	3400085	29
HN M8 G	5298151	3400085	77
HN M8 G	5298151	3400085	129
HN M8 G	5298151	3400085	145
		/pc.	
KBK-1	6460991	7202709	36
KBK-2	6460878	7202725	36
KBK-3	6460755	7202741	36
		/100 pc.	
KS GR A2	5694625	6062282	104
		/pc.	
KS-S EN	5725695	7205429	20
KS-S EN	5725695	7205429	29
KS-S EN	5725695	7205429	36
KS-S EN	5725695	7205429	45
KS-S EN	5725695	7205429	65
KS-S EN	5725695	7205429	77
KS-S EN	5725695	7205429	85
KS-S EN	5725695	7205429	98
KU 3 FT	6340217	6348874	125
KU 5 V FT	6901456	6348920	126
KUS 5 FT	6168910	6348904	126
		/100 pc.	
MBS 015	5693345	7203100	112
MBS 030	5693352	7203102	112
MBS 045	5693369	7203104	112
MBS 061	5693376	7203106	112
MBS 075	5693383	7203108	112
MBS 100	5693390	7203110	112
MBS 120	5693406	7203112	112
MBS 150	5693413	7203114	112



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MBS-Z	5693420	7203120	113
		/pc.	
MIW-S	5918929	7202306	19
MIW-S	5918929	7202306	29
MIW-S	5918929	7202306	77
MIW-S	5918929	7202306	98
		price/100	
MS4121P2000FS	5686262	1122918	103
MS4121P2000FT	5697541	1122923	103
MS4121P3000FS	5686279	1122920	103
MS4121P3000FT	5686293	1122924	103
		/pc.	
MSX-S1	5850076	7206104	18
MSX-S1	5850076	7206104	84
NIK-S	6126897	7206210	19
PSX-P60	6649594	7202297	28
		/pc.	
RWWL 60 FS	6065530	6067115	102
RWWL 60 FS	6065530	6067115	124
		/100 pc.	
SKS 10x80 F	6437474	6418250	128
		price/m	
SKS 610 FS	6060191	6056105	102
SKS 610 FS	6060191	6056105	124
SKS 620 FS	6060252	6056202	102
SKS 620 FS	6060252	6056202	124
SKS 630 FS	6060313	6056296	102
SKS 630 FS	6060313	6056296	124
SKS 640 FS	6060375	6056407	102
SKS 650 FS	6060436	6056504	102
SKS 660 FS	6060498	6056601	102
		/pc.	
SSLB 100 FS	6079971	7070205	102
SSLB 100 FS	6079971	7070205	124
SSLB 200 FS	6094882	7070213	102
SSLB 200 FS	6094882	7070213	124
SSLB 300 FS	6094943	7070217	102
SSLB 300 FS	6094943	7070217	124
SSLB 400 FS	6095001	7070221	102
SSLB 500 FS	6095063	7070225	102
SSLB 600 FS	6095186	7070233	102
TCX-032	5856559	7202200	18
TCX-032	5856559	7202200	28
TCX-032	5856559	7202200	76
TCX-040	5856566	7202201	18
TCX-040	5856566	7202201	28
TCX-040	5856566	7202201	76
TCX-050	5856597	7202203	18
TCX-050	5856597	7202203	28
TCX-050	5856597	7202203	76
TCX-063	5856603	7202204	18
TCX-063	5856603	7202204	28
TCX-063	5856603	7202204	76
TCX-075	5856610	7202205	18
TCX-075	5856610	7202205	28
TCX-075	5856610	7202205	76
TCX-090	5856627	7202206	18
TCX-090	5856627	7202206	28
TCX-090	5856627	7202206	76
TCX-110	5856665	7202207	18
TCX-110	5856665	7202207	28
TCX-110	5856665	7202207	76
TCX-125	5856672	7202208	18
TCX-125	5856672	7202208	28
TCX-125	5856672	7202208	76
TCX-140	5856689	7202209	19
TCX-140	5856689	7202209	29
TCX-140	5856689	7202209	76
TCX-160	5856719	7202210	19
TCX-160	5856719	7202210	29
TCX-160	5856719	7202210	76
TCX-180	6086917	7202212	76
TCX-200	6053674	7202214	76
TCX-225	6086924	7202213	76
TCX-250	6086931	7202215	76
TCX-280	6086948	7202216	77

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TCX-300	6086979	7202217	77
TCX-315	6086986	7202218	77
TCX-355	6086993	7202219	77
TCX-400	6087006	7202220	77
		/100 pc.	
TR M10 1M G	5253396	3141209	127
TR M10 1M G	5253396	3141209	145
TR M12 1M G	5253457	3141306	103
TR M12 1M G	5253457	3141306	127
TR M12 1M G	5253457	3141306	145
TR M8 1M G	5253334	3141128	19
TR M8 1M G	5253334	3141128	29
TR M8 1M G	5253334	3141128	77
TR M8 1M G	5253334	3141128	127
TR M8 1M G	5253334	3141128	145
		price/m	
TSG 45 FS	5694489	6062033	104
TSG 45 FS	5694489	6062033	128
TSG 60 FS	5694540	6062068	104
TSG 60 FS	5694540	6062068	128
		/pc.	
TSGV A2	5694724	6067970	128
US 3 100 FS	6223572	6342318	125
US 3 150 FS	6223633	6342328	125
US 3 20 FS	6221776	6342302	125
US 3 200 FS	6224296	6342338	125
US 3 30 FS	6222018	6342304	125
US 3 40 FS	6222070	6342306	125
US 3 50 FS	6222315	6342308	125
US 3 60 FS	6222377	6342310	125
US 3 70 FS	6222438	6342312	125
US 3 80 FS	6222490	6342314	125
US 3 90 FS	6223510	6342316	125
US 3 K 100 FT	6225132	6342368	125
US 3 K 110 FT	6225378	6342370	125
US 3 K 120 FT	6225439	6342372	125
US 3 K 20 FT	6224470	6342351	125
US 3 K 30 FT	6224531	6342353	125
US 3 K 40 FT	6224593	6342355	125
US 3 K 50 FT	6224654	6342357	125
US 3 K 60 FT	6224715	6342359	125
US 3 K 70 FT	6224777	6342362	125
US 3 K 80 FT	6225019	6342364	125
US 3 K 90 FT	6225071	6342366	125
US 3 KS OR	5668039	6338458	125
US 5 100 FT	6284177	6340962	126
US 5 150 FT	6437597	6340966	126
US 5 200 FT	6437658	6340970	126
US 5 30 FT	6959068	6340903	126
US 5 40 FT	6959129	6340911	126
US 5 50 FT	6959181	6340938	126
US 5 60 FT	6601752	6340946	126
US 5 70 FT	6043927	6340950	126
US 5 80 FT	6044047	6340954	126
US 5 90 FT	6044160	6340958	126
US 5 K 100 FT	6536290	6341616	103
US 5 K 100 FT	6536290	6341616	126
US 5 K 110 FT	6536238	6341624	103
US 5 K 110 FT	6536238	6341624	126
US 5 K 120 FT	6536177	6341632	103
US 5 K 120 FT	6536177	6341632	126
US 5 K 20 FT	6536771	6341527	103
US 5 K 20 FT	6536771	6341527	126
US 5 K 30 FT	6536719	6341535	103
US 5 K 30 FT	6536719	6341535	126
US 5 K 40 FT	6536658	6341543	103
US 5 K 40 FT	6536658	6341543	126
US 5 K 50 FT	6536597	6341551	103
US 5 K 50 FT	6536597	6341551	126
US 5 K 60 FT	6536535	6341578	103
US 5 K 60 FT	6536535	6341578	126
US 5 K 70 FT	6536474	6341586	103
US 5 K 70 FT	6536474	6341586	126
US 5 K 80 FT	6536412	6341594	103
US 5 K 80 FT	6536412	6341594	126
US 5 K 90 FT	6536351	6341608	103
US 5 K 90 FT	6536351	6341608	126
US 5 KS OR	5668046	6338462	103
US 5 KS OR	5668046	6338462	126



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WS M10 D20 G	5300137	3402096	145
WS M12 D24 G	5300199	3402126	104
WS M12 D24 G	5300199	3402126	128
WS M12 D24 G	5300199	3402126	145
WS M8 D16 G	5300076	3402088	128
WS M8 D16 G	5300076	3402088	145



## Sales Offices:

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Mobile: +91 08939993172

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Thane (W) – 400604

Mobile: +91 08879637276

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Pune

Phone: +91 7824077761

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Bengaluru – 560069

Phone: +91 080 42062651

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Direct Phone: +91 44 7103 3900

## Territory locations:

Bhubaneswar  
9042624814

Coimbatore  
9962537190

Ernakulam  
8879637273

Gujarat  
9638432920

Guwahati  
9836400525

Hyderabad  
8939993192

Nagpur  
78240 77762

Indore  
8939993193

Jamshedpur  
8102602220

Pune  
8879637627

Visakhapatnam  
9966008211

Patna  
9708354536

Puducherry  
9962537183

Raipur  
9384018643

Thiruvananthapuram  
8939993130

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