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Authorised and notified according to Article 29 of the Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011

European Technical Assessment ETA-23/0163 of 2024/01/04

I General Part

Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011: ETA-Danmark A/S

Trade name of the construction product:	fischer FiAM Plus
Product family to which the above construction product belongs:	Fire Stopping, Fire Sealing & Fire Protective Products. Fire Retardant Products
Manufacturer:	fischerwerke GmbH & Co. KG Klaus-Fischer-Str. 1 DE-72178 Waldachtal Telephone: 049 7443 120 www.fischer-international.com
Manufacturing plant:	fischerwerke
This European Technical Assessment contains:	64 pages including 2 annexes which form an integral part of the document
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of:	EAD 350454-00-1104 Firestopping and Fire Sealing Products, Penetration Seals

II SPECIFIC PART OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical description of the product

fischer FiAM Plus is a one-part water based acrylic sealant system used to reinstate the fire resistance performance of wall or floor constructions where they have been provided with apertures for the penetration of single or multiple services.

fischer FiAM Plus is supplied in cartridges and foil packs and can be applied with a dispenser into the annular space between the penetration and the edge of the construction opening together with a backfilling material.

2 Specification of the intended use in accordance with the applicable European Assessment Document (hereinafter EAD)

The intended use fischer FiAM Plus is to reinstate the fire resistance performance of rigid wall constructions where they are penetrated by various pipes, cable supports and cables.

The specific elements of construction that the system fischer FiAM Plus may be used to provide a penetration seal in, are as follows:

Drywalls:
The wall must have a minimum thickness of 100 mm and comprise minimum 1 layer of gypsum board, steel or wood studs and stone wool insulation or no insulation.

Rigid Walls:
The wall must have a minimum thickness of 115 mm and comprise concrete, aerated concrete, or masonry, with a minimum density of 650 kg/m^3.

Rigid Floors:
The floor must have a minimum thickness of 150 mm and comprise concrete or aerated concrete with a minimum density of 650 kg/m^3.
The individual requirements for walls and floors are detailed in the respective systems in Annex B of this document.

The supporting construction must be classified in accordance with EN 13501-2 for the required fire resistance period.

The fire resistance of fischer FiAM Plus is tested according to EN 1366-3.

fischer FiAM Plus may be used to provide a penetration seal with pipes, cables, and cable trays and ladders (for details see Annex B of this document).

The provisions made in this European Technical Assessment are based on an assumed intended working life of the sealant system of 25 years, provided that the conditions laid down in the product data sheet for the packaging/transport/storage/installation/use/repair are met.

The indications given on the intended working life cannot be interpreted as a guarantee given by the producer or the Technical Assessment Body but are to be regarded only as a means for selecting the appropriate products in relation to the expected economically reasonable working life of the works.

3 Performance of the product and references to the methods used for its assessment.

Characteristic	Assessment of characteristic

3.2 Safety in case of fire (BWR 2)

Reaction to fire

The product is classified as **D-s1, d0** in accordance with EN13501-1, and the EC Delegated regulation 2016/364/EU.

Resistance to fire

See Annex B

3.3 Hygiene, Health and the Environment (BWR 3)

Air permeability

Leakage rate per unit area of the seal: Q < 0,10 m³/hm²

Water permeability

Clear opening [mm]	Result [Pa]
Ø 300	Watertight to **1.050 Pa**
550x200	Watertight to **600 Pa**
100x1000	Watertight to **600 Pa**

Content, emission and/or release of dangerous Substances*)

Release scenario	**IA1: Product with direct contact to indoor air.**	
	3 days [mg/m³]	28 days [mg/m³]
SVOC	**0**	**0**
VOC	**0,005**	**0,005**

3.4 Safety and accessibility in use (BWR4)

Mechanical resistance and stability

No performance assessed

Resistance to impact/movement

No performance assessed

Adhesion

No performance assessed

Durability

Use category: **Type Y_2**

3.5 Protection against noise (BWR5)

Airborne sound insulation

Rw (C; Ctr) = 55 (-2; -5) dB

3.6 Energy economy and heat retention (BWR6)

Thermal properties

No performance assessed

Water vapour permeability

No performance assessed

See additional information in section 3.7-3.8

*) In addition to the specific clauses relating to dangerous substances contained in this European technical Assessment, there may be other requirements applicable to the products falling within its scope (e.g., transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Construction Products Regulation, these requirements need also to be complied with, when and where they apply.

3.7 Methods of verification

The assessment of fischer FiAM Plus for the declared intended use has been made in accordance with EAD 350454-00-1104 Firestopping and fire sealing products, Penetration Seals, assessed as a sealant according to table 1.1 of the EAD.

3.8 General aspects related to the fitness for use of the product.

The verification of durability is part of testing the essential characteristics. fischer FiAM Plus may be used in end-use applications according to the provisions for use category Y_2 (intended for use at temperatures below 0°C, but with no exposure to rain or UV radiation) without expecting significant changes of the characteristics relevant for fire protection. Products that meet the requirements for type Y_2 also meet the requirement for type Z_1 and Z_2.

The European Technical Assessment is issued for the product based on agreed data/information, deposited with ETA-Danmark, which identifies the product that has been assessed and judged. Changes to the product or production process, which could result in this deposited data/information being incorrect, should be notified to ETA-Danmark before the changes are introduced. ETA-Danmark will decide if such changes affect the ETA and consequently the validity of the CE marking based on the ETA and if so whether further assessment or alterations to the ETA, shall be necessary.

The fischer FiAM Plus for firestopping and fire sealing purposes are manufactured in accordance with the provisions of this European Technical Assessment using the manufacturing processes as identified in the inspection of the plant by the notified inspection body and laid down in the technical documentation.

4 Attestation and verification of constancy of performance (hereinafter AVCP) system applied, with reference to its legal base.

4.1 AVCP system

According to the decision 1999/454/EC of the European Commission, the system of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) is: **1.**

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD.

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at ETA-Danmark prior to CE marking.

Issued in Copenhagen on 2024-01-04 by

Thomas Bruun
Managing Director, ETA-Danmark

Annex A

References

A.1 References to standards mentioned in the ETA

EN 1026:2016	Windows and doors - Air permeability - Test method
EN 1027:2016	Windows and doors - Water tightness - Test method
EN 1366-3:2022	Fire resistance tests for service installations - Part 3: Penetration seals
EN 13501-1:2018	Fire classification of construction products and building elements – Part 1: Classification using test data from reaction to fire tests
EN 13501-2:2016	Fire classification of construction products and building elements – Part 2: Classification using test data from fire resistance tests
EN 16516:2017+A1:2020	Construction products: Assessment of release of dangerous substances - Determination of emissions into indoor air
ISO 9047:2001 + Cor. 1:2009	Building construction - Jointing products - Determination of adhesion/cohesion properties of sealants at variable temperatures
ISO 7389:2002	Building construction - Jointing products - Determination of elastic recovery of sealants
EN ISO 10140-2:2021	Acoustics - Laboratory measurement of sound insulation of building elements - Part 2: Measurement of airborne sound insulation
ISO 11600:2002 + Amd 1:2011	Building construction - Jointing products - Classification and requirements for sealants

A.2 Other reference documents

EAD 350454-00-1104	European Assessment Document: Fire Stopping and Fire Sealing Products, Penetration Seals, September 2017
EOTA TR 024	EOTA Technical Report: Technical description and assessment of reactive products effective in case of fire, Edition November 2006, Amended August 2019
Council Directive 67/548/EEC	Council Directive 67/548/EEC of 27 June 1967 on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances

Table of Content

Annex B

Resistance to Fire Classification of fischer FiAM Plus

B.1 Flexible wall construction with minimum thickness of 100 mm

B.1.1 Double sided penetration seal with cables (service option S)

Penetration Seal: Cables sealed with fischer FiAM Plus sealant to both sides of the wall, backed with stone wool, seal installed flush with surface of wall, wall thickness ≥100 mm

Construction details:

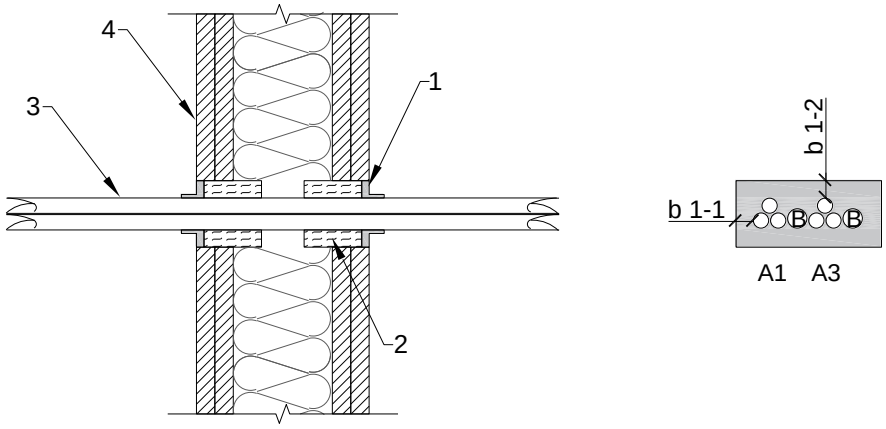


Figure not to scale

Key:

1. FiAM Plus
2. Backing material
3. Cables
4. Wall

Table B.1.1

Type of penetrant	Cable type	Maximum aperture size	Sealant thickness	Seal overlap on penetrant	Backing material	Classification
Service option S	Sheathed cables / telecommunication cables / optical fibre cables up to a max. outer diameter of 21 mm without cable carrier	112 x 46 mm	≥5 mm	≥13 mm*	Stone wool ρ ≥60 kg/m³, ≥40 mm thick from both sides**	E 60 EI 30

b 1-1 – side (≥10 mm)
b 1-2 – top / bottom (≥10 mm)
Cable support ≤250 mm from top surface of wall
* overlap with sealant thickness of t ≥3 mm
** ≥10 mm air gap between layers of insulation

B.1.2 Double sided penetration seal with cables (service option M)

Penetration Seal: Cables sealed with fischer FiAM Plus sealant to both sides of the wall, backed with stone wool, seal installed flush with surface of wall, wall thickness ≥100 mm

Construction details:

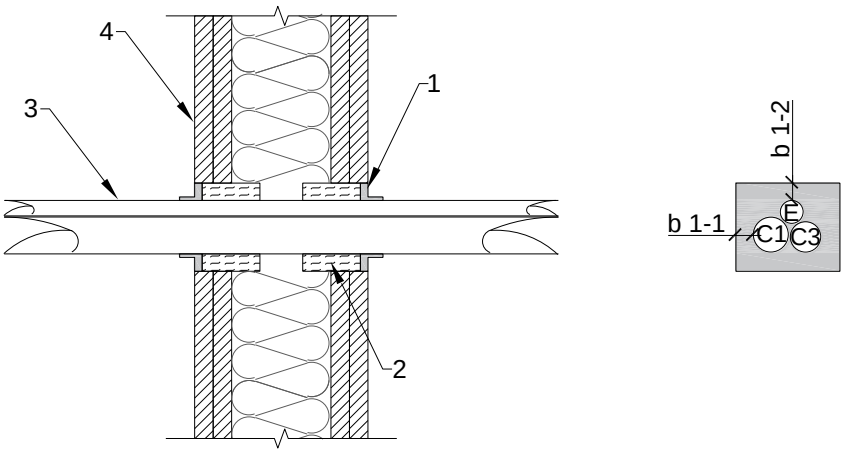


Figure not to scale

Key:

1. FiAM Plus
2. Backing material
3. Cables
4. Wall

Table B.1.2

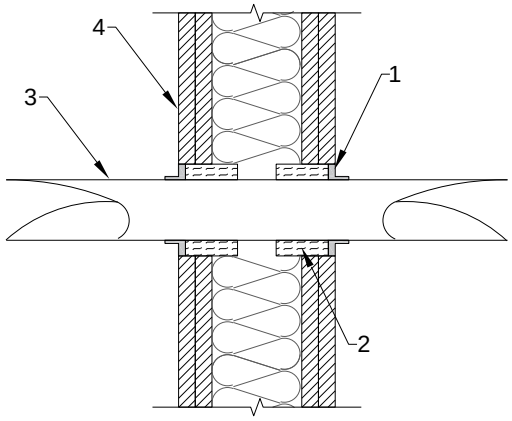
Type of penetrant	Cable type	Maximum aperture size	Sealant thickness	Seal overlap on penetrant	Backing material	Classification
Service option M	Sheathed cables / telecommunication cables / optical fibre cables up to a max. outer diameter of 50 mm without cable carrier	105 x 81 mm	≥5 mm	≥13 mm*	Stone wool ρ ≥60 kg/m³, ≥40 mm thick from both sides**	E 60 EI 20

b 1-1 – side (≥10 mm)
b 1-2 – top / bottom (≥10 mm)
Cable support ≤250 mm from top surface of wall
* overlap with sealant thickness of t ≥3 mm
** ≥10 mm air gap between layers of insulation

B.1.3 Double sided penetration seal with cables (service option L)

Penetration Seal: Cables sealed with fischer FiAM Plus sealant to both sides of the wall, backed with stone wool, seal installed flush with surface of wall, wall thickness ≥100 mm

Construction details:



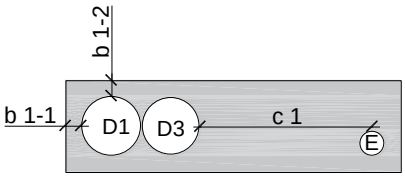


Figure not to scale

Key:

1. FiAM Plus
2. Backing material
3. Cables
4. Wall

Table B.1.3

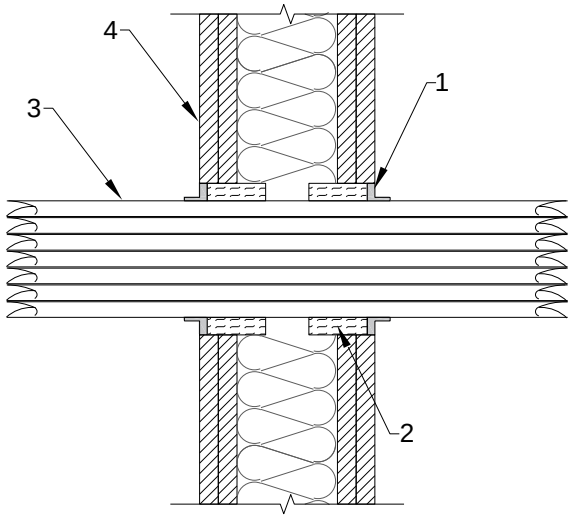
Type of penetrant	Cable type	Maximum aperture size	Sealant thickness	Seal overlap on penetrant	Backing material	Classification
Service option L	Sheathed cables / telecommunication cables / optical fibre cables up to a max. outer diameter of 80 mm without cable carrier	310 x 78 mm	≥5 mm	≥13 mm*	Stone wool ρ ≥60 kg/m³, ≥40 mm thick from both sides**	E 60 EI 20

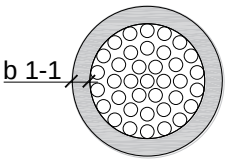
b 1-1 – side (≥10 mm)
b 1-2 – top / bottom (≥10 mm)
c 1 (≥0 mm)
Cable support ≤250 mm from top surface of wall
* overlap with sealant thickness of t ≥3 mm
** ≥10 mm air gap between layers of insulation

B.1.4 Double sided penetration seal with cables (tied bundle of cables)

Penetration Seal: Cable bundle sealed with fischer FiAM Plus sealant to both sides of the wall, backed with stone wool, seal installed flush with surface of wall, wall thickness ≥100 mm

Construction details:





F-cable bundle

Figure not to scale

Key:

1. FiAM Plus
2. Backing material
3. Cable bundle
4. Wall

Table B.1.4

Type of penetrant	Cable type	Maximum aperture size	Sealant thickness	Seal overlap on penetrant	Backing material	Classification
Tied bundle of cables	Tied bundles up to 100 mm overall diameter containing sheathed electrical / telecommunication / optical fibre cables up to a max. outer diameter of 21 mm without cable carrier	Ø120 mm	≥5 mm	≥13 mm*	Stone wool ρ ≥60 kg/m³, ≥40 mm thick from both sides**	E 60 EI 20

b 1-1 – side (≥10 mm)

Cable support ≤250 mm from top surface of wall

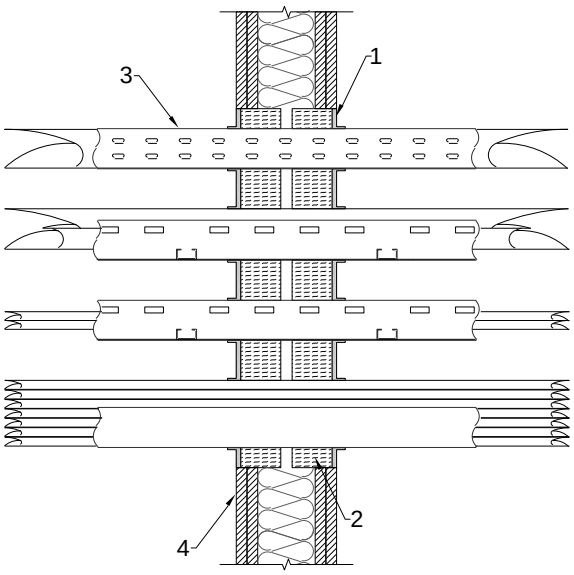
* overlap with sealant thickness of t ≥3 mm

** ≥10 mm air gap between layers of insulation

B.1.5 Double sided penetration seal with cables supports (cable arrangement L)

Penetration Seal: Cable supports, and cables sealed with fischer FiAM Plus sealant to both sides of the wall, backed with stone wool insulation, seal installed flush with surface of wall, wall thickness ≥100 mm

Construction details:



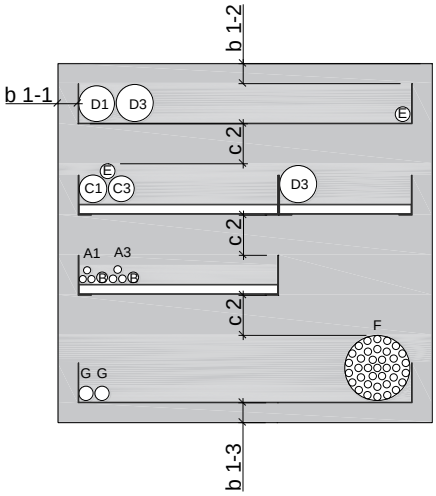


Figure not to scale

Key:

1. FiAM Plus
2. Backing material
3. Cable support
4. Wall

Table B.1.5

Type of penetrant	Cable type	Maximum aperture size	Sealant thickness	Seal overlap on penetrant	Backing material	Classification
Service option L	Sheathed cables / telecommunication cables / optical fibre cables up to a max. outer diameter of 80 mm	550 x 500 mm	≥5 mm	≥13 mm*	Stone wool ρ ≥60 kg/m³, ≥40 mm thick from both sides**	E 45 EI 20
	Tied bundles up to 100 mm overall diameter containing sheathed electrical / telecommunication / optical fibre cables up to a max. outer diameter of 21 mm					
	Non-sheathed cables up to a maximum outer diameter of 24 mm					

Minimum working clearance: Distance between cable / cable carrier and the aperture edge

b 1-1 – Distance between a cable/the cable carrier and the aperture edge – aside (≥25 mm)

b 1-2 – Distance between a cable/the cable carrier and the aperture edge – above (≥25 mm)

b 1-3 – Distance between a cable/the cable carrier and the aperture edge – underneath (≥25 mm)

c2 – Distance between a cable/cable carrier and other cables/cable carriers – underneath (≥50 mm)

Cable support (with cable carrier) ≤ 250mm form surface of wall

Cable support (without cable carrier) ≤ 150mm form surface of wall

* overlap with sealant thickness of t ≥3 mm

** ≥10 mm air gap between layers of insulation

B.1.6 Double sided penetration seal with steel pipes

Penetration Seal:	Steel pipes sealed with fischer FiAM Plus sealant to both sides of the wall, backed with backer rod, seal installed flush with surface of wall, wall thickness ≥100 mm

Construction details:

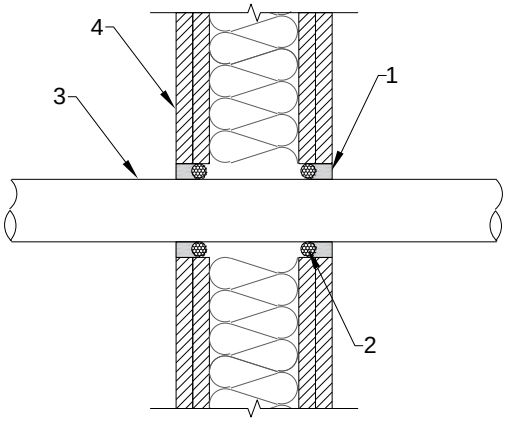


Figure not to scale

Key:

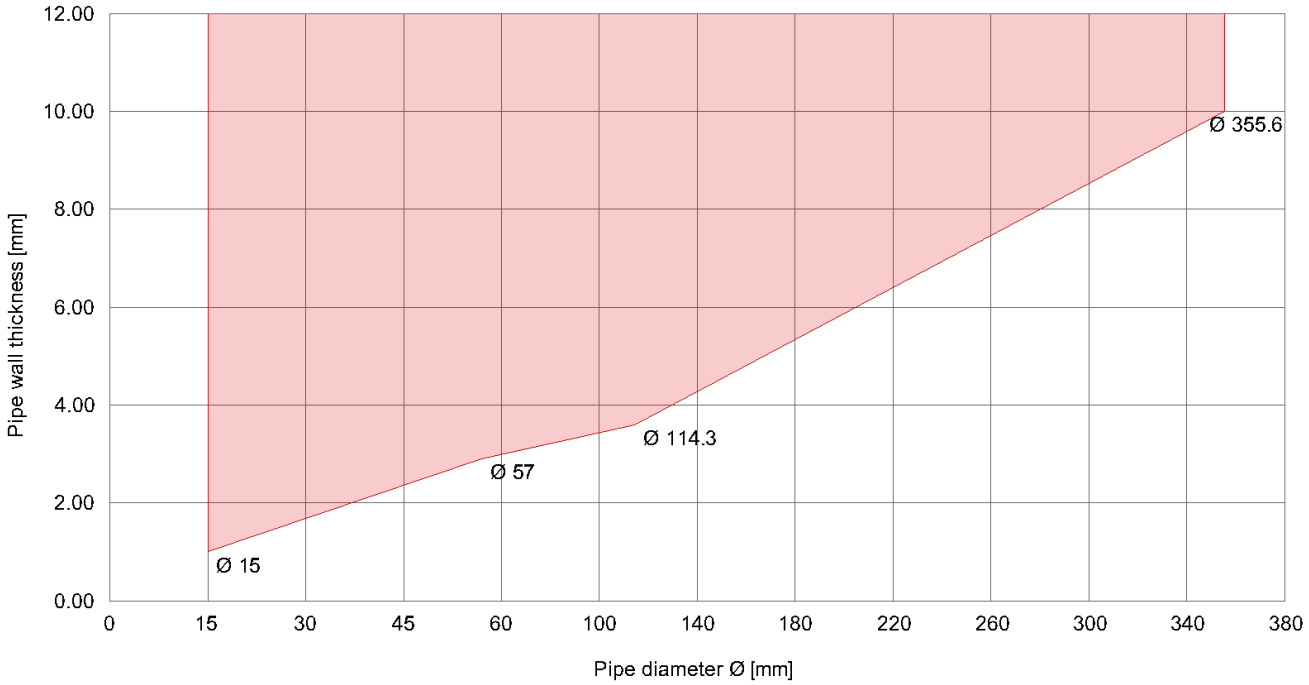
1. FiAM Plus
2. Backing material
3. Pipe
4. Wall

Table B.1.6

Type of penetrant	Sealant thickness	Annular space	Backing material	Classification
Steel pipe, Ø15 mm, 1.0 mm wall thickness	≥10 mm	10 mm	PE backer rod	EI 60 – C/U, C/C
Steel pipe, Ø57 mm, 2.9 mm wall thickness				E 60 – C/U, C/C EI 15 – C/U, C/C
Steel pipe, Ø114.3 mm, 3.6 mm wall thickness				E 60 – C/U, C/C
Steel pipe, Ø355.6 mm, 10.0 mm wall thickness				E 60 – C/U, C/C EI 20 – C/U, C/C
Steel pipe, Ø355.6 mm, 20.0 mm wall thickness				E 60 – C/U, C/C EI 30 – C/U, C/C

Pipe support ≤ 250mm from surface of specimen

Penetration Seal: Pipe diameter and wall thickness interpolation for
B.1.6 Double sided penetration seal with steel pipes



Type of penetrant	Classification
Steel pipe Ø15 mm	EI 60 – C/U, C/C
Steel pipe Ø57 mm	E 60 – C/U, C/C EI 15 – C/U, C/C
Steel pipe Ø114.3 mm	E 60 – C/U, C/C
Steel pipe Ø355.6 mm	E 60 – C/U, C/C EI 20 – C/U, C/C

B.1.7 Double sided penetration seal with stone wool insulated steel pipes (CS)

Penetration Seal:	Steel pipes sealed with fischer FiAM Plus sealant to both sides of the wall, backed with backer rod, seal installed flush with surface of wall, wall thickness ≥100 mm

Construction details:

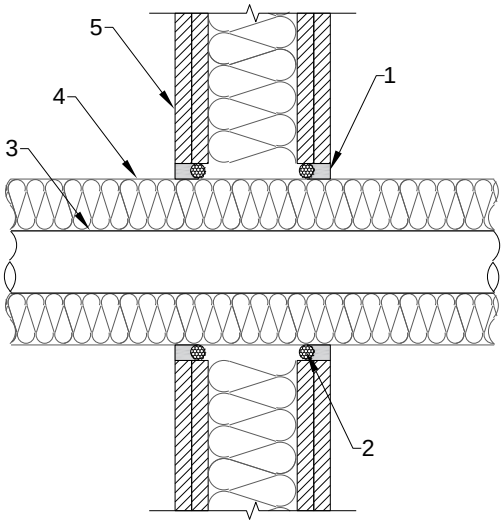


Figure not to scale

Key:

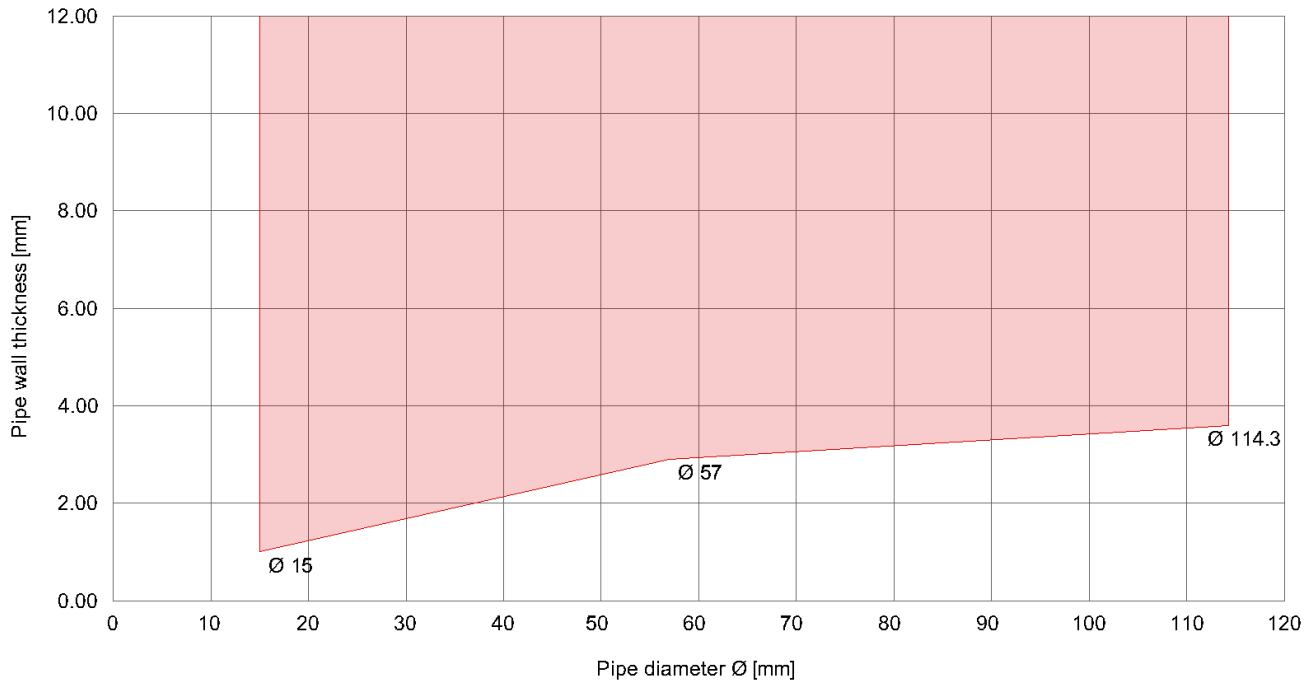
1. FiAM Plus
2. Backing material
3. Pipe
4. Pipe insulation
5. Wall

Table B.1.7

Type of penetrant	Type of pipe insulation	Sealant thickness	Annular space	Backing material	Classification
Steel pipe, Ø15 mm, 1.0 mm wall thickness	Stone wool, ρ ≥ 42 kg/m³, ≥ 50 mm thickness	≥10 mm	10 mm	PE backer rod	E 60 – U/C, C/U, C/C EI 45 – U/C, C/U, C/C
Steel pipe, Ø57 mm, 2.9 mm wall thickness					E 60 – U/C, C/U, C/C EI 30 – U/C, C/U, C/C
Steel pipe, Ø114.3 mm, 3.6 mm wall thickness					E 60 – U/C, C/U, C/C EI 45 – U/C, C/U, C/C

Pipe support ≤ 250mm from surface of specimen
CS = Continued Sustained

Penetration Seal: Pipe diameter and wall thickness interpolation for
B.1.7 Double sided penetration seal with stone wool insulated steel pipes (CS)



Type of penetrant	Classification
Steel pipe Ø15 mm	E 60 – U/C, C/U, C/C EI 45 – U/C, C/U, C/C
Steel pipe Ø57 mm	E 60 – U/C, C/U, C/C EI 30 – U/C, C/U, C/C
Steel pipe Ø114.3 mm	E 60 – U/C, C/U, C/C EI 45 – U/C, C/U, C/C

B.1.8 Double sided penetration seal with stone wool insulated steel pipes (CI)

Penetration Seal:	Steel pipes sealed with fischer FiAM Plus sealant to both sides of the wall, backed with backer rod, seal installed flush with surface of wall, wall thickness ≥100 mm

Construction details:

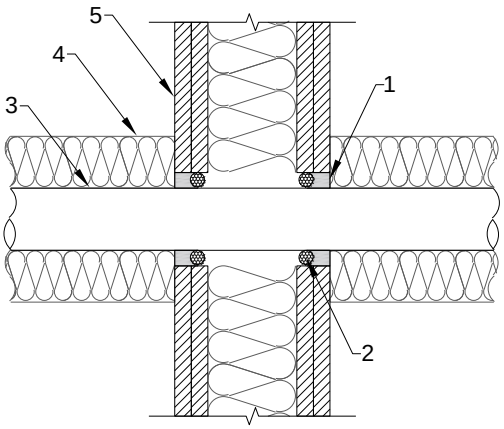


Figure not to scale

Key:

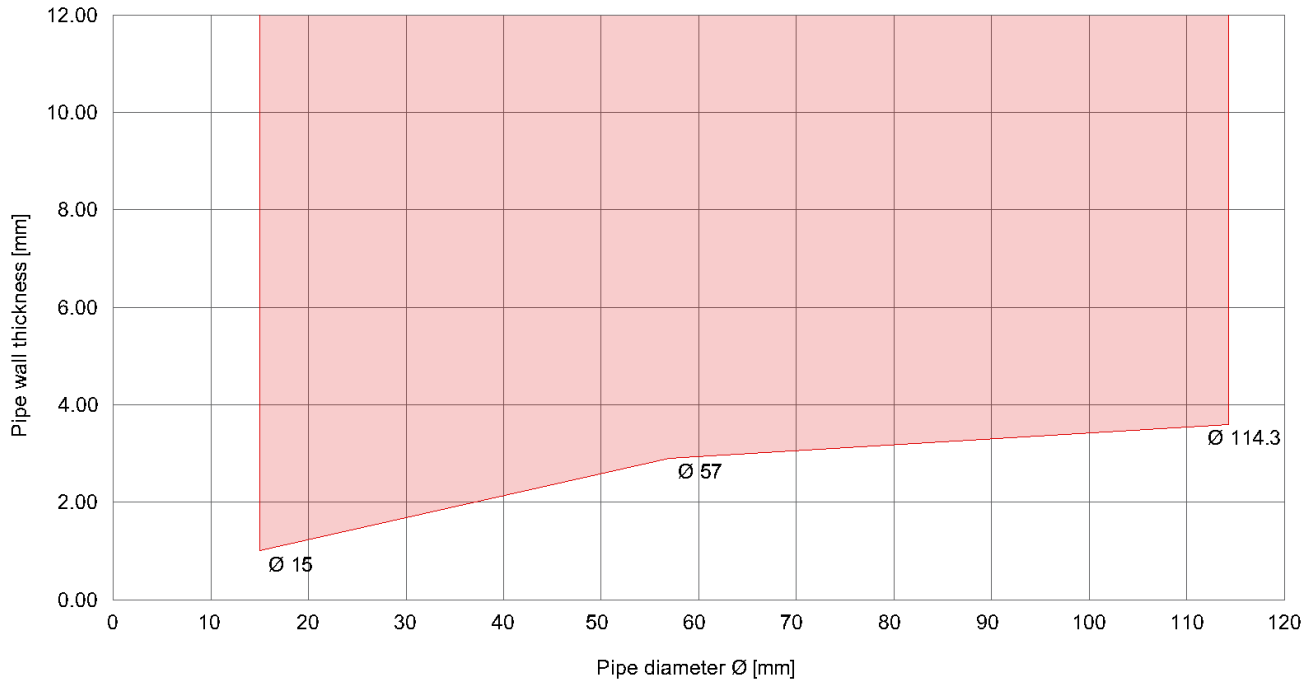
1. FiAM Plus
2. Backing material
3. Pipe
4. Pipe insulation
5. Wall

Table B.1.8

Type of penetrant	Type of pipe insulation	Sealant thickness	Annular space	Backing material	Classification
Steel pipe, Ø15 mm, 1.0 mm wall thickness	Stone wool, ρ ≥ 42 kg/m³, ≥ 50 mm thickness	≥10 mm	10 mm	PE backer rod	EI 60 – U/C, C/U, C/C
Steel pipe, Ø57 mm, 2.9 mm wall thickness					E 60 – U/C, C/U, C/C EI 45 – U/C, C/U, C/C
Steel pipe, Ø114.3 mm, 3.6 mm wall thickness					E 60 – U/C, C/U, C/C EI 30 – U/C, C/U, C/C

Pipe support ≤ 250mm from surface of specimen
CI = Continued Interrupted

Penetration Seal: Pipe diameter and wall thickness interpolation for
B.1.8 Double sided penetration seal with stone wool insulated steel pipes (CI)



Type of penetrant	Classification
Steel pipe Ø15 mm	EI 60 – U/C, C/U, C/C
Steel pipe Ø57 mm	E 60 – U/C, C/U, C/C EI 45 – U/C, C/U, C/C
Steel pipe Ø114.3 mm	E 60 – U/C, C/U, C/C EI 30 – U/C, C/U, C/C

B.1.9 Double sided penetration seal with rubber type insulated steel pipes (CS)

Penetration Seal:	Steel pipes sealed with fischer FiAM Plus sealant to both sides of the wall, backed with backer rod, seal installed flush with surface of wall, wall thickness ≥100 mm

Construction details:

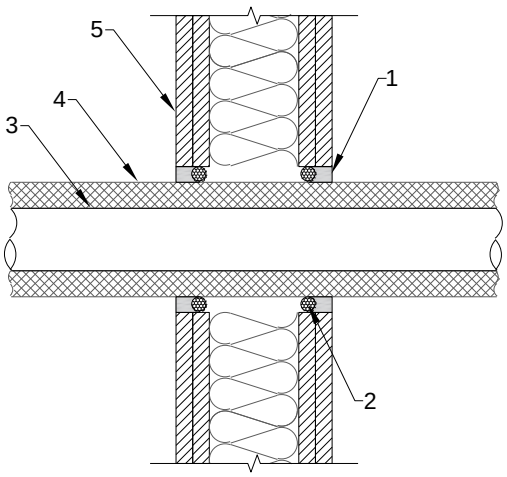


Figure not to scale

Key:

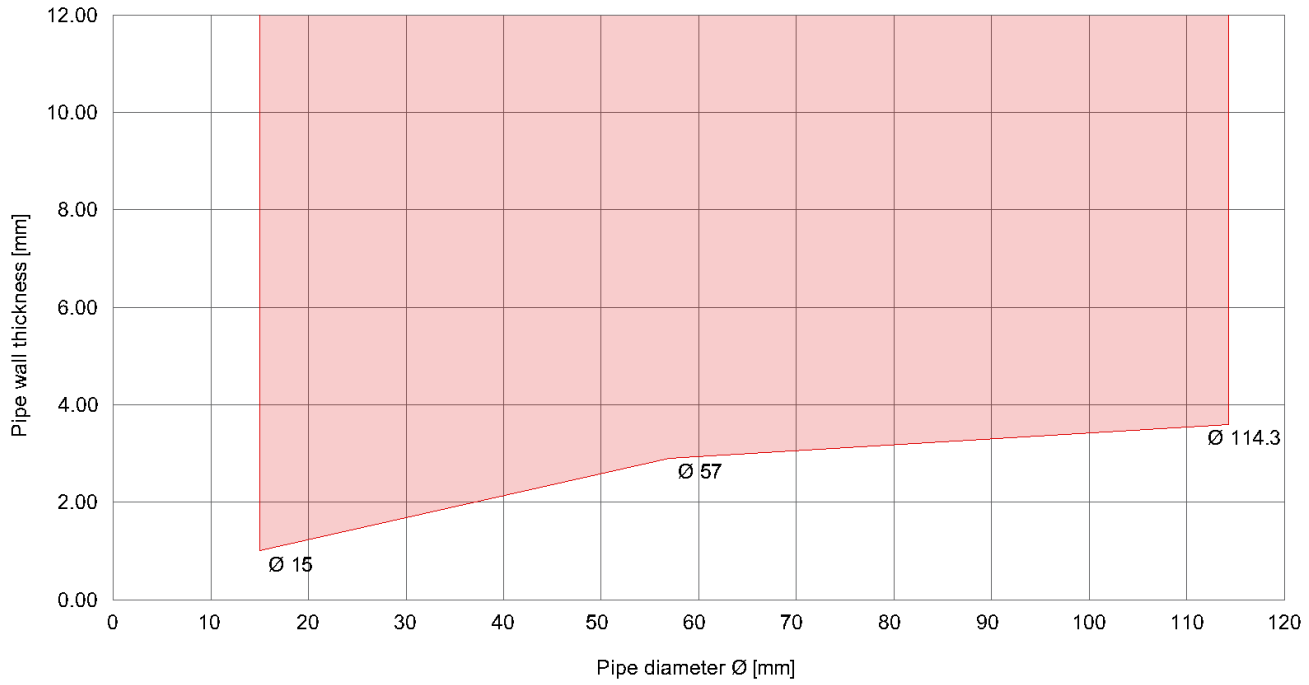
1. FiAM Plus
2. Backing material
3. Pipe
4. Pipe insulation
5. Wall

Table B.1.9

Type of penetrant	Type of pipe insulation	Sealant thickness	Annular space	Backing material	Classification
Steel pipe, Ø15 mm, 1.0 mm wall thickness	Armaflex AF EVO, 13 mm thickness	≥20 mm	20 mm	PE backer rod	EI 60 – C/U, C/C
Steel pipe, Ø57 mm, 2.9 mm wall thickness					EI 60 – C/U, C/C
Steel pipe, Ø57 mm, 2.9 mm wall thickness	Armaflex AF EVO, 25 mm thickness				E 60 – C/U, C/C EI 45 – C/U, C/C
Steel pipe, Ø114.3 mm, 3.6 mm wall thickness					E 60 – C/U, C/C EI 45 – C/U, C/C

Pipe support ≤ 250mm from surface of specimen
CS = Continued Sustained

Penetration Seal: Pipe diameter and wall thickness interpolation for
B.1.9 Double sided penetration seal with rubber type insulated steel pipes (CS)



Type of penetrant	Classification
Steel pipe Ø15 mm (13mm Armaflex)	EI 60 – C/U, C/C
Steel pipe Ø57 mm (13mm Armaflex)	EI 60 – C/U, C/C
Steel pipe Ø57 mm (25mm Armaflex)	E 60 – C/U, C/C EI 45 – C/U, C/C
Steel pipe Ø114.3 mm (25mm Armaflex)	E 60 – C/U, C/C EI 45 – C/U, C/C

B.1.10 Double sided penetration seal with copper pipes

Penetration Seal:	Copper pipes sealed with fischer FiAM Plus sealant to both sides of the wall, backed with backer rod, seal installed flush with surface of wall, wall thickness ≥100 mm

Construction details:

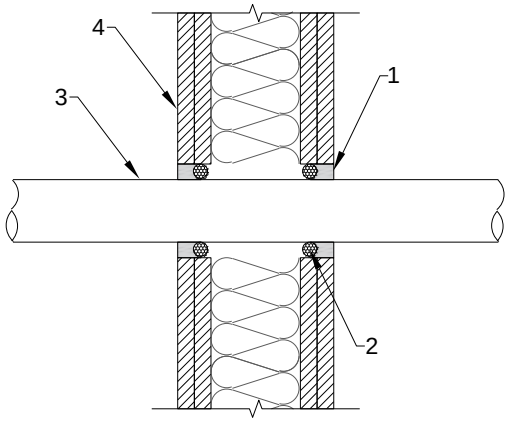


Figure not to scale

Key:

