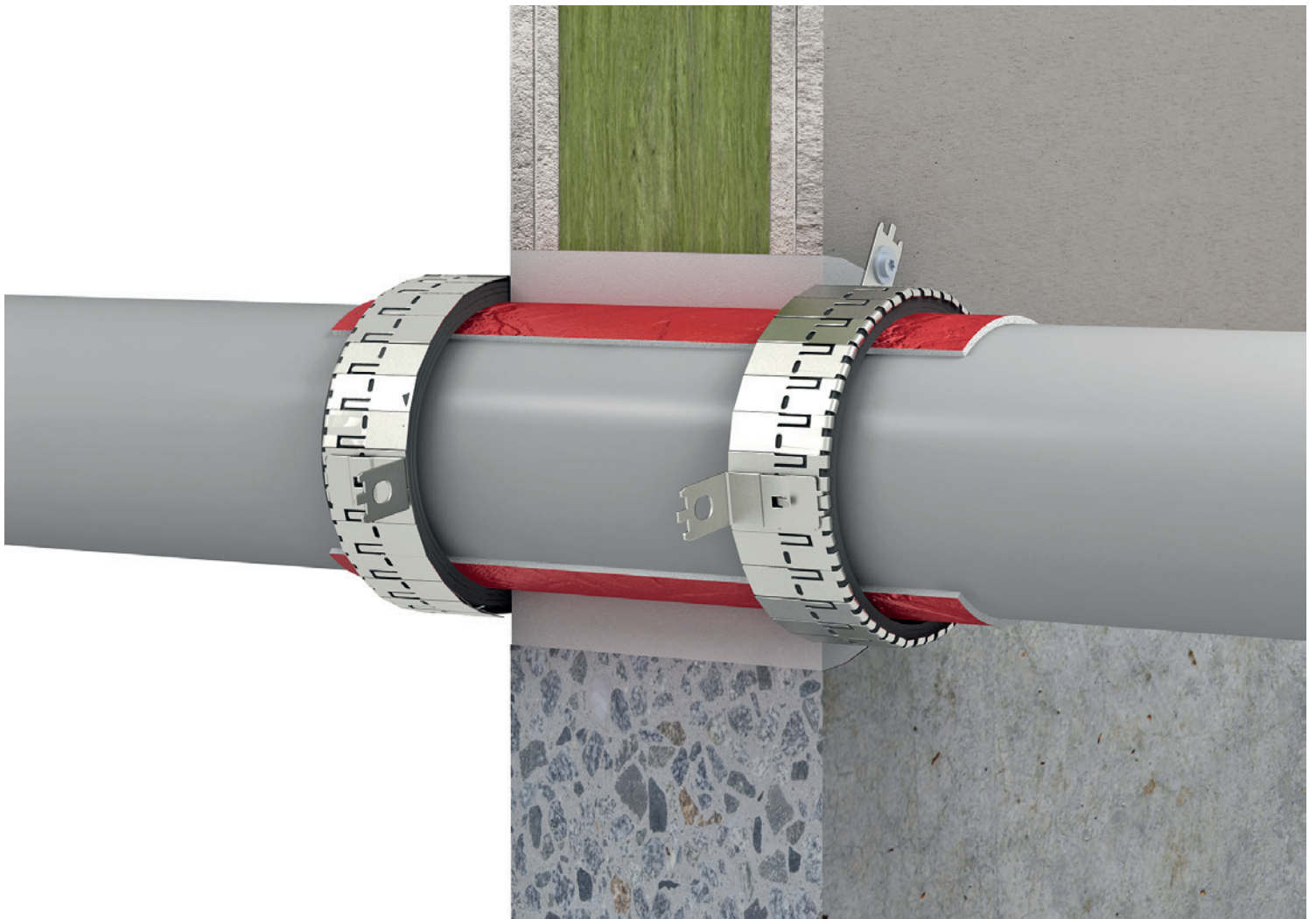


System EC Endless Collar

Pipe sealing system

Fire-resistant sealing system for plastic pipes

Fire resistance class max. EI 240 in accordance with EN 13501-2 as per ETA 22/0054



System EC Endless Collar

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System EC Endless Collar

1. Preliminary remarks / overview

1.1 Target group

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

1.2 Use of the instructions

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

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

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

Unless stated otherwise, all lengths are specified in mm.





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

Upon request, 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. Use breathing protection in compliance with international/national standards. |
|  | Use chemically resistant gloves. Recommended materials: butyl rubber, nitrile rubber, fluorinated rubber, PVC. |

Safety instructions for the installation of floor penetration seals

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

System EC Endless Collar

1.3 Building elements

Plasterboard walls

Non-load-bearing partition walls with a minimum thickness of 94 mm in stud design with a subconstruction made of steel or timber cladded on both sides with at least two layers of boards (minimum thickness 12.5 mm) classified as A2-s1,d0 or A1 in accordance with 13501-1. In walls with timber studs a minimum clearance of 100 mm between seal and each timber stud must be observed. Cavities between seal and studs must be filled with at least 100 mm insulation of class A1 or A2 in accordance with EN 13501-1.

The supporting structure must have the required fire resistance rating according to EN 13501-2.

Solid walls

Made of concrete, aerated concrete or masonry.

Thickness ≥ 100 mm

The walls must have the required fire resistance rating according to EN 13501-2.

Solid floors

Made of concrete or aerated concrete with a density of ≥ 550 kg/m³.

Thickness ≥ 150 mm


The floors must have the required fire resistance rating according to EN 13501-2.

System EC Endless Collar

2. 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 9.


2.1 Combustible pipes



| Standard pipes | | | |
|----------------|---|---------------|---------------------|
| Pipe material | in acc. with standard | Diameter [mm] | Pipe wall thickness |
| PVC-U | EN 1452-1, EN ISO 15493, DIN 8061, DIN 8062 | ≤ 160 | 1.8–12.3 |
| PE-HD | EN 1519-1, EN ISO 15494, DIN 8074, DIN 8075 | ≤ 160 | 1.8–14.6 |
| PP | EN ISO 15494, DIN 8077, DIN 8078 | ≤ 160 | 1.8–14.6 |

| Non-standard pipes | |
|---------------------|---------------|
| Pipe material | Diameter [mm] |
| Geberit Silent-PP | ≤ 160 |
| Wavin SiTech+ | ≤ 160 |
| POLO-KAL NG | ≤ 160 |
| REHAU RAUPIANO PLUS | ≤ 160 |
| Valsir Triplus | ≤ 160 |
| Coes BluePower | ≤ 110 |

2.2 Multilayer pipes



| Pipe material | Diameter [mm] |
|--|---------------|
| FRÄNKISCHE alpex F50 PROFI, FRÄNKISCHE alpex L | ≤ 75 |
| Uponor Uni Pipe MLC | ≤ 110 |
| fusiotherm®-Stabiverbund | ≤ 110 |
| fusiotherm® SDR 11 | ≤ 315 |

2.3 Non-combustible pipes



| Pipe material | Diameter [mm] |
|---|---------------|
| Copper, steel, stainless steel, cast iron | ≤ 88.9 |
| Steel, stainless steel, cast iron | ≤ 108.0 |

System EC Endless Collar

3. Thicknesses, sizes and spacing

| Dimensions | | | |
|--|--|--|--|
| | Plasterboard wall [mm] | Solid wall [mm] | Solid floor [mm] |
| Thickness of building element | ≥ 94 | ≥ 100 | ≥ 150 |
| Maximum diameter of combustible pipe | ≤ 160 | ≤ 160 | ≤ 160 |
| Distance to other apertures or installations | ≥ 200 | ≥ 200 | ≥ 200 |
| Minimum spacing distance between pipes | ≥ 100 ≥ 0 for multiple penetrations (see page 17) | ≥ 100 ≥ 0 for multiple penetrations (see page 17) | ≥ 100 ≥ 0 for multiple penetrations (see page 17) |
| Distance to other apertures or installations when the aperture to be sealed is not larger than 200 mm × 200 mm | ≥ 100 | ≥ 100 | ≥ 100 |

4. Initial supports

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

| Initial supports | Wall | Floor |
|-----------------------|----------|----------|
| Combustible pipes | ≤ 650 mm | ≤ 400 mm |
| Multilayer pipes | ≤ 650 mm | ≤ 400 mm |
| Non-combustible pipes | ≤ 650 mm | ≤ 550 mm |

5. Annular gap

The annular gap is filled entirely with non-combustible sealing material such as concrete, cement mortar or gypsum mortar (class A1 or A2-s1,d0 in acc. with EN 13501-1). In solid walls with penetrating pipes of the types Wavin SiTech+, Geberit Silent-PP, POLO-KAL NG and REHAU RAUPIANO PLUS, the annular gap can be filled with BSS fire protection foam.

| Dimensions | | |
|-------------------|-----------|------------|
| | Wall [mm] | Floor [mm] |
| Annular gap width | ≤ 30 | ≤ 50 |

System EC Endless Collar

6. Included products



**Endless Collar U/U
Pipe collar**

Set with 10 m fire protection strip, 3 m stainless steel strap und 18 fasteners –
Art. no. 01145303



**Endless Collar U/C
Pipe collar**

Set with 10 m fire protection strip, 3 m stainless steel strap und 18 fasteners –
Art. no. 01145310



General sealing material

Dimensionally stable, non-combustible (class A1 or A2-s1,d0 in acc. with EN 13501-1) material such as concrete, cement mortar, gypsum mortar



**BSS
Fire protection foam**

180 g cartridge – Art. no. 32004
480 g cartridge – Art. no. 32010



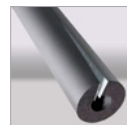
Mastic gun

manual gun –
Art. no. 32100
battery operated gun –
Art. no. 32101



Label

1 piece – Art. no. 14003



Section and protective insulations

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

| Name | abP/DoP |
|-------------|-------------------------------|
| AF/ArmaFlex | 0543-CPR-2016-001, 01.04.2015 |
| SH/ArmaFlex | 0543-CPR-2013-013, 01.01.2015 |

6.1 Declarations of Performance

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

System EC Endless Collar

7. Design

7.1 Fire resistance classes

System EC Endless Collar meets the requirements of max. class EI 240 in acc. 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.

7.2 Pipe end configurations

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

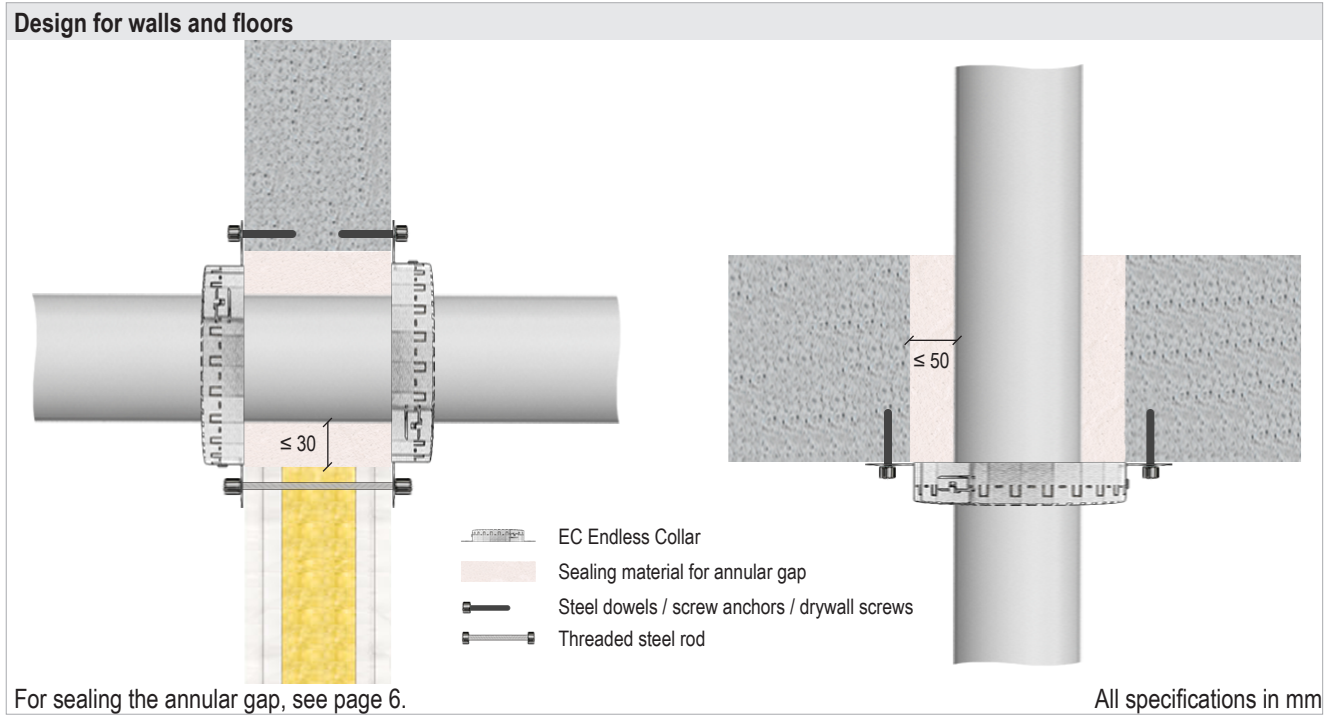
| Non-combustible pipes | | | | |
|-----------------------|-------------------------|-----|-----|-----|
| tested | included configurations | | | |
| | U/U | U/C | C/U | C/C |
| U/U | ✓ | ✓ | ✓ | ✓ |
| U/C | - | ✓ | ✓ | ✓ |
| C/U | - | - | ✓ | ✓ |
| C/C | - | - | - | ✓ |

System EC Endless Collar

8. Design variants

8.1 Combustible pipes

8.1.1 Design without insulation



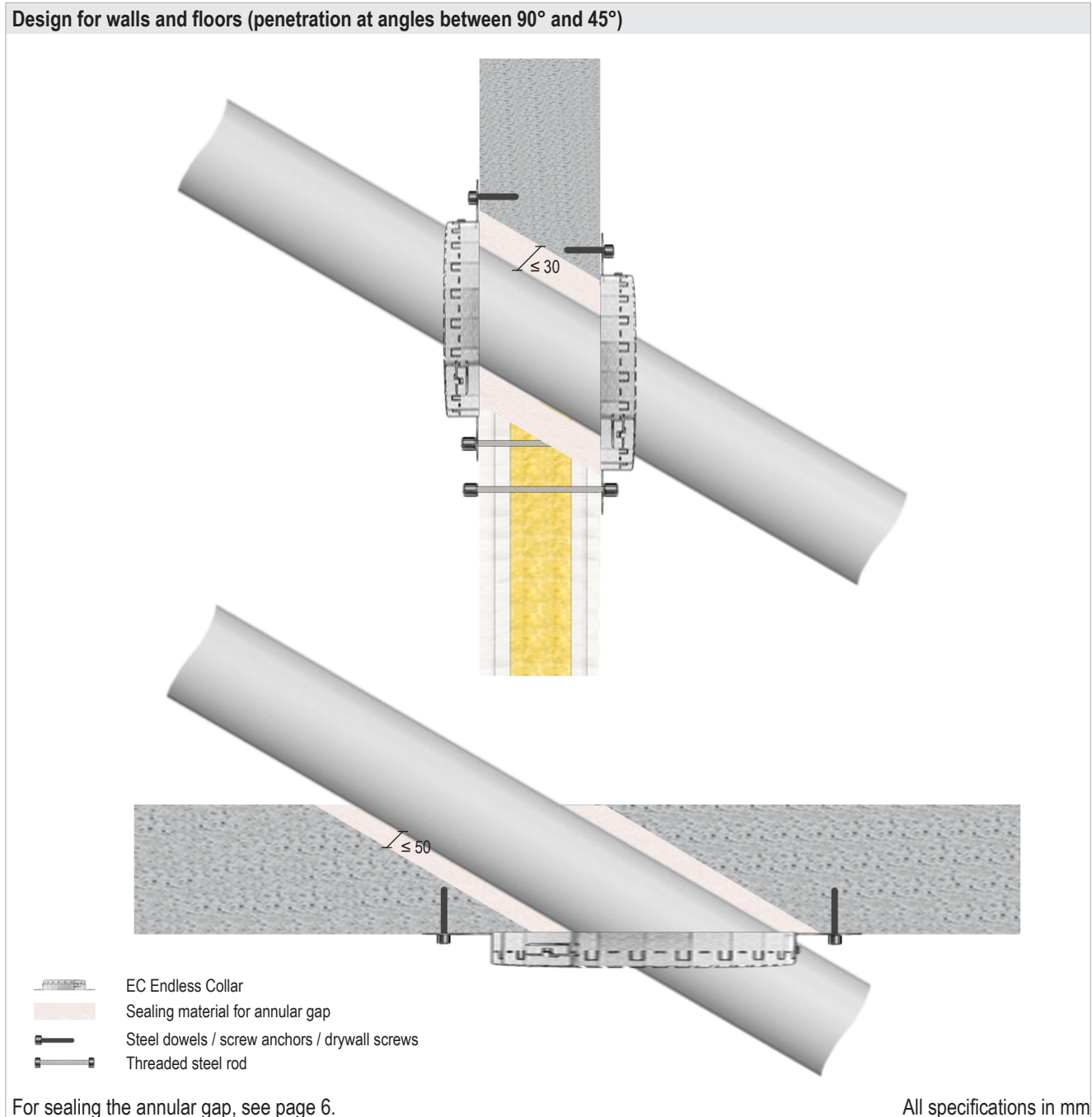
| Wall | | | | | | |
|---------------|-------------------|--------------------------|-------------------|-------------|------------------|-----------------------|
| Pipe material | Pipe | | EC Endless Collar | | | Fire resistance class |
| | Pipe outer Ø [mm] | Pipe wall thickness [mm] | Variant U/U | Variant U/C | Number of layers | |
| PVC-U | ≤ 50 | 1.8–5.6 | ✓ | ✓ | 2 | EI 120 U/C |
| | > 50 – ≤ 75 | 1.8–8.4 | ✓ | ✓ | 3 | EI 120 U/C |
| | > 75 – ≤ 110 | 1.8–12.3 | ✓ | ✓ | 4 | EI 120 U/C |
| | > 110 – ≤ 125 | 2.2–12.2 | ✓ | ✓ | 5 | EI 120 U/C |
| | > 125 – ≤ 160 | 3.2–11.9 | ✓ | ✓ | 6 | EI 120 U/C |
| PE-HD | ≤ 50 | 1.8–4.6 | ✓ | ✓ | 2 | EI 120 U/C |
| | > 50 – ≤ 75 | 1.8–8.4 | ✓ | ✓ | 3 | EI 120 U/C |
| | > 75 – ≤ 110 | 2.7–10.0 | ✓ | ✓ | 4 | EI 120 U/C |
| | > 110 – ≤ 160 | 4.0 | ✓ | ✓ | 8 | EI 120 U/C |
| | | > 4.0–14.6 | ✓ | ✓ | 8 | EI 60 U/C |
| PP | ≤ 50 | 1.8–4.6 | ✓ | ✓ | 2 | EI 120 U/C |
| | > 50 – ≤ 75 | 1.8–8.4 | ✓ | ✓ | 3 | EI 120 U/C |
| | > 75 – ≤ 110 | 2.7–10.0 | ✓ | ✓ | 4 | EI 120 U/C |
| | > 110 – ≤ 160 | 4.0 | ✓ | ✓ | 8 | EI 90 U/C |
| | | > 4.0–14.6 | ✓ | ✓ | 6 | EI 90 U/C |

System EC Endless Collar

| Floor | | | | | | |
|---------------|-------------------|--------------------------|-------------------|-------------|------------------|---------------------------|
| Pipe material | Pipe | | EC Endless Collar | | | Fire resistance class |
| | Pipe outer Ø [mm] | Pipe wall thickness [mm] | Variant U/U | Variant U/C | Number of layers | |
| PVC-U | ≤ 50 | 1.8–5.6 | ✓ | ✓ | 2 | EI 240 U/C |
| | > 50 – ≤ 75 | 1.8–8.4 | ✓ | ✓ | 3 | EI 240 U/C |
| | > 75 – ≤ 110 | 1.8–12.3 | ✓ | ✓ | 4 | EI 240 U/C |
| | > 110 – ≤ 125 | 2.2–12.1 | ✓ | ✓ | 5 | EI 120 U/C |
| | > 125 – ≤ 160 | 3.2–11.9 | ✓ | ✓ | 6 | EI 120 U/C |
| PE-HD | ≤ 50 | 1.8–4.6 | ✓ | ✓ | 2 | EI 240 U/C |
| | > 50 – ≤ 75 | 1.8–8.4 | ✓ | ✓ | 3 | EI 240 U/C |
| | > 75 – ≤ 110 | 2.7–10.0 | ✓ | ✓ | 4 | EI 180 U/C / E 240 U/C |
| | > 110 – ≤ 160 | > 4.0–14.6 | ✓ | ✓ | 6 | EI 120 U/C / E 240 U/C |
| PP | ≤ 50 | 1.8–4.6 | ✓ | ✓ | 2 | EI 240 U/C |
| | > 50 – ≤ 75 | 1.8–8.4 | ✓ | ✓ | 3 | EI 240 U/C |
| | > 75 – ≤ 110 | > 2.7–10.0 | ✓ | ✓ | 4 | EI 180 U/C |
| | > 110 – ≤ 125 | > 3.1–11.4 | ✓ | ✓ | 6 | EI 120 U/C |
| | > 125 – ≤ 160 | > 4.0–14.6 | ✓ | ✓ | 8 | EI 120 U/C |

System EC Endless Collar

8.1.2 Design for diagonal penetration without insulation



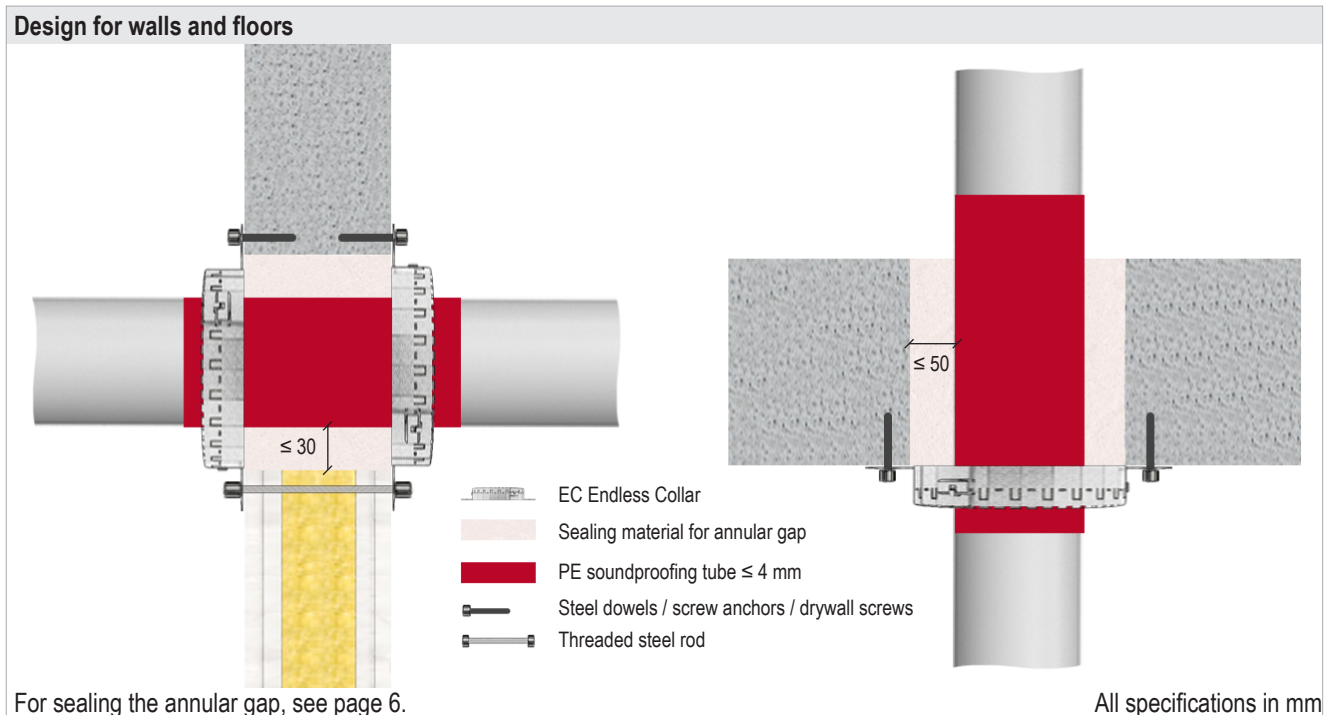
System EC Endless Collar

| Wall | | | | | | |
|---------------|-------------------|--------------------------|-------------------|-------------|------------------|-----------------------|
| Pipe material | Pipe | | EC Endless Collar | | | Fire resistance class |
| | Pipe outer Ø [mm] | Pipe wall thickness [mm] | Variant U/U | Variant U/C | Number of layers | |
| PVC-U | ≤ 50 | 1.8–5.6 | ✓ | ✓ | 2 | EI 120 U/C |
| | > 50 – ≤ 75 | 1.8–8.4 | ✓ | ✓ | 3 | EI 120 U/C |
| | > 75 – ≤ 110 | 1.8–12.3 | ✓ | ✓ | 4 | EI 120 U/C |
| | > 110 – ≤ 125 | 2.2–12.2 | ✓ | ✓ | 6 | EI 120 U/C |
| | > 125 – ≤ 160 | 3.2–11.9 | ✓ | ✓ | 8 | EI 90 U/C |
| PE-HD | ≤ 50 | 1.8 | ✓ | ✓ | 2 | EI 120 U/C |
| | > 50 – ≤ 75 | 1.8 | ✓ | ✓ | 4 | EI 90 U/C |
| | > 75 – ≤ 110 | 2.7 | ✓ | ✓ | 5 | EI 90 U/C |
| | > 110 – ≤ 125 | 3.2 | ✓ | ✓ | 7 | EI 90 U/C |
| | > 125 – ≤ 160 | 4.0 | ✓ | ✓ | 8 | EI 90 U/C |
| PP | ≤ 50 | 1.8 | ✓ | ✓ | 2 | EI 120 U/C |
| | > 50 – ≤ 75 | 1.8 | ✓ | ✓ | 3 | EI 120 U/C |
| | > 75 – ≤ 110 | 2.7 | ✓ | ✓ | 4 | EI 120 U/C |

| Floor | | | | | | |
|---------------|-------------------|--------------------------|-------------------|-------------|------------------|-----------------------|
| Pipe material | Pipe | | EC Endless Collar | | | Fire resistance class |
| | Pipe outer Ø [mm] | Pipe wall thickness [mm] | Variant U/U | Variant U/C | Number of layers | |
| PVC-U | ≤ 50 | 1.8 | ✓ | ✓ | 2 | EI 120 U/C |
| | > 75 – ≤ 110 | 12.3 | ✓ | ✓ | 4 | EI 120 U/C |
| | > 110 – ≤ 125 | 12.1 | ✓ | ✓ | 5 | EI 120 U/C |
| | > 125 – ≤ 160 | 11.9 | ✓ | ✓ | 6 | EI 120 U/C |
| | | 3.2 | ✓ | ✓ | 8 | EI 120 U/C |
| PE-HD | ≤ 50 | 4.6 | ✓ | ✓ | 2 | EI 120 U/C |
| | > 50 – ≤ 110 | 2.7–10.0 | ✓ | ✓ | 4 | EI 120 U/C |
| PP | ≤ 110 | 2.7–10.0 | ✓ | ✓ | 4 | EI 120 U/C |
| | > 110 – ≤ 125 | 3.2–12.0 | ✓ | ✓ | 6 | EI 120 U/C |
| | > 125 – ≤ 160 | 4.0–14.6 | ✓ | ✓ | 8 | EI 120 U/C |

System EC Endless Collar

8.1.3 Design with PE soundproofing tube



| Wall – standard pipes – design with PE soundproofing tube | | | | | | |
|---|-------------------|--------------------------|-------------------|-------------|------------------|-----------------------|
| Pipe material | Pipe | | EC Endless Collar | | | Fire resistance class |
| | Pipe outer Ø [mm] | Pipe wall thickness [mm] | Variant U/U | Variant U/C | Number of layers | |
| PVC-U | ≤ 50 | 1.8 | ✓ | ✓ | 4 | EI 90 U/C / E 120 U/C |
| | | 1.8–5.6 | ✓ | – | 2 | EI 120 U/U |
| | > 50 – ≤ 75 | 1.8 | ✓ | ✓ | 5 | EI 90 U/C / E 120 U/C |
| | | 1.8–8.4 | ✓ | – | 3 | EI 90 U/U / E 120 U/U |
| | > 75 – ≤ 110 | 1.8 | ✓ | ✓ | 4 | EI 90 U/C / E 120 U/C |
| | | 1.8–11.9 | ✓ | – | 4 | EI 90 U/U / E 120 U/U |
| | > 110 – ≤ 125 | 1.8–2.2 | ✓ | ✓ | 6 | EI 90 U/C / E 120 U/C |
| | | 3.2–11.9 | ✓ | – | 5 | EI 90 U/U / E 120 U/U |
| > 125 – ≤ 160 | 3.2–11.9 | ✓ | – | 6 | EI 120 U/U | |

System EC Endless Collar

| Wall – standard pipes – design with PE soundproofing tube | | | | | | |
|---|-------------------|--------------------------|-------------------|-------------|------------------|-----------------------|
| Pipe | | | EC Endless Collar | | | Fire resistance class |
| Pipe material | Pipe outer Ø [mm] | Pipe wall thickness [mm] | Variant U/U | Variant U/C | Number of layers | |
| PE-HD | ≤ 50 | 1.8–4.6 | ✓ | ✓ | 2 | EI 120 U/C |
| | | | ✓ | – | 2 | EI 120 U/U |
| | > 50 – ≤ 75 | 1.8–6.8 | ✓ | ✓ | 3 | EI 120 U/C |
| | | | ✓ | – | 3 | EI 120 U/U |
| | > 75 – ≤ 110 | 1.8–10.0 | ✓ | ✓ | 4 | EI 120 U/C |
| | | | ✓ | – | 4 | EI 120 U/U |
| | > 110 – ≤ 160 | 4.0 | ✓ | ✓ | 6 | EI 120 U/C |
| | | | ✓ | ✓ | 6 | EI 90 U/C / E 120 U/C |
| PP | ≤ 50 | 1.8–4.6 | ✓ | – | 2 | EI 120 U/U |
| | > 50 – ≤ 75 | 1.8–2.7 | ✓ | – | 3 | EI 120 U/U |
| | > 75 – ≤ 110 | 2.7 | ✓ | – | 4 | EI 120 U/U |

| Wall – non-standard pipes – design with PE soundproofing tube | | | | | |
|---|-------------------|-------------------|-------------|------------------|-----------------------|
| Pipe | | EC Endless Collar | | | Fire resistance class |
| Type of pipe | Pipe outer Ø [mm] | Variant U/U | Variant U/C | Number of layers | |
| Wavin SiTech+ | ≤ 50 | ✓ | ✓ | 2 | EI 120 U/C |
| | | ✓ | – | 2 | EI 120 U/U |
| | ≤ 75 | ✓ | – | 3 | EI 120 U/U |
| | | ✓ | ✓ | 4 | EI 90 U/C / E 120 U/C |
| | ≤ 110 | ✓ | ✓ | 5 | EI 120 U/C |
| | | ✓ | – | 4 | EI 120 U/U |
| | ≤ 160 | ✓ | ✓ | 8 | EI 120 U/C |
| | Geberit Silent-PP | ≤ 50 | ✓ | ✓ | 2 |
| ✓ | | | – | 2 | EI 120 U/U |
| ≤ 75 | | ✓ | ✓ | 3 | EI 90 U/C / E 120 U/C |
| | | ✓ | ✓ | 4 | EI 120 U/C |
| | | ✓ | – | 3 | EI 120 U/U |
| ≤ 110 | | ✓ | ✓ | 4 | EI 90 U/C / E 120 U/C |
| | | ✓ | ✓ | 5 | EI 120 U/C |
| | | ✓ | – | 4 | EI 120 U/U |
| ≤ 125 | | ✓ | ✓ | 6 | EI 120 U/C |
| | | ✓ | – | 5 | EI 120 U/U |
| ≤ 160 | | ✓ | ✓ | 8 | EI 120 U/C |
| | | ✓ | – | 6 | EI 120 U/U |

System EC Endless Collar

| Wall – non-standard pipes – design with PE soundproofing tube | | | | | |
|---|-------------------|-------------------|-------------|------------------|-----------------------|
| Pipe | | EC Endless Collar | | | Fire resistance class |
| Type of pipe | Pipe outer Ø [mm] | Variant U/U | Variant U/C | Number of layers | |
| POLO-KAL NG | ≤ 50 | ✓ | ✓ | 2 | EI 120 U/C |
| | | ✓ | – | 2 | EI 120 U/U |
| | ≤ 75 | ✓ | ✓ | 3 | EI 90 U/C / E 120 U/C |
| | | ✓ | – | 3 | EI 120 U/U |
| | ≤ 110 | ✓ | ✓ | 4 | EI 90 U/C / E 120 U/C |
| | | ✓ | ✓ | 5 | EI 120 U/C |
| | | ✓ | – | 4 | EI 120 U/U |
| | ≤ 125 | ✓ | ✓ | 5 | EI 120 U/C |
| | | ✓ | – | 5 | EI 120 U/U |
| | ≤ 160 | ✓ | ✓ | 6 | EI 120 U/C |
| ✓ | | – | 6 | EI 120 U/U | |
| REHAU RAUPIANO PLUS | ≤ 50 | ✓ | ✓ | 2 | EI 120 U/C |
| | | ✓ | – | 2 | EI 120 U/U |
| | ≤ 75 | ✓ | ✓ | 3 | EI 120 U/C |
| | | ✓ | – | 3 | EI 120 U/U |
| | ≤ 110 | ✓ | ✓ | 4 | EI 120 U/C |
| | | ✓ | – | 4 | EI 120 U/U |
| ≤ 125 | ✓ | ✓ | 5 | EI 120 U/C | |
| ≤ 160 | ✓ | ✓ | 6 | EI 120 U/C | |
| Valsir Triplus | ≤ 40 | ✓ | ✓ | 2 | EI 120 U/C |
| | ≤ 75 | ✓ | ✓ | 3 | EI 120 U/C |
| | ≤ 90 | ✓ | ✓ | 4 | EI 120 U/C |
| | ≤ 110 | ✓ | ✓ | 5 | EI 120 U/C |
| | ≤ 125 | ✓ | ✓ | 6 | EI 120 U/C |
| | ≤ 160 | ✓ | ✓ | 8 | EI 120 U/C |
| Coes BluePower | ≤ 50 | ✓ | ✓ | 2 | EI 120 U/C |
| | ≤ 75 | ✓ | ✓ | 3 | EI 120 U/C |
| | ≤ 110 | ✓ | ✓ | 4 | EI 120 U/C |

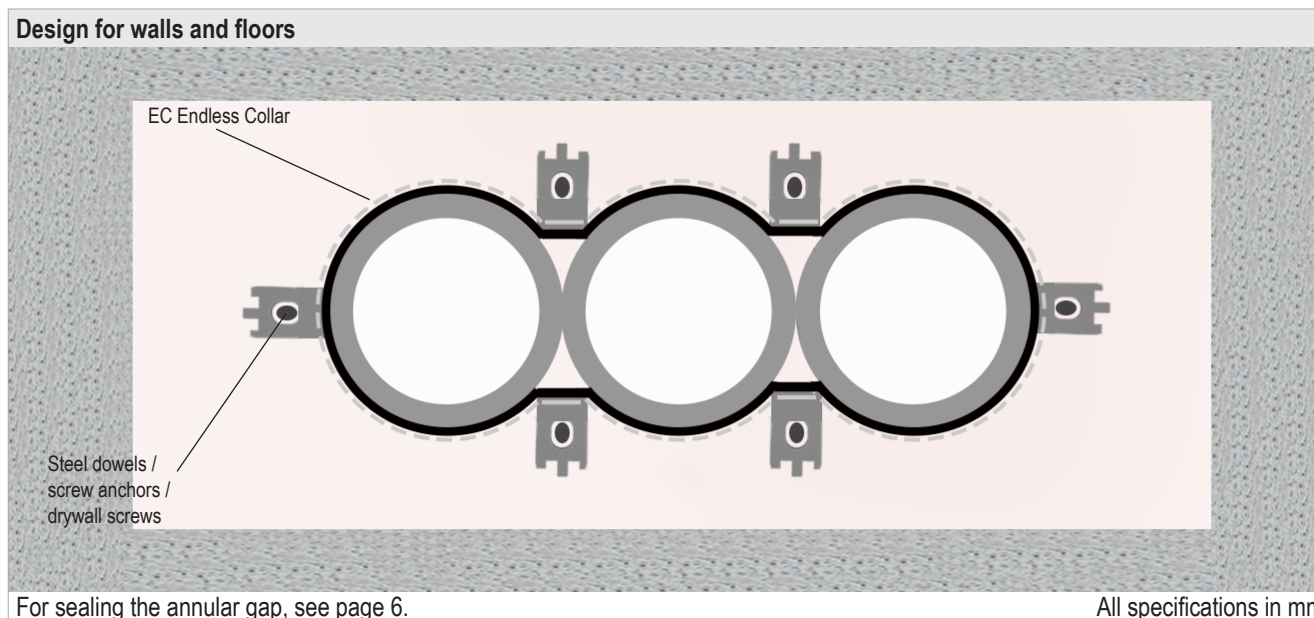
| Floor – standard pipes – design with PE soundproofing tube | | | | | | |
|--|-------------------|--------------------------|-------------------|-------------|------------------|-----------------------|
| Pipe | | | EC Endless Collar | | | Fire resistance class |
| Pipe material | Pipe outer Ø [mm] | Pipe wall thickness [mm] | Variant U/U | Variant U/C | Number of layers | |
| PE-HD | ≤ 50 | 1.8 | ✓ | ✓ | 2 | EI 120 U/C |
| | > 50 – ≤ 75 | 2.2 | ✓ | ✓ | 3 | EI 120 U/C |
| | > 75 – ≤ 110 | 2.7–10.0 | ✓ | ✓ | 4 | EI 120 U/C |

System EC Endless Collar

| Floor – non-standard pipes – design with PE soundproofing tube | | | | | | |
|--|-------------------|-------------------|-------------|------------------|-----------------------|-----------------------|
| Pipe | | EC Endless Collar | | | Fire resistance class | |
| Type of pipe | Pipe outer Ø [mm] | Variant U/U | Variant U/C | Number of layers | | |
| Wavin SiTech+ | ≤ 50 | ✓ | ✓ | 2 | EI 120 U/C | |
| | | ✓ | – | 2 | EI 120 U/U | |
| | ≤ 75 | ✓ | ✓ | 3 | EI 120 U/C | |
| | | ✓ | – | 3 | EI 120 U/U | |
| | ≤ 110 | ✓ | ✓ | 4 | EI 120 U/C | |
| | | ✓ | – | 4 | EI 120 U/U | |
| | ≤ 125 | ✓ | ✓ | 5 | EI 60 U/C | |
| | | ✓ | – | 5 | EI 120 U/U | |
| | ≤ 160 | ✓ | ✓ | 6 | EI 60 U/C | |
| | | ✓ | – | 6 | EI 120 U/U | |
| Geberit Silent-PP | ≤ 50 | ✓ | ✓ | 2 | EI 120 U/C | |
| | | ✓ | – | 2 | EI 120 U/U | |
| | ≤ 75 | ✓ | ✓ | 3 | EI 120 U/C | |
| | | ✓ | – | 3 | EI 120 U/U | |
| | ≤ 110 | ✓ | ✓ | 4 | EI 120 U/C | |
| | | ✓ | – | 4 | EI 120 U/U | |
| | ≤ 125 | ✓ | – | 5 | EI 120 U/U | |
| | ≤ 160 | ✓ | – | 6 | EI 120 U/U | |
| | POLO-KAL NG | ≤ 50 | ✓ | ✓ | 2 | EI 90 U/C / E 120 U/C |
| | | | ✓ | – | 2 | EI 120 U/U |
| ≤ 75 | | ✓ | ✓ | 3 | EI 90 U/C / E 120 U/C | |
| | | ✓ | – | 3 | EI 120 U/U | |
| ≤ 110 | | ✓ | ✓ | 4 | EI 120 U/C | |
| | | ✓ | – | 4 | EI 120 U/U | |
| ≤ 125 | | ✓ | – | 5 | EI 120 U/U | |
| ≤ 160 | | ✓ | – | 6 | EI 120 U/U | |
| REHAU RAUPIANO PLUS | | ≤ 50 | ✓ | – | 2 | EI 120 U/U |
| | | ≤ 75 | ✓ | – | 3 | EI 120 U/U |
| | ≤ 110 | ✓ | – | 4 | EI 120 U/U | |
| | ≤ 125 | ✓ | – | 5 | EI 120 U/U | |
| | ≤ 160 | ✓ | – | 6 | EI 120 U/U | |
| Coes BluePower | ≤ 50 | ✓ | ✓ | 2 | EI 120 U/C | |
| | ≤ 75 | ✓ | ✓ | 4 | EI 90 U/C | |
| | ≤ 110 | ✓ | ✓ | 5 | EI 90 U/C | |

System EC Endless Collar

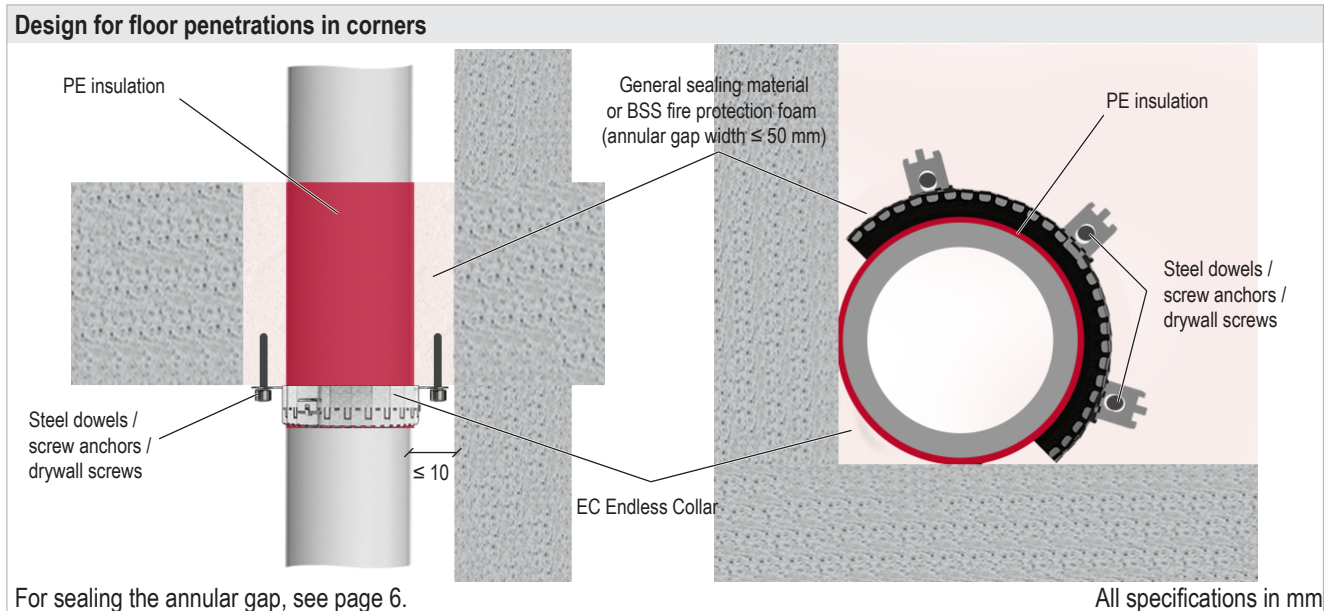
8.1.4 Multiple penetration



| Wall/floor – standard pipes | | | | | | |
|-----------------------------|-------------------|--------------------------|-------------------|-------------|------------------|-----------------------|
| Pipe material | Pipe | | EC Endless Collar | | | Fire resistance class |
| | Pipe outer Ø [mm] | Pipe wall thickness [mm] | Variant U/U | Variant U/C | Number of layers | |
| PVC-U, PE-HD, PP | ≤ 75 | 1.8–8.4 | ✓ | ✓ | 4 | EI 120 U/C |

System EC Endless Collar

8.1.5 Design for corners

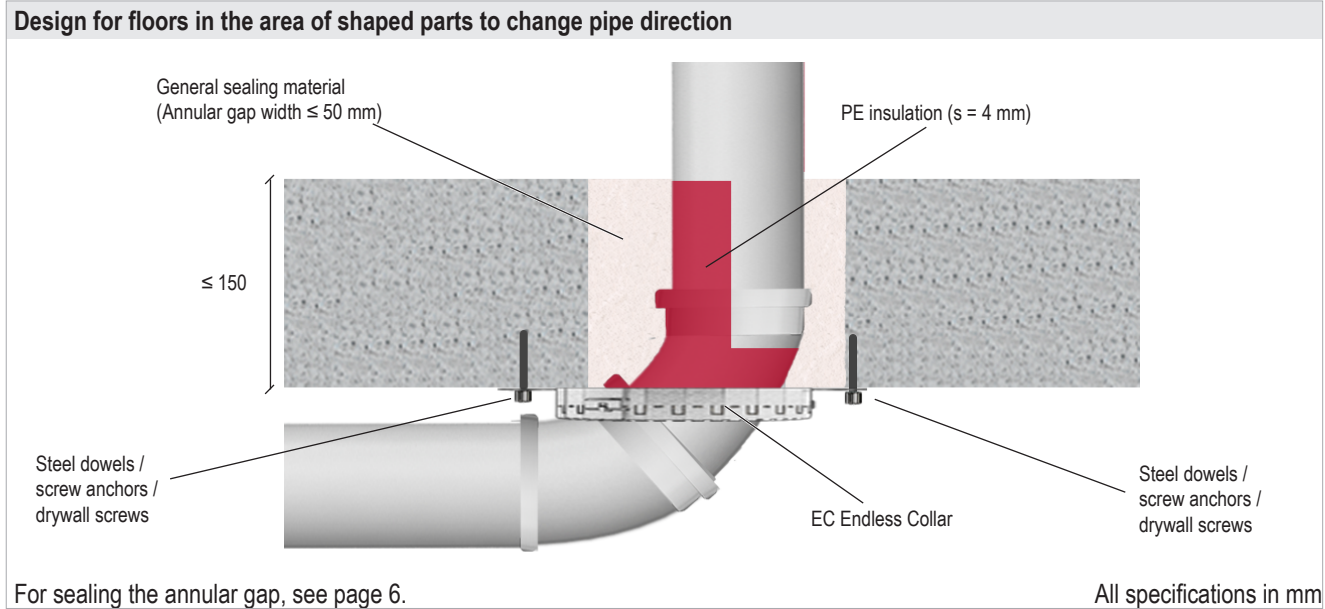


| Floor – standard pipes | | | | | | |
|------------------------|-------------------|--------------------------|-------------------|-------------|------------------|-----------------------|
| Pipe material | Pipe | | EC Endless Collar | | | Fire resistance class |
| | Pipe outer Ø [mm] | Pipe wall thickness [mm] | Variant U/U | Variant U/C | Number of layers | |
| PE-HD | ≤ 110 | 10.0 | ✓ | ✓ | 4 | EI 120 U/C |
| PP | ≤ 110 | 2.7 | ✓ | ✓ | 4 | EI 120 U/C |

| Floor – non-standard pipes | | | | | |
|----------------------------|-------------------|-------------------|-------------|------------------|-----------------------|
| Type of pipe | Pipe outer Ø [mm] | EC Endless Collar | | | Fire resistance class |
| | | Variant U/U | Variant U/C | Number of layers | |
| Wavin SiTech+ | ≤ 110 | ✓ | – | 5 | EI 120 U/U |
| Geberit Silent-PP | ≤ 110 | ✓ | – | 5 | EI 120 U/U |
| POLO-KAL NG | ≤ 110 | ✓ | – | 5 | EI 120 U/U |
| REHAU RAUPIANO PLUS | ≤ 110 | ✓ | – | 5 | EI 120 U/U |

System EC Endless Collar

8.1.6 Design with pipe sleeves

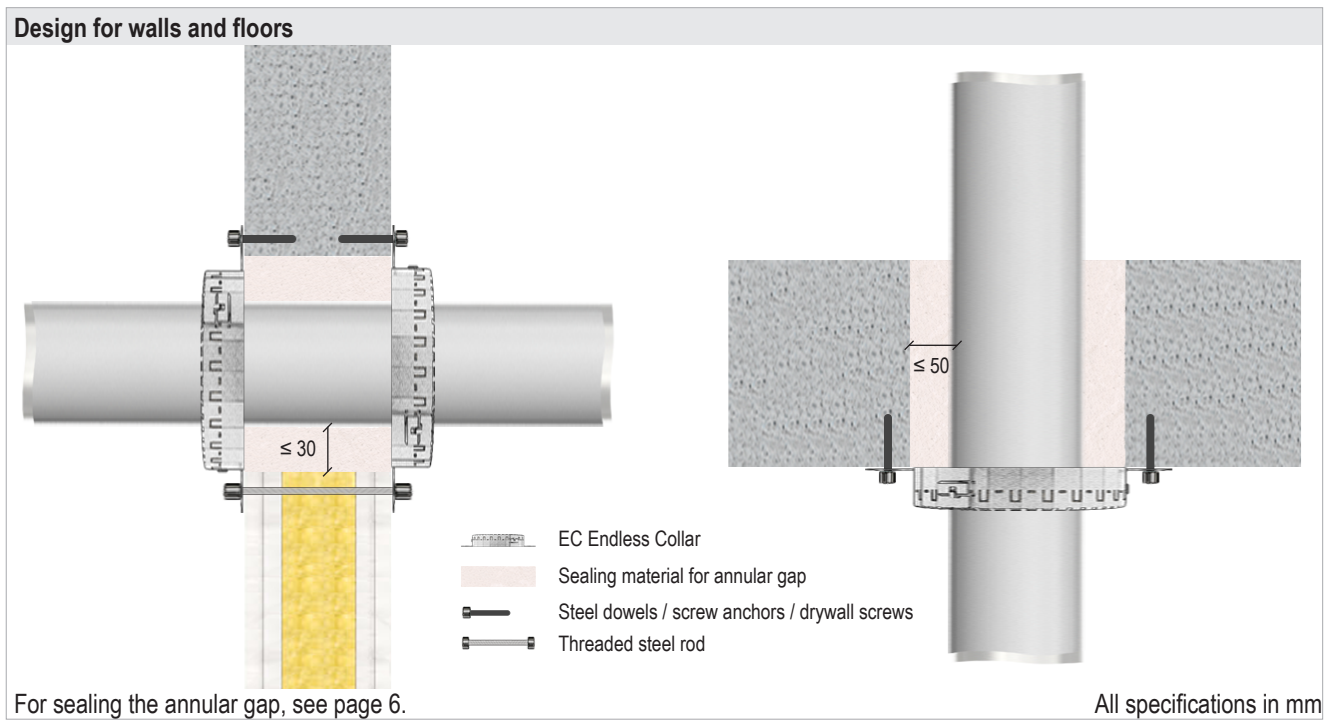


| Floor – non-standard pipes | | | | | |
|----------------------------|-------------------|-------------------|-------------|------------------|-----------------------|
| Pipe | | EC Endless Collar | | | Fire resistance class |
| Type of pipe | Pipe outer Ø [mm] | Variant U/U | Variant U/C | Number of layers | |
| Wavin SiTech+ | ≤ 50 | ✓ | – | 3 | EI 120 U/U |
| | ≤ 75 | ✓ | – | 4 | EI 120 U/U |
| | ≤ 110 | ✓ | – | 5 | EI 120 U/U |
| Geberit Silent-PP | ≤ 50 | ✓ | – | 3 | EI 120 U/U |
| | ≤ 75 | ✓ | – | 4 | EI 120 U/U |
| | ≤ 110 | ✓ | – | 5 | EI 120 U/U |
| POLO-KAL NG | ≤ 50 | ✓ | – | 3 | EI 120 U/U |
| | ≤ 75 | ✓ | – | 4 | EI 120 U/U |
| | ≤ 110 | ✓ | – | 5 | EI 120 U/U |
| REHAU RAUPIANO PLUS | ≤ 50 | ✓ | – | 3 | EI 120 U/U |
| | ≤ 75 | ✓ | – | 4 | EI 120 U/U |
| | ≤ 110 | ✓ | – | 5 | EI 120 U/U |

System EC Endless Collar

8.2 Multilayer pipes

8.2.1 Design without insulation



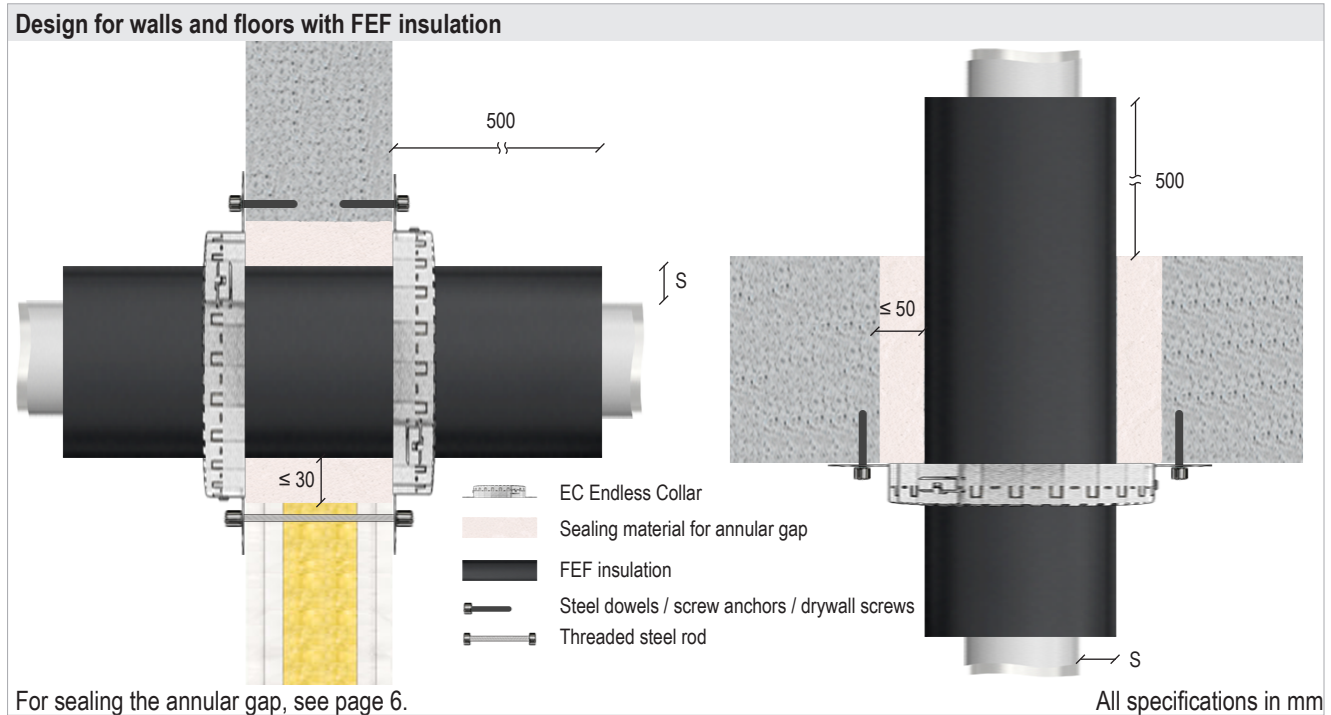
| Wall | | | | | |
|----------------------------|-------------------|-------------------|-------------|------------------|-----------------------|
| Pipe | | EC Endless Collar | | | Fire resistance class |
| Type of pipe | Pipe outer Ø [mm] | Variant U/U | Variant U/C | Number of layers | |
| FRÄNKISCHE alpex F50 PROFI | ≤ 16 | ✓ | ✓ | 2 | EI 120 U/C |
| Uponor Uni Pipe MLC | ≤ 16 | ✓ | ✓ | 2 | EI 120 U/C |
| fusiotherm®-Stabiverbund | ≤ 16 | ✓ | ✓ | 2 | EI 120 U/C |
| | ≤ 50 | ✓ | ✓ | 2 | EI 120 U/C |
| | ≤ 75 | ✓ | ✓ | 3 | EI 120 U/C |
| | ≤ 110 | ✓ | ✓ | 4 | EI 120 U/C |

System EC Endless Collar

| Floor | | | | | |
|----------------------------------|-------------------|-------------------|-------------|------------------|-----------------------|
| Pipe | | EC Endless Collar | | | Fire resistance class |
| Type of pipe | Pipe outer Ø [mm] | Variant U/U | Variant U/C | Number of layers | |
| FRÄNKISCHE alpex F50 PROFI | ≤ 16 | ✓ | ✓ | 2 | EI 120 U/C |
| | ≤ 50 | ✓ | ✓ | 2 | EI 120 U/C |
| | ≤ 75 | ✓ | ✓ | 4 | EI 120 U/C |
| Uponor Uni Pipe MLC | ≤ 50 | ✓ | ✓ | 2 | EI 120 U/C |
| | ≤ 75 | ✓ | ✓ | 3 | EI 90 U/C |
| | ≤ 110 | ✓ | ✓ | 4 | EI 90 U/C |
| fusiotherm®- Stabverbund-Rohr | ≤ 16 | ✓ | ✓ | 2 | EI 120 U/C |
| | ≤ 50 | ✓ | ✓ | 2 | EI 120 U/C |
| | ≤ 75 | ✓ | ✓ | 3 | EI 120 U/C |
| | ≤ 110 | ✓ | ✓ | 4 | EI 120 U/C |
| fusiotherm® SDR 11 | ≤ 315 | ✓ | ✓ | 20 | EI 120 U/C |

System EC Endless Collar

8.2.2 Design with FEF insulation



| Wall – insulation with SH/ArmaFlex | | | | | | |
|---|-------------------|--------------------------|-------------------|--------------------------|------------------|--------------------------|
| Pipe material | Pipe | | EC Endless Collar | | | Fire resistance class |
| | Pipe outer Ø [mm] | Pipe wall thickness [mm] | Variant U/U | Variant U/C | Number of layers | |
| FRÄNKISCHE alpex F50 PROFIL alpex L | ≤ 16 | 9.0 | ✓ | ✓ | 2 | EI 120 U/C |
| | ≤ 50 | 10.0 | ✓ | ✓ | 3 | EI 60 U/C / E 120 U/C |
| | ≤ 75 | 9.0 | ✓ | ✓ | 4 | EI 90 U/C / E 120 U/C |
| | | > 9.0 – 20.0 | ✓ | ✓ | 5 | EI 90 U/C |
| | | > 20.0 – 30.0 | ✓ | ✓ | 6 | EI 90 U/C |
| > 30.0 – 44.0 | ✓ | ✓ | 6 | EI 90 U/C / E 120 U/C | | |
| Uponor Uni Pipe MLC | ≤ 16 | 9.0 | ✓ | ✓ | 2 | EI 120 U/C |
| | ≤ 50 | 10.0 | ✓ | ✓ | 3 | EI 60 U/C / E 120 U/C |
| | ≤ 110 | 9.0 | ✓ | ✓ | 6 | EI 120 U/C |
| | | > 9.0 – 20.0 | ✓ | ✓ | 6 | EI 90 U/C / E 120 U/C |
| fusiotherm®- Stabverbund | ≤ 16 | 9.0 | ✓ | ✓ | 3 | EI 120 U/C |
| | ≤ 50 | 10.0 | ✓ | ✓ | 3 | EI 120 U/C |

System EC Endless Collar

| Wall – insulation with AF/ArmaFlex | | | | | | |
|---|-------------------|--------------------------|-------------------|-------------|------------------|--------------------------|
| Pipe | | | EC Endless Collar | | | Fire resistance class |
| Pipe material | Pipe outer Ø [mm] | Pipe wall thickness [mm] | Variant U/U | Variant U/C | Number of layers | |
| FRÄNKISCHE alpex F50 PROFIL alpex L | ≤ 75 | 9.5 | ✓ | ✓ | 4 | EI 120 U/C |
| | | > 9.5 – 20.0 | ✓ | ✓ | 5 | EI 120 U/C |
| | | > 20.0 – 30.0 | ✓ | ✓ | 6 | EI 120 U/C |
| Uponor Uni Pipe MLC | ≤ 50 | 27.5 | ✓ | ✓ | 4 | EI 120 U/C |
| | ≤ 110 | 9.5 | ✓ | ✓ | 6 | EI 120 U/C |
| | | 19.0 | ✓ | ✓ | 6 | EI 90 U/C / E 120 U/C |
| | | 30.0 | ✓ | ✓ | 6 | EI 120 U/C |
| fusiotherm®- Stabverbund | ≤ 110 | 31.0 | ✓ | ✓ | 6 | EI 120 U/C |

| Floor – insulation with SH/ArmaFlex | | | | | | |
|---|-------------------|--------------------------|-------------------|-------------|------------------|-----------------------|
| Pipe | | | EC Endless Collar | | | Fire resistance class |
| Pipe material | Pipe outer Ø [mm] | Pipe wall thickness [mm] | Variant U/U | Variant U/C | Number of layers | |
| FRÄNKISCHE alpex F50 PROFIL alpex L | ≤ 16 | 9.0 | ✓ | ✓ | 2 | EI 120 U/C |
| | ≤ 75 | 9.0 | ✓ | ✓ | 4 | EI 120 U/C |
| | | > 9.0 – 20.0 | ✓ | ✓ | 5 | EI 120 U/C |
| | | > 20.0 – 30.0 | ✓ | ✓ | 6 | EI 120 U/C |
| Uponor Uni Pipe MLC | ≤ 50 | 10.0 | ✓ | ✓ | 3 | EI 120 U/C |
| | ≤ 63 | 9.0 | ✓ | ✓ | 4 | EI 120 U/C |
| | ≤ 90 | 9.0 | ✓ | ✓ | 5 | EI 120 U/C |
| | ≤ 110 | > 9.0 – 20.0 | ✓ | ✓ | 6 | EI 120 U/C |
| fusiotherm®- Stabverbund | ≤ 50 | 10.0 | ✓ | ✓ | 3 | EI 120 U/C |

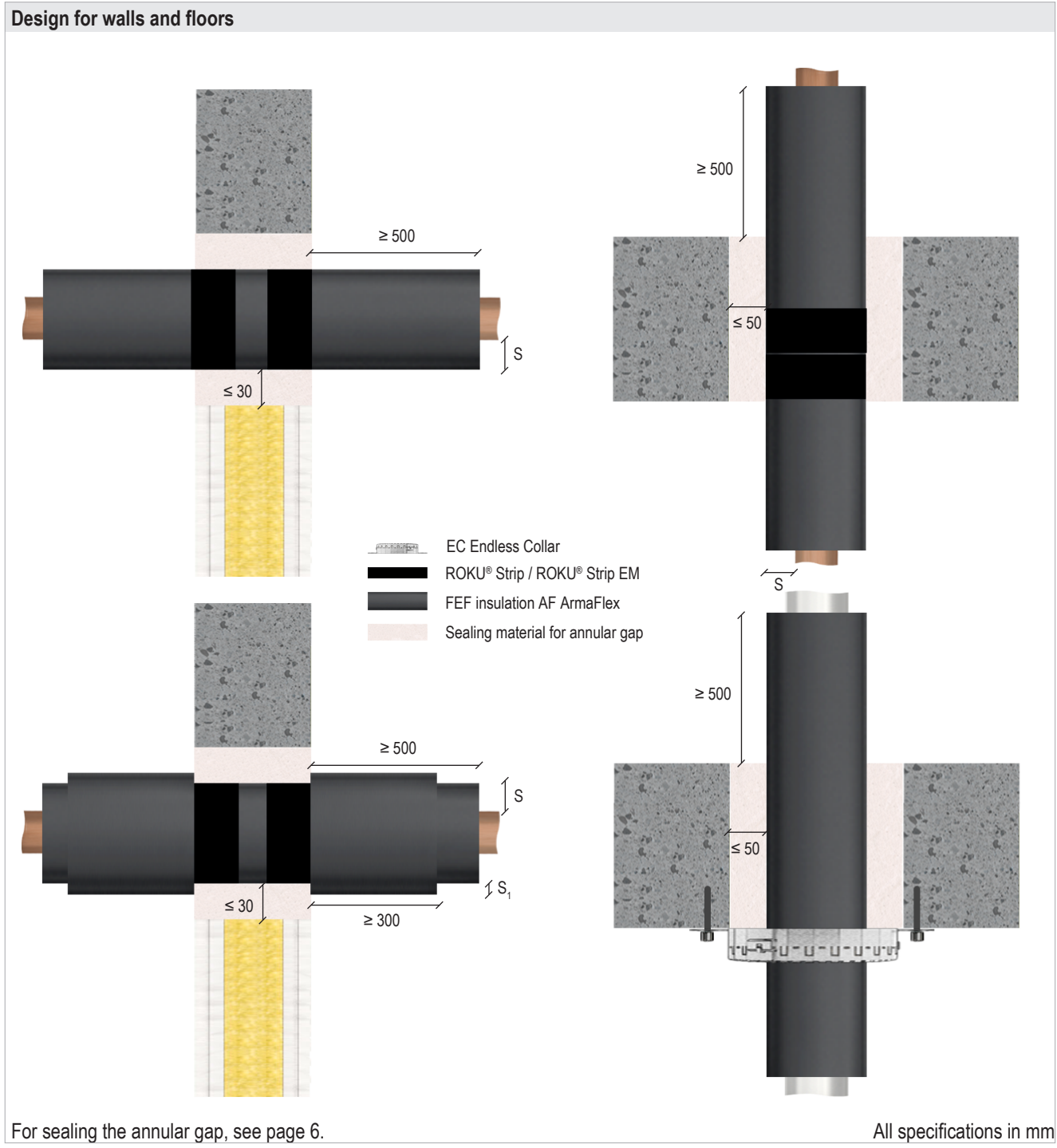
System EC Endless Collar

| Floor – insulation with AF/ArmaFlex | | | | | | |
|--|-------------------|--------------------------|-------------------|-------------|------------------|-----------------------|
| Pipe | | | EC Endless Collar | | | Fire resistance class |
| Pipe material | Pipe outer Ø [mm] | Pipe wall thickness [mm] | Variant U/U | Variant U/C | Number of layers | |
| FRÄNKISCHE alpex F50 PROFI alpex L | ≤ 75 | 9.5 | ✓ | ✓ | 4 | EI 120 U/C |
| Uponor Uni Pipe MLC | ≤ 50 | 27.5 | ✓ | ✓ | 4 | EI 120 U/C |
| | ≤ 75 | 30.0 | ✓ | ✓ | 5 | EI 120 U/C |
| | ≤ 110 | 9.5–31.0 | ✓ | ✓ | 6 | EI 120 U/C |
| fusiotherm®- Stabiverbund | ≤ 110 | 31.0 | ✓ | ✓ | 6 | EI 120 U/C |

System EC Endless Collar

8.3 Non-combustible pipes

8.3.1 Design with FEF insulation and ROKU® Strip with and without metal strap



System EC Endless Collar

| Wall – insulation with AF/ArmaFlex – design with ROKU® Strip without metal strap | | | | | | | | |
|--|-------------------|--------------------------|-----------------------------|--|---------------------|------------------------|------------------|-----------------------|
| Pipe | | | Section insulation | Protective insulation | ROKU® Strip | | | Fire resistance class |
| Pipe material | Pipe outer Ø [mm] | Pipe wall thickness [mm] | Insulation thickness S [mm] | Insulation thickness S ₁ [mm] | Variant ROKU® Strip | Variant ROKU® Strip EM | Number of layers | |
| Copper, steel, stainless steel, cast iron | ≤ 28 | 1.0–14.2 | 6.0–35.0 | – | ✓ | ✓ | 2 | EI 120 C/U |
| | ≤ 54 | 1.5–14.2 | 9.0 – < 35.0 | – | ✓ | ✓ | 2 | EI 60 C/U / E 120 C/U |
| | | | 35.0 | – | ✓ | ✓ | 2 | EI 120 C/U |
| | | | 9.0 – < 35.0 | ≥ 9.0 | ✓ | ✓ | 2 | EI 90 C/U / E 120 C/U |

| Floor – insulation with AF/ArmaFlex – design with ROKU® Strip without metal strap | | | | | | | | |
|---|-------------------|--------------------------|-----------------------------|---------------------|------------------------|------------------|-----------------------|--|
| Pipe | | | Section insulation | ROKU® Strip | | | Fire resistance class | |
| Pipe material | Pipe outer Ø [mm] | Pipe wall thickness [mm] | Insulation thickness S [mm] | Variant ROKU® Strip | Variant ROKU® Strip EM | Number of layers | | |
| Copper, steel, stainless steel, cast iron | ≤ 28 | 1.0–14.2 | 6.0 | ✓ | ✓ | 2 | EI 120 C/U | |
| | | | > 6.0 – ≤ 20.0 | ✓ | ✓ | 3 | EI 120 C/U | |
| | | | > 20.0 – 35.0 | ✓ | ✓ | 4 | EI 120 C/U | |
| | ≤ 54 | 1.5–14.2 | 9.0 | ✓ | ✓ | 2 | EI 120 C/U | |
| | | | > 9.0 – 22.0 | ✓ | ✓ | 3 | EI 120 C/U | |
| | | | > 22.0 – 35.0 | ✓ | ✓ | 4 | EI 120 C/U | |
| | ≤ 89 | 2.0–14.2 | 13.0 | ✓ | ✓ | 2 | EI 120 C/U | |
| | | 2.5–14.2 | | ✓ | ✓ | 2 | EI 120 C/U | |
| Steel, stainless steel, cast iron | ≤ 108 | 2.0–14.2 | 13.0–30.0 | ✓ | ✓ | 2 | EI 120 C/U | |

| Floor – insulation with AF/ArmaFlex – design with EC Endless Collar | | | | | | | | |
|---|-------------------|--------------------------|-----------------------------|-------------------|--------------|------------------|-----------------------|--|
| Pipe | | | Section insulation | EC Endless Collar | | | Fire resistance class | |
| Pipe material | Pipe outer Ø [mm] | Pipe wall thickness [mm] | Insulation thickness S [mm] | Variant U/U | Variante U/C | Number of layers | | |
| Steel, stainless steel, cast iron | ≤ 108 | 2.0–14.2 | 13.0–30.0 | ✓ | ✓ | 2 | EI 120 C/U | |

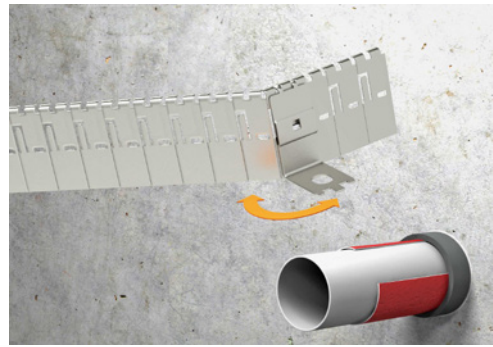
System EC Endless Collar

9. Installation steps

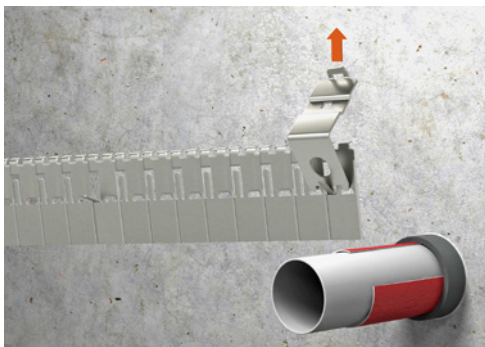
1. Wrap the intumescent strip with the required number of layers (see chapter 8) around the pipe and around the PE insulation, if applicable.



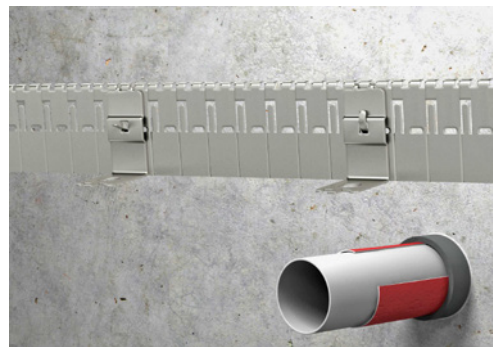
2. Select the number of required links and then bend the metal strap, using a fastener. Hook the fastener to the upper edge of the strap and ensure the fastener is flush with the strap on the left side. Then break off the metal strap by moving it back and forth.



3. Insert the long lug of the fastener into the long lug of the strap. Determine the fastening point by pushing the fastener down and bending the lug by 90°



4. Mount the fasteners at the required locations, lead the bent lug through the opening and bend it back, ensuring that the fastener is tightly in place.



5. Bend two lugs at the end of the metal strap by 90°, connect the other end of the metal strap by inserting the bent lugs into the horizontal slots and bend the lugs back again so that the strap is firmly connected.

