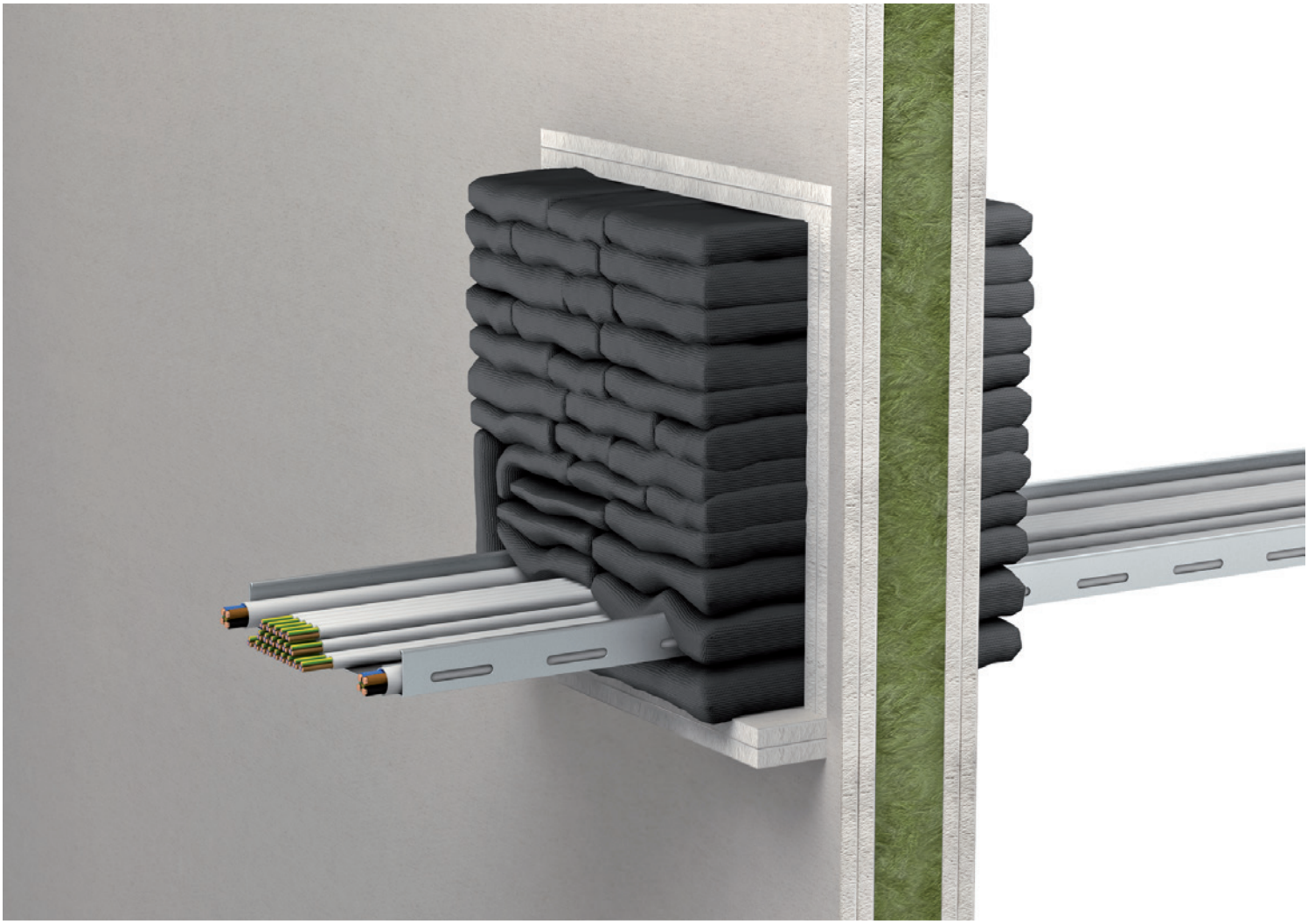
System BK-N

Cable Penetration Seal

Cable penetration seal for sheathed and non-sheathed cables, tightly packed cable bundles, electrical installation conduits C/C made of steel or plastic as well as cable trays made of steel. Suitable for the installation in plasterboard walls and solid walls of at least 100 mm thickness and in floors made of concrete or aerated concrete of at least 150 mm thicknesss. As per ETA-17/0904.

Maximum fire resistance class: EI 180 according to EN 13501



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1. Preliminary remarks / overview

1.1 Target group

The installation instructions are intended solely for personnel trained in fire protection.

1.2 Use of the instructions

Before starting work, read through these installation instructions completely once. Pay particular attention to the following safety instructions.

The authorisation holder assumes no liability for damage caused by failure to comply with these instructions.

Pictorial representations serve as examples only. Installation results may differ in appearance.

Unless stated otherwise, all lengths are specified in mm.

All information in this document represents the state of the art at the time of writing or the current version of the standard.

Upon request, we will be pleased to provide the relevant legal and technical framework and manufacturer specifications for each individual case.

1.3 Safety instructions

The safety data sheets must be consulted when processing the penetration seal components.

Personal protective equipment:

	Wear protective clothing and non-slip shoes.
	Use safety goggles, safety glasses.
	P2 particle filter in case of short-term or low level exposure. For intensive or prolonged exposure use a breathing apparatus with independent air supply. Use breathing protection in compliance with international/national standards.
	Use chemically resistant gloves. Recommended materials: Butyl rubber, nitrile rubber, fluorinated rubber, PVC.

Safety instructions for the installation of floor penetration seals

	The area below the floor penetration seal must be cordoned off against entry during penetration seal work (barrier tape and warning sign: warning of possible falling objects, do not enter the area, penetration seal work in floor openings).
	The contractor for the production of floor penetration seals must inform the client in writing (for forwarding to the client or appointed representative) that after the production of the fire penetration seals in floors, these must be secured on site against loads, in particular against being stepped on, by suitable measures (e.g. by fencing or by covering with grating).

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1.4 Field of application

The cable penetration seal System BK-N in wall and floor openings has been assessed in accordance with ETAG 026-Teil 2, 2011-08 and EN 13501-1 in terms of the „Reaction to fire“, „Fire resistance“, „Release of dangerous substances“ and „Durability and serviceability“ product characteristics.

Reaction to fire

The fire protection pillow BK-N and the intumescent material KERAFIX® Flexpan 200 NG-A meet class E for reaction to fire in accordance with EN 13501-1

Fire resistance

System BK-N meets the maximum requirements of class EI 180 in accordance with EN 13501-2.

The maximum fire resistance class of the seal in vertical or horizontal separating elements depends on the fire resistance class of the penetrating services. The fire resistance class of the seal is reduced to the fire resistance class of the penetrating service with the lowest fire resistance class.

Release of dangerous substances

No component of BK-N and KERAFIX® Flexpan 200 NG-A contains any substances identified as dangerous in the list of the European Commission.

Durability and serviceability

All components of System BK-N meet the requirements of category Z_2 in accordance with EOTA TR024.

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1.5 Building elements

Plasterboard walls

Plasterboard walls with a minimum thickness of ≥ 100 mm comprising timber or steel studs according to EN 14195, cladded on both sides with at least 2 layers of gypsum boards (minimum thickness 12.5 mm) according to EN 520.

All spaces between the studs must be sealed to a depth of ≥ 40 mm with mineral wool (density ≥ 100 kg/m³).

Solid walls

Walls of concrete, aerated concrete or masonry with a thickness of ≥ 100 mm. The wall must have a fire resistance class of at least 90 minutes.

Solid floors

Floors of concrete or aerated concrete with a thickness of ≥ 150 mm. The floor must have a fire resistance class of at least 90 minutes.

1.6 Thicknesses and seal distances

Dimensions			
Item	**Name**	**Wall [mm]**	**Floor [mm]**
A	Thickness of building element	≥ 100	≥ 150
B	Thickness of penetration seal	≥ 250	≥ 250
C	Maximum dimensions of the opening (width × height)	600 × 600	600 × 600
D	Distance to other cable or pipe penetration seals	≥ 100	≥ 100
E	Distance to other openings or installations	≥ 100	≥ 100

The total allowable cross section of the installations (outer dimensions) is ≤ 60% of the construction opening.

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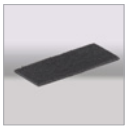
2. Used products

Fire protection pillows BK-N

BK-N Small,
250 × 50 (± 10) × 25 (± 10) mm,
approx. 120 g,
10 pcs. in box
– Art. no. 12060

BK-N Medium,
250 × 115 (± 15) × 30 (± 10) mm,
approx. 650 g,
7 pieces in box
– Art. no. 12130

BK-N Large,
250 × 175 (± 10) × 30 (± 10) mm,
approx. 940 g,
5 pieces in box
– Art. no. 12180

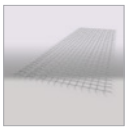


KERAFIX® Flexpan 200 NG-A

in accordance with ETA-15/0719
strip of intumescent material
included in delivery

Glass fibre mat

≥ 125 g/m²
included in delivery



Steel grid

mesh size: ≤ 40 × 40 mm
diameter of wire: ≤ 4,8 mm
not included in delivery

2.1 Declarations of Performance

The Declarations of Performance for featured svt products are available for download on our website:
https://svt-global.com/downloads

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3. Fire resistance classes

3.1 Walls

Cables, cable bundles and cable trays	Fire resistance class
all sheathed cable types Ø ≤ 21 mm	**EI 120, E 120**
all sheathed cable types Ø ≤ 50 mm	**EI 120, E 120**
all sheathed cable types Ø ≤ 80 mm	**EI 90, E 120**
cable bundles Ø ≤ 100 mm	**EI 120, E 120**
non-sheathed cable types Ø ≤ 24 mm	**EI 120, E 120**
metal or plastic pipes (pipe end configuration C/C, Ø ≤ 16 mm)	**EI 120, E 120**
blank seal	**EI 120**

3.2 Floors

3.2.1 Floors with penetrating trays and ladders

Cables, cable bundles and cable trays	Fire resistance class
all sheathed cable types Ø ≤ 21 mm	**EI 180, E 180**
all sheathed cable types Ø ≤ 50 mm	**EI 120, E 180**
all sheathed cable types Ø ≤ 80 mm	**EI 180, E 180**
cable bundles Ø ≤ 100 mm	**EI 120, E 180**
non-sheathed cable types Ø ≤ 24 mm	**EI 120, E 180**
metal or plastic pipes (pipe end configuration C/C, Ø ≤ 16 mm)	**EI 180, E 180**
blank seal	**EI 120**

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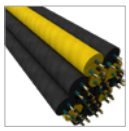
4. Allowed services

4.1 Cables / cable bundles / cable trays

Electrical cables and lines of all types (including fibre optic cables)

Maximum outer diameter ≤ 80 mm without size limitation to the cross section of all conductors in individual cables (excluding wave guides).



Cable bundles

Ø ≤ 100 mm with single cable Ø ≤ 21 mm.
No gusset filling necessary for tightly packed, tied cable bundles.

Cable trays

Of steel, aluminium or plastic.

Conduits made of steel or plastic

Steel and plastic pipes with outer Ø ≤ 16 mm.

5. Spacing distances

Wall and floor

		 Cables	 Cable bundles	 Cable trays	 Conduits made of steel or plastic	Seal edge		
						upper	under	side
	Cables	≥ 20 (side by side) ≥ 100 (one below the other)	≥ 20 (side by side) ≥ 100 (one below the other)	≥ 20 (side by side) ≥ 100 (one below the other)	≥ 20 (side by side) ≥ 100 (one below the other)	≥ 80	≥ 20	≥ 20
	Cable bundles	≥ 20 (side by side) ≥ 100 (one below the other)	≥ 20 (side by side) ≥ 100 (one below the other)	≥ 20 (side by side) ≥ 100 (one below the other)	≥ 20 (side by side) ≥ 100 (one below the other)	≥ 80	≥ 20	≥ 20
	Cable trays	≥ 20 (side by side) ≥ 100 (one below the other)	≥ 20 (side by side) ≥ 100 (one below the other)	≥ 20 (side by side) ≥ 100 (one below the other)	≥ 20 (side by side) ≥ 100 (one below the other)	≥ 80	≥ 20	≥ 20
	Conduits made of steel or plastic	≥ 20 (side by side) ≥ 100 (one below the other)	≥ 20 (side by side) ≥ 100 (one below the other)	≥ 20 (side by side) ≥ 100 (one below the other)	≥ 0	≥ 80	≥ 20	≥ 20

Dimensions in mm

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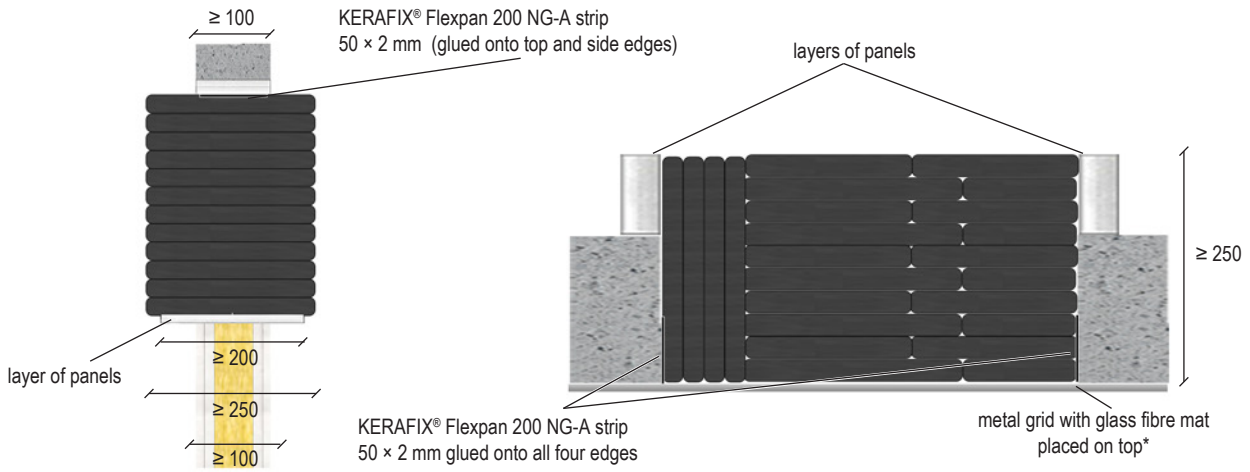
6. Design variants

For installation in plasterboard walls, cladding all around the seal edge is required.

In walls with a thickness of ≤ 100 mm it is necessary to install a symmetrical layer of non-combustible fire protection panels (e.g. GKF, gypsum fiber boards or calcium silicate panels) on the lower edge of the reveal. Required dimensions of the layer: thickness ≤ 30 mm, width ≤ 250 mm.

Design variants in walls and floors



* not included in delivery

Dimensions in mm

7. Initial brackets (supports)

Essential parts of the brackets/supports for the installations in front of the penetration sealing system must be non-combustible (building material category DIN 4102-A) and must be configured with a spacing as per the overview on both sides.

For wall penetrations the brackets are required to be installed on both sides of the wall.

For floor penetrations the brackets are required to be installed above the floor.

Services	Wall [mm]	Floor [mm]
Cables, cable bundles, cable trays, conduits made of steel or plastic	≤ 225	≤ 500

Dimensions in mm (taken from seal surface)

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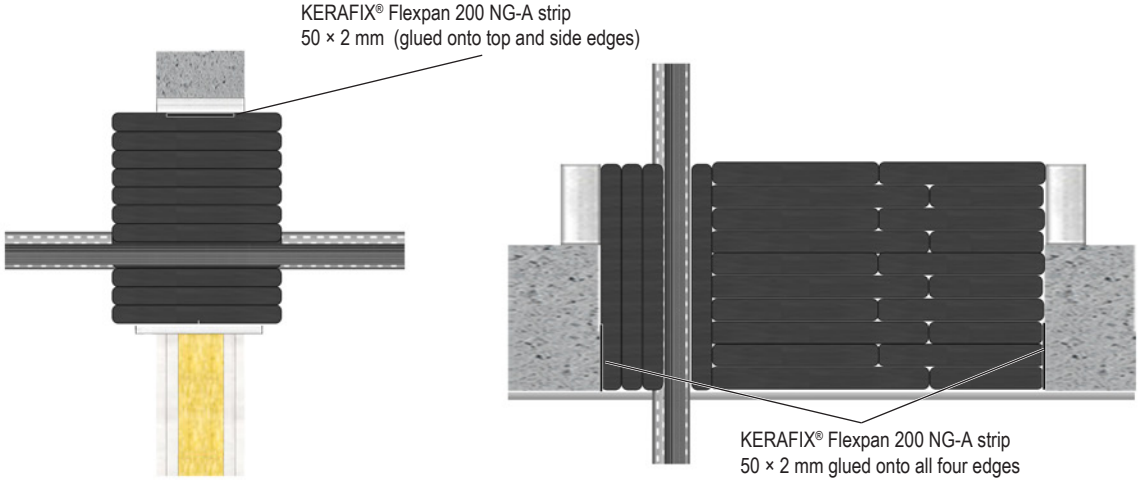
8. Fire protection measures

8.1 Cables / cable bundles / cable trays

Cable bundels with a diameter of ≤ 100 mm may be installed unopened in the seal. It is not necessary to fill the gussets if the bundles consist of parallel-running cables that are tightly packed, tied, stitched or welded together.
(Outer diameter of the individual cable: ≤ 21 mm).

Design for wall and floor penetration sealing system



For thicknesses and design variants, see page 5.

	Dimensions [mm]
Sheathed cable types	≤ 80
Non-sheathed cable types	≤ 24
Cable bundles	cable Ø ≤ 21, bundle Ø ≤ 100
Conduits made of steel or plastic	≤ 16

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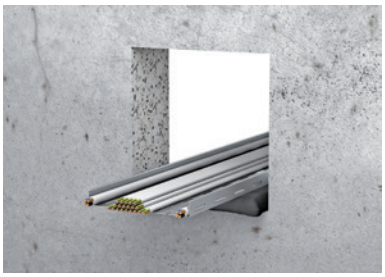
9. Installation steps

1. Clean the opening and remove all loose parts. Check the correct installation of the cable tray on wall or floor. Cable trays and ladders should be supported at approx. 250 mm on both sides of the wall and 500 mm above the floor.

2. In walls the intumescent strip KERAFIX® Flexpan 200 NG-A (width: 50 mm) must be glued onto both side edges and centrally onto the top edge of the seal. In floors the strip must be glued onto all edges of the reveal while being flush with the lower side of the floor. If possible, insert the first layer of pillows below the cable bundle or the cable tray.



3. Insert the fire protection pillows tightly packed and if possible in a staggered pattern around the cables. Use pillows of different sizes for this purpose, if possible.

4. In floors with a thickness < 250 mm, non-combustible panels must be installed to reach the required minimum thickness of 250 mm. The fire protection pillows are held in place by a steel grid installed below the floor (≤ 40 × 40 × 4,8 mm, not included in delivery), onto which a glass fibre mat (≥ 125 g/m²) is placed.

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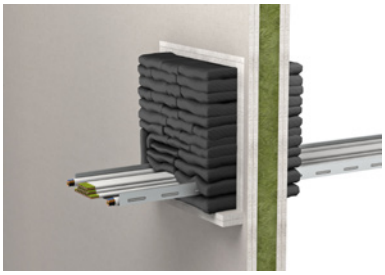
5. Installation in walls ≥ 100 mm is possible. In walls with a thickness of < 200 mm non-combustible panels must be placed on the lower seal edge to reach the required minimum thickness of 200 mm.



6. If required, label the penetration seal. Fill out the label neatly and attach it firmly next to/above (not on!) the penetration seal.