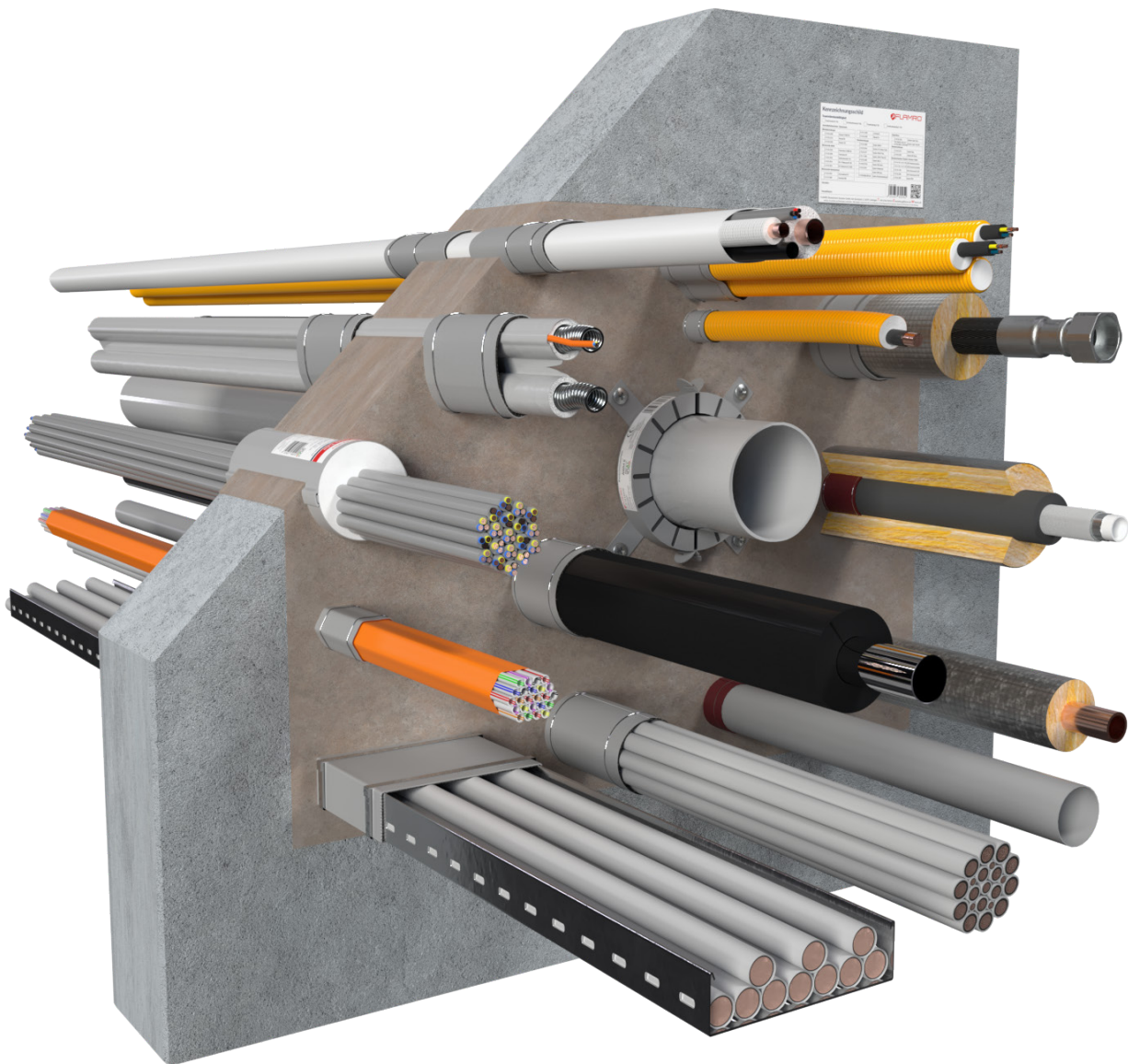


# System Novasit BM

## Mixed penetration sealing system made of mortar

Fibre-free mixed penetration sealing system made of special mortar. For electrical cables and lines of all types, electrical installation conduits, combustible and non-combustible pipes and further services.

Fire resistance class: maximum EI 120 in accordance with EN 13501-2 as per ETA-22/0051



# System Novasit BM

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# System Novasit BM

## 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.

Subject to errors, misprints and changes. All information contained in this brochure reflects the state of the art or, if applicable, the requirements of the pertinent standard at the time of printing (24.09).





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



#### 1.2.1 Safety instructions

Consult the respective safety information for the individual 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.<br>Use breathing protection in compliance with international/national standards. |
|  | Use chemically resistant gloves.<br>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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## 1.3 Building elements

### Plasterboard walls

Plasterboard walls must have a minimum thickness of  $\geq 100$  mm.

Plasterboard walls with timber studs must be declared and installed with at least the same number of layers as tested. The distance between the opening and the studs and transoms must be  $\geq 100$  mm. The gap between seal and stud / timber girt is sealed with an insulation of at least 100 mm, reaction to fire class A1 or A2 according to EN 13501-1.

If one or more studs must be cut to install the seal, horizontal girts must be installed.

The cladding of the aperture edge must consist on all sides of at least two layers of 12.5 mm cement or gypsum-bound building boards with a reaction to fire of class A1 or A2 according to EN 13501-1, corresponding to the respective wall cladding.

Standard plasterboard wall construction is not applicable for construction on the basis of sandwich panels or for plasterboard walls with one-sided cladding (shaft walls).

The supporting structure must have the required fire resistance rating in accordance with EN 13501-2.

### Solid walls

Made of masonry, concrete, reinforced concrete or aerated concrete with a density of  $\geq 450$  kg/m<sup>3</sup>.

The walls must be classified for the desired fire resistance duration in accordance with EN 13501-2.

### Solid floors

Made of concrete, reinforced concrete or aerated concrete with a density of  $\geq 550$  kg/m<sup>3</sup>.

The floors must be classified for the desired fire resistance duration in accordance with EN 13501-2.

## 2. Thicknesses, sizes and spacing

| Dimensions  |                        |                 |                  |
|---|------------------------|-----------------|------------------|
|   | Plasterboard wall [mm] | Solid wall [mm] | Solid floor [mm] |
| Thickness of building element                       | $\geq 100$             | $\geq 150$      | $\geq 150$       |
| Thickness of penetration seal                       | $\geq 100$             | $\geq 150$      | $\geq 150$       |
| Maximum dimensions of the aperture (width × height) | 550 × 600              | 1200 × 2000     | 1200 × 2000      |
| Distance to other penetration seals                 | $\geq 100$             | $\geq 100$      | $\geq 100$       |
| Distance to other apertures or installations        | $\geq 200$             | $\geq 200$      | $\geq 200$       |



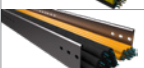


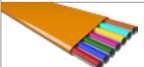
The total allowable cross section of the installations (outer dimensions) is  $\leq 60\%$  of the construction aperture.

## System Novasit BM

### 3. Allowed services

For specific fire resistance classes and pipe end configurations depending on measurements and fire protection measures see the respective chapters on design variants starting on page 15.

#### 3.1 Cables / electrical installation conduits / speedpipes

| Service   |               | Max. diameter [mm]  |
|---|---------------|---|
|    | Cables        | ≤ 80  |
|    | Cable bundles | ≤ 150, cable Ø ≤ 21   |
|    | Cable trays   | ✓   |
|    | CT Cable Tube | Lengths: 150 mm, 200 mm, 300 mm<br>With cables, cable bundles, single or bundled electrical installation conduits, speedpipes |
|   | single        | ≤ 63 (wall) / ≤ 100 (floor), with or without cables   |
|   | bundled       | ≤ 100, conduit Ø ≤ 32, with or without cables   |
|  | speedpipes    | ≤ 50, single Ø ≤ 14   |

#### 3.2 Combustible pipes


| Standard pipes |   |               |                          |
|----------------|---|---------------|--------------------------|
| Pipe material  | In accordance with standard                               | Diameter [mm] | Pipe wall thickness [mm] |
| PVC-U          | EN 1329-1, EN 1452-2,<br>EN 1453-1, EN ISO 15493          | ≤ 200.0       | 1.8–14.6                 |
| PVC-C          | EN 1566-1, EN ISO 15493,<br>EN ISO 15877                  | ≤ 160.0       | 1.8–14.6                 |
| PE-HD          | EN 1519-1, EN 12201-2,<br>EN ISO 15494, EN 12666-1        | ≤ 200.0       | 1.8–18.2                 |
| PP             | EN 1451-1, EN ISO 15874,<br>EN 15494, DIN 8077 / DIN 8078 | ≤ 160.0       | 1.8–18.2                 |
| PP-H           | EN 1451-1, EN ISO 15874,<br>EN 15494                      | ≤ 200.0       | 1.8–11.4                 |
| ABS            | EN 1455-1, EN ISO 15493                                   | ≤ 160.0       | 1.8–14.6                 |
| SAN + PVC      | EN 1565-1   | ≤ 160.0       | 1.8–14.6                 |

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| Non-standard pipes                 |              |
|------------------------------------|--------------|
| Type of pipe                       | Outer Ø [mm] |
| Geberit Silent-Pro                 | ≤ 160.0      |
| Geberit Silent-PP                  | ≤ 160.0      |
| Geberit Silent-dB20                | ≤ 160.0      |
| POLOPLAST POLO-KAL NG              | ≤ 160.0      |
| POLOPLAST POLO-KAL XS              | ≤ 160.0      |
| POLOPLAST POLO-KAL 3S              | ≤ 160.0      |
| CONEL DRAIN                        | ≤ 160.0      |
| Wavin AS                           | ≤ 160.0      |
| Wavin AS+                          | ≤ 160.0      |
| Wavin SiTech                       | ≤ 110.0      |
| Wavin SiTech+                      | ≤ 160.0      |
| REHAU RAUPIANO PLUS                | ≤ 160.0      |
| REHAU RAUPIANO LIGHT               | ≤ 160.0      |
| REHAU RAUSILENTO                   | ≤ 160.0      |
| GF Silenta Premium                 | ≤ 135.0      |
| Hakan Silenta Premium              | ≤ 160.0      |
| Valsir Triplus                     | ≤ 160.0      |
| Pipelife MASTER 3                  | ≤ 110.0      |
| Pipelife MASTER 3 PLUS             | ≤ 160.0      |
| KE KELIT PHONEX AS                 | ≤ 160.0      |
| Ostendorf Skolan dB                | ≤ 135.0      |
| coes Blue Power                    | ≤ 110.0      |
| GF Cool-Fit 2.0 / 2.0F             | ≤ 140/200    |
| GF Cool-Fit 4.0                    | ≤ 160/250    |
| GF Cool-Fit 4.0F                   | ≤ 140/160    |
| Pellet hose PVC-Cu                 | 60           |
| Pellet hose PUR-Cu                 | 60           |
| aquatherm blue pipe SDR 9 MF RP    | 32           |
| aquatherm blue pipe SDR 9 MF RP OT | ≤ 200.0      |
| aquatherm blue pipe SDR 11 MF RP   | ≤ 200.0      |
| aquatherm blue pipe SDR 17.6 MF RP | ≤ 200.0      |
| aquatherm green pipe SDR 6 S       | ≤ 110.0      |
| aquatherm green pipe SDR 7.4 S     | ≤ 63.0       |
| aquatherm green pipe SDR 9 MF RP   | ≤ 200.0      |
| aquatherm green pipe SDR 11 S      | ≤ 200.0      |


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### 3.3 Multilayer pipes



| Type of pipe                             | Diameter [mm] |
|--|---------------|
| Henco                                    | ≤ 63.0        |
| FRÄNKISCHE alpex L, FRÄNKISCHE alpex F50 | ≤ 75.0        |
| Geberit Mepla                            | ≤ 75.0        |
| Geberit FlowFit                          | ≤ 75.0        |
| REHAU RAUTITAN stabil                    | ≤ 40.0        |
| KE KELIT KELOX                           | ≤ 75.0        |
| Uponor Uni Pipe MLC                      | ≤ 110.0       |
| fusiotherm®-Stabiverbund-Rohr            | ≤ 110.0       |
| fusiotherm® SDR 11                       | ≤ 315.0       |




### 3.4 Non-combustible pipes



| Pipe material                             | Outer Ø [mm]      | Pipe wall thickness [mm] |
|---|-------------------|--------------------------|
| Copper, steel, stainless steel, cast iron | ≤ 15.0            | ≥ 0.8                    |
|   | > 15.0 – ≤ 108.0  | ≥ 1.0 – ≥ 2.5 / ≤ 14.2   |
| Steel, stainless steel, cast iron         | > 108.0 – ≤ 323.9 | ≥ 2.6 – ≥ 7.5 / ≤ 14.2   |

Pipes made of other metals may be used in the seal if their heat transfer is lower than that of steel or copper with a melting point of ≥ 1049 °C.

### 3.5 Other services

| Service  | Dimensions  |
|--|---|
|  HVAC split line combinations | Copper pipe Ø 2 × 18 mm<br>+ 9 mm PE foam<br>+ 1 pipe PVC-U/PVC-C Ø ≤ 25.0 × 1.5 mm<br>+ ≤ 3 × cable Ø ≤ 14.0 mm              |
|  | Copper pipe ≤ 2 × Ø 22 mm<br>+ 9 mm PE foam<br>+ 1 pipe PVC-U Ø ≤ 25.0<br>+ ≤ 2 × cable Ø ≤ 21.0 mm or. 3 × cable Ø ≤ 14.0 mm |
|  Double solar pipes NanoSun²  | ≤ DN 25   |
|  HANSA-FLEX hydraulic hoses   | ≤ 55.9 mm   |



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### 3.6 Initial supports

Penetrating services must be supported at the distances specified in the table below. In wall constructions support is required on both sides. In floor constructions support is required on the upper side of the floor. Essential parts of the supports must be non-combustible.

| First supports   | Wall and floor |
|--|----------------|
| Cables, cable bundles, cable support systems                                       | ≤ 500          |
| Electrical installation conduits   | ≤ 500          |
| speedpipes for glass fibre cables and micro cables                                 | ≤ 250          |
| Combustible pipes  | ≤ 500          |
| Multilayer pipes   | ≤ 400          |
| Non-combustible pipes with section insulation made of mineral fibre mats or shells | ≤ 500          |
| Non-combustible pipes with section insulation made of FEF                          | ≤ 500          |
| HVAC split line combinations   | ≤ 700          |
| Double solar pipes NanoSun <sup>2</sup>  | ≤ 500          |
| HANSA-FLEX wire braided hydraulic hoses  | ≤ 500          |
| Cable Tube installations   | ≤ 300          |

All specifications in mm.

### 4. Reduced spacing requirements for services

|  | Distance to                                   | Plasterboard wall<br>(thickness 100 mm) | Solid wall<br>(thickness 150 mm)     | Solid floor<br>(Thickness 150 mm) |
|--|---|---|--------------------------------------|-----------------------------------|
| <b>Cables, cable bundles,<br/>cable support systems</b>                          | cables, cable bundles, cable support systems  | 5 (horizontally)<br>50 (vertically)     | 10 (horizontally)<br>50 (vertically) |                                   |
|  | electrical installation conduits              |   | 0 (cable Ø ≤ 21)                     |                                   |
|  | speedpipes                                    | 25                                      |                                      | 40                                |
|  | combustible pipes with fire protection collar | 25                                      |                                      |                                   |
|  | combustible pipes with fire protection wrap   | 50                                      |                                      |                                   |
|  | multilayer pipes                              | –                                       | 0 (cable Ø ≤ 21)                     |                                   |
|  | non-combustible pipes                         | 50*                                     | 50                                   | 25                                |
|  | HVAC split line combinations                  | 40                                      |                                      | –                                 |
|  | HANSA-FLEX hydraulic hoses                    | –                                       | 45                                   | 85                                |
|  | Cable Tube CT                                 | 50                                      | 65                                   |                                   |
| aperture edge  | 50 (upper)<br>0 (lower)<br>5 (side)           | 30 (upper)<br>0 (lower)<br>0 (side)     | 30 (upper)<br>0 (lower)<br>10 (side) |                                   |
| <b>Electrical installation<br/>conduits, single/bundled,<br/>made of plastic</b> | cables, cable bundles, cable support systems  | 5 (horizontally)<br>50 (vertically)     | 0 (cable Ø ≤ 21)                     |                                   |
|  | electrical installation conduits              |   | 0                                    |                                   |
|  | non-combustible pipes                         | 80*                                     | 80                                   |                                   |
|  | Cable Tube CT                                 | 50                                      | –                                    |                                   |
|  | aperture edge                                 | 50 (upper)<br>0 (lower)<br>5 (side)     | 0                                    | 0                                 |
| <b>speedpipes</b>  | cables, cable bundles, cable support systems  | 5 (horizontally)<br>50 (vertically)     | 25                                   | 40                                |
|  | speedpipes                                    | 25                                      |                                      |                                   |
|  | non-combustible pipes                         | 20*                                     | 20                                   | –                                 |
|  | aperture edge                                 | 50 (upper)<br>0 (lower)<br>5 (side)     | 0                                    | 30                                |

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|  | Distance to                                   | Plasterboard wall<br>(thickness 100 mm) | Solid wall<br>(thickness 150 mm) | Solid floor<br>(Thickness 150 mm) |
|--|---|---|----------------------------------|-----------------------------------|
| <b>Cable Tube CT</b>                                 | cables, cable bundles, cable support systems  | 50                                      | 65                               |                                   |
|  | electrical installation conduits              | 50                                      | -                                |                                   |
|  | Cable Tube CT                                 | 10                                      | 3                                | 10                                |
|  | aperture edge                                 | 5                                       | 15                               |                                   |
| <b>Combustible pipes with fire protection collar</b> | cables, cable bundles, cable support systems  | 25                                      |                                  |                                   |
|  | combustible pipes with fire protection collar | 0                                       |                                  |                                   |
|  | HVAC split line combinations                  | 50                                      | -                                |                                   |
|  | aperture edge                                 | 0                                       |                                  |                                   |
| <b>Combustible pipes with fire protection wrap</b>   | cables, cable bundles, cable support systems  | 50                                      |                                  |                                   |
|  | combustible pipes with fire protection wrap   | 0                                       | 25                               |                                   |
|  | non-combustible pipes                         | 0*                                      | 0                                |                                   |
|  | HVAC split line combinations                  | 50                                      | -                                |                                   |
|  | aperture edge                                 | 0                                       |                                  |                                   |
| <b>Multilayer pipes</b>                              | cables, cable bundles, cable support systems  | -                                       | 0 (cable Ø ≤ 21)                 |                                   |
|  | multilayer pipes                              | 0                                       |                                  |                                   |
|  | aperture edge                                 | 0                                       |                                  |                                   |
| <b>Non-combustible pipes</b>                         | cables, cable bundles, cable support systems  | 50                                      | 25                               |                                   |
|  | electrical installation conduits              | 80                                      |                                  |                                   |
|  | speedpipes                                    | 20                                      | -                                |                                   |
|  | combustible pipes with fire protection wrap   | 0                                       |                                  |                                   |
|  | non-combustible pipes                         | 0*                                      | 0                                |                                   |
|  | HVAC split line combinations                  | 50                                      | 60                               |                                   |
|  | aperture edge                                 | 0                                       |                                  |                                   |
| <b>HVAC split line combinations</b>                  | cables, cable bundles, cable support systems  | 40                                      | -                                |                                   |
|  | combustible pipes with fire protection collar | 50                                      | -                                |                                   |
|  | combustible pipes with fire protection wrap   | 50                                      | -                                |                                   |
|  | non-combustible pipes                         | 50*                                     | 50                               | 60                                |
|  | HVAC split line combinations                  | 25                                      | 50                               |                                   |
|  | double solar pipes NanoSun <sup>2</sup>       | -                                       | 85                               | -                                 |
|  | aperture edge                                 | 0                                       |                                  |                                   |
| <b>Double solar pipes NanoSun<sup>2</sup></b>        | HVAC split line combinations                  | -                                       | 85                               | -                                 |
|  | HANSA-FLEX hydraulic hoses                    | -                                       | 85                               | 80                                |
|  | aperture edge                                 | -                                       | 0                                | 30                                |
| <b>Hydraulic hoses HANSA-FLEX</b>                    | cables, cable bundles, cable support systems  | -                                       | 45                               | 85                                |
|  | double solar pipes NanoSun <sup>2</sup>       | -                                       | 85                               | 80                                |
|  | aperture edge                                 | -                                       | 80                               | 35                                |

\* only non-combustible pipes with FEF insulation

All specifications in mm.

All specifications refer to distances between the respective insulations and additional measures if applicable.

All other distances must be at least 100 mm.

# System Novasit BM

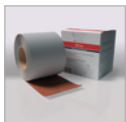
## 5. Products



**NOVASIT BM**  
**Fire protection compound**  
 20 kg bag – Art. no. 01161000  
 10 kg pail – Art. no. 01161010



**FLAMMOTECT-A**  
**Filler**  
 5 kg pail – Art. no. 01155135  
 12.5 kg pail – Art. no. 01155134  
 310 ml cartridge – Art. no. 01155115  
 600 ml flow pack – Art. no. 01155153



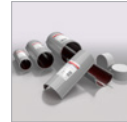
**NBR-plus**  
**Fire protection wrap**  
 Roll, 5 m × 125 mm (sep. into 2 × 62.5 mm)  
 – Art. no. 0760150133  
 Roll, 10 m × 125 mm (sep. into 2 × 62.5 mm)  
 – Art. no. 01261941



**KSL-W**  
**Fire protection wrap**  
 Roll, 10 m × 50 mm self-adhesive  
 – Art. no. 15510  
 Roll, 20 m × 50 mm self-adhesive  
 – Art. no. 15520  
 Roll, 10 m × 100 mm self-adhesive  
 – Art. no. 15530



**AWM II fire protection collar**  
 Ø 32 mm – Ø 200 mm



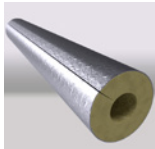
**Cable Tube CT**  
 comprising Cable Tube CT and 2 flexible foam plugs  
 Ø 60 mm / L 150 mm – Art. no. 01276101  
 Ø 90 mm / L 150 mm – Art. no. 01279101  
 Ø 90 mm / L 200 mm – Art. no. 01279201  
 Ø 90 mm / L 300 mm – Art. no. 01279301  
 Ø 120 mm / L 150 mm – Art. no. 01271151  
 Ø 120 mm / L 200 mm – Art. no. 01271201  
 Ø 120 mm / L 300 mm – Art. no. 01271301



**Endless Collar U/U**  
**Pipe collar**  
 Set with 10 m fire protection strip, 3 m stainlesssteel strap und 18 fasteners –  
 – Art. no. 01145303

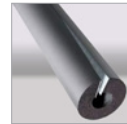
| Dimensions [mm] | Inner Ø collar [mm] | Outer Ø collar [mm] | Overall height [mm] | Number of tabs [n] | Art. no. |
|-----------------|---------------------|---------------------|---------------------|--------------------|----------|
| 32              | 36–40               | 50–54               | 26.0                | 2                  | 01142032 |
| 40              | 44–48               | 58–62               | 26.0                | 2                  | 01142040 |
| 50              | 54–57               | 68–71               | 26.0                | 2                  | 01142050 |
| 63              | 67–70               | 94–97               | 26.0                | 4                  | 01142063 |
| 75              | 79–83               | 106–110             | 26.0                | 4                  | 01142075 |
| 90              | 94–100              | 132–138             | 26.6                | 4                  | 01142090 |
| 110             | 114–120             | 155–161             | 26.6                | 4                  | 01142110 |
| 125             | 129–135             | 172–178             | 40.0                | 4                  | 01142125 |
| 140             | 144–152             | 200–206             | 40.0                | 6                  | 01142140 |
| 160             | 164–169             | 220–225             | 40.0                | 6                  | 01142160 |
| 180             | 184                 | 264                 | 40.0                | 8                  | 01142180 |
| 200             | 204                 | 284                 | 40.0                | 8                  | 01142200 |

# System Novasit BM



### Lamella mat or pipe shells made of mineral fibres

Classification: A2-S1, d0 or A1 in acc. with EN 13501-1  
 Minimum bulk density: 35 kg/m<sup>3</sup>  
 Melting point ≥ 1000 °C



### Section and protective insulations

made of flexible elastomeric foam (FEF) in accordance with EN 14304

for example:

| Name   | Nominal bulk density [kg/m <sup>3</sup> ] | abP/DoP                                   |
|--|---|---|
| Rockwool lamella mat Klimarock Roll, 3.05 m <sup>2</sup> – Art. no. 01187100 | 40–50                                     | DE0628031801 of 14.03.2018                |
| Rockwool ProRox PS 960 (formerly Rockwool Lapimus Rohrschale 880)            | 95–150                                    | PROPS960NL-03                             |
| Rockwool 800   | 90–115                                    | DE0721011801 of 15.01.2018                |
| Rockwool ProRox WM 950 (formerly WM 80/RTD-2)                                | 85  | PROWM950D-03 of 04.05.2017                |
| Rockwool ProRox WM WM 960 (formerly WM 100/ RBM)                             | 100                                       | PROWM960D-03 of 04.05.2017                |
| Rockwool Conlit 150 U  | 150                                       | P-NDS04-417                               |
| Isover Schalen Protect 1000 S, Isover Schalen Protect 1000 S Alu             | 70–90                                     | DE0002-Pi-pe_Sections 001 of 10.06.2013   |
| Isover Mineralfasermatte MD2 and MD2/A                                       | 80  | DE0002-Pro-tect_EN14303 002 of 09.02.2015 |
| Isover Mineralfasermatte MDD and MDD/A                                       | 115                                       |   |
| PAROC Hvac Section AluCoat T   | 85–120                                    | 40361                                     |
| PAROC Pro Section 100  | 100                                       | 40080                                     |
| PAROC Hvac Lamella Mat AluCoat Fix   | 50  | 40236                                     |

for example:

| Name                     | abP/DoP   |
|--------------------------|---|
| ArmaFlex Protect         | (0543-CPR-2016-001 of 01.04.2015)                         |
| AF/ArmaFlex              | 0543-CPR-2016-001 of 01.04.2015                           |
| AF/ArmaFlex Evo          | 0543-CPR-2020-101   |
| SH/ArmaFlex              | 0543-CPR-2013-013 of 01.01.2015                           |
| NH/ArmaFlex              | 0552-CPR-2013-015 of 08.08.2018                           |
| NH/ArmaFlex Smart        | 0543-CPR-2020-102   |
| ArmaFlex LS              | 0551-CPR-2016-066   |
| ArmaFlex Ultima          | 0543-CPR-2016-017   |
| FEF Kaiflex KKplus s1    | DoP KKplus s1 01032018001 of 01.03.2018                   |
| FEF Kaiflex HTplus       | DoP HTplus s1 01032018001 of 01.03.2018                   |
| K-Flex R90               | P-2300/871/16-MPA BS of 04.10.2016                        |
| flexen Heizungskautschuk | LE_5258006015_00_M_flexen_Heizungskautschuk of 30.06.2013 |
| flexen Kältekautschuk    | LE_0869806006_00_M_flexen_Kältekautschuk of 30.06.2013    |
| EUROBATEX                | 01/20190610   |
| EUROBATEX HF             | 03/20171201   |

### Recommended tools



Mixing container – mortar cask, mixing paddle, masonry tools (round dippers), if necessary sheeting, foldable stepladder, spanner/ratchet, galvanised steel wire

## 5.1 Declarations of Performance

The Declarations of Performance for the featured products are available for download on our website:

<https://flamro.com/eu/downloads>

# System Novasit BM

## 6. Design

### 6.1 Fire resistance classes

System Novasit BM meets the requirements of max. class EI 120 in accordance with EN 13501-2.

The fire resistance class of the sealing system is reduced to the fire resistance class of the installed service with the lowest fire resistance rating.

The fire resistance class of the sealing system is reduced to the maximum fire resistance class of the surrounding building element.

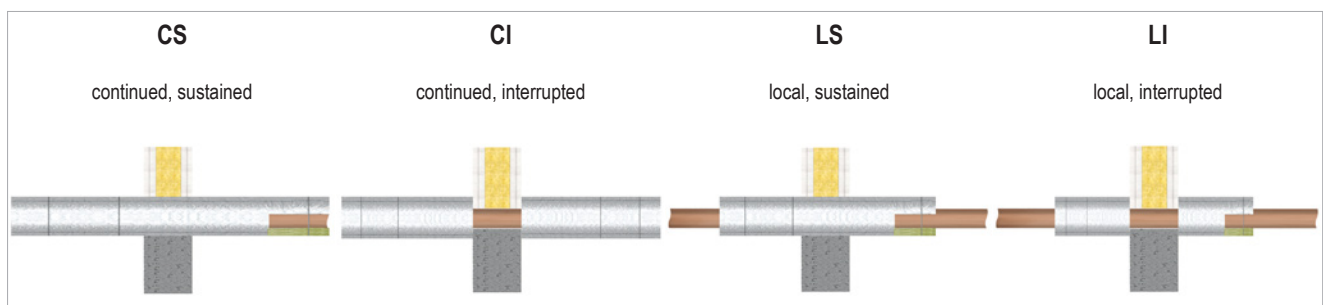
| Building element  | Fire resistance class |
|-------------------|-----------------------|
| Plasterboard wall | max. EI 120           |
| Solid wall        | max. EI 120           |
| Solid floor       | max. EI 120           |

### 6.2 Pipe end configurations

| Combustible pipes |                         |     |     |     |
|-------------------|-------------------------|-----|-----|-----|
| tested            | included configurations |     |     |     |
|                   | U/U                     | U/C | C/U | C/C |
| U/U               | ✓                       | ✓   | ✓   | ✓   |
| U/C               | -                       | ✓   | -   | ✓   |
| C/U               | -                       | ✓   | ✓   | ✓   |
| C/C               | -                       | -   | -   | ✓   |

| Non-combustible pipes |                         |     |     |     |
|-----------------------|-------------------------|-----|-----|-----|
| tested                | included configurations |     |     |     |
|                       | U/U                     | U/C | C/U | C/C |
| U/U                   | ✓                       | ✓   | ✓   | ✓   |
| U/C                   | -                       | ✓   | ✓   | ✓   |
| C/U                   | -                       | -   | ✓   | ✓   |
| C/C                   | -                       | -   | -   | ✓   |

### 6.3 Pipe insulation configurations



Results for LS insulation are also applicable to CS insulation.

Results for LI insulation are also applicable to CI insulation.

# System Novasit BM

## 7. Design variants

The sealing system may be used to close apertures without installations (reserve penetration for subsequent configurations).

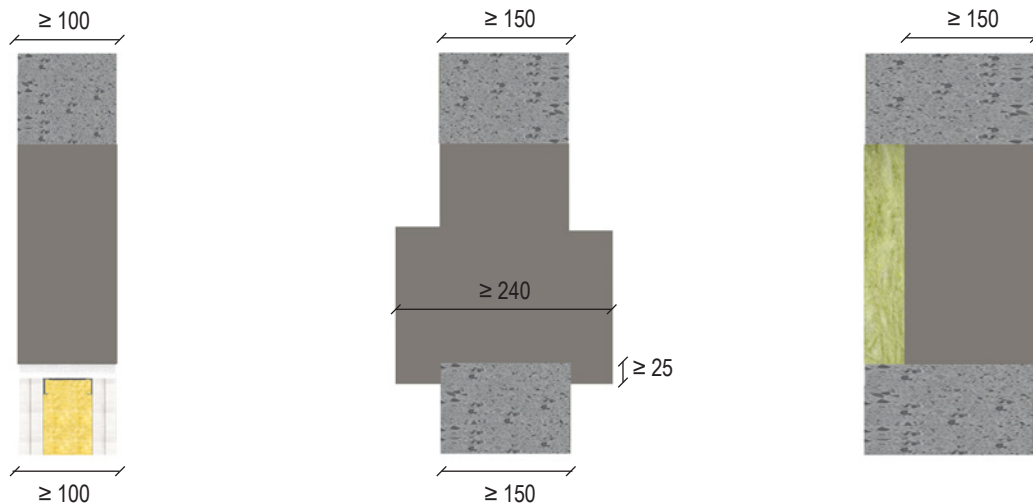
There must be suitable measures in the buildings to secure sealing systems in floors from being stepped on or subjected to loads.

When installing in walls, shuttering may be necessary on one side. When installing in floors, shuttering may be necessary on the lower side.

When installing in floors, seal surfaces  $> 500 \times 500$  mm without services or cable trays must be provided with an appropriate friction-locked steel reinforcement.

The structural and fire protection properties of the lintel or the floor above the aperture must ensure that the sealing system is not subjected to additional vertical load (except its own weight).

### Design variants for walls

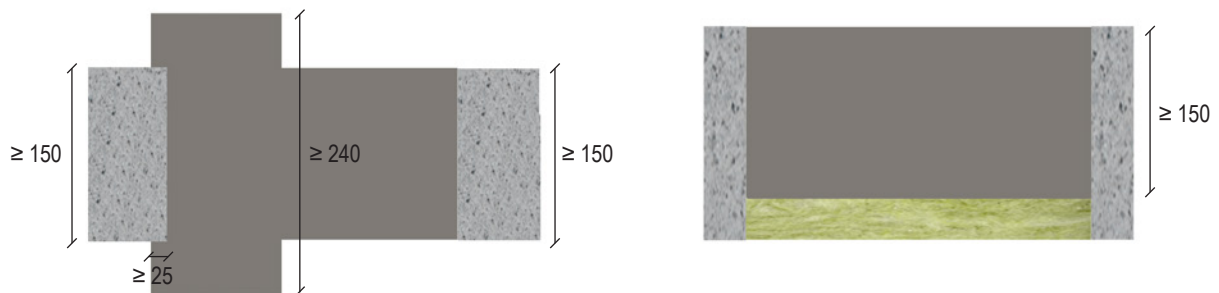


Design with NOVASIT BM fire protection mortar.

A mineral fibre mat (non-combustible, melting point  $> 1000$  °C) may be used for permanent shuttering.

All specifications in mm.

### Design variants for floors



Design with NOVASIT BM fire protection mortar.

A mineral fibre mat (non-combustible, melting point  $> 1000$  °C) may be used for permanent shuttering.

All specifications in mm.

# System Novasit BM

## 8. Fire protection measures

### 8.1 Cables / cable bundles / cable support systems

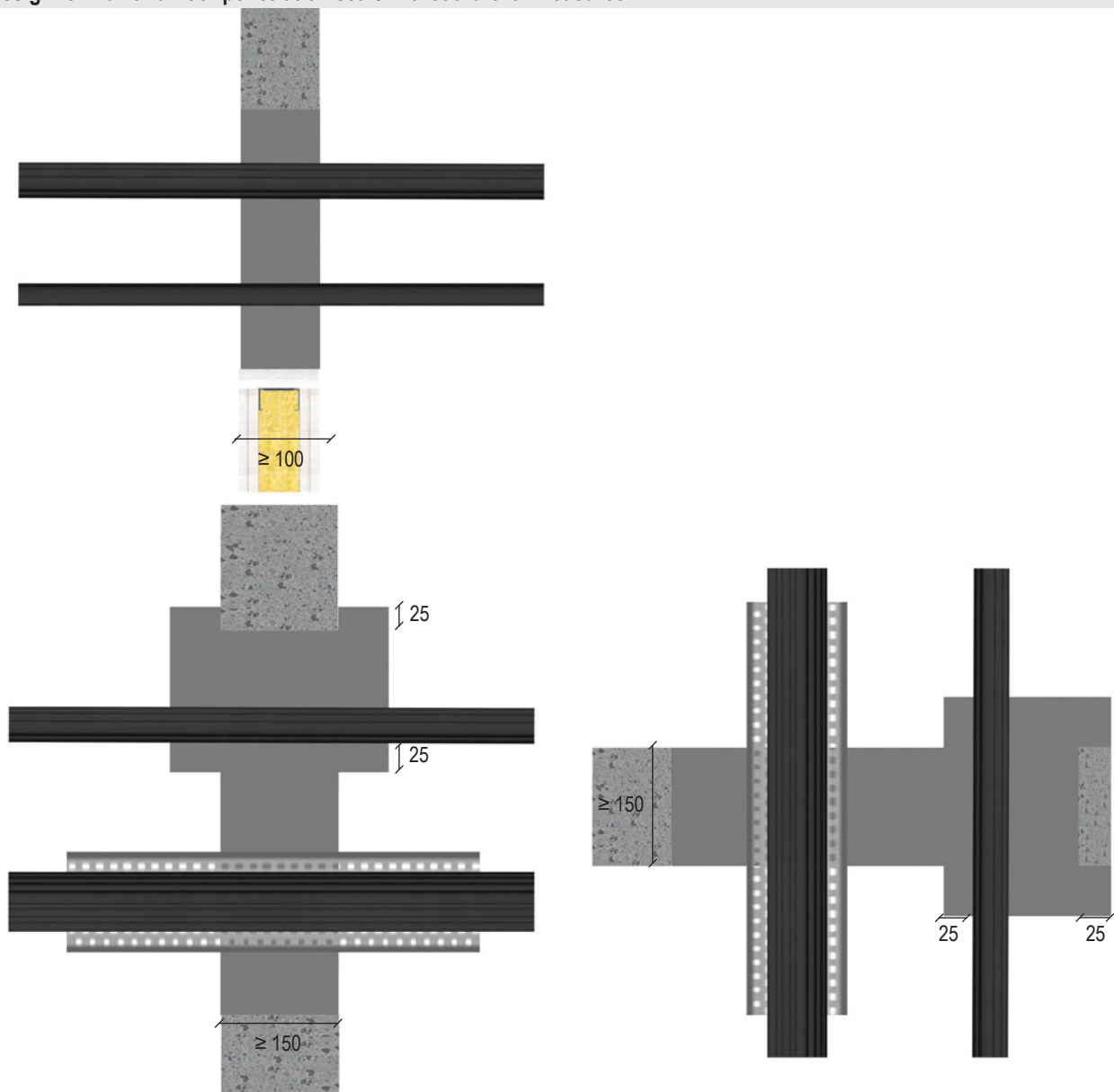
Cables and cable bundles may be installed with or without cable trays.

Cable bundles may be installed unopened in the seal. It is not necessary to fill the interstices of the bundles consist of parallel-running cables that are tightly packed, tied, stitched or welded together.

The supporting structures for cable trays must be designed in such a way that the penetration seal will not be subjected to additional mechanical stress in case of fire.

In case of cable support structures made of sheet steel or hollow aluminium profiles, the spars must be drilled and filled with the ablative filler FLAMMOTECT-A in the penetration area (necessary measures must be coordinated on site).

#### Design for wall and floor penetration seals without further measures



For building element and seal thicknesses see page 5. For design variants see page 14.

All specifications in mm.

## System Novasit BM

| Services                        | Dimensions [mm]               | Sealing thickness [mm] | Fire resistance class |               |               |
|---------------------------------|-------------------------------|------------------------|-----------------------|---------------|---------------|
|                                 |                               |                        | Plasterboard wall     | Solid wall    | Solid floor   |
| Cables                          | $\varnothing \leq 21$         | 100                    | EI 90                 | –             | –             |
|                                 | $\varnothing \leq 32$         | 150                    | –                     | EI 120        | EI 120        |
|                                 | $\varnothing \leq 50$         | 240                    | –                     | EI 120        | EI 90 / E 120 |
|                                 | $\varnothing \leq 80$         |                        | –                     | EI 90 / E 120 | EI 90         |
| Single-core non-sheathed cables | $\varnothing$ wires $\leq 24$ | 150                    | –                     | EI 120        | EI 120        |
| Cable bundles                   | $\varnothing \leq 60$         | 100                    | EI 90                 | –             | –             |
|                                 |                               | 150                    | –                     | EI 120        | EI 120        |
|                                 | $\varnothing \leq 100$        | 150                    | –                     | EI 90 / E 120 | EI 60 / E 120 |
|                                 |                               | 240                    | –                     | EI 120        | EI 120        |



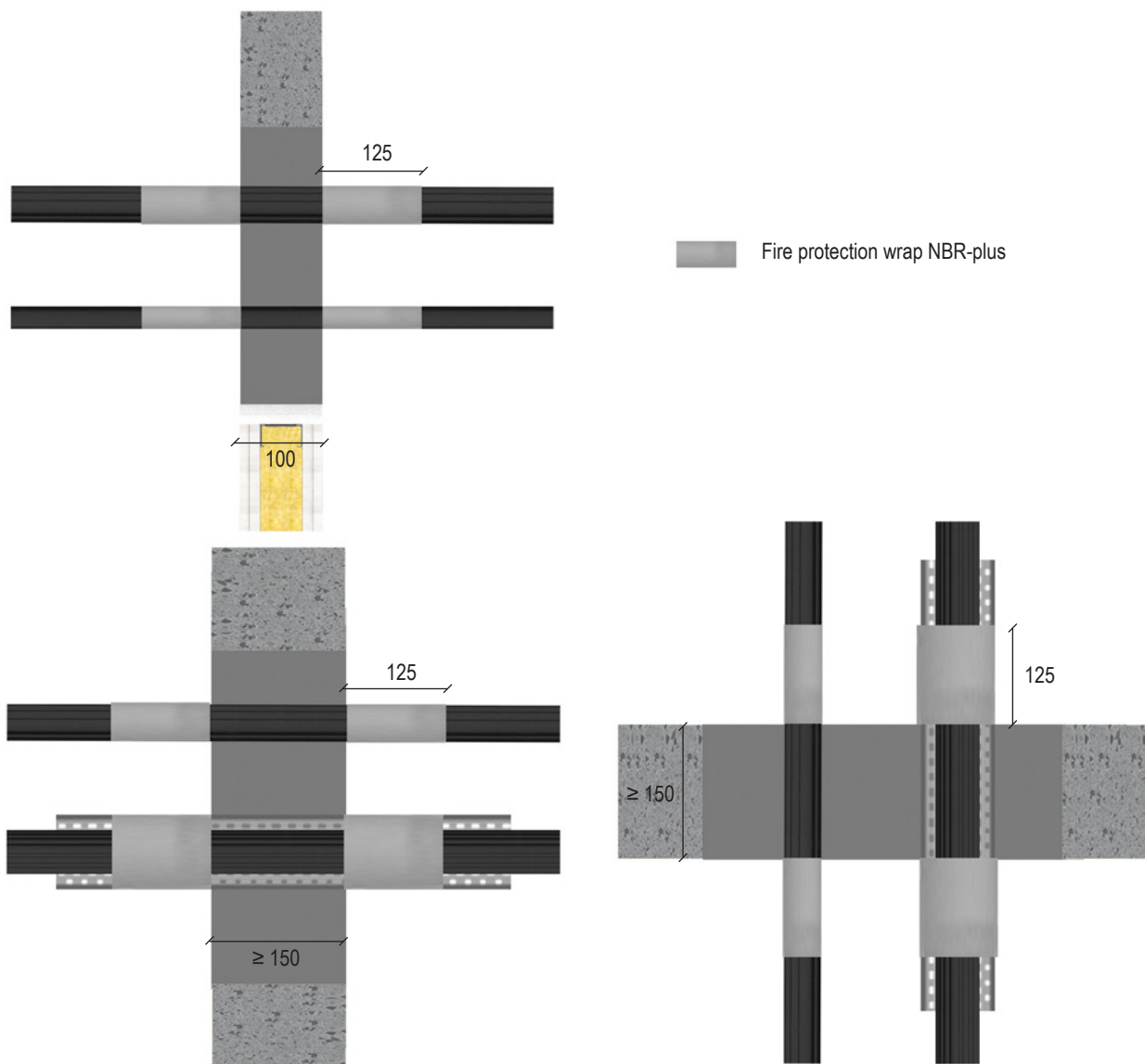
# System Novasit BM

## 8.1.1 Design with fire protection wrap NBR-plus

The fire protection wrap NBR-plus is coated on one side and equipped with a protective film. The film must be removed before applying the wrap with the coated side facing inwards.

The fire protection wrap must be secured with winding wire against falling out.

**Design for wall and floor penetration seals with fire protection wrap**



For building element and seal thicknesses see page 5. For design variants see page 14.

All specifications in mm.

## System Novasit BM

| Services      | Outer diameter [mm] | Fire protection wrap NBR-plus |                      |  | Fire resistance class |            |               |
|---------------|---------------------|-------------------------------|----------------------|--|-----------------------|------------|---------------|
|               |                     | Number of wraps [n]           | Number of layers [n] | Overlap [mm]                                       | Plasterboard wall     | Solid wall | Solid floor   |
| Cables        | ≤ 50                | 2 × 125                       | 2                    | –  | EI 90 / E 120         | –          | –             |
|               |                     |                               |                      | 45   | –                     | EI 120     | EI 120        |
|               | –                   |                               |                      | EI 90 / E 120                                      | –                     | –          |               |
|               | ≤ 80                |                               |                      | 2 × 125 +<br>2 × 62.5<br>(37.5 mm lateral overlap) | 45                    | –          | EI 90 / E 120 |
| –             |                     | EI 120                        | EI 120               |  |                       |            |               |
| Cable bundles | ≤ 150               | 2 × 125                       | 1                    | –  | EI 120                | EI 120     | EI 120        |

# System Novasit BM

## 8.2 Electrical installation conduits, single or bundled

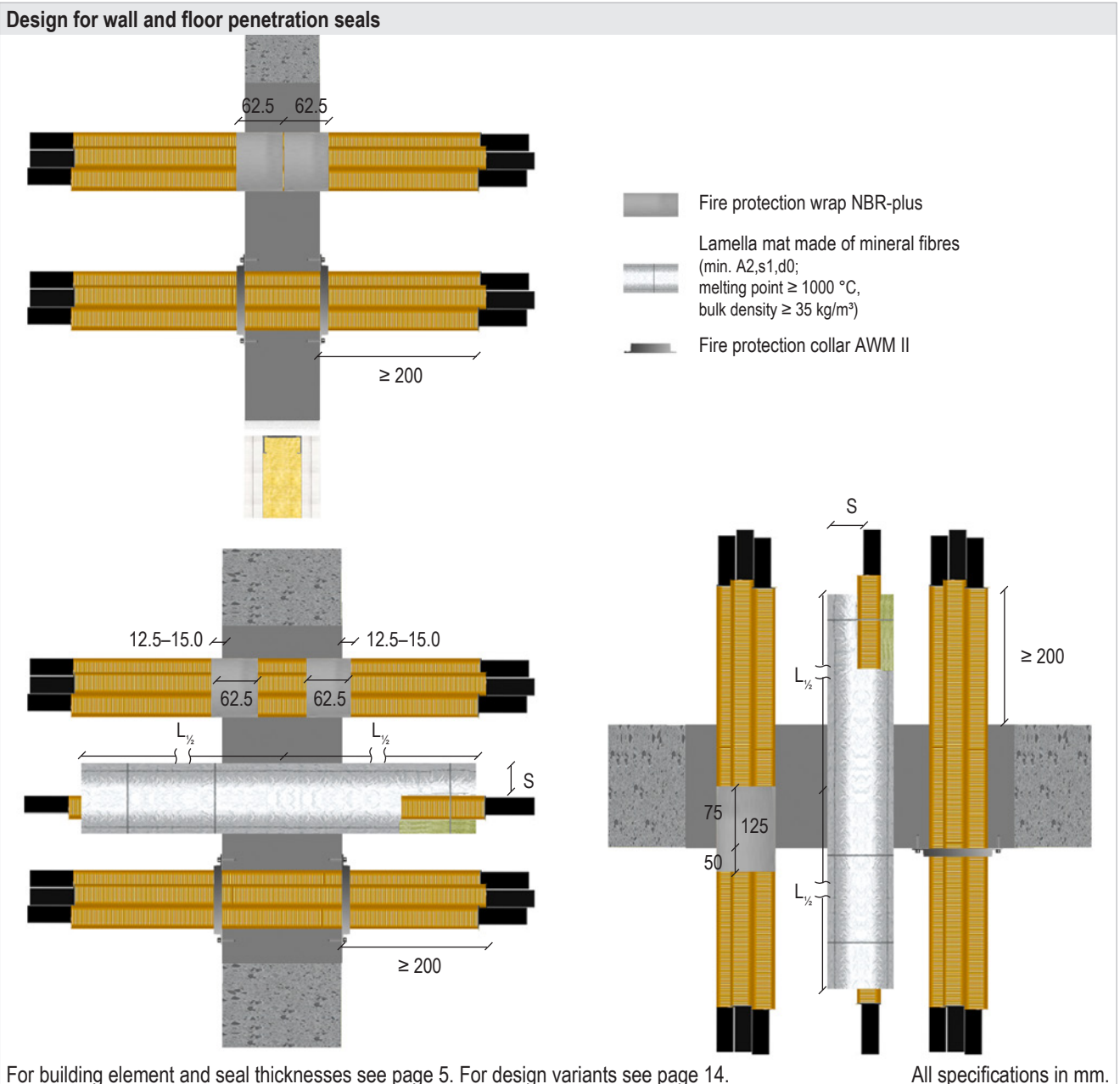
Installed conduits must be sealed on each side at a depth of at least 10 mm.

The fire protection wrap NBR-plus is coated on one side and equipped with a protective film. The film must be removed before applying the wrap with the coated side facing inwards. For easier installation the wrap can be secured against falling out with duct tape or winding wire.

Section insulation made of mineral fibre mats or shells must be fastened with tension bands or wire.

When using fire protection collars, always choose the smallest size fitting the single conduits or bundles. The inner diameter of the collar may not exceed the outer diameter of the conduit or bundle by more than 15 mm.

Use appropriate fasteners for the collars (dowels / steel screws / threaded rods M6 for inner Ø 63–75 mm, M8 for inner Ø 90–125 mm).



## System Novasit BM

Sources: ETA-21/0461 (NBR-plus), ETA-21/0461 (AWM II)

| Service   | Outer diameter [mm]  | Measure  | Fire resistance class |            |             |
|---|--|--|-----------------------|------------|-------------|
|   |  |  | Plasterboard wall     | Solid wall | Solid floor |
| <b>Conduits made of plastic (flexible or rigid), single</b>             | Conduit $\varnothing \leq 32$<br>with/without cables $\varnothing \leq 21$   | Fire protection wrap NBR-plus<br>1 x 125 mm or 2 x 62.5 mm, 1 layer  | EI 120 U/U            | EI 120 U/U | EI 120 U/U  |
|   | Conduit $\varnothing \leq 63$<br>with/without cables $\varnothing \leq 21$   | Fire protection wrap NBR-plus<br>1 x 125 mm or 2 x 62.5 mm, 2 layers                                       | EI 120 U/U            | EI 120 U/U | EI 120 U/U  |
|   |  | Section insulation made of lamella mat<br>Thickness $S \geq 30$ mm<br>Length $L_{\frac{1}{2}} \geq 500$ mm | –                     | EI 120 U/C | EI 120 U/C  |
|   |  | Fire protection collar AWM II<br>on both sides in wall,<br>on lower side in floor                          | EI 120 C/C            | EI 120 C/C | EI 120 C/C  |
|   | Conduit $\varnothing \leq 100$<br>with/without cables $\varnothing \leq 50^*$  | Fire protection wrap NBR-plus<br>2 x 125 mm, 3 layers  | –                     | –          | EI 120 U/U  |
| <b>Conduits made of plastic (flexible or rigid), bundled</b>            | Conduit $\varnothing \leq 32$ ,<br>bundled up to $\varnothing \leq 100$<br>with/without cables $\varnothing \leq 21$ | Fire protection wrap NBR-plus<br>1 x 125 mm or 2 x 62.5 mm, 2 layers                                       | EI 120 U/U            | EI 120 U/U | EI 120 U/U  |
|   | Conduit $\varnothing \leq 63$ ,<br>bundled up to $\varnothing \leq 125$<br>with/without cables $\varnothing \leq 21$ | Fire protection collar AWM II<br>on both sides in wall,<br>on lower side in floor                          | –                     | EI 120 C/C | EI 120 C/C  |
| <b>Conduits made of plastic (flexible), multiple linear penetration</b> | $\leq 3$ conduits $\varnothing \leq 32$<br>with/without cables $\varnothing \leq 21$                                 | Fire protection wrap NBR-plus<br>1 x 125 mm or 2 x 62.5 mm, 1 layer  | EI 120 U/U            | EI 120 U/U | EI 120 U/U  |

\* With additional protective insulation made of mineral fibre mat ( $L_1 \geq 500$  mm x  $D_1 \geq 30$  mm).

# System Novasit BM

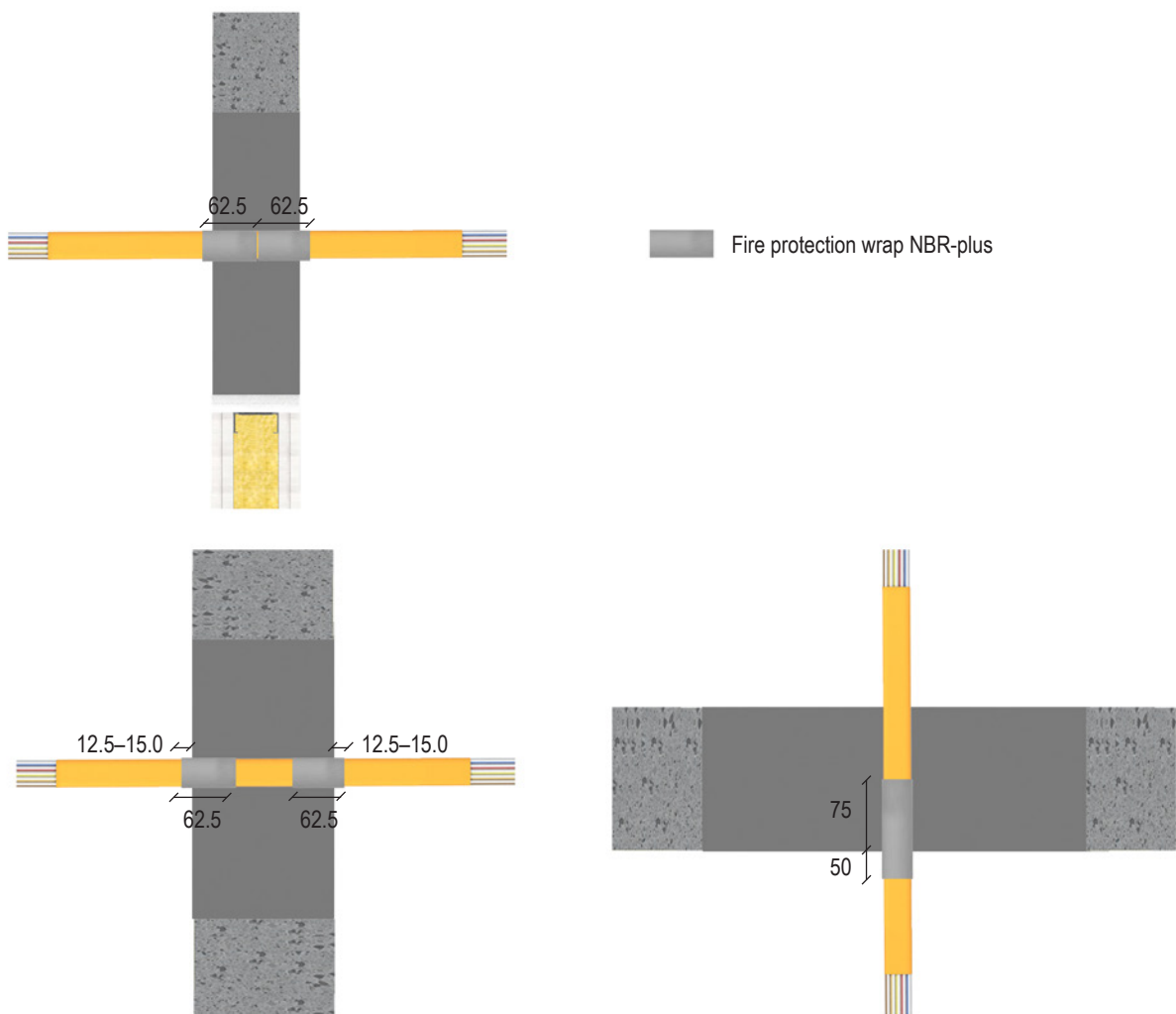
## 8.3 speedpipes

speedpipes must be installed with the fire protection wrap NBR-plus.

The fire protection wrap NBR-plus is coated on one side and equipped with a protective film. The film must be removed before applying the wrap with the coated side facing inwards.

For easier installation the wrap can be secured against falling out with duct tape or winding wire.

### Design for wall and floor penetration seals



For building element and seal thicknesses see page 5. For design variants see page 14.

All specifications in mm

| Source: ETA-21/0461 |  |                               |                      |                       |            |             |
|---------------------|--|-------------------------------|----------------------|-----------------------|------------|-------------|
| Service             | Outer diameter [mm]  | Fire protection wrap NBR-plus |                      | Fire resistance class |            |             |
|                     |  | Number of wraps [n]           | Number of layers [n] | Plasterboard wall     | Solid wall | Solid floor |
| speedpipes          | bundle $\varnothing \leq 50$<br>single $\varnothing \leq 50$ | 1 x 125 or<br>2 x 62.5        | 1                    | EI 120 U/U            | EI 120 U/U | EI 120 U/U  |

# System Novasit BM

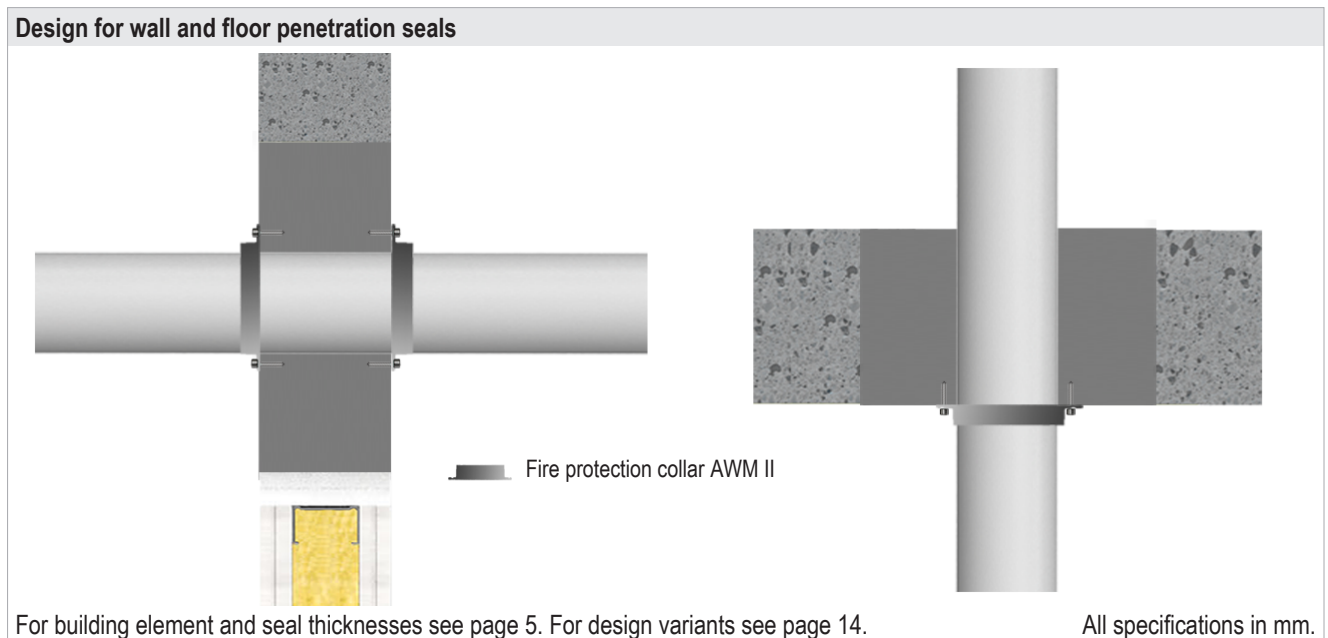
## 8.4 Combustible pipes

### 8.4.1 Design with fire protection collar AWM II

In walls, fire protection collars AWM II must be installed on both sides. In floors, one collar must be installed on the lower side. Pipes must always be installed perpendicularly to the surface of the building element, unless other installation possibilities are explicitly mentioned.

The penetration sealing may only be used on pneumatic conveyors, compressed air lines etc. if the pipeline system is switched off in the event of a fire.

Optionally a soundproofing tube  $\leq 5$  mm may be installed.



| Installation in walls – standard pipes |                   |                          |                | Source: ETA-17/0753 |                |                       |            |
|--|-------------------|--------------------------|----------------|---------------------|----------------|-----------------------|------------|
| Pipe material                          | Max. outer Ø [mm] | Pipe wall thickness [mm] | Design variant | Insulation          |                | Fire resistance class |            |
|  |                   |                          |                | Type                | Thickness [mm] | Plasterboard wall     | Solid wall |
| PVC-U                                  | 32–50             | 1.8–5.6                  | straight       | –                   | –              | EI 120-U/U            | EI 120-U/U |
|  | 32–160            | 2.7–4.6                  |                | PE                  | 5.0            | EI 120-U/U            | EI 120-U/U |
|  | 50–160            | 1.8–12.3                 |                | –                   | –              | EI 90-U/U             | EI 90-U/U  |
|  | 90–160            | 1.8–3.2                  | 45° diagonal   | PE                  | 5.0            | EI 60-U/U             | EI 60-U/U  |
|  | 110               | 1.8                      | 10.0           | –                   | –              | EI 120-U/C            | EI 120-U/C |
|  |                   |                          |                | PE                  | 5.0            | EI 120-U/U            | EI 120-U/U |
| 180–200                                | 4.0–9.6           | straight                 | –              | –                   | –              | EI 120-U/C            |            |

## System Novasit BM

| Installation in walls – standard pipes |                   |                          |                |            |                |                       |            | Source: ETA-17/0753 |
|--|-------------------|--------------------------|----------------|------------|----------------|-----------------------|------------|---------------------|
| Pipe material                          | Max. outer Ø [mm] | Pipe wall thickness [mm] | Design variant | Insulation |                | Fire resistance class |            |                     |
|  |                   |                          |                | Type       | Thickness [mm] | Plasterboard wall     | Solid wall |                     |
| PE-HD                                  | 32–110            | 1.8–10.0                 | straight       | –          | –              | EI 120-U/C            | EI 120-U/C |                     |
|  | ≤ 50              | 1.8–4.6                  |                | –          | –              | EI 120-U/U            | EI 120-U/U |                     |
|  | 50                | 4.6                      | 45° diagonal   | –          | –              | EI 120-U/C            | EI 120-U/C |                     |
|  | 50–160            | 1.9–14.6                 | straight       | –          | –              | EI 90-U/U             | EI 90-U/U  |                     |
|  | 110               | 2.7                      |                | –          | –              | EI 120-U/U            | EI 120-U/U |                     |
|  | 110               | 2.7                      | 45° diagonal   | –          | –              | EI 120-U/C            | EI 120-U/C |                     |
|  | 125–160           | 4.0–14.6                 | straight       | –          | –              | EI 120-U/C            | EI 120-U/C |                     |
|  | 180–200           | 4.9–11.4                 |                | –          | –              | –                     | EI 120-U/C |                     |
| 180–200                                | 4.9–18.2          | –                        |                | –          | –              | EI 120-U/C            |            |                     |
| PP-H                                   | 32–110            | 1.8–10.0                 | straight       | –          | –              | EI 120-U/C            | EI 120-U/C |                     |
|  | ≤ 50              | 1.8–4.6                  |                | –          | –              | EI 120-U/U            | EI 120-U/U |                     |
|  | 50–160            | 1.9–14.6                 |                | –          | –              | EI 90-U/U             | EI 90-U/U  |                     |
|  | 110               | 2.7                      |                | –          | –              | EI 120-U/U            | EI 120-U/U |                     |
|  | 125–160           | 4.0–14.6                 |                | –          | –              | EI 120-U/C            | EI 120-U/C |                     |
|  | 180–200           | 4.9–18.2                 |                | –          | –              | –                     | EI 120-U/C |                     |

| Installation in walls – non-standard pipes |                   |                          |                           |            |                |                       |            | Source: ETA-17/0753 |
|--|-------------------|--------------------------|---------------------------|------------|----------------|-----------------------|------------|---------------------|
| Type of pipe                               | Max. outer Ø [mm] | Pipe wall thickness [mm] | Design variant            | Insulation |                | Fire resistance class |            |                     |
|  |                   |                          |                           | Type       | Thickness [mm] | Plasterboard wall     | Solid wall |                     |
| POLO-KAL 3S                                | 75                | 3.8                      | straight                  | –          | –              | EI 60-U/C             | EI 60-U/C  |                     |
|  |                   |                          | 45° diagonal              | PE         | 4.0            | –                     | EI 120-U/C |                     |
|  | 125               | 5.3                      | straight                  | –          | –              | EI 60-U/C             | EI 60-U/C  |                     |
|  | 110               | 4.8                      |                           | PE         | 4.0            | EI 60-U/C             | EI 60-U/C  |                     |
|  | 110               | 4.8                      | straight with pipe sleeve | PE         | 4.0            | EI 60-U/C             | EI 60-U/C  |                     |
|  | 125               | 5.3                      | straight                  | PE         | 4.0            | EI 90-U/C             | EI 90-U/C  |                     |
|  |                   |                          | 45° diagonal              | –          | –              | –                     | EI 120-U/C |                     |
|  |                   |                          |                           | PE         | 4.0            | –                     | EI 120-U/C |                     |
| 160  | 7.5               | straight                 | PE                        | 4.0        | EI 60-U/C      | EI 60-U/C             |            |                     |
| POLO-KAL NG                                | 40–110            | 1.8–3.4                  | straight                  | PE         | 5.0            | EI 120-U/U            | EI 120-U/U |                     |
|  | 50–110            | 2.0–3.4                  | straight with pipe sleeve | PE         | 4.0            | EI 120-U/U            | EI 120-U/U |                     |
| POLO-KAL XS                                | 40–110            | 1.8–3.4                  | straight                  | PE         | 5.0            | EI 120-U/U            | EI 120-U/U |                     |
|  | 50–110            | 2.0–3.4                  | straight with pipe sleeve | PE         | 4.0            | EI 120-U/U            | EI 120-U/U |                     |
| Geberit Silent PP                          | 32–160            | 2.0–5.2                  | straight                  | PE         | 5.0            | EI 120-U/U            | EI 120-U/U |                     |
|  | 50–90             | 2.0–3.1                  | 45° diagonal              | PE         | 4.0            | EI 90-U/C             | EI 90-U/C  |                     |
|  | 50–110            | 2.0–3.6                  | straight with pipe sleeve | PE         | 4.0            | EI 120-U/C            | EI 120-U/C |                     |
|  | 50–110            | 2.0–3.6                  | 2 × 45°, bends            | PE         | 4.0            | EI 120-U/C            | EI 120-U/C |                     |
|  | 110               | 3.6                      | 45° diagonal              | PE         | 4.0            | EI 120-U/C            | EI 120-U/C |                     |
|  | 125–160           | 4.2–5.2                  | straight, zero clearance  | PE         | 4.0            | EI 90-U/C             | EI 90-U/C  |                     |

## System Novasit BM

| Installation in walls – non-standard pipes |                   |                          |                           |            |                |                       | Source: ETA-17/0753 |  |
|--|-------------------|--------------------------|---------------------------|------------|----------------|-----------------------|---------------------|--|
| Type of pipe                               | Max. outer Ø [mm] | Pipe wall thickness [mm] | Design variant            | Insulation |                | Fire resistance class |                     |  |
|  |                   |                          |                           | Type       | Thickness [mm] | Plasterboard wall     | Solid wall          |  |
| Geberit Silent Pro                         | 50–110            | 2.6–4.1                  | straight with pipe sleeve | PE         | 5.0            | EI 120-U/U            | EI 120-U/U          |  |
|  | 50–160            | 3.0–6.0                  | straight                  | PE         | 5.0            | EI 120-U/U            | EI 120-U/U          |  |
| Geberit Silent dB 20                       | 56–110            | 3.2–6.0                  | straight                  | PE         | 5.0            | EI 120-U/U            | EI 120-U/U          |  |
|  | 56–160            | 3.2–7.0                  | straight                  | PE         | 5.0            | EI 90-U/U             | EI 90-U/U           |  |
| GF Silenta Premium                         | 58                | 4.0                      | 45° diagonal              | PE         | 4.0            | EI 120-U/U            | EI 120-U/U          |  |
|  | 58–110            | 4.0–5.3                  | straight with pipe sleeve | PE         | 4.0            | EI 120-U/U            | EI 120-U/U          |  |
|  | 58–160            | 4.0–5.3                  | straight                  | PE         | 4.0            | EI 120-U/U            | EI 120-U/U          |  |
|  | 78–110            | 4.6–5.3                  | 45° diagonal              | PE         | 4.0            | EI 90-U/U             | EI 90-U/U           |  |
|  | 110–135           | 5.3                      | straight, zero clearance  | PE         | 4.0            | EI 120-U/U            | EI 120-U/U          |  |
| coes Blue Power                            | 50                | 1.8                      | straight                  | PE         | 4.0            | EI 120-U/C            | EI 120-U/C          |  |
|  | 50–90             | 1.8–3.4                  | straight with pipe sleeve | PE         | 4.0            | EI 120-U/C            | EI 120-U/C          |  |
|  | 110               | 3.4                      | straight with pipe sleeve | PE         | 4.0            | EI 90-U/C             | EI 90-U/C           |  |
| Wavin SiTech+                              | 32–75             | 1.8–2.6                  | straight with pipe sleeve | PE         | 4.0            | EI 120-U/C            | EI 120-U/C          |  |
|  | 32–125            | 1.8–3.9                  | straight                  | FEF        | 9.0–40.0       | EI 120-U/C            | EI 120-U/C          |  |
|  | 32–160            | 1.8–5.0                  | straight                  | PE         | 5.0            | EI 120-U/U            | EI 120-U/U          |  |
| REHAU RAUPIANO LIGHT                       | 40–160            | 1.8–3.9                  | straight                  | PE         | 5.0            | EI 120-U/U            | EI 120-U/U          |  |
| CONEL DRAIN                                | 40–160            | 1.8–3.9                  | straight                  | PE         | 5.0            | EI 120-U/U            | EI 120-U/U          |  |
| REHAU RAUPIANO PLUS                        | 50–160            | 1.8–3.9                  | straight                  | PE         | 5.0            | EI 120-U/U            | EI 120-U/U          |  |
| Pipelife MASTER 3 Plus                     | 40–160            | 1.8–4.4                  | straight                  | PE         | 5.0            | EI 120-U/U            | EI 120-U/U          |  |
| KE KELIT PHONEX AS                         | 58–160            | 4.0–5.3                  | straight                  | PE         | 5.0            | EI 120-U/U            | EI 120-U/U          |  |
| Wavin AS                                   | 58–160            | 4.0–5.3                  | straight                  | PE         | 5.0            | EI 120-U/U            | EI 120-U/U          |  |
| Valsir Triplus®                            | 32–160            | 1.8–4.9                  | straight                  | PE         | 5.0            | EI 120-U/U            | EI 120-U/U          |  |
| GF Cool-Fit 2.0 / 2.0F                     | 32/75 – 140/200   | –                        | straight                  | –          | –              | EI 120-U/C            | EI 120-U/C          |  |
| GF Cool-Fit 4.0                            | 110/180           | –                        | straight                  | –          | –              | EI 120-U/C            | EI 120-U/C          |  |
| GF Cool-Fit 4.0F                           | 63/110            | –                        | straight                  | –          | –              | EI 120-U/C            | EI 120-U/C          |  |
| Pellet hose PVC-Cu                         | 60                | –                        | straight                  | –          | –              | EI 120-U/C            | EI 120-U/C          |  |
| Pellet hose PUR-Cu                         | 60                | –                        | straight                  | –          | –              | EI 120-U/C            | EI 120-U/C          |  |



## System Novasit BM

| Installation in walls – non-standard pipes |                   |                          |                |                    |                |                       | Source: ETA-17/0753 |  |
|--|-------------------|--------------------------|----------------|--------------------|----------------|-----------------------|---------------------|--|
| Type of pipe                               | Max. outer Ø [mm] | Pipe wall thickness [mm] | Design variant | Insulation         |                | Fire resistance class |                     |  |
|  |                   |                          |                | Type               | Thickness [mm] | Plaster-board wall    | Solid wall          |  |
| GF Cool-Fit 2.0 / 2.0F                     | 32/75 – 140/200   | –                        | straight       | –                  | –              | EI 120-U/C            | EI 120-U/C          |  |
| GF Cool-Fit 4.0                            | 110/180           | –                        | straight       | –                  | –              | EI 120-U/C            | EI 120-U/C          |  |
| GF Cool-Fit 4.0F                           | 63/110            | –                        | straight       | –                  | –              | EI 120-U/C            | EI 120-U/C          |  |
| Pelletschlauch PVC-Cu                      | 60                | –                        | straight       | –                  | –              | EI 120-U/C            | EI 120-U/C          |  |
| Pelletschlauch PUR-Cu                      | 60                | –                        | straight       | –                  | –              | EI 120-U/C            | EI 120-U/C          |  |
| aquatherm blue pipe SDR 9 MF RP            | 32                | 3.6                      | straight       | PE                 | 5.0            | EI 120-U/C            | EI 120-U/C          |  |
|  |                   |                          | straight       | FEF (LS, ≥ 800 mm) | 22.0–39.5      | EI 120-U/C            | EI 120-U/C          |  |
| aquatherm blue pipe SDR 11 MF RP           | 40                | 3.7                      | straight       | PE                 | 5.0            | EI 120-U/C            | EI 120-U/C          |  |
|  |                   |                          | straight       | FEF (LS, ≥ 800 mm) | 22.0–39.5      | EI 120-U/C            | EI 120-U/C          |  |
|  | 50                | 4.6                      | straight       | PE                 | 5.0            | EI 120-U/C            | EI 120-U/C          |  |
|  |                   |                          | straight       | FEF (LS, ≥ 800 mm) | 22.0–39.5      | EI 120-U/C            | EI 120-U/C          |  |
|  | 63                | 5.8                      | straight       | PE                 | 5.0            | EI 120-U/C            | EI 120-U/C          |  |
|  |                   |                          | straight       | FEF (LS, ≥ 800 mm) | 22.0–39.5      | EI 120-U/C            | EI 120-U/C          |  |
|  | 75                | 6.8                      | straight       | PE                 | 5.0            | EI 120-U/C            | EI 120-U/C          |  |
|  |                   |                          | straight       | FEF (LS, ≥ 800 mm) | 22.0–39.5      | EI 120-U/C            | EI 120-U/C          |  |
|  | 90                | 8.2                      | straight       | PE                 | 5.0            | EI 120-U/C            | EI 120-U/C          |  |
|  |                   |                          | straight       | FEF (LS, ≥ 800 mm) | 22.0–39.5      | EI 120-U/C            | EI 120-U/C          |  |
|  | 110               | 10.0                     | straight       | PE                 | 5.0            | EI 120-U/C            | EI 120-U/C          |  |
|  |                   |                          | straight       | FEF (LS, ≥ 800 mm) | 19.0           | EI 120-U/C            | EI 120-U/C          |  |
|  | 125               | 11.4                     | straight       | PE                 | 5.0            | EI 120-U/C            | EI 120-U/C          |  |
|  |                   |                          | straight       | FEF (LS, ≥ 800 mm) | 19.0           | EI 120-U/C            | EI 120-U/C          |  |
|  | 160               | 14.6                     | straight       | PE                 | 5.0            | EI 120-U/C            | EI 120-U/C          |  |
|  |                   |                          | straight       | FEF (LS, ≥ 800 mm) | 19.0           | EI 120-U/C            | EI 120-U/C          |  |
| 200  | 18.2              | straight                 | PE             | 5.0                | –              | EI 120-U/C            |                     |  |

# System Novasit BM

| Installation in walls – non-standard pipes |                                |                          |                |                    |                    | Source: ETA-17/0753   |            |            |
|--|--------------------------------|--------------------------|----------------|--------------------|--------------------|-----------------------|------------|------------|
| Type of pipe                               | Max. outer Ø [mm]              | Pipe wall thickness [mm] | Design variant | Insulation         |                    | Fire resistance class |            |            |
|  |                                |                          |                | Type               | Thickness [mm]     | Plaster-board wall    | Solid wall |            |
| aquatherm green pipe SDR 6 S               | 32                             | 5.4                      | straight       | PE                 | 5.0                | EI 120-U/C            | EI 120-U/C |            |
|  |                                |                          | straight       | FEF (LS, ≥ 800 mm) | 18.0–39.5          | EI 120-U/C            | EI 120-U/C |            |
|  | 40                             | 6.7                      | straight       | PE                 | 5.0                | EI 120-U/C            | EI 120-U/C |            |
|  |                                |                          | straight       | FEF (LS, ≥ 800 mm) | 22.0–39.5          | EI 120-U/C            | EI 120-U/C |            |
|  | 50                             | 8.3                      | straight       | PE                 | 5.0                | EI 120-U/C            | EI 120-U/C |            |
|  |                                |                          | straight       | FEF (LS, ≥ 800 mm) | 22.0–39.5          | EI 120-U/C            | EI 120-U/C |            |
|  | 63                             | 10.5                     | straight       | PE                 | 5.0                | EI 120-U/C            | EI 120-U/C |            |
|  |                                |                          | straight       | FEF (LS, ≥ 800 mm) | 22.0–39.5          | EI 120-U/C            | EI 120-U/C |            |
|  | 75                             | 12.5                     | straight       | PE                 | 5.0                | EI 120-U/C            | EI 120-U/C |            |
|  |                                |                          | straight       | FEF (LS, ≥ 800 mm) | 22.0–50.0          | EI 120-U/C            | EI 120-U/C |            |
|  | 90                             | 15.0                     | straight       | PE                 | 5.0                | EI 120-U/C            | EI 120-U/C |            |
|  |                                |                          | straight       | FEF (LS, ≥ 800 mm) | 22.5–50.0          | EI 120-U/C            | EI 120-U/C |            |
|  | 110                            | 18.3                     | straight       | PE                 | 5.0                | EI 120-U/C            | EI 120-U/C |            |
|  |                                |                          | straight       | FEF (LS, ≥ 800 mm) | 19.0               | EI 120-U/C            | EI 120-U/C |            |
|  | aquatherm green pipe SDR 7.4 S | 32                       | 4.4            | straight           | PE                 | 5.0                   | EI 120-U/C | EI 120-U/C |
|  |                                |                          |                | straight           | FEF (LS, ≥ 800 mm) | 18.0–39.5             | EI 120-U/C | EI 120-U/C |
| 40   |                                | 5.5                      | straight       | PE                 | 5.0                | EI 120-U/C            | EI 120-U/C |            |
|  |                                |                          | straight       | FEF (LS, ≥ 800 mm) | 22.0–39.5          | EI 120-U/C            | EI 120-U/C |            |
| 50   |                                | 6.9                      | straight       | PE                 | 5.0                | EI 120-U/C            | EI 120-U/C |            |
|  |                                |                          | straight       | FEF (LS, ≥ 800 mm) | 22.0–39.5          | EI 120-U/C            | EI 120-U/C |            |
| 63   |                                | 8.6                      | straight       | PE                 | 5.0                | EI 120-U/C            | EI 120-U/C |            |
|  |                                |                          | straight       | FEF (LS, ≥ 800 mm) | 22.0–39.5          | EI 120-U/C            | EI 120-U/C |            |
| aquatherm green pipe SDR 11 S              | 32                             | 2.9                      | straight       | PE                 | 5.0                | EI 120-U/C            | EI 120-U/C |            |
|  |                                |                          | straight       | FEF (LS, ≥ 800 mm) | 18.0–39.5          | EI 120-U/C            | EI 120-U/C |            |
|  | 40                             | 3.7                      | straight       | PE                 | 5.0                | EI 120-U/C            | EI 120-U/C |            |
|  |                                |                          | straight       | FEF (LS, ≥ 800 mm) | 22.0–39.5          | EI 120-U/C            | EI 120-U/C |            |
|  | 50                             | 4.6                      | straight       | PE                 | 5.0                | EI 120-U/C            | EI 120-U/C |            |
|  |                                |                          | straight       | FEF (LS, ≥ 800 mm) | 22.0–39.5          | EI 120-U/C            | EI 120-U/C |            |
|  | 63                             | 5.8                      | straight       | PE                 | 5.0                | EI 120-U/C            | EI 120-U/C |            |
|  |                                |                          | straight       | FEF (LS, ≥ 800 mm) | 22.0–39.5          | EI 120-U/C            | EI 120-U/C |            |
|  | 75                             | 6.8                      | straight       | PE                 | 5.0                | EI 120-U/C            | EI 120-U/C |            |
|  |                                |                          | straight       | FEF (LS, ≥ 800 mm) | 22.0–50.0          | EI 120-U/C            | EI 120-U/C |            |
|  | 90                             | 8.2                      | straight       | PE                 | 5.0                | EI 120-U/C            | EI 120-U/C |            |
|  |                                |                          | straight       | FEF (LS, ≥ 800 mm) | 22.5–50.0          | EI 120-U/C            | EI 120-U/C |            |
|  | 110                            | 10.0                     | straight       | PE                 | 5.0                | EI 120-U/C            | EI 120-U/C |            |
|  |                                |                          | straight       | FEF (LS, ≥ 800 mm) | 19.0               | EI 120-U/C            | EI 120-U/C |            |
|  | 125                            | 11.4                     | straight       | PE                 | 5.0                | EI 120-U/C            | EI 120-U/C |            |
|  |                                |                          | straight       | FEF (LS, ≥ 800 mm) | 19.0               | EI 120-U/C            | EI 120-U/C |            |
|  | 160                            | 14.6                     | straight       | PE                 | 5.0                | EI 120-U/C            | EI 120-U/C |            |
|  |                                |                          | straight       | FEF (LS, ≥ 800 mm) | 19.0               | EI 120-U/C            | EI 120-U/C |            |
| 200  | 18.2                           | straight                 | PE             | 5.0                | –                  | EI 120-U/C            |            |            |

## System Novasit BM

| Installation in floors – standard pipes |                   |                          |                |            |                | Source: ETA-17/0753   |
|---|-------------------|--------------------------|----------------|------------|----------------|-----------------------|
| Pipe material                           | Max. outer Ø [mm] | Pipe wall thickness [mm] | Design variant | Insulation |                | Fire resistance class |
|   |                   |                          |                | Type       | Thickness [mm] |                       |
| PVC-U                                   | 32–50             | 1.8–5.6                  | straight       | –          | –              | EI 120-U/U            |
|   | > 50 – ≤ 160      | 1.8–12.3                 | straight       | –          | –              | EI 90-U/U             |
|   | 63–75             | 2.2–8.4                  | straight       | –          | –              | EI 120-U/C            |
|   | ≤ 75              | 1.8                      | straight       | –          | –              | EI 120-U/U            |
|   | 90–110            | 2.2–12.3                 | straight       | –          | –              | EI 120-U/C            |
|   | 110               | 8.2                      | 45° diagonal   | PE         | 4.0            | EI 120-U/C            |
|   | 125–160           | 3.2–11.8                 | straight       | –          | –              | EI 120-U/C            |
|   | 180–200           | 4.0–9.6                  | straight       | –          | –              | EI 120-U/C            |
| PE-HD                                   | 32–50             | 1.8–4.6                  | straight       | –          | –              | EI 120-U/U            |
|   | 50–110            | 4.6–10.0                 | 45° diagonal   | PE         | 4.0            | EI 120-U/C            |
|   | 50–125            | 1.8–14.6                 | straight       | –          | –              | EI 120-U/U            |
|   | 63–75             | 2.7–6.9                  | straight       | –          | –              | EI 120-U/C            |
|   | 90–110            | 2.7–10.0                 | straight       | –          | –              | EI 120-U/C            |
|   | 125–160           | 4.0–14.6                 | straight       | –          | –              | EI 120-U/C            |
|   | 125–160           | 4.0–14.6                 | straight       | –          | –              | EI 60-U/U             |
|   | 160               | 4.0                      | straight       | PE         | 5.0            | EI 90-U/U             |
| 180–200                                 | 4.9–18.2          | straight                 | –              | –          | EI 120-U/C     |                       |
| PP-H                                    | ≤ 50              | 1.8–4.6                  | straight       | –          | –              | EI 120-U/U            |
|   | 63–75             | 2.7–6.9                  | straight       | –          | –              | EI 120-U/C            |
|   | ≤ 75              | 1.9 – < 10.0             | straight       | –          | –              | EI 90-U/U             |
|   | ≤ 75              | 10.0                     | straight       | –          | –              | EI 120-U/U            |
|   | 90–110            | 2.7–10.0                 | straight       | –          | –              | EI 120-U/C            |
|   | ≤ 110             | 2.7 – < 10.0             | straight       | –          | –              | EI 90-U/U             |
|   | 110               | 2.7                      | straight       | –          | –              | EI 120-U/U            |
|   | 110               | 10.0                     | straight       | –          | –              | EI 120-U/U            |
|   | ≤ 125             | 3.1 – < 11.4             | straight       | –          | –              | EI 90-U/U             |
|   | ≤ 125             | 11.4                     | straight       | –          | –              | EI 120-U/U            |
|   | 125–160           | 4.0–14.6                 | straight       | –          | –              | EI 120-U/C            |
|   | ≤ 160             | 4.0–14.6                 | straight       | –          | –              | EI 120-U/U            |
| 180–200                                 | 4.9–11.4          | straight                 | –              | –          | EI 120-U/C     |                       |

# System Novasit BM

| Installation in floors – non-standard pipes |                   |                          |   |            |                | Source: ETA-17/0753   |
|---|-------------------|--------------------------|---|------------|----------------|-----------------------|
| Pipe material                               | Max. outer Ø [mm] | Pipe wall thickness [mm] | Design variant                            | Insulation |                | Fire resistance class |
|   |                   |                          |   | Type       | Thickness [mm] |                       |
| POLO-KAL 3S                                 | 75–110            | 3.8–4.8                  | straight                                  | –          | –              | EI 90-U/C             |
|   | 75–110            | 3.8–4.8                  | straight with pipe sleeve                 | PE         | 4.0            | EI 90-U/C             |
|   | 75–110            | 3.8–4.8                  | 45° diagonal                              | PE         | 4.0            | EI 90-U/C             |
|   | 125               | 5.3                      | 45° diagonal                              | –          | –              | EI 90-U/C             |
|   | 125               | 5.3                      | 35°                                       | PE         | 4.0            | EI 120-U/C            |
|   | 125               | 5.3                      | 2 × 45°, bends                            | PE         | 4.0            | EI 120-U/C            |
| POLO-KAL NG                                 | 40–160            | 1.8–4.9                  | straight                                  | PE         | 5.0            | EI 60-U/U             |
|   | 90–160            | 3.0–4.9                  | straight                                  | PE         | 5.0            | EI 90-U/U             |
| POLO-KAL XS                                 | 40–160            | 1.8–4.9                  | straight                                  | PE         | 5.0            | EI 60-U/U             |
|   | 50–110            | 1.8–3.4                  | straight with pipe sleeve                 | PE         | 4.0            | EI 120-U/U            |
|   | 50–110            | 1.8–3.4                  | 2 × 45°, bends                            | PE         | 4.0            | EI 120-U/U            |
|   | 90–160            | 3.0–4.9                  | straight                                  | PE         | 5.0            | EI 90-U/U             |
| Geberit Silent PP                           | 40–110            | 2.0–3.6                  | straight                                  | PE         | 5.0            | EI 90-U/U             |
|   | 40–160            | 2.0–5.2                  | straight                                  | PE         | 5.0            | EI 60-U/U             |
|   |                   | 1.8–3.4                  | straight with pipe sleeve                 | PE         | 4.0            | EI 120-U/C            |
|   |                   | 1.8–3.4                  | 45° diagonal                              | PE         | 4.0            | EI 120-U/C            |
|   | 50–110            | 1.8–3.4                  | 2 × 45°, bends                            | PE         | 4.0            | EI 120-U/C            |
|   |                   | 1.8–3.4                  | 2 × 45°, bends                            | PE         | 4.0            | EI 120-U/C            |
|   | 50–160            | 1.8–4.9                  | straight                                  | PE         | 4.0            | EI 120-U/C            |
| 125–160                                     | 3.9–4.9           | straight, zero clearance | PE  | 4.0        | EI 120-U/C     |                       |
| Geberit Silent Pro                          | 50–90             | 2.6–3.9                  | straight with pipe sleeve                 | PE         | 5.0            | EI 120-U/U            |
|   | 50–110            | 2.6–4.1                  | straight, pipe collar in building element | PE         | 5.0            | EI 120-U/U            |
|   | 50–110            | 2.6–4.1                  | 2 × 45°, bends                            | PE         | 5.0            | EI 120-U/U            |
|   | 50–160            | 2.6–5.6                  | straight                                  | PE         | 5.0            | EI 120-U/U            |
|   |                   | 2.6–5.6                  | straight                                  | FEF        | 9.0–25.0       | EI 120-U/U            |
|   | 125               | 4.6                      | 2 × 45°, bends                            | PE         | 5.0            | EI 90-U/U             |
| GF Silenta Premium                          | 58–110            | 4.0–5.3                  | straight with pipe sleeve                 | PE         | 4.0            | EI 120-U/U            |
|   | 58–110            | 4.0–5.3                  | 2 × 45°, bends                            | PE         | 4.0            | EI 120-U/U            |
|   | 58–160            | 4.0–5.3                  | straight                                  | PE         | 4.0            | EI 120-U/U            |
|   | 110–135           | 5.3                      | straight, zero clearance                  | PE         | 4.0            | EI 120-U/U            |
| Wavin SiTech                                | 110               | 3.4                      | straight                                  | PE         | 4.0            | EI 120-U/C            |
| REHAU RAUPIANO PLUS                         | 110               | 2.7                      | straight                                  | PE         | 4.0            | EI 120-U/C            |
| Ostendorf Skolan dB                         | 110               | 5.3                      | straight                                  | PE         | 4.0            | EI 120-U/C            |
| CONEL DRAIN                                 | 40–110            | 1.8–2.7                  | straight                                  | PE         | 5.0            | EI 60 U/U             |
|   | 50–110            | 1.8–2.7                  | straight                                  | PE         | 4.0            | EI 120-U/C            |
|   |                   | 1.8–2.7                  | straight with pipe sleeve                 | PE         | 4.0            | EI 120-U/C            |
|   |                   | 1.8–2.7                  | 2 × 45°, bends                            | PE         | 4.0            | EI 120-U/C            |
|   |                   | 1.8–2.7                  | 2 × 45°, bends                            | PE         | 4.0            | EI 120-U/C            |
| 75–110                                      | 1.9–2.7           | straight                 | PE  | 5.0        | EI 90 U/U      |                       |

# System Novasit BM

| Installation in floors – non-standard pipes |                     |                          |                |                    |                | Source: ETA-17/0753   |
|---|---------------------|--------------------------|----------------|--------------------|----------------|-----------------------|
| Pipe material                               | Max. outer Ø [mm]   | Pipe wall thickness [mm] | Design variant | Insulation         |                | Fire resistance class |
|   |                     |                          |                | Type               | Thickness [mm] |                       |
| REHAU<br>RAUPIANO LIGHT                     | 40–110              | 1.8–2.7                  | straight       | PE                 | 5.0            | EI 60 U/U             |
|   | 75–110              | 1.9–2.7                  | straight       | PE                 | 5.0            | EI 90 U/U             |
| Wavin<br>SiTECH+                            | 32–75               | 1.8–2.6                  | straight       | PE                 | 4.0            | EI 120-U/C            |
|   | 32, 75–160          | 1.8, 2.6–5.0             | straight       | PE                 | 5.0            | EI 90 U/U             |
|   | 58–110              | 4.1–5.3                  | straight       | PE                 | 5.0            | EI 60 U/U             |
|   |                     |                          | straight       | PE                 | 4.0            | EI 120-U/C            |
|   | 50–160              | 1.8–4.9                  | straight       | FEF                | 9.0–34.0       | EI 120-U/C            |
|   |                     |                          | straight       | PE                 | 4.0            | EI 120-U/C            |
| 50+125                                      | 1.8+3.9             | 2 × 45°, bends           | PE             | 4.0                | EI 120-U/C     |                       |
| Valsir Triplus®                             | 32–50               | 1.8                      | straight       | PE                 | 5.0            | EI 90 U/U             |
| GF Cool-Fit<br>2.0 / 2.0F                   | 32/75–<br>110/160   | –                        | straight       | –                  | –              | EI 120-U/C            |
|   | 140/200             | –                        | straight       | –                  | –              | EI 90-U/C             |
| GF Cool-Fit<br>4.0                          | 110/180-<br>160/250 | –                        | straight       | –                  | –              | EI 90-U/C             |
| GF Cool-Fit<br>4.0F                         | 63/125              | –                        | straight       | –                  | –              | EI 120-U/C            |
|   | 75/140–160          | –                        | straight       | –                  | –              | EI 90-U/C             |
| Pellet hose<br>PVC-Cu                       | 60                  | –                        | straight       | –                  | –              | EI 120-U/C            |
| Pellet hose<br>PUR-Cu                       | 60                  | –                        | straight       | –                  | –              | EI 120-U/C            |
| aquatherm blue pipe<br>SDR 9 MF RP          | 32                  | 3.6                      | straight       | PE                 | 5.0            | EI 120-U/C            |
|   |                     |                          |                | FEF (LS, ≥ 800 mm) | 22.0–39.5      | EI 120-U/C            |
| aquatherm blue pipe<br>SDR 11 MF RP         | 40                  | 3.7                      | straight       | PE                 | 5.0            | EI 120-U/C            |
|   |                     |                          |                | FEF (LS, ≥ 850 mm) | 22.0–39.5      | EI 120-U/C            |
|   | 50                  | 4.6                      | straight       | PE                 | 5.0            | EI 120-U/C            |
|   |                     |                          |                | FEF (LS, ≥ 850 mm) | 22.0–39.5      | EI 120-U/C            |
|   | 63                  | 5.8                      | straight       | PE                 | 5.0            | EI 120-U/C            |
|   |                     |                          |                | FEF (LS, ≥ 850 mm) | 22.0–39.5      | EI 120-U/C            |
|   | 75                  | 6.8                      | straight       | PE                 | 5.0            | EI 120-U/C            |
|   |                     |                          |                | FEF (LS, ≥ 850 mm) | 22.0–50.0      | EI 120-U/C            |
|   | 90                  | 8.2                      | straight       | PE                 | 5.0            | EI 120-U/C            |
|   |                     |                          |                | FEF (LS, ≥ 850 mm) | 22.5–50.0      | EI 120-U/C            |
|   | 110                 | 10.0                     | straight       | PE                 | 5.0            | EI 120-U/C            |
|   | 125                 | 11.4                     | straight       | PE                 | 5.0            | EI 120-U/C            |
| 160   | 14.6                | straight                 | PE             | 5.0                | EI 120-U/C     |                       |
| 200   | 18.2                | straight                 | PE             | 5.0                | EI 120-U/C     |                       |
| aquatherm blue pipe<br>SDR 17.6 MF RP       | 125                 | 7.1                      | straight       | PE                 | 5.0            | EI 120-U/C            |
|   |                     |                          |                | FEF (LS, ≥ 850 mm) | 19.0           | EI 120-U/C            |
|   | 160                 | 9.1                      | straight       | PE                 | 5.0            | EI 120-U/C            |
|   |                     |                          |                | FEF (LS, ≥ 850 mm) | 19.0           | EI 120-U/C            |
| 200   | 11.4                | straight                 | PE             | 5.0                | EI 120-U/C     |                       |

## System Novasit BM

| Installation in floors – non-standard pipes |                   |                          |                |                    |                | Source: ETA-17/0753   |
|---|-------------------|--------------------------|----------------|--------------------|----------------|-----------------------|
| Pipe material                               | Max. outer Ø [mm] | Pipe wall thickness [mm] | Design variant | Insulation         |                | Fire resistance class |
|   |                   |                          |                | Type               | Thickness [mm] |                       |
| aquatherm blue pipe SDR 9 MF RP OT          | 32                | 3.6                      | straight       | PE                 | 5.0            | EI 120-U/C            |
|   | 40                | 3.7                      | straight       | PE                 | 5.0            | EI 120-U/C            |
|   | 50                | 4.6                      | straight       | PE                 | 5.0            | EI 120-U/C            |
|   | 63                | 5.8                      | straight       | PE                 | 5.0            | EI 120-U/C            |
|   | 75                | 6.8                      | straight       | PE                 | 5.0            | EI 120-U/C            |
|   | 90                | 8.2                      | straight       | PE                 | 5.0            | EI 120-U/C            |
|   | 110               | 10.0                     | straight       | PE                 | 5.0            | EI 120-U/C            |
|   | 125               | 11.4                     | straight       | PE                 | 5.0            | EI 120-U/C            |
|   | 160               | 14.6                     | straight       | PE                 | 5.0            | EI 120-U/C            |
|   | 200               | 18.2                     | straight       | PE                 | 5.0            | EI 120-U/C            |
| aquatherm green pipe SDR 9 MF RP            | 32                | 3.6                      | straight       | PE                 | 5.0            | EI 120-U/C            |
|   |                   |                          |                | FEF (LS, ≥ 850 mm) | 22.0–39.5      | EI 120-U/C            |
|   | 40                | 4.5                      | straight       | PE                 | 5.0            | EI 120-U/C            |
|   |                   |                          |                | FEF (LS, ≥ 850 mm) | 22.0–39.5      | EI 120-U/C            |
|   | 50                | 5.6                      | straight       | PE                 | 5.0            | EI 120-U/C            |
|   |                   |                          |                | FEF (LS, ≥ 850 mm) | 22.0–39.5      | EI 120-U/C            |
|   | 63                | 7.1                      | straight       | PE                 | 5.0            | EI 120-U/C            |
|   |                   |                          |                | FEF (LS, ≥ 850 mm) | 22.0–39.5      | EI 120-U/C            |
|   | 75                | 8.4                      | straight       | PE                 | 5.0            | EI 120-U/C            |
|   |                   |                          |                | FEF (LS, ≥ 850 mm) | 22.0–50.0      | EI 120-U/C            |
|   | 90                | 10.0                     | straight       | PE                 | 5.0            | EI 120-U/C            |
|   |                   |                          |                | FEF (LS, ≥ 850 mm) | 22.5–50.0      | EI 120-U/C            |
|   | 110               | 12.3                     | straight       | PE                 | 5.0            | EI 120-U/C            |
|   |                   |                          |                | FEF (LS, ≥ 850 mm) | 22.5           | EI 120-U/C            |
|   | 125               | 14.0                     | straight       | PE                 | 5.0            | EI 120-U/C            |
|   |                   |                          |                | FEF (LS, ≥ 850 mm) | 19.0           | EI 120-U/C            |
|   | 160               | 17.9                     | straight       | PE                 | 5.0            | EI 120-U/C            |
|   |                   |                          |                | FEF (LS, ≥ 850 mm) | 19.0           | EI 120-U/C            |
| 200   | 22.4              | straight                 | PE             | 5.0                | EI 120-U/C     |                       |

# System Novasit BM

| Installation in floors – non-standard pipes |                   |                          |                    |                    |                | Source: ETA-17/0753   |
|---|-------------------|--------------------------|--------------------|--------------------|----------------|-----------------------|
| Pipe material                               | Max. outer Ø [mm] | Pipe wall thickness [mm] | Design variant     | Insulation         |                | Fire resistance class |
|   |                   |                          |                    | Type               | Thickness [mm] |                       |
| aquatherm green pipe SDR 6 S                | 32                | 5.4                      | straight           | PE                 | 5.0            | EI 120-U/C            |
|   |                   |                          |                    | FEF (LS, ≥ 850 mm) | 22.0–39.5      | EI 120-U/C            |
|   | 40                | 6.7                      | straight           | PE                 | 5.0            | EI 120-U/C            |
|   |                   |                          |                    | FEF (LS, ≥ 850 mm) | 22.0–39.5      | EI 120-U/C            |
|   | 50                | 8.3                      | straight           | PE                 | 5.0            | EI 120-U/C            |
|   |                   |                          |                    | FEF (LS, ≥ 850 mm) | 22.0–39.5      | EI 120-U/C            |
|   | 63                | 10.5                     | straight           | PE                 | 5.0            | EI 120-U/C            |
|   |                   |                          |                    | FEF (LS, ≥ 850 mm) | 22.0–39.5      | EI 120-U/C            |
|   | 75                | 12.5                     | straight           | PE                 | 5.0            | EI 120-U/C            |
|   |                   |                          |                    | FEF (LS, ≥ 850 mm) | 22.0–50.0      | EI 120-U/C            |
|   | 90                | 15.0                     | straight           | PE                 | 5.0            | EI 120-U/C            |
|   |                   |                          |                    | FEF (LS, ≥ 850 mm) | 22.5–50.0      | EI 120-U/C            |
|   | 110               | 18.3                     | straight           | PE                 | 5.0            | EI 120-U/C            |
|   |                   |                          |                    | FEF (LS, ≥ 850 mm) | 22.5           | EI 120-U/C            |
| aquatherm green pipe SDR 7.4 S              | 32                | 4.4                      | straight           | PE                 | 5.0            | EI 120-U/C            |
|   |                   |                          |                    | FEF (LS, ≥ 850 mm) | 22.0–39.5      | EI 120-U/C            |
|   | 40                | 5.5                      | straight           | PE                 | 5.0            | EI 120-U/C            |
|   |                   |                          |                    | FEF (LS, ≥ 850 mm) | 22.0–39.5      | EI 120-U/C            |
|   | 50                | 6.9                      | straight           | PE                 | 5.0            | EI 120-U/C            |
|   |                   |                          |                    | FEF (LS, ≥ 850 mm) | 22.0–39.5      | EI 120-U/C            |
| 63  | 8.6               | straight                 | PE                 | 5.0                | EI 120-U/C     |                       |
|   |                   |                          | FEF (LS, ≥ 850 mm) | 22.0–39.5          | EI 120-U/C     |                       |
| aquatherm green pipe SDR 11 S               | 32                | 2.9                      | straight           | PE                 | 5.0            | EI 120-U/C            |
|   |                   |                          |                    | FEF (LS, ≥ 850 mm) | 22.0–39.5      | EI 120-U/C            |
|   | 40                | 3.7                      | straight           | PE                 | 5.0            | EI 120-U/C            |
|   |                   |                          |                    | FEF (LS, ≥ 850 mm) | 22.0–39.5      | EI 120-U/C            |
|   | 50                | 4.6                      | straight           | PE                 | 5.0            | EI 120-U/C            |
|   |                   |                          |                    | FEF (LS, ≥ 850 mm) | 22.0–39.5      | EI 120-U/C            |
|   | 63                | 5.8                      | straight           | PE                 | 5.0            | EI 120-U/C            |
|   |                   |                          |                    | FEF (LS, ≥ 850 mm) | 22.0–39.5      | EI 120-U/C            |
|   | 75                | 6.8                      | straight           | PE                 | 5.0            | EI 120-U/C            |
|   |                   |                          |                    | FEF (LS, ≥ 850 mm) | 22.0–50.0      | EI 120-U/C            |
|   | 90                | 8.2                      | straight           | PE                 | 5.0            | EI 120-U/C            |
|   |                   |                          |                    | FEF (LS, ≥ 850 mm) | 22.5–50.0      | EI 120-U/C            |
|   | 110               | 10.0                     | straight           | PE                 | 5.0            | EI 120-U/C            |
|   |                   |                          |                    | FEF (LS, ≥ 850 mm) | 22.5           | EI 120-U/C            |
| 125   | 11.4              | straight                 | PE                 | 5.0                | EI 120-U/C     |                       |
|   |                   |                          | FEF (LS, ≥ 850 mm) | 19.0               | EI 120-U/C     |                       |
| 160   | 14.6              | straight                 | PE                 | 5.0                | EI 120-U/C     |                       |
|   |                   |                          | FEF (LS, ≥ 850 mm) | 19.0               | EI 120-U/C     |                       |
| 200   | 18.2              | straight                 | PE                 | 5.0                | EI 120-U/C     |                       |

## System Novasit BM

### 8.4.2 Design with fire protection wrap KSL-W

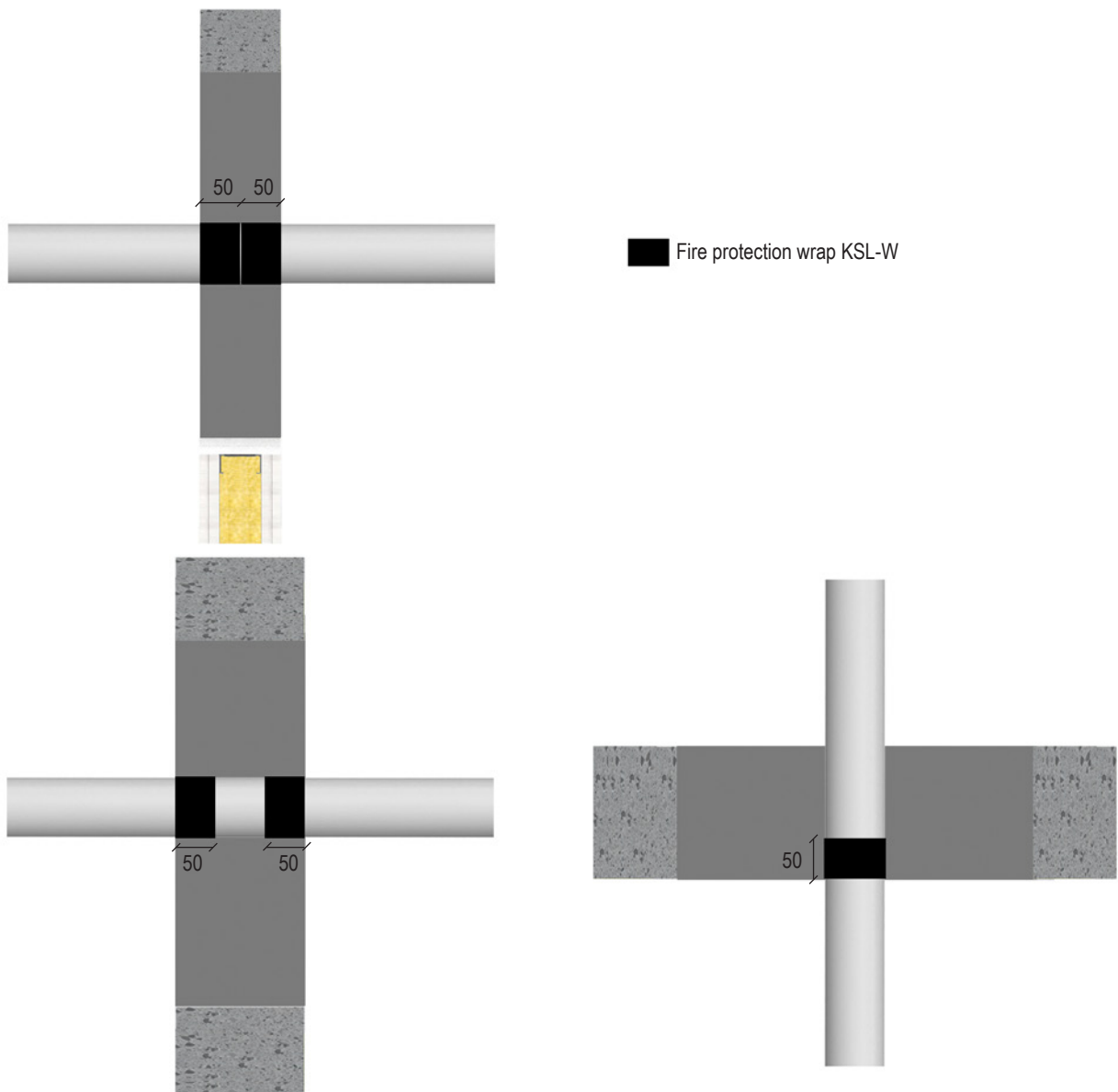
In walls, fire protection wraps KSL-W (wrap width  $2 \times 50$  mm) must be installed on both sides. In floors, only one wrap must be installed on the lower side.

Pipes must always be installed perpendicularly to the surface of the building element.

The penetration sealing may only be used on pneumatic conveyors, compressed air lines etc. if the pipeline system is switched off in the event of a fire.

Optionally a soundproofing tube  $\leq 5$  mm may be installed.

#### Design for wall and floor penetration seals



For building element and seal thicknesses see page 5. For design variants see page 14.

All specifications in mm.



## System Novasit BM

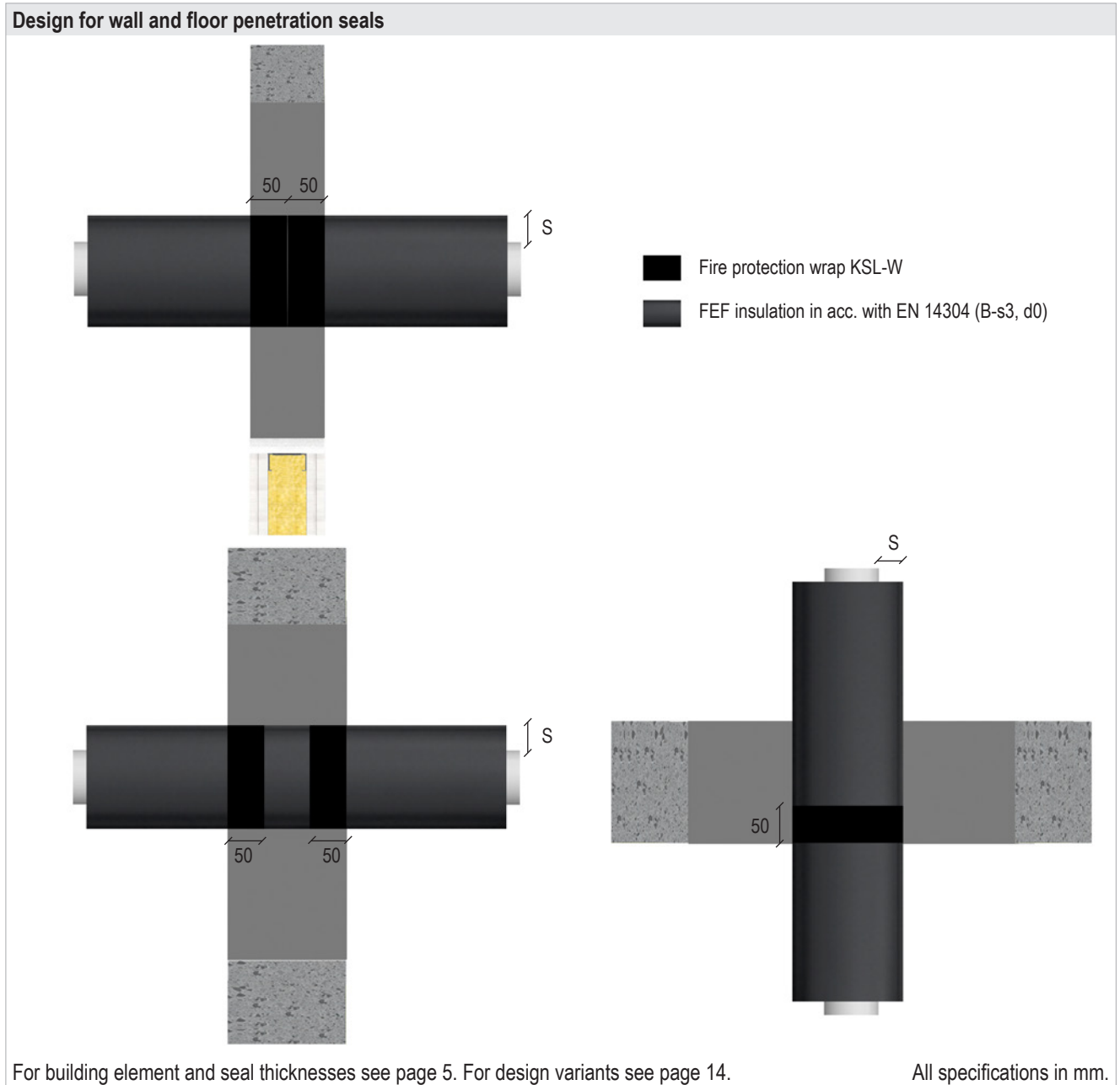
| Standard pipes      |                   |                          |                            |              |                                  |             | Source: ETA-18/0885 |
|---------------------|-------------------|--------------------------|----------------------------|--------------|----------------------------------|-------------|---------------------|
| Pipe material       | Pipe outer Ø [mm] | Pipe wall thickness [mm] | Fire protection wrap KSL-W |              | Fire resistance class            |             |                     |
|                     |                   |                          | Number of wraps and layers |              | Plasterboard wall and solid wall | Solid floor |                     |
|                     |                   |                          | Wall                       | Floor        |                                  |             |                     |
| PVC-U, PVC-C        | 32–50             | 1.8–5.6                  | 2 × 2 layers               | 1 × 2 layers | EI 120 U/U                       | EI 120 U/U  |                     |
|                     | 63–110            | 1.8–12.3                 | 2 × 4 layers               | 1 × 4 layers | EI 120 U/U                       | EI 90 U/U   |                     |
| PE-HD, ABS, SAN+PVC | 32–50             | 1.8–4.6                  | 2 × 2 layers               | 1 × 2 layers | EI 120 U/U                       | EI 120 U/U  |                     |
|                     | 63–110            | 1.8–10.0                 | 2 × 4 layers               | 1 × 4 layers | EI 120 U/U                       | EI 120 U/U  |                     |
| PP                  | 32–50             | 1.8–4.6                  | 2 × 2 layers               | 1 × 2 layers | EI 120 U/U                       | EI 120 U/U  |                     |
|                     | 63–110            | 1.8–10.0                 | 2 × 4 layers               | 1 × 4 layers | EI 120 U/U                       | EI 120 U/U  |                     |

| Non-standard pipes        |                   |                          |                            |              |                                  |             | Source: ETA-18/0885 |
|---------------------------|-------------------|--------------------------|----------------------------|--------------|----------------------------------|-------------|---------------------|
| Type of pipe              | Pipe outer Ø [mm] | Pipe wall thickness [mm] | Fire protection wrap KSL-W |              | Fire resistance class            |             |                     |
|                           |                   |                          | Number of wraps and layers |              | Plasterboard wall and solid wall | Solid floor |                     |
|                           |                   |                          | Wall                       | Floor        |                                  |             |                     |
| Geberit Silent-PP         | ≤ 50.0            | 2.0–3.6                  | 2 × 2 layers               | 1 × 2 layers | EI 120 U/U                       | EI 120 U/U  |                     |
|                           | ≤ 110.0           |                          | 2 × 4 layers               | 1 × 4 layers | EI 120 U/U                       | EI 120 U/U  |                     |
| Geberit Silent-Pro        | ≤ 75.0            | 3.8–4.5                  | 2 × 3 layers               | 1 × 3 layers | EI 120 U/U                       | EI 120 U/U  |                     |
|                           | ≤ 110.0           |                          | 2 × 4 layers               | 1 × 4 layers | EI 120 U/U                       | EI 120 U/U  |                     |
| Geberit Silent-db20       | ≤ 56.0            | 3.2                      | 2 × 2 layers               | 1 × 2 layers | EI 120 U/U                       | EI 120 U/U  |                     |
|                           | ≤ 110.0           | 5.5–6.0                  | 2 × 4 layers               | 1 × 4 layers | EI 120 U/U                       | EI 120 U/U  |                     |
| KE KELIT PHONEX AS        | ≤ 56.0            | 4.0                      | 2 × 2 layers               | 1 × 2 layers | EI 120 U/U                       | EI 120 U/U  |                     |
|                           | ≤ 110.0           | 5.3                      | 2 × 4 layers               | 1 × 4 layers | EI 120 U/U                       | EI 120 U/U  |                     |
| Pipelife MASTER 3         | ≤ 50.0            | 1.8–2.0                  | 2 × 2 layers               | 1 × 2 layers | EI 120 U/U                       | EI 90 U/U   |                     |
|                           | ≤ 110.0           | 2.1–3.0                  | 2 × 4 layers               | 1 × 4 layers | EI 120 U/U                       | EI 120 U/U  |                     |
| POLO-KAL NG / POLO-KAL XS | ≤ 50.0            | 1.8–2.0                  | 2 × 2 layers               | 1 × 2 layers | EI 120 U/U                       | EI 120 U/U  |                     |
|                           | ≤ 110.0           | 2.6–3.4                  | 2 × 4 layers               | 1 × 4 layers | EI 120 U/U                       | EI 120 U/U  |                     |
| REHAU RAUPIANO LIGHT      | ≤ 50.0            | 1.8–2.7                  | 2 × 2 layers               | 1 × 2 layers | EI 120 U/U                       | EI 120 U/U  |                     |
|                           | ≤ 110.0           |                          | 2 × 4 layers               | 1 × 4 layers | EI 120 U/U                       | EI 120 U/U  |                     |
| REHAU RAUPIANO PLUS       | ≤ 50.0            | 1.8                      | 2 × 2 layers               | 1 × 2 layers | EI 120 U/U                       | EI 60 U/U   |                     |
|                           | ≤ 110.0           | 1.9–2.7                  | 2 × 4 layers               | 1 × 4 layers | EI 120 U/U                       | EI 120 U/U  |                     |
| REHAU RAUSILENTO          | ≤ 50.0            | 1.8–2.7                  | 2 × 2 layers               | 1 × 2 layers | EI 120 U/U                       | EI 120 U/U  |                     |
|                           | ≤ 110.0           |                          | 2 × 4 layers               | 1 × 4 layers | EI 120 U/U                       | EI 120 U/U  |                     |
| CONEL DRAIN               | ≤ 50.0            | 1.8–2.7                  | 2 × 2 layers               | 1 × 2 layers | EI 120 U/U                       | EI 120 U/U  |                     |
|                           | ≤ 110.0           |                          | 2 × 4 layers               | 1 × 4 layers | EI 120 U/U                       | EI 120 U/U  |                     |
| Wavin SiTech+             | ≤ 50.0            | 2.0–2.1                  | 2 × 2 layers               | 1 × 2 layers | EI 120 U/U                       | EI 120 U/U  |                     |
|                           | ≤ 110.0           | 2.6–3.4                  | 2 × 4 layers               | 1 × 4 layers | EI 120 U/U                       | EI 120 U/U  |                     |
| GF Silenta Premium        | ≤ 50.0            | 4.1                      | 2 × 2 layers               | 1 × 2 layers | EI 120 U/U                       | EI 90 U/U   |                     |
|                           | ≤ 110.0           | 4.6–5.3                  | 2 × 4 layers               | 1 × 4 layers | EI 120 U/U                       | EI 120 U/U  |                     |

# System Novasit BM

## 8.4.3 Design with fire protection wrap KSL-W and FEF insulation



| Standard pipes |                   |                          |                |                            |                            | Source: ETA-17/0885   |                                  |
|----------------|-------------------|--------------------------|----------------|----------------------------|----------------------------|-----------------------|----------------------------------|
| Pipe material  | Pipe outer Ø [mm] | Pipe wall thickness [mm] | FEF insulation | Fire protection wrap KSL-W |                            | Fire resistance class |                                  |
|                |                   |                          |                | Thickness S [mm]           | Number of wraps and layers |                       | Plasterboard wall and solid wall |
|                |                   |                          | Wall           |                            | Floor                      |                       |                                  |
| PP-H           | 40–75             | 1.8–8.2                  | 9.0–22.0       | 2 × 3 layers               | –                          | EI 90 U/U*            | –                                |

# System Novasit BM

| Non-standard pipes        |                   |                          |                |                            |                            |                       |                                  | Source: ETA-17/0885 |
|---------------------------|-------------------|--------------------------|----------------|----------------------------|----------------------------|-----------------------|----------------------------------|---------------------|
| Type of pipe              | Pipe outer Ø [mm] | Pipe wall thickness [mm] | FEF insulation | Fire protection wrap KSL-W |                            | Fire resistance class |                                  |                     |
|                           |                   |                          |                | Thickness S [mm]           | Number of wraps and layers |                       | Plasterboard wall and solid wall | Solid floor         |
|                           |                   |                          | Wall           |                            | Floor                      |                       |                                  |                     |
| Geberit Silent-PP         | ≤ 50              | 2.0                      | 17.0           | –                          | 1 × 2 layers               | –                     | EI 120 U/U                       |                     |
|                           | > 100 – ≤ 125     | 3.6–4.2                  | 18.5           | –                          | 1 × 5 layers               | –                     | EI 120 U/U                       |                     |
| Geberit Silent-Pro        | ≤ 50              | 3.0                      | 17.0           | –                          | 1 × 2 layers               | –                     | EI 120 U/U                       |                     |
|                           | > 75 – ≤ 110      | 3.8–4.5                  | 18.0           | –                          | 1 × 4 layers               | –                     | EI 120 U/U                       |                     |
| Geberit Silent-db20       | ≤ 56              | 3.2                      | 17.0           | –                          | 1 × 2 layers               | –                     | EI 120 U/U                       |                     |
|                           | > 56 – ≤ 110      | 3.2–6.0                  | 18.0           | –                          | 1 × 4 layers               | –                     | EI 90 U/U                        |                     |
|                           | > 110 – ≤ 135     | 6.0                      | 18.5           | –                          | 1 × 5 layers               | –                     | EI 120 U/U                       |                     |
|                           | > 135 – ≤ 160     | 6.0–7.0                  | 19.0           | –                          | 1 × 6 layers               | –                     | EI 120 U/U                       |                     |
| Pipelife MASTER 3         | ≤ 50              | 1.8–2.0                  | 17.0           | –                          | 1 × 2 layers               | –                     | EI 120 U/U                       |                     |
|                           | > 50 – ≤ 110      | 2.0–3.0                  | 18.0           | –                          | 1 × 4 layers               | –                     | EI 120 U/U                       |                     |
| POLO-KAL NG / POLO-KAL XS | ≤ 50              | 1.8–2.0                  | 17.0           | –                          | 1 × 2 layers               | –                     | EI 120 U/U                       |                     |
|                           | > 50 – ≤ 110      | 2.0–3.0                  | 18.0           | –                          | 1 × 4 layers               | –                     | EI 120 U/U                       |                     |
| REHAU RAUPIANO LIGHT      | ≤ 50              | 1.8                      | 17.0           | –                          | 1 × 2 layers               | –                     | EI 120 U/U                       |                     |
|                           | > 50 – ≤ 110      | 1.8–2.7                  | 18.0           | –                          | 1 × 4 layers               | –                     | EI 120 U/U                       |                     |
|                           | > 110 – ≤ 125     | 2.7–3.1                  | 18.5           | –                          | 1 × 5 layers               | –                     | EI 120 U/U                       |                     |
|                           | > 125 – ≤ 160     | 3.1–3.9                  | 19.0           | –                          | 1 × 6 layers               | –                     | EI 90 U/U                        |                     |
| REHAU RAUPIANO PLUS**     | ≤ 50              | 1.8                      | 17.0           | –                          | 1 × 2 layers               | –                     | EI 120 U/U                       |                     |
| CONEL DRAIN               | ≤ 50              | 1.8–2.7                  | 17.0           | –                          | 1 × 2 layers               | –                     | EI 120 U/U                       |                     |
| Wavin SiTech              | ≤ 50              | 2.0–2.1                  | 17.0           | –                          | 1 × 2 layers               | –                     | EI 120 U/U                       |                     |
|                           | > 50 – ≤ 110      | 2.6–3.4                  | 18.0           | –                          | 1 × 4 layers               | –                     | EI 120 U/U                       |                     |
| Wavin SiTech+             | ≤ 50              | 2.0–2.1                  | 17.0           | –                          | 1 × 2 layers               | –                     | EI 120 U/U                       |                     |
|                           | > 50 – ≤ 110      | 2.6–3.4                  | 18.0           | –                          | 1 × 4 layers               | –                     | EI 120 U/U                       |                     |
| Wavin AS                  | ≤ 58              | 4.0                      | 17.0           | –                          | 1 × 2 layers               | –                     | EI 120 U/U                       |                     |
|                           | > 58 – ≤ 110      | 5.3                      | 18.0           | –                          | 1 × 4 layers               | –                     | EI 120 U/U                       |                     |
| GF Silenta Premium        | ≤ 58              | 4.1                      | 17.0           | –                          | 1 × 2 layers               | –                     | EI 120 U/U                       |                     |
|                           | > 58 – ≤ 110      | 4.1–5.3                  | 18.0           | –                          | 1 × 4 layers               | –                     | EI 120 U/U                       |                     |
|                           | > 110 – ≤ 135     | 5.3                      | 18.5           | –                          | 1 × 5 layers               | –                     | EI 120 U/U                       |                     |
| Ostendorf Skolan dB       | ≤ 58              | 4.0                      | 17.0           | –                          | 1 × 2 layers               | –                     | EI 120 U/U                       |                     |
|                           | > 58 – ≤ 110      | 4.0–5.3                  | 18.0           | –                          | 1 × 4 layers               | –                     | EI 60 U/U                        |                     |
|                           | > 110 – ≤ 135     | 5.3                      | 18.5           | –                          | 1 × 5 layers               | –                     | EI 120 U/U                       |                     |

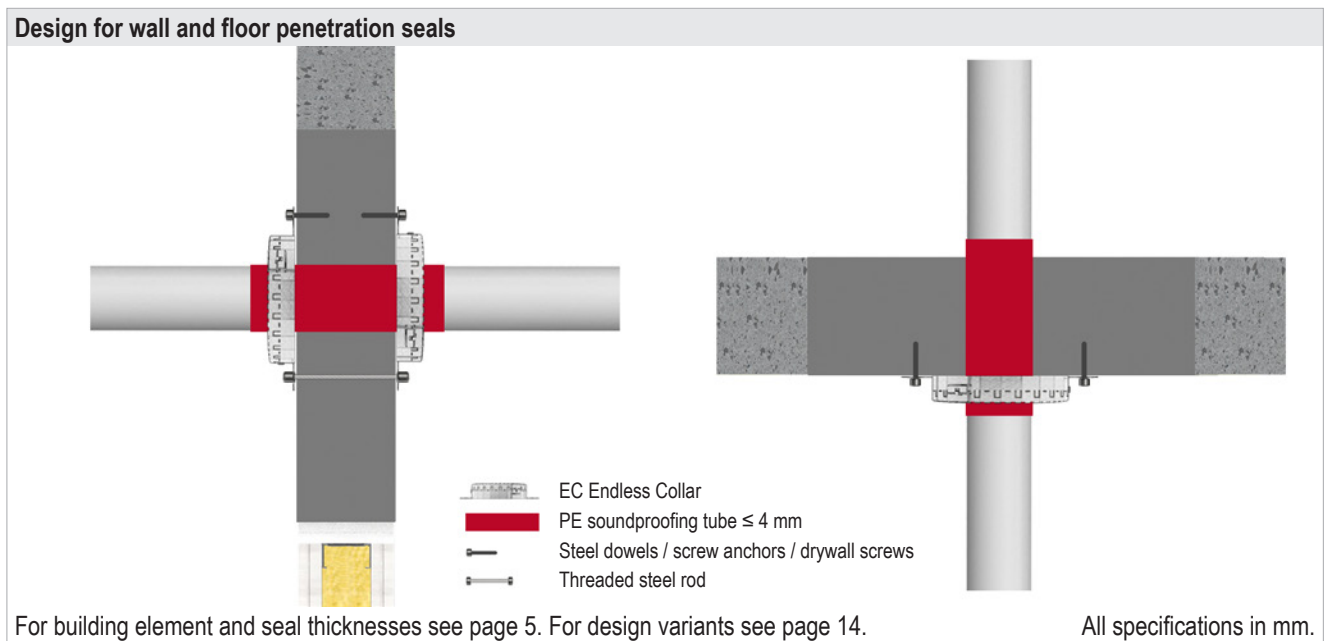
\* Source: KB 319061402-A, Rev. 2

\*\* Equivalent to REHAU RAUPIANO LIGHT

# System Novasit BM

## 8.4.4 Design with EC Endless Collar

**NOTE:** Diagonal and multiple penetrations as well as installations in corners and with pipe sleeves are also possible. Please consult the installation instructions for System EC Endless Collar for more information. All of the design variants covered there can also be installed in System Novasit BM.



| Standard pipes |                   | Source: ETA-22/0054 |                                |             |
|----------------|-------------------|---------------------|--------------------------------|-------------|
| Pipe           |                   | EC Endless Collar   | Fire resistance class          |             |
| Pipe material  | Pipe outer Ø [mm] | Number of layers    | Plasterboard wall / solid wall | Solid floor |
| PVC-U          | ≤ 50              | 2                   | EI 120 U/U                     | -           |
|                | > 50 – ≤ 75       | 3                   | EI 90 U/U                      | -           |
|                | > 75 – ≤ 110      | 4                   |                                | -           |
|                | > 110 – ≤ 125     | 5                   |                                | -           |
|                | > 125 – ≤ 160     | 6                   |                                | -           |
| PE-HD          | ≤ 50              | 2                   | EI 120 U/U                     | EI 120 U/C  |
|                | > 50 – ≤ 75       | 3                   |                                |             |
|                | > 75 – ≤ 110      | 4                   |                                |             |
|                | > 110 – ≤ 160     | 6                   | EI 120 U/C                     | -           |
| PP             | ≤ 50              | 2                   | EI 120 U/U                     | -           |
|                | > 50 – ≤ 75       | 3                   |                                | -           |
|                | > 75 – ≤ 110      | 4                   |                                | -           |

## System Novasit BM

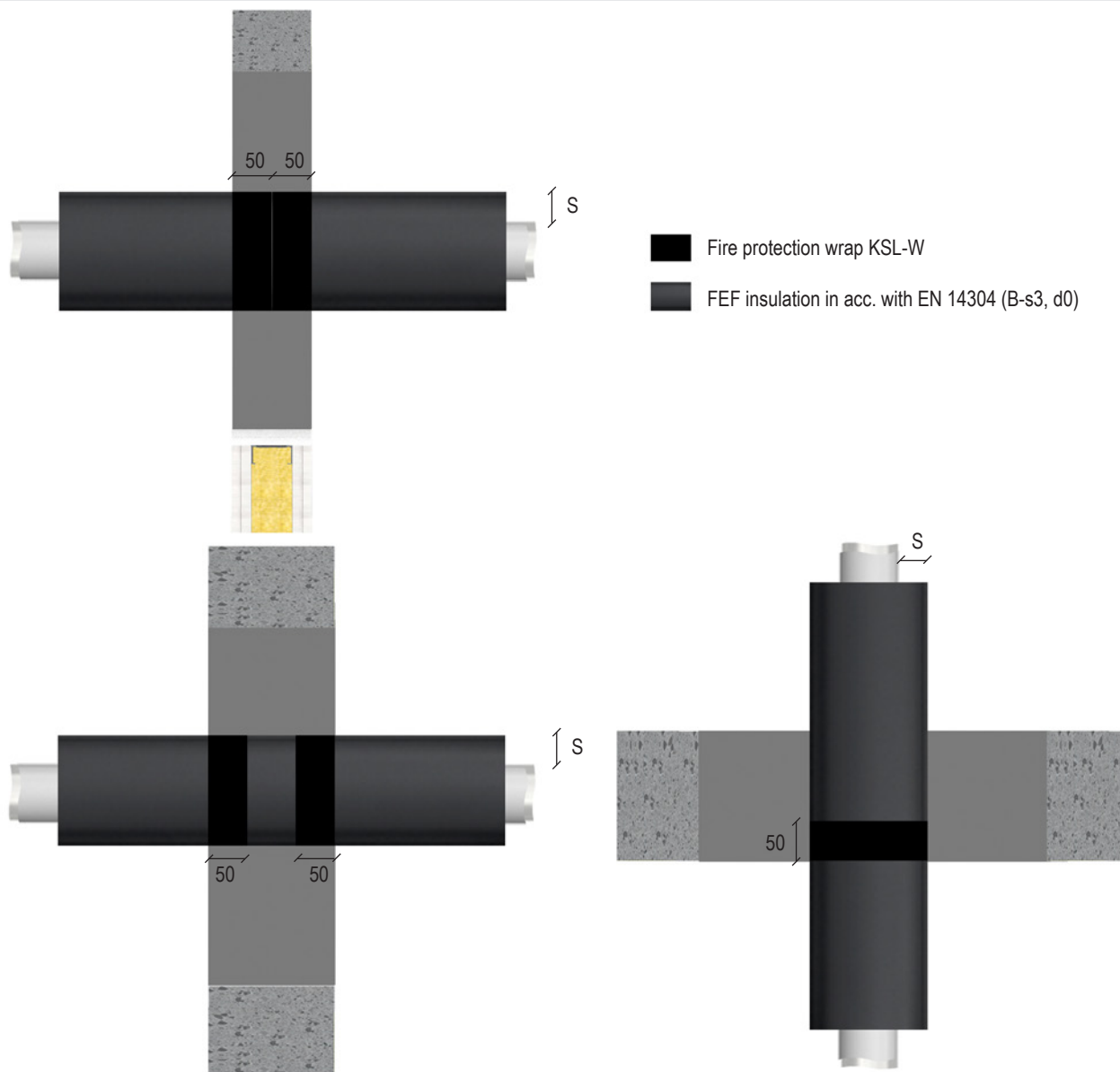
| Non-standard pipes                   |                   |                   | Source: ETA-22/0054            |             |
|--------------------------------------|-------------------|-------------------|--------------------------------|-------------|
| Pipe                                 |                   | EC Endless Collar | Fire resistance class          |             |
| Type of pipe                         | Pipe outer Ø [mm] | Number of layers  | Plasterboard wall / solid wall | Solid floor |
| Wavin SiTech+<br>REHAU RAUPIANO PLUS | ≤ 50              | 2                 | EI 120 U/U                     | EI 120 U/U  |
|                                      | ≤ 75              | 3                 |                                |             |
|                                      | ≤ 110             | 4                 |                                |             |
|                                      | ≤ 125             | 5                 | -                              |             |
|                                      | ≤ 160             | 6                 | -                              |             |
| Geberit Silent-PP<br>POLO-KAL NG     | ≤ 50              | 2                 | EI 120 U/U                     |             |
|                                      | ≤ 75              | 3                 |                                |             |
|                                      | ≤ 110             | 4                 |                                |             |
|                                      | ≤ 125             | 5                 |                                |             |
|                                      | ≤ 160             | 6                 |                                |             |

# System Novasit BM

## 8.5 Multilayer pipes

### 8.5.1 Design with fire protection wrap KSL-W and FEF insulation

#### Design for wall and floor penetration seals



For building element and seal thicknesses see page 5. For design variants see page 14.

All specifications in mm.

## System Novasit BM

| Plasterboard walls and solid walls |                   |                     |                            |                       |
|------------------------------------|-------------------|---------------------|----------------------------|-----------------------|
| Type of pipe                       | Pipe outer Ø [mm] | FEF insulation      | Fire protection wrap KSL-W | Fire resistance class |
|                                    |                   | Thickness S [mm]    | Number of wraps and layers |                       |
| Geberit Mepla                      | 16                | 8.0–32.0            | 2 × 1 layer                | EI 120 U/C            |
|                                    | 20                | 8.0–32.0            |                            | EI 120 U/C            |
|                                    | 26                | 8.5–35.0            |                            | EI 120 U/C            |
|                                    | 32                | 9.0–35.0            |                            | EI 120 U/C            |
|                                    | 40                | 9.0–35.0            | 2 × 2 layers               | EI 120 U/C            |
|                                    | 50                | 9.0–35.0            |                            | EI 120 U/C            |
|                                    | 63                | 9.0–39.0            |                            | EI 120 U/C            |
|                                    | 75                | 9.5<br>> 9.5 – 40.5 |                            | EI 90 U/C             |
| REHAU RAUTITAN stabil              | 16                | 8.0–32.0            | 2 × 1 layer                | EI 120 U/C            |
|                                    | 20                | 8.0–32.0            |                            | EI 120 U/C            |
|                                    | 25                | 8.5–35.0            |                            | EI 120 U/C            |
|                                    | 32                | 9.0–35.0            |                            | EI 120 U/C            |
|                                    | 40                | 9.0–35.0            | 2 × 2 layers               | EI 120 U/C            |
| KE KELIT KELOX                     | 16                | 8.0–32.0            | 2 × 1 layer                | EI 120 U/C            |
|                                    | 18                |                     |                            | EI 120 U/C            |
|                                    | 20                |                     |                            | EI 120 U/C            |
|                                    | 25                |                     |                            | EI 120 U/C            |
|                                    | 32                | 9.0–35.0            | 2 × 2 layers               | EI 120 U/C            |
|                                    | 40                | 9.0–35.0            |                            | EI 120 U/C            |
|                                    | 50                | 9.0–35.0            |                            | EI 120 U/C            |
|                                    | 63                | 9.0–39.0            |                            | EI 120 U/C            |
| Henco                              | 20                | 8.0–32.0            | 2 × 1 layer                | EI 120 U/C            |
|                                    | 32                |                     |                            | EI 120 U/C            |
| Geberit FlowFit                    | 16–32             | 8.5–33.5            | 2 × 1 layer                | EI 90 U/C             |

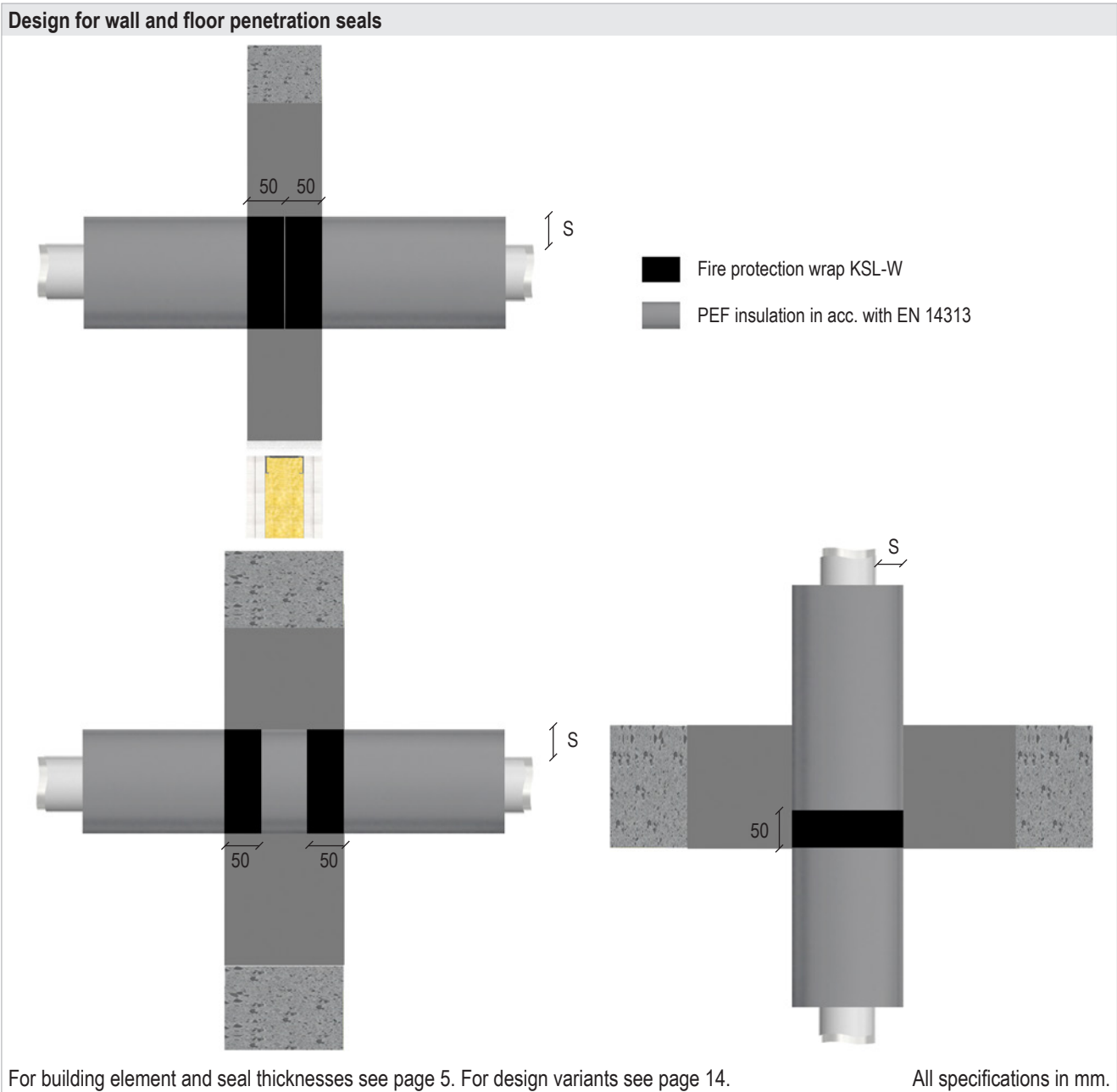
## System Novasit BM

| Solid floors          |                   |                  |                            |                       |
|-----------------------|-------------------|------------------|----------------------------|-----------------------|
| Type of pipe          | Pipe outer Ø [mm] | FEF insulation   | Fire protection wrap KSL-W | Fire resistance class |
|                       |                   | Thickness S [mm] | Number of wraps and layers |                       |
| Geberit Mepla         | 16                | 8.0–32.0         | 1 × 1 layer                | EI 120 U/C            |
|                       | 20                | 8.0              |                            | EI 120 U/C            |
|                       |                   | > 8.0 – 32.0     |                            | EI 120 U/C            |
|                       | 26                | 8.5–35.0         |                            | EI 120 U/C            |
|                       | 32                | 9.0              |                            | EI 120 U/C            |
|                       |                   | > 9.0 – 35.0     |                            | EI 120 U/C            |
|                       | 40                | 9.0              | 1 × 2 layers               | EI 120 U/C            |
|                       |                   | > 9.0 – 35.0     |                            | EI 120 U/C            |
|                       |                   | 50               |                            | EI 120 U/C            |
|                       |                   | 63               |                            | EI 120 U/C            |
| 75                    | 9.0               | EI 120 U/C       |                            |                       |
|                       | > 9.0–39.0        | EI 120 U/C       |                            |                       |
| 75                    | 9.5               | EI 90 U/C        |                            |                       |
|                       | > 9.5 – 40.5      | EI 120 U/C       |                            |                       |
| REHAU RAUTITAN stabil | 16                | 8.0–32.0         | 1 × 1 layer                | EI 120 U/C            |
|                       | 20                | 8.0–32.0         |                            | EI 120 U/C            |
|                       | 25                | 8.5–35.0         |                            | EI 120 U/C            |
|                       | 32                | 9.0              |                            | EI 120 U/C            |
|                       |                   | > 9.0 – 35.0     | EI 120 U/C                 |                       |
| 40                    | 9.0–35.0          | 1 × 2 layers     | EI 120 U/C                 |                       |
| KE KELIT KELOX        | 16                | 8.0–32.0         | 1 × 1 layer                | EI 120 U/C            |
|                       | 18                |                  |                            | EI 120 U/C            |
|                       | 20                |                  |                            | EI 120 U/C            |
|                       | 25                |                  |                            | EI 120 U/C            |
|                       | 32                | 9.0–35.0         | 1 × 2 layers               | EI 120 U/C            |
|                       | 40                | 9.0–35.0         |                            | EI 120 U/C            |
|                       | 50                |                  |                            | EI 120 U/C            |
|                       | 63                | 9.0–39.0         |                            | EI 120 U/C            |
| 75                    | 9.5–40.5          | EI 120 U/C       |                            |                       |
| Geberit FlowFit       | 16–32             | 8.5–35.0         | 1 × 1 layer                | EI 90 U/C             |
|                       | 40–75             | 20.5–40.5        | 1 × 2 layers               | EI 90 U/C             |



# System Novasit BM

## 8.5.2 Design with fire protection wrap KSL-W and PEF insulation



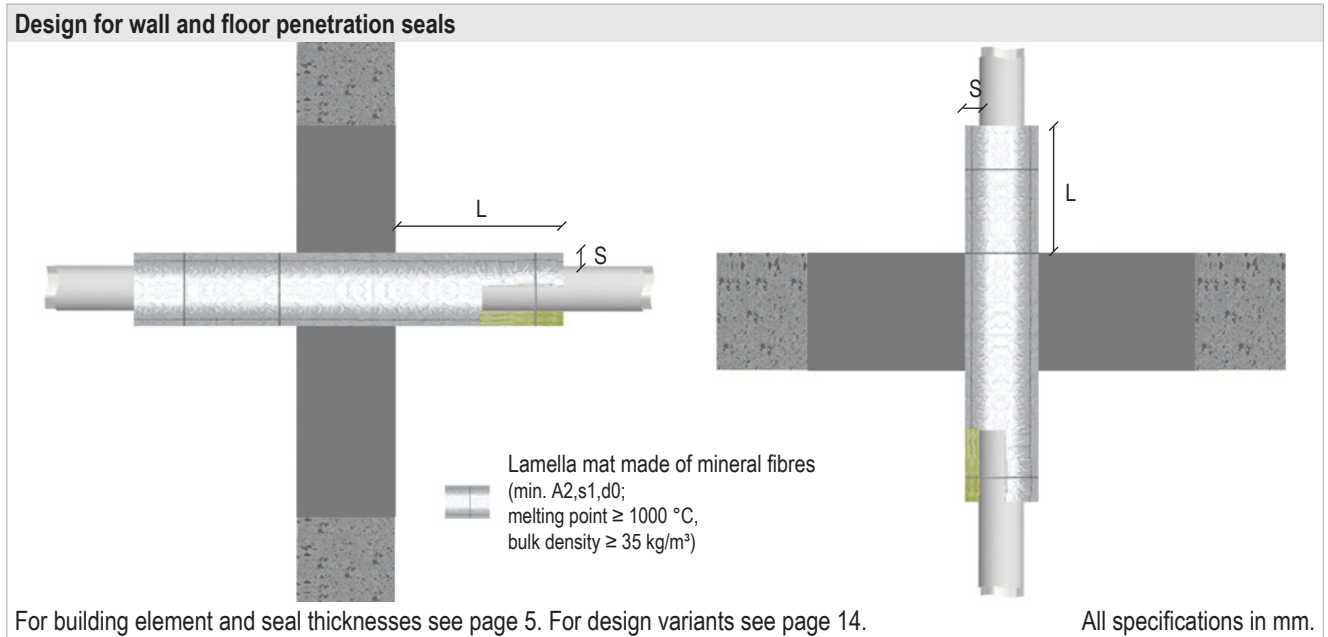
## System Novasit BM

| Plasterboard walls and solid walls |                   |                  |                            |                       |
|------------------------------------|-------------------|------------------|----------------------------|-----------------------|
| Type of pipe                       | Pipe outer Ø [mm] | PEF insulation   | Fire protection wrap KSL-W | Fire resistance class |
|                                    |                   | Thickness S [mm] | Number of wraps and layers |                       |
| Geberit Mepla                      | 16–32             | 6.0–13.0         | 2 × 1 layer                | EI 120 U/C            |
| REHAU RAUTITAN stabil              | 16–32             | 4.0–26.0         | 2 × 1 layer                | EI 120 U/C            |
| KE KELIT KELOX                     | 18–32             | 4.0–13.0         | 2 × 1 layer                | EI 120 U/C            |
| Henco                              | 20–32             | 6.0–13.0         | 2 × 1 layer                | EI 120 U/C            |
| Geberit FlowFit                    | 16                | 13.0–26.0        | 2 × 1 layer                | EI 90 U/C             |
|                                    | 20–25             | 26.0             |                            | EI 90 U/C             |

| Solid floors          |                   |                  |                            |                       |
|-----------------------|-------------------|------------------|----------------------------|-----------------------|
| Type of pipe          | Pipe outer Ø [mm] | PEF insulation   | Fire protection wrap KSL-W | Fire resistance class |
|                       |                   | Thickness S [mm] | Number of wraps and layers |                       |
| Geberit Mepla         | 16–32             | 6.0–13.0         | 1 × 1 layer                | EI 120 U/C            |
| REHAU RAUTITAN stabil | 16–32             | 4.0–26.0         | 1 × 1 layer                | EI 120 U/C            |
| KE KELIT KELOX        | 18–32             | 4.0–13.0         | 1 × 1 layer                | EI 120 U/C            |
| Henco                 | 20–32             | 6.0–13.0         | 1 × 1 layer                | EI 120 U/C            |
| Geberit FlowFit       | 16–25             | 6.0–26.0         | 1 × 1 layer                | EI 90 U/C             |

# System Novasit BM

## 8.5.3 Design with lamella mat



| Type of pipe | Outer $\varnothing$<br>[mm] | Wall thickness<br>[mm] | Insulation<br>length L<br>[mm] | Insulation<br>thickness S<br>[mm] | Fire resistance class |            |
|--------------|-----------------------------|------------------------|--------------------------------|-----------------------------------|-----------------------|------------|
|              |                             |                        |                                |                                   | Wall                  | Floor      |
| Henco        | $\leq 12$                   | 1.6                    | $\geq 250$                     | $\geq 20$                         | EI 120 U/C            | EI 120 U/C |
|              | $\leq 32$                   | 3.0                    |                                |                                   |                       |            |
|              | $\leq 63$                   | 4.5                    |                                | $\geq 30$                         |                       |            |

## System Novasit BM

### 8.6 Non-combustible pipes

#### 8.6.1 Section insulation with lamella mat Klimarock or mineral fibre shells Conlit 150U

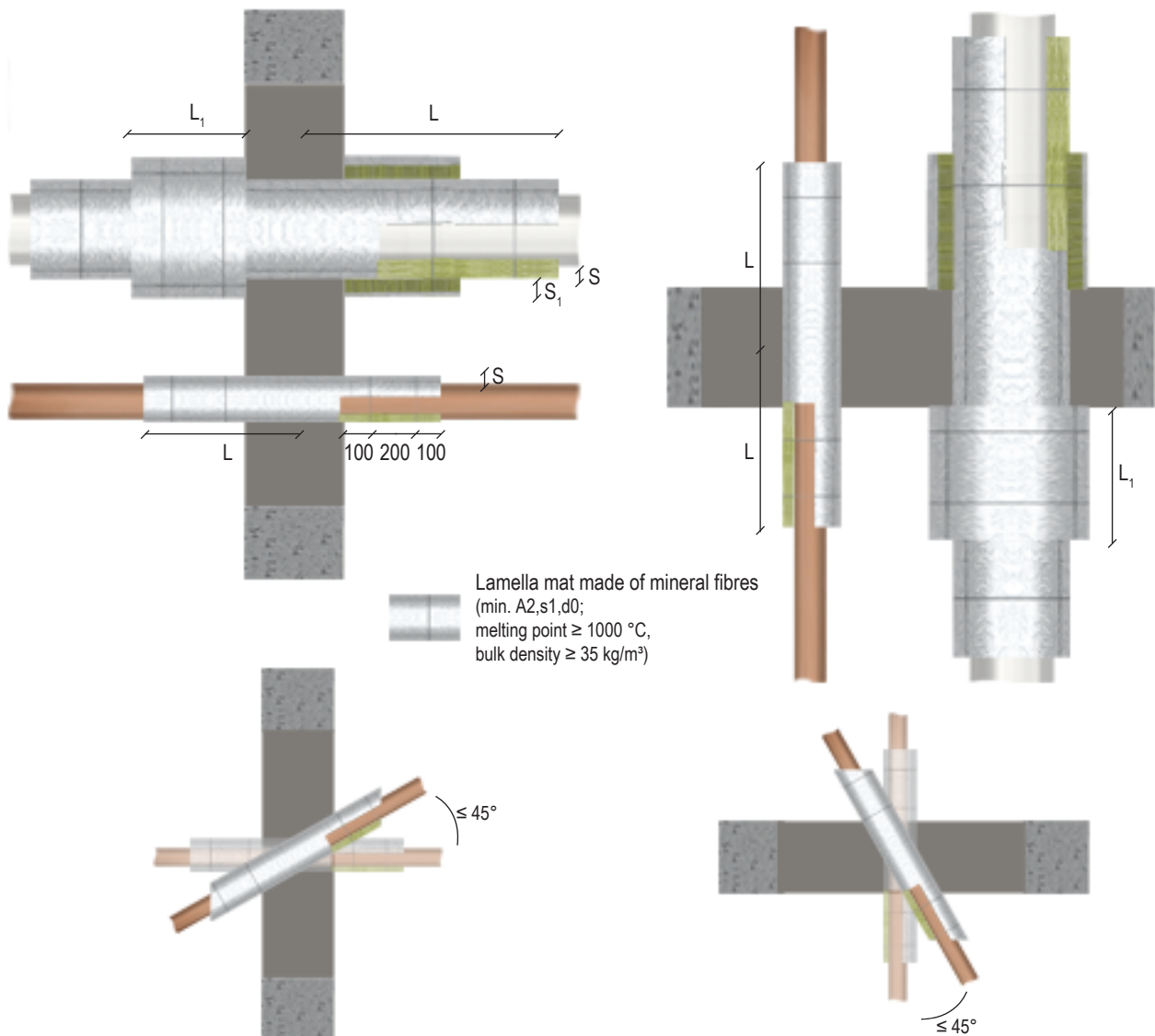
The section insulation must be fastened to the pipes using tension bands or wire (with a spacing of 100 mm or  $\leq 200$  mm).

When installing in floors, appropriate measures must be applied to secure the section insulation against falling out.

Pipes may be installed at  $45^\circ$ – $90^\circ$  angles to the surface of the building element.

Depending on pipe wall thickness and the outer diameter of the pipe, an additional protective insulation made of mineral fibre mats may be necessary.

#### Design for wall and floor penetration seals



For building element and seal thicknesses see page 5. For design variants see page 14.

All specifications in mm.

# System Novasit BM

| Design with lamella mat Klimarock         |                      |                          |                             |                       |            |
|---|----------------------|--------------------------|-----------------------------|-----------------------|------------|
| Pipe material                             | Outer Ø [mm]         | Insulation length L [mm] | Insulation thickness S [mm] | Fire resistance class |            |
|   |                      |                          |                             | Wall                  | Floor      |
| Copper, steel, stainless steel, cast iron | Ø ≤ 15.0             | ≥ 250                    | ≥ 20                        | EI 120 C/U            | EI 120 C/U |
|   | Ø > 15.0 – ≤ 28.0    | ≥ 500                    | ≥ 20                        |                       |            |
|   | Ø > 28.0 – ≤ 42.0    |                          | ≥ 30                        |                       |            |
|   | Ø > 42.0 – ≤ 54.0    |                          | ≥ 40                        |                       |            |
|   | Ø > 54.0 – ≤ 88.9    | ≥ 750                    | ≥ 60                        |                       |            |
|   | Ø > 88.9 – ≤ 108.0*  | ≥ 1000                   | ≥ 30                        |                       |            |
| Steel, stainless steel, cast iron         | Ø ≤ 15.0             | ≥ 250                    | ≥ 20                        | EI 120 C/U            | EI 120 C/U |
|   | Ø > 15.0 – ≤ 28.0    | ≥ 500                    | ≥ 20                        |                       |            |
|   | Ø > 28.0 – ≤ 42.0    |                          | ≥ 30                        |                       |            |
|   | Ø > 42.0 – ≤ 114.3   |                          | ≥ 1000                      |                       |            |
|   | Ø > 114.3 – ≤ 168.3  | ≥ 40                     |                             |                       |            |
|   | Ø > 168.3 – ≤ 323.9* | ≥ 40                     |                             |                       |            |

\* Additional protective insulation made of mineral fibre mat (L<sub>1</sub> ≥ 500 mm × S<sub>1</sub> ≥ 30 mm)

| Design with mineral fibre shells Conlit 150U |                      |                          |                             |                       |            |
|--|----------------------|--------------------------|-----------------------------|-----------------------|------------|
| Pipe material                                | Outer Ø [mm]         | Insulation length L [mm] | Insulation thickness S [mm] | Fire resistance class |            |
|  |                      |                          |                             | Wall                  | Floor      |
| Copper, steel, stainless steel, cast iron    | Ø ≤ 15.0             | ≥ 250                    | ≥ 22.5                      | EI 120 C/U            | EI 120 C/U |
|  | Ø > 15.0 – ≤ 28.0    | ≥ 500                    | ≥ 26.0                      |                       | -          |
|  | Ø > 28.0 – ≤ 42.0    |                          | ≥ 19.0                      | EI 120 C/U            |            |
|  | Ø > 42.0 – ≤ 54.0    |                          | ≥ 38.0                      |                       |            |
|  | Ø > 54.0 – ≤ 108.0   | ≥ 1000                   | ≥ 36.0                      | EI 120 C/U            |            |
| Steel, stainless steel, cast iron            | Ø ≤ 15.0             | ≥ 250                    | ≥ 22.5                      | EI 120 C/U            | EI 120 C/U |
|  | Ø > 15.0 – ≤ 28.0    | ≥ 500                    | ≥ 26                        |                       |            |
|  | Ø > 15.0 – ≤ 42.0    |                          | ≥ 19                        | -                     |            |
|  | Ø > 28.0 – ≤ 54.0    |                          | ≥ 750                       | ≥ 38                  |            |
|  | Ø > 54.0 – ≤ 114.3   | ≥ 33                     |                             |                       |            |
|  | Ø > 114.3 – ≤ 168.3  | ≥ 1000                   |                             | ≥ 40                  |            |
|  | Ø > 168.3 – ≤ 323.9* |                          | ≥ 40                        |                       |            |

\* Additional protective insulation made of mineral fibre mat (L<sub>1</sub> ≥ 500 mm × S<sub>1</sub> ≥ 40 mm)

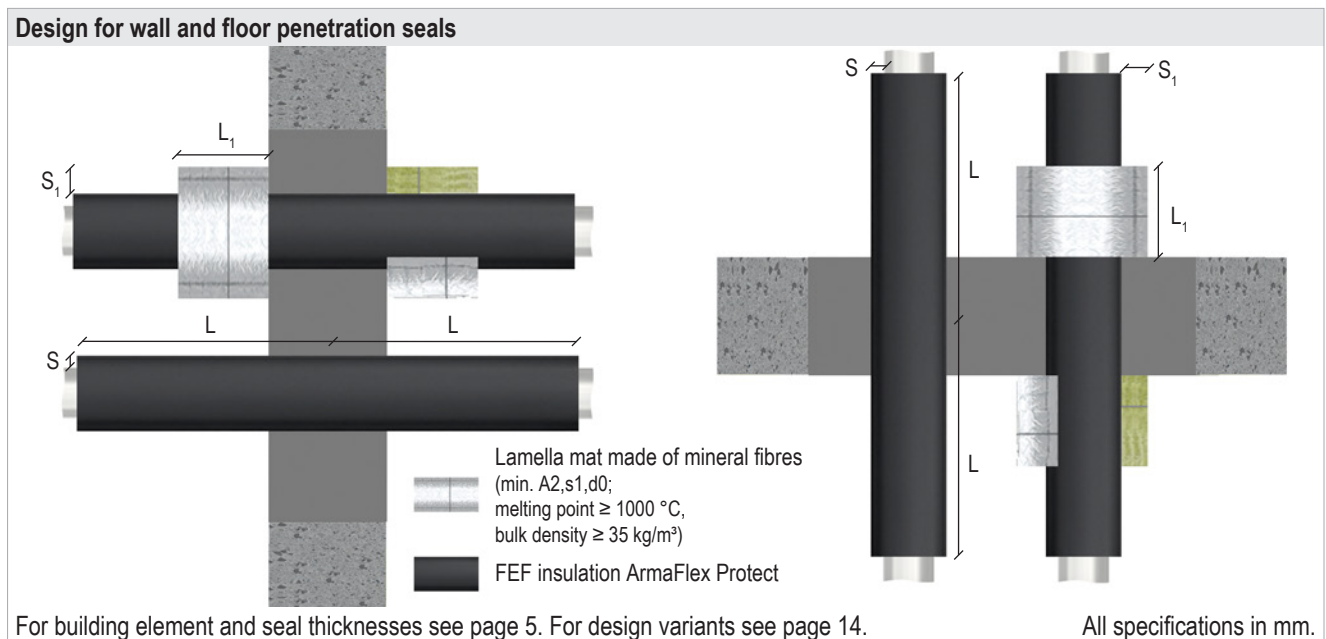
# System Novasit BM

## 8.6.2 Section insulation made of FEF ArmaFlex Protect

Depending on pipe wall thickness and the outer diameter of the pipe, an additional protective insulation made of mineral fibre mats may be necessary.

The protective insulation must be fastened to the pipe using tension bands or wire ( $\varnothing \geq 1 \text{ mm}$ ).

When installing in floors, appropriate measures must be applied to secure the protective insulation against falling out.



| Pipe material                                | Outer $\varnothing$ [mm]            | Insulation length L [mm] | Insulation thickness S [mm] | Fire resistance class |            |
|--|-------------------------------------|--------------------------|-----------------------------|-----------------------|------------|
|  |                                     |                          |                             | Wall                  | Floor      |
| Copper, steel,<br>stainless steel, cast iron | $\varnothing \leq 28.0$             | $\geq 250$               | 25                          | EI 120 C/U            | EI 120 C/U |
|  | $\varnothing \leq 28.0$             | $\geq 500$               | 26-51                       |                       |            |
|  | $\varnothing > 28.0 - \leq 88.9$    |                          | 25                          |                       |            |
|  | $\varnothing > 28.0 - \leq 88.9$    | $\geq 1000$              | 26-51                       |                       |            |
|  | $\varnothing > 88.9 - \leq 108.0^*$ |                          | 26-52                       |                       |            |
| Steel, stainless steel,<br>cast iron         | $\varnothing \leq 28.0$             | $\geq 250$               | 25                          | EI 120 C/U            | EI 120 C/U |
|  | $\varnothing \leq 28.0$             | $\geq 500$               | 26-51                       |                       |            |
|  | $\varnothing > 28.0 - \leq 88.9$    |                          | 25                          |                       |            |
|  | $\varnothing > 28.0 - \leq 88.9$    | $\geq 1000$              | 26-51                       |                       |            |
|  | $\varnothing > 88.9 - \leq 170.0$   |                          | 52                          |                       |            |
|  | $\varnothing > 88.9 - \leq 170.0^*$ |                          | 26-52                       |                       |            |

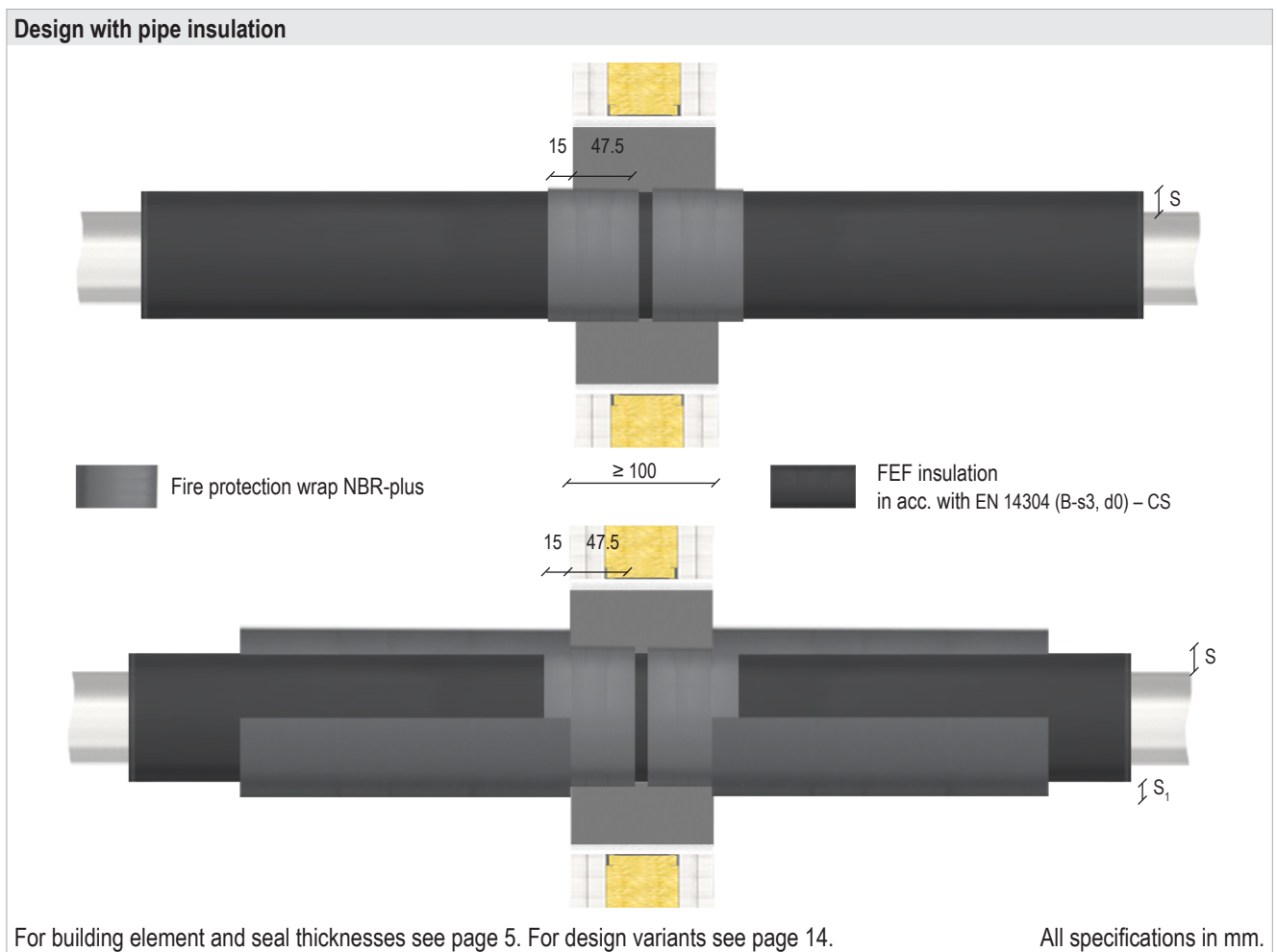
\* Additional protective insulation made of mineral fibre mat ( $L_1 \geq 500 \text{ mm} \times S_1 \geq 40 \text{ mm}$ )

## System Novasit BM

### 8.6.3 Design with fire protection wrap NBR-plus in plasterboard walls

The fire protection wrap NBR-plus is coated on one side and equipped with a protective film. The film must be removed before applying the wrap with the coated side facing inwards.

For easier installation the wrap can be secured against falling out with duct tape or winding wire.



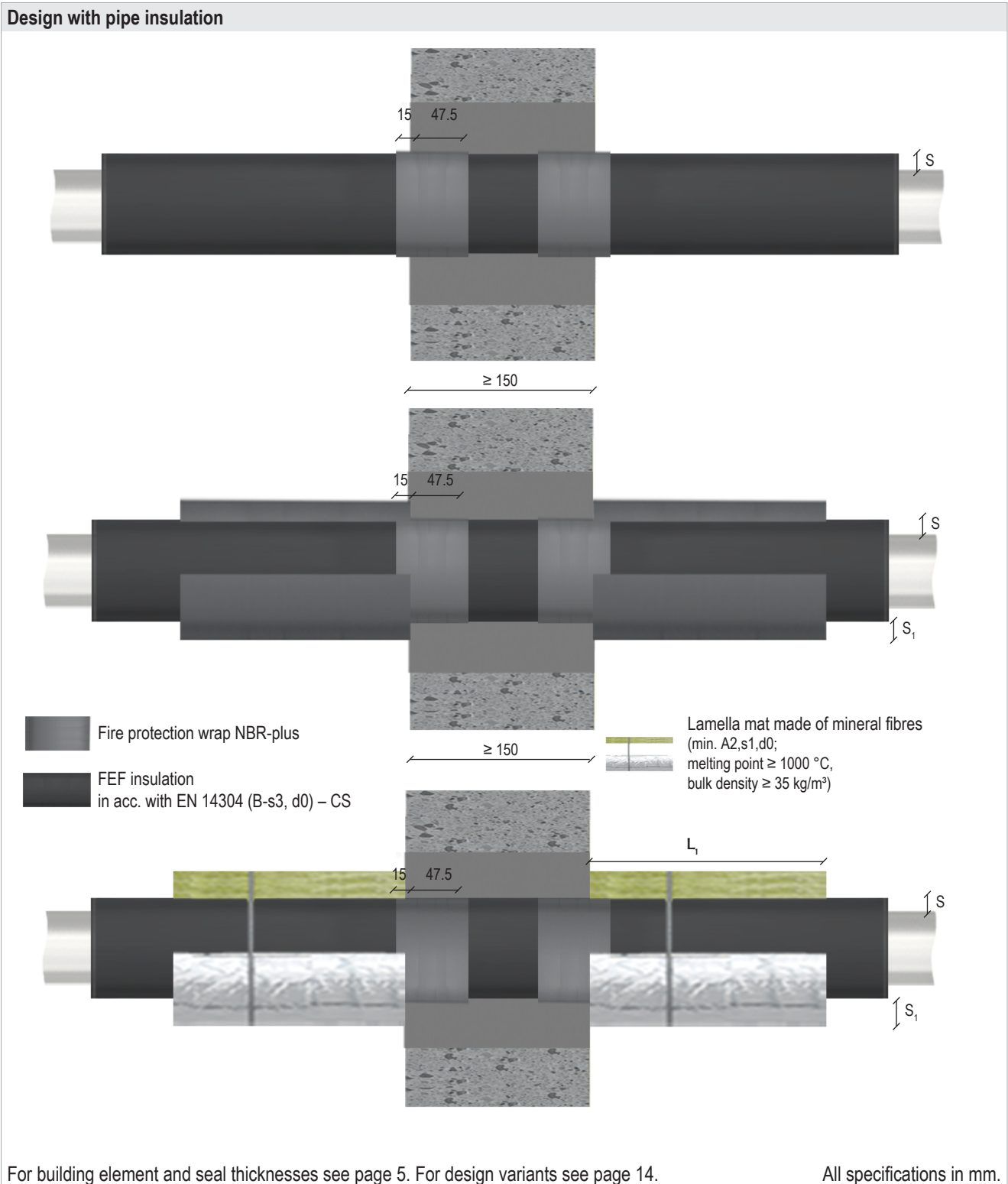
## System Novasit BM

| Pipe                                      |                   |                     | Section insulation made of FEF | Protective insulation |                            |                               | Fire protection wrap NBR-plus | Fire resistance class |            |
|---|-------------------|---------------------|--------------------------------|-----------------------|----------------------------|-------------------------------|-------------------------------|-----------------------|------------|
| Material                                  | Outer Ø [mm]      | Wall thickness [mm] | Thickness S [mm]               | Type                  | Length L <sub>1</sub> [mm] | Thickness S <sub>1</sub> [mm] | Number of layers              |                       |            |
| Copper, steel, stainless steel, cast iron | ≤ 15.0            | 0.8–14.2            | 10.0                           | -                     | -                          | -                             | 1                             | EI 120 C/U            |            |
|   |                   |                     | 10.0–38.0                      |                       |                            |                               | 2                             |                       |            |
|   | > 15.0 – ≤ 42.0   |                     | 10.0                           |                       |                            |                               | 1                             | EI 90 C/U             |            |
|   | > 15.0 – ≤ 54.0   |                     | 19.0–38.0                      |                       |                            |                               | 2                             | EI 120 C/U            |            |
|   | > 42.0 – ≤ 88.9   |                     |                                |                       |                            |                               | 2                             | EI 90 C/U             |            |
|   | > 54.0 – ≤ 88.9   |                     | 1.2–14.2                       |                       |                            |                               | 2                             | EI 120 C/U            |            |
| > 54.0 – ≤ 88.9                           | 1.5–14.2          | 25.0                | 2                              |                       |                            |                               |                               |                       |            |
| Steel, stainless steel, cast iron         | > 15.0 – ≤ 88.9   | 0.8–14.2            | 19.0–38.0                      | FEF                   | 250                        | 19                            | 2                             |                       | EI 120 C/U |
|   | > 88.9 – ≤ 114.3  | 2.0–14.2            |                                |                       |                            |                               | 2                             |                       |            |
|   | > 114.3 – ≤ 159.0 | 3.2–14.2            | 25.0–38.0                      |                       |                            |                               | 2                             |                       |            |
|   | > 159.0 – ≤ 219.1 |                     |                                |                       |                            |                               | 4.0–14.2                      | 38                    |            |



# System Novasit BM

## 8.6.4 Design with fire protection wrap NBR-plus in solid walls



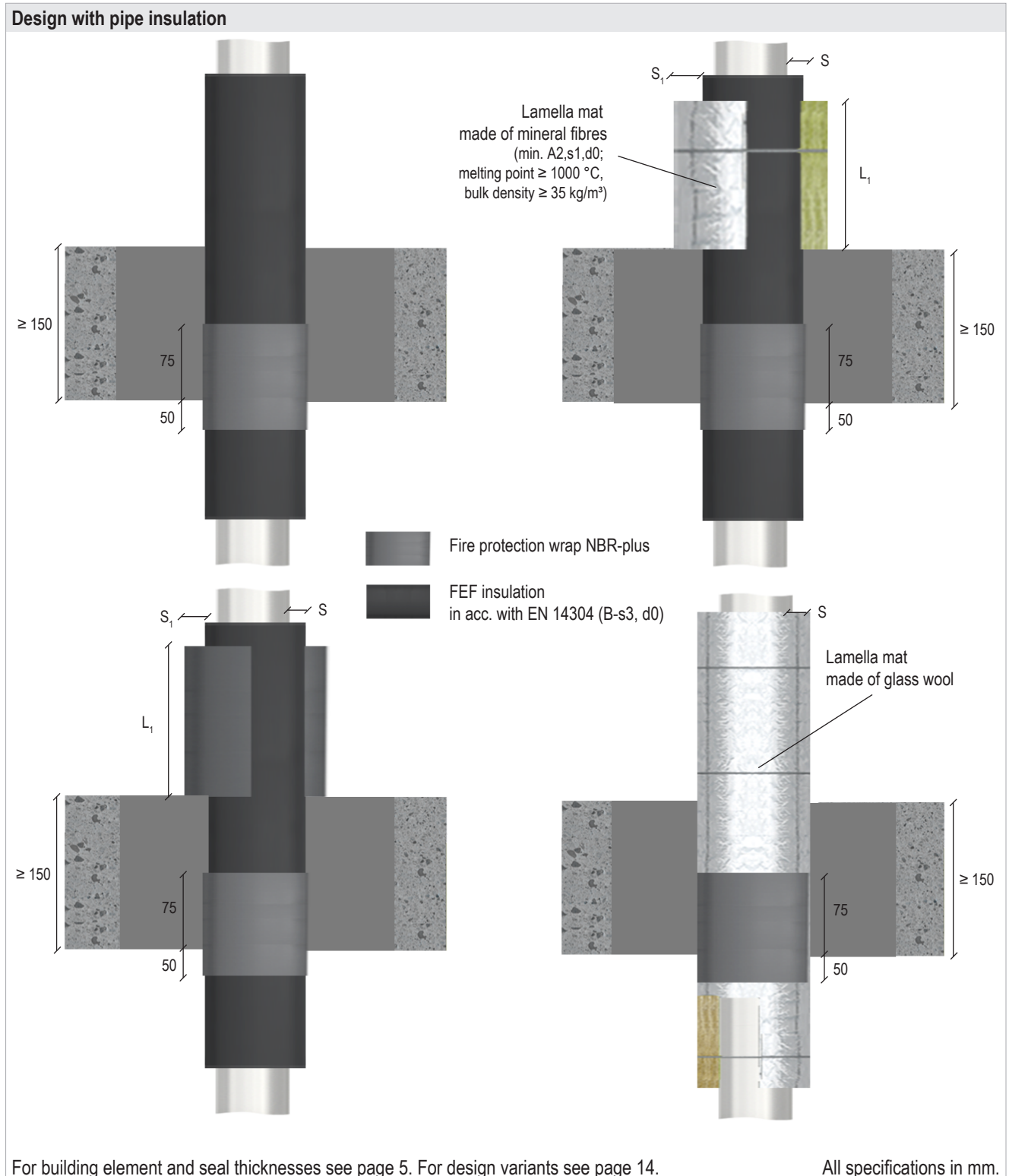
## System Novasit BM

| Pipe                                      |                   |                     | Section insulation made of FEF | Protective insulation |                            |                               | Fire protection wrap NBR-plus | Fire resistance class |            |
|---|-------------------|---------------------|--------------------------------|-----------------------|----------------------------|-------------------------------|-------------------------------|-----------------------|------------|
| Material                                  | Outer Ø [mm]      | Wall thickness [mm] | Thickness S [mm]               | Type                  | Length L <sub>1</sub> [mm] | Thickness S <sub>1</sub> [mm] | Number of layers              |                       |            |
| Copper, steel, stainless steel, cast iron | ≤ 15.0            | 0.8–14.2            | 10.0                           | -                     | -                          | -                             | 1                             | EI 120 C/U            |            |
|   |                   |                     | 10.0–38.0                      |                       |                            |                               | 2                             |                       |            |
|   | > 15.0 – ≤ 42.0   |                     | 10.0                           |                       |                            |                               | 1                             | EI 90 C/U             |            |
|   | > 15.0 – ≤ 54.0   |                     | 19.0–38.0                      |                       |                            |                               | 2                             | EI 120 C/U            |            |
|   | > 42.0 – ≤ 88.9   |                     | 1.2–14.2                       |                       |                            |                               | 2                             | EI 90 C/U             |            |
|   | > 54.0 – ≤ 88.9   |                     | 1.5–14.2                       |                       |                            |                               | 25.0                          | 2                     | EI 120 C/U |
|   | ≤ 108.0           |                     | 2.0–14.2                       |                       |                            |                               | -                             | Lamella mat           |            |
| Steel, stainless steel, cast iron         | > 15.0 – ≤ 88.9   | 0.8–14.2            | 19.0–38.0                      | -                     | -                          | -                             | 2                             | EI 120 C/U            |            |
|   | > 88.9 – ≤ 114.3  | 2.0–14.2            | 19.0                           | FEF                   | 250                        | 19                            | 2                             |                       |            |
|   | ≤ 114.3           | 3.2–14.2            |                                |                       |                            |                               | 2                             | EI 90 C/U             |            |
|   |                   |                     | 19.0–25.0                      |                       |                            |                               | 2                             | EI 60 C/U             |            |
|   | > 114.3 – ≤ 159.0 | 3.2–14.2            | 25.0–38.0                      |                       |                            |                               | -                             | -                     | -          |
|   | > 159.0 – ≤ 219.1 | 4.0–14.2            | 38                             | 2                     |                            |                               |                               |                       |            |
|   | ≤ 168.3           | 4.0–14.2            | 25.0                           | -                     | -                          | -                             | 2                             | EI 60 C/U             |            |
|   |                   |                     | 50.0                           | 3                     |                            |                               |                               |                       |            |
|   | > 219.1 – ≤ 323.9 | 4.0–14.2            | 39.0–48.0                      | Lamella mat           | 500                        | 30                            | 2                             | EI 60 C/U             |            |
|   | ≤ 323.9           | 5.6–14.2            | 25.0                           | FEF                   | 750                        | 60                            | 2                             | EI 120 C/U            |            |
| 25.0–50.0                                 |                   |                     | 3                              |                       |                            |                               | EI 120 C/U                    |                       |            |
| 50.0                                      |                   |                     | Lamella mat                    |                       |                            |                               | 3                             | EI 120 C/U            |            |
|   |                   |                     |                                |                       |                            |                               | 3                             | EI 120 C/U            |            |

\* Two fire protection wraps with a length of 125 mm each; installation on both sides with 50 mm inside the seal and 75 in front of the seal.

# System Novasit BM

## 8.6.5 Design with fire protection wrap NBR-plus in solid floors



# System Novasit BM

| Pipe                                      |                   |                     | Section insulation |                  | Protective insulation |                            |                               | Fire protection wrap NBR-plus | Fire resistance class |   |
|---|-------------------|---------------------|--------------------|------------------|-----------------------|----------------------------|-------------------------------|-------------------------------|-----------------------|---|
| Material                                  | Outer Ø [mm]      | Wall thickness [mm] | Type               | Thickness S [mm] | Type                  | Length L <sub>1</sub> [mm] | Thickness S <sub>1</sub> [mm] | Number of layers              |                       |   |
| Copper, steel, stainless steel, cast iron | ≤ 42.0            | 0.6–14.2            | FEF                | 10.0             | –                     | –                          | –                             | 1                             | EI 90 C/U             |   |
|   |                   |                     |                    | 9.0–40.0         | –                     | –                          | –                             | 2                             |                       |   |
|   | > 42.0 – ≤ 60.0   | 1.2–14.2            |                    | 13.0–40.0        | –                     | –                          | –                             | 2                             |                       |   |
|   | ≤ 60.0            | 0.6–14.2            |                    | 13.0–40.0        | –                     | –                          | –                             | 2                             | EI 120 C/U            |   |
|   | > 60.0 – ≤ 88.9   | 1.5–14.2            |                    | 19.0–38.0        | –                     | –                          | –                             | 2                             | EI 90 C/U             |   |
|   |                   |                     |                    | 25.0             | –                     | –                          | –                             | 2                             | EI 120 C/U            |   |
|   | ≤ 54.0            | 2.0–14.2            |                    | glass wool       | 20.0–50.0             | –                          | –                             | –                             |                       | 2 |
|   | ≤ 88.9            |                     |                    | 40.0             | –                     | –                          | –                             | 2                             |                       |   |
|   |                   |                     |                    | 80.0             | –                     | –                          | –                             | 3                             |                       |   |
|   |                   | 100.0               |                    | –                | –                     | –                          | 4                             |                               |                       |   |
| ≤ 108.0                                   | 2.0–14.2          | –                   | 25.0–50.0          | lamella mat      | 750                   | 40                         | 2*                            |                               |                       |   |
| Steel, stainless steel, cast iron         | ≤ 108.0           | 2.0–14.2            | FEF                | 19.0–39.0        | –                     | –                          | –                             | 2                             | EI 90 C/U             |   |
|   | ≤ 114.3           | 3.2–14.2            |                    | 13.0–40.0        | –                     | –                          | –                             | 2                             |                       |   |
|   | ≤ 159.0           | 0.6–14.2            |                    | 25.0–38.0        | FEF                   | 250                        | 25                            | 2                             |                       |   |
|   | > 159.0 – ≤ 219.1 | 4.0–14.2            |                    | 25.0–38.0        | FEF                   | 250                        | 38                            | 2                             |                       |   |
|   | ≤ 219.1           | 4.5–14.2            | glass wool         | 19.0–26.0        | lamella mat           | 500                        | 60                            | 2                             | EI 120 C/U            |   |
|   | ≤ 273.0           | 5.0–14.2            | 60.0               | –                |                       | –                          | –                             | –                             | EI 90 C/U             |   |
|   | ≤ 323.9           | 5.6–14.2            | FEF                | 25.0–26.0        | FEF                   | 750                        | 60                            | 2                             | EI 120 C/U            |   |
|   |                   |                     |                    | 25.0             |                       | 750                        | 60                            | 2                             |                       |   |
|   |                   |                     | 25.0–50.0          | –                | –                     | –                          | 3                             |                               |                       |   |
| ≤ 323.9                                   | 5.6–14.2          | glass wool          | 100.0              | –                | –                     | –                          | 4                             | EI 90 C/U                     |                       |   |

\* Two fire protection wraps with a length of 125 mm each; installation on both sides with 50 mm inside the seal and 75 in front of the seal.

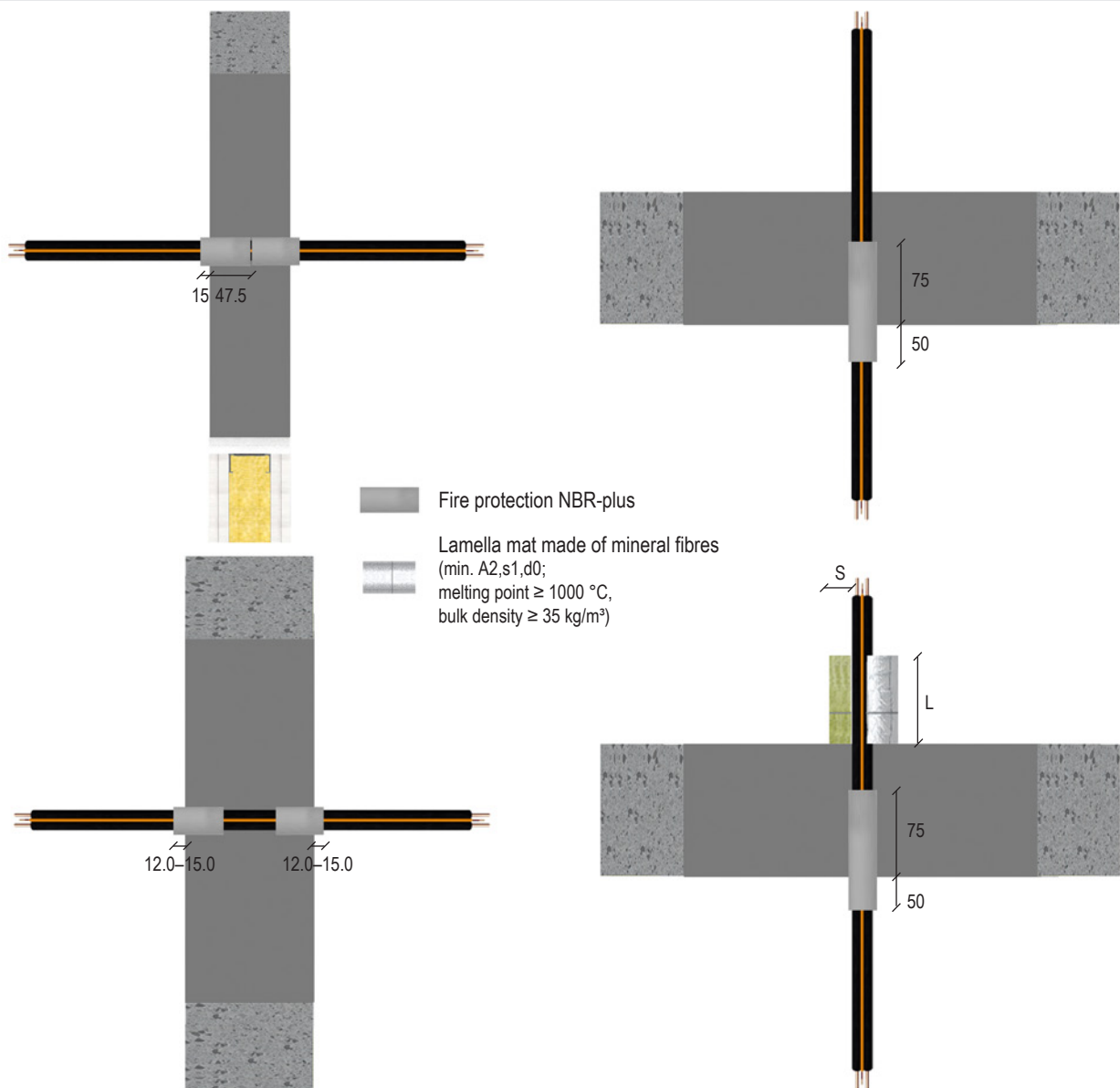
## System Novasit BM

### 8.7 HVAC split line combinations

The fire protection wrap NBR-plus is coated on one side and equipped with a protective film. The film must be removed before applying the wrap with the coated side facing inwards.

For easier installation the wrap can be secured against falling out with duct tape or winding wire.

#### Design for wall and floor penetration seals



For building element and seal thicknesses see page 5. For design variants see page 14.

All specifications in mm.

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| Services   | Fire protection wrap<br>NBR-plus | Protective insulation<br>made of lamella mat |                     | Fire resistance class |            |             |
|--|----------------------------------|--|---------------------|-----------------------|------------|-------------|
|  | Number of<br>layers              | Length L<br>[mm]                             | Thickness S<br>[mm] | Plasterboard<br>wall  | Solid wall | Solid floor |
| Copper pipe $\varnothing 2 \times 18$ mm<br>+ 9 mm PE foam<br>+ 1 pipe PVC-U/PVC-C $\varnothing \leq 25.0 \times 1.5$ mm<br>+ $\leq 3$ cables $\varnothing \leq 14.0$ mm | 2                                | –  | –                   | EI 120                | EI 120     | EI 120      |
| Copper pipe $\varnothing 2 \times 22$ mm<br>+ 9 mm PE foam<br>+ 1 pipe PVC-U $\varnothing \leq 25.0$<br>+ $\leq 2$ cables $\varnothing \leq 21.0$ mm                     | 2                                | 250  | 30                  | –                     | –          | EI 90       |

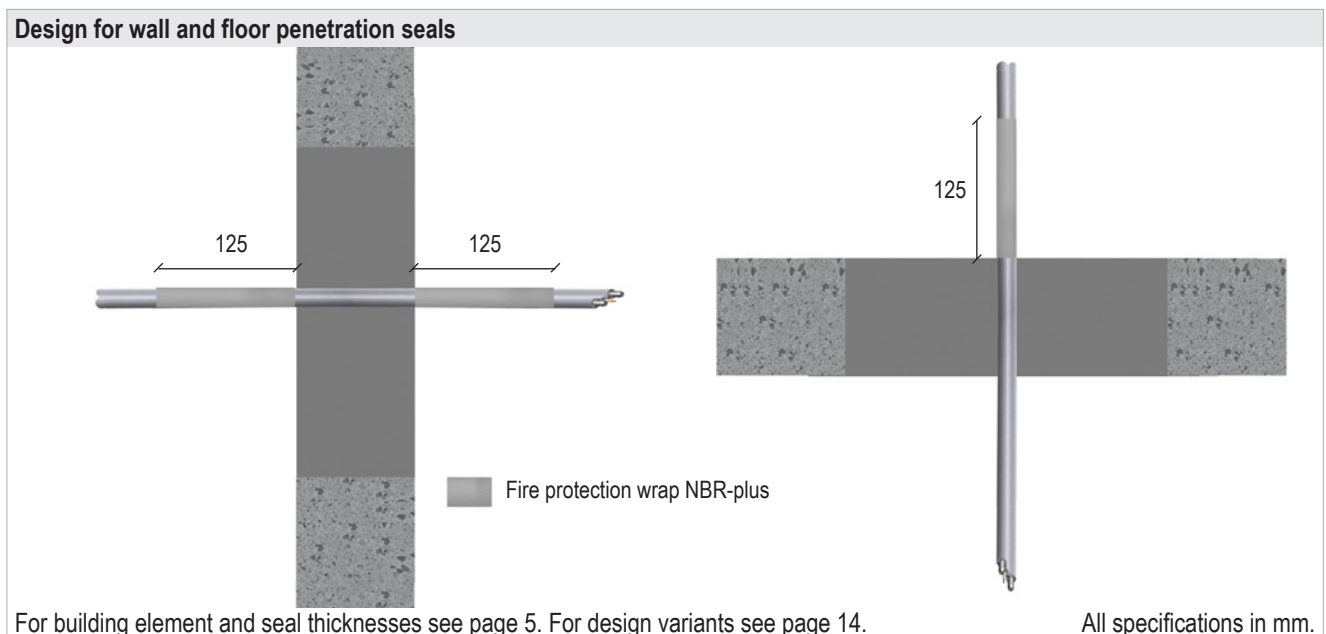
## System Novasit BM

### 8.8 Double solar pipes NanoSun<sup>2</sup>

The double solar pipes must be installed perpendicularly to the surface of the building element (pipe end configuration U/U).

The fire protection wrap NBR-plus is coated on one side and equipped with a protective film. The film must be removed before applying the wrap with the coated side facing inwards.

For easier installation the wrap can be secured against falling out with duct tape or winding wire.



| Pipe outer Ø [mm] | Fire protection wrap NBR-plus  |         | Fire resistance class |             |
|-------------------|--|---------|-----------------------|-------------|
|                   | Number of wraps and layers   | Overlap | Solid wall            | Solid floor |
| DN 16 – DN 25     | <b>in walls:</b><br>2 × 1 layer<br>(on both sides)<br><b>in floors:</b><br>1 × 1 layer<br>(on upper side of floor) | ≥ 40    | EI 120 C/U            | EI 120 C/U  |

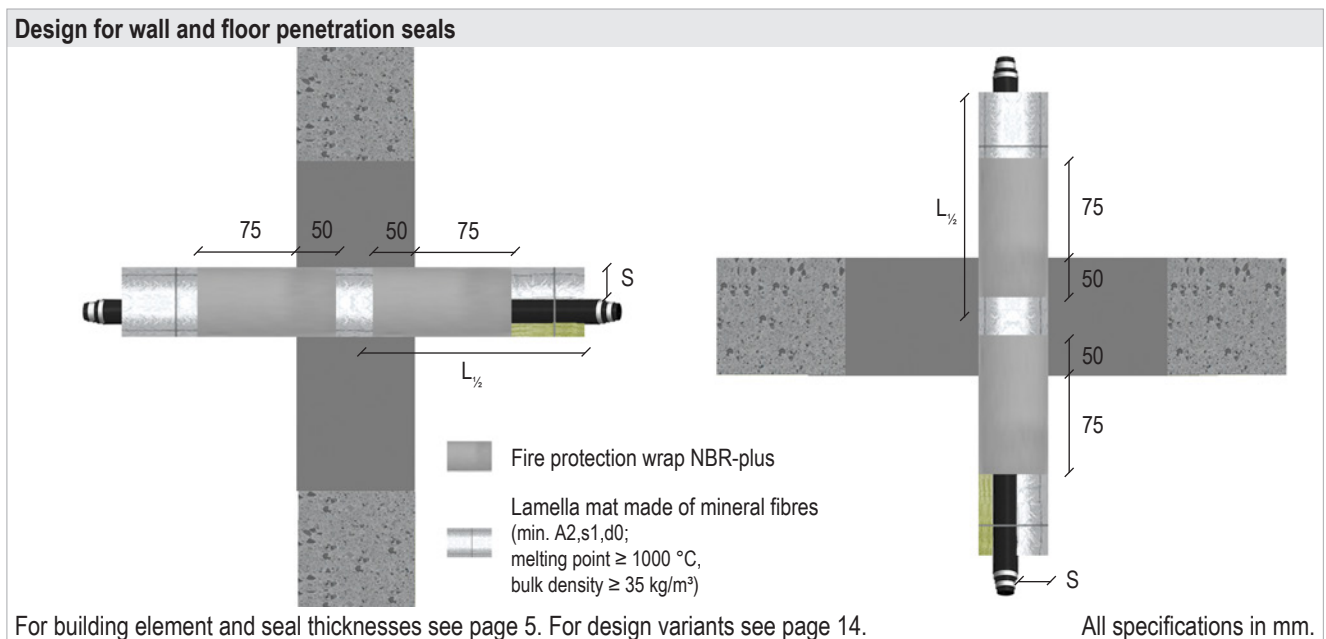
## System Novasit BM

### 8.9 HANSA-FLEX AG wire braided hydraulic hoses

The hoses must be installed perpendicularly to the surface of the building element.

The fire protection wrap NBR-plus is coated on one side and equipped with a protective film. The film must be removed before applying the wrap with the coated side facing inwards.

For easier installation the wrap can be secured against falling out with duct tape or winding wire.



| Pipe outer Ø [mm] | Fire protection wrap NBR-plus | Protective insulation made of lamella mat |                  | Fire resistance class |             |
|-------------------|-------------------------------|---|------------------|-----------------------|-------------|
|                   | Number of wraps and layers    | Length $L_{1/2}$ [mm]                     | Thickness S [mm] | Solid wall            | Solid floor |
| ≤ 55.9            | 2 × 1 layer                   | ≥ 250 mm                                  | ≥ 20 mm          | EI 120                | EI 120      |



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### 8.10 Cable Tube CT

Depending on the installed services, Cable Tubes with lengths of 150, 200 and 300 mm may be used.

Cables, cable bundles and electrical installation conduits may be installed directly adjacent to each other and to the inner Cable Tube wall.

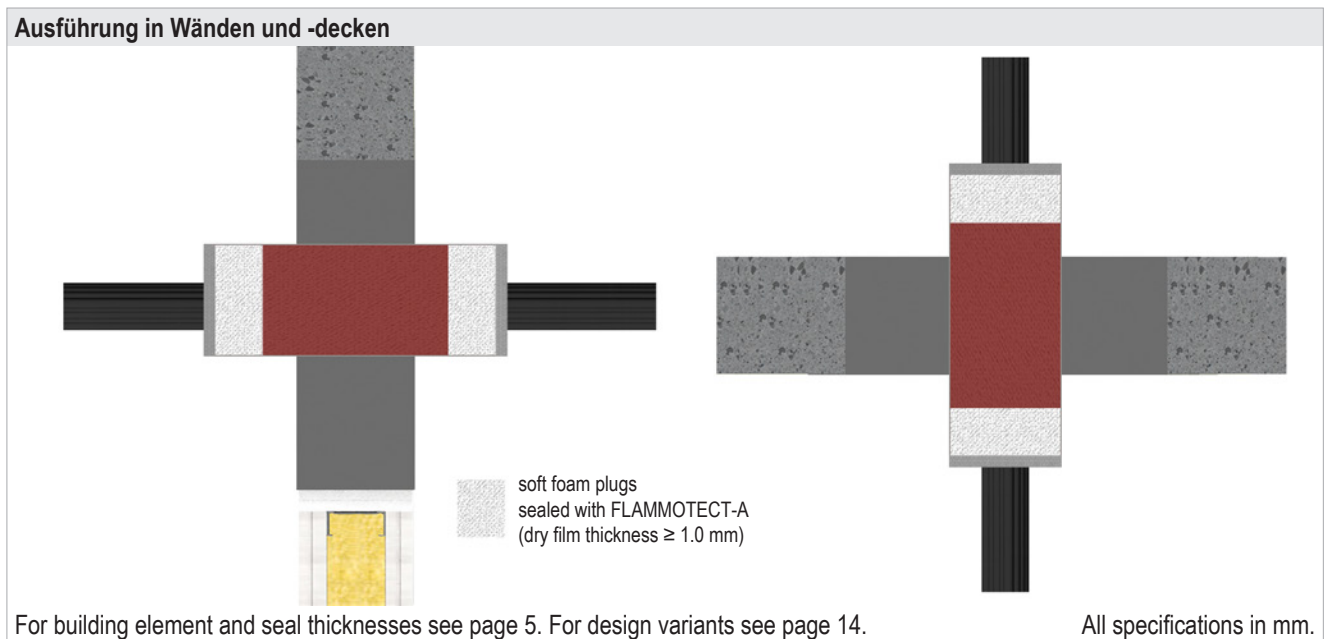
The Cable Tube may be used to seal openings without installations (blank seals).

For detailed installation steps, please consult the Cable Tube CT installation instructions.

For subsequent installations, the sealed soft foam plugs must be removed from the Cable Tube.

The remaining openings between the services and the Cable Tube as well as between the services themselves must be sealed completely with the 40 mm soft foam plugs. Afterwards the plugs must be sealed with the ablative filler FLAMMOTECT-A.

In floors with a thickness of  $\geq 200$  mm, two 150 mm Cable Tubes can be combined (using duct tape) to a 300 mm Cable Tube.



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| Cable Tube CT – subsequent installation options in walls  |                    | Source: ETA-22/0053    |            |                       |
|---|--------------------|------------------------|------------|-----------------------|
| Length of CT [mm]   |                    | Fire resistance class  |            |                       |
| Service   | Additional measure | 150                    | 200        | 300                   |
| Cables $\varnothing \leq 21$ mm   | –                  | EI 90 / E 120          | EI 120     | EI 120                |
| Cables $\varnothing \leq 50$ mm   | –                  | –                      | –          | EI 90 / E 120         |
| Cables $\varnothing \leq 80$ mm   | Solid wall         | –                      | –          | EI 90 / E 120         |
| Cable bundles $\varnothing \leq 100$ % of single cables $\varnothing \leq 21$ mm  | –                  | EI 90 / E 120          | EI 120     | EI 120                |
| CommScope HELIAX LDF (low density foam), $\varnothing \leq 16.002$ mm   | –                  | –                      | –          | EI 120 U/C            |
| CommScope 50 $\Omega$ braided CNT, $\varnothing \leq 15.0$ mm   | –                  | –                      | –          | EI 120 U/C            |
| CommScope HELIAX AVA, $\varnothing \leq 28$ mm  | –                  | –                      | –          | E 120 U/C / EI 90 U/C |
| CommScope HELIAX FSJ (super flexible), $\varnothing \leq 13.5$ mm   | –                  | –                      | –          | E 120 U/C / EI 90 U/C |
| RFS RADIAFLEX RLK, $\varnothing \leq 28.5$ mm   | –                  | –                      | –          | EI 120 U/C            |
| RFS CELLFLEX LCF, $\varnothing \leq 27.8$ mm  | –                  | –                      | –          | EI 120 U/C            |
| Electrical installation conduits made of plastic, flexible $\varnothing \leq 40$ mm single, with/without cable $\varnothing \leq 21$ mm   | –                  | EI 90 U/U<br>E 120 U/U | EI 120 U/U | EI 120 U/U            |
| Electrical installation conduits made of plastic, bundled with/without cable $\varnothing \leq 90$ mm, flexible $\varnothing 40$ mm with/without cables $\varnothing 21$ mm   | –                  | EI 90 U/U<br>E 120 U/U | EI 120 U/U | EI 120 U/U            |
| Electrical installation conduits made of plastic, bundled $\varnothing 100\%$ , flexible $\varnothing 32$ mm with/without cable up to $\varnothing 21$ mm   | –                  | –                      | EI 120 U/U | EI 120 U/U            |
| HVAC split line combination<br>Pipe 1 / pipe 2 outer $\varnothing 6\text{--}10$ mm / $10\text{--}18$ mm +<br>9 mm insulation made of PE foam; plastic pipe PVC-U,<br>outer $\varnothing$ up to 25 mm, s 1.5 mm + max. 3 cables up to<br>$\varnothing 14$ mm with zero clearance | –                  | EI 90 U/U              | EI 90 U/U  | EI 90 U/U             |
| speedpipes, bundled or single, with/without glass fibre cables<br>$7$ mm $\leq \varnothing \leq 14$ mm bundled $\leq 100\%$   | –                  | EI 120 U/U             | EI 120 U/U | EI 120 U/U            |
| Combustible pipes made of PVC-U<br>Outer $\varnothing 20$ mm, s = 1.5 mm $\leq$ outer $\varnothing 32$ mm, s = 2.4 mm   | –                  | –                      | –          | EI 120 U/U            |

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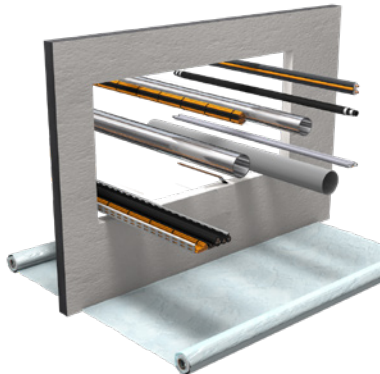
| Cable Tube CT – subsequent installation options in floors   |   | Source: ETA-22/0053   |              |               |
|---|---|-----------------------|--------------|---------------|
| Length of CT [mm]   |   | Fire resistance class |              |               |
| Service   | Additional measure  | 150                   | 200          | 300           |
| Cables $\varnothing \leq 21$ mm   | –   | EI 120                | EI 120       | EI 120        |
| Cables $\varnothing \leq 50$ mm   | –   | –                     | –            | EI 60 / E 120 |
|   | only when serviced at 100%  | EI 90 / E 90          | EI 90 / E 90 | EI 90 / E 90  |
|   | lamella mat $\geq 250$ mm $\times$ $\geq 30$ mm + NBR-plus, 1 layer, upper side | –                     | –            | EI 120        |
| Cables $\varnothing \leq 80$ mm   | –   | –                     | –            | EI 60 / E 120 |
| Cable bundles $\varnothing \leq 100\%$ of single cables $\varnothing \leq 14$ mm  |   | EI 90                 | EI 120       |               |
| Cable bundles $\varnothing \leq 100\%$ of single cables $\varnothing \leq 21$ mm  | –   | EI 60 / E 90          | EI 60 / E 90 | EI 120        |
|   | NBR-plus, 1 layer, 50 mm overlap upper or underside                             | EI 120                | EI 120       | –             |
| Max. 3 $\times$ electrical installation conduits made of plastic, flexible $\varnothing 32$ mm single with/without cables $\varnothing \leq 14$ mm  | –   | EI 90 U/U             | EI 90 U/U    | –             |
| Electrical installation conduits made of plastic, flexible $\varnothing 63$ mm with/without cables $\varnothing 21$ mm  | –   | –                     | –            | EI 120        |
| Electrical installation conduits made of plastic, flexible $\varnothing \leq 32$ mm single or bundled up to $\varnothing 100\%$ , with/without cables up to $\varnothing \leq 21$ mm  | –   | –                     | –            | EI 120 U/U*   |
| HVAC split line combination<br>Pipe 1/ pipe 2 outer $\varnothing 6\text{--}10$ mm / $10\text{--}18$ mm + 9 mm insulation made of PE foam; plastic pipe PE-100, outer $\varnothing$ up to 25 mm, s 1.5 mm + max. 3 cables up to $\varnothing 14$ mm in zero clearance  |   | EI 90 U/U             | EI 90 U/U    | EI 90 U/U     |
| HVAC split line combination<br>Pipe 1/ pipe 2 outer $\varnothing 6\text{--}22$ mm / $6\text{--}22$ mm + 9 mm insulation made of PE foam; plastic pipe PE-100, outer $\varnothing$ up to 25 mm, s 1.5 mm + max. 3 cables up to $\varnothing 14$ mm with zero clearance | lamella mat $\geq 250$ mm $\times$ $\geq 30$ mm upper side                      | EI 120 U/U            | EI 120 U/U   | EI 120 U/U    |
| speedpipes, bundled or single, with/without glass fibre cables<br>max. 24 pcs. pipe outer $\varnothing$ up to 7 mm<br>max. 7 pcs. pipe outer $\varnothing$ up to 10 mm<br>max. 5 pcs. pipe outer $\varnothing$ up to 12 mm  | –   | EI 120 U/U            | EI 120 U/U   | EI 120 U/U    |

\* only floors  $\geq 200$  mm

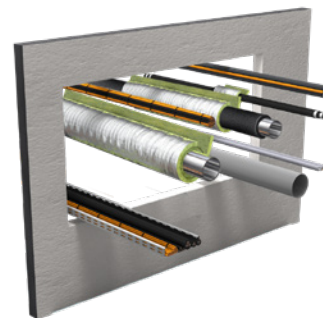
## System Novasit BM

### 9. Installation steps

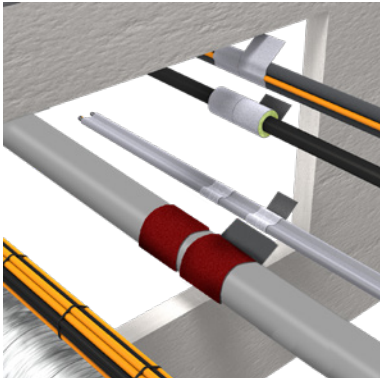
1. If necessary, cover the floor on both sides with protective sheets, clean the aperture edge and wet absorbing surfaces of the aperture with water. Prepare NOVASIT BM fire protection mortar according to the instructions on the packaging.



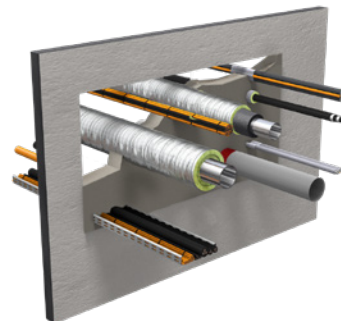
2. When additionally installing non-combustible pipes, apply sectional/protective insulation, when installing HANSA-FLEX hydraulic hoses, apply protective insulation as necessary.



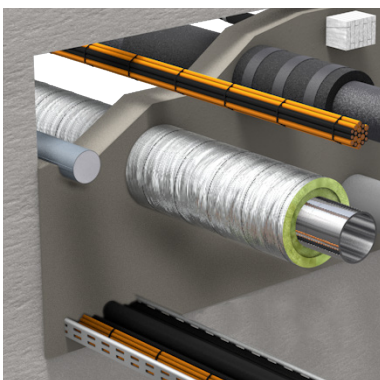
3. When additionally installing NanoSun<sup>2</sup>, HVAC split line combinations or HANSA-FLEX hydraulic hoses, apply the fire protection wrap NBR-plus, when installing combustible pipes, apply the fire protection wrap KSL-W as necessary.



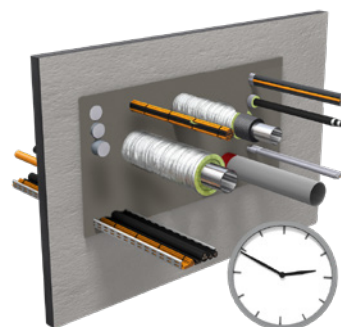
4. Apply the mortar in such a way that it tightly and firmly connects to the building element (sealing thickness  $\geq 15$  cm). All interstices and cavities must be filled completely.



5. Insert Cable Tube CT with additional services into the mortar, observing the necessary distances. Fill remaining openings completely. Seal the soft foam plugs of the cable tube with FLAMMOTECT-A.



6. After hardening, smooth the surfaces with the trowel and fully rework any shrinkage cracks. The same applies to any areas revealed after removing the shuttering.

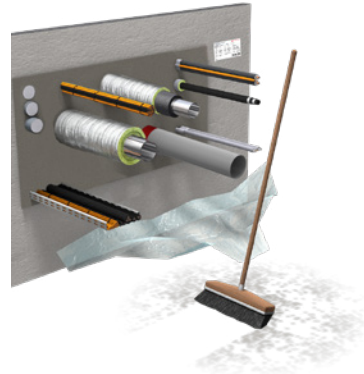


## System Novasit BM

7. If required, label the penetration seal. Fill out the label neatly and attach it firmly next to the penetration seal.



8. After the mortar residues have dried, remove them from cables, walls and floors. Clean surfaces. Remove the protective sheets and ensure their proper disposal.

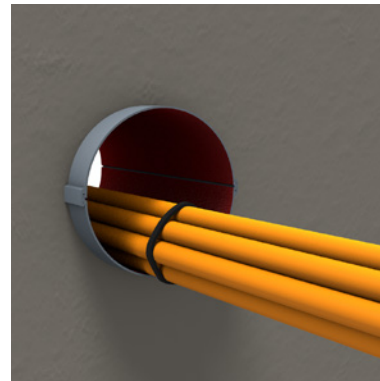


### 9.1 Subsequent installations with Cable Tube CT

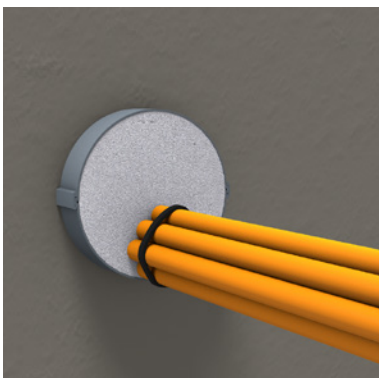
1. Remove the plugs on both sides.



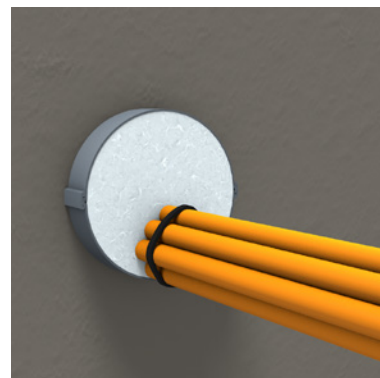
2. Install services in accordance with their respective approval.



3. Adjust the plugs to the services and insert them.



4. Seal plugs with FLAMMOTECT-A (dry film thickness  $\geq 1$  mm).



When subsequently installing electrical installation conduits without cables, the conduit openings must be filled with mineral wool and sealed with FLAMMOTECT-A.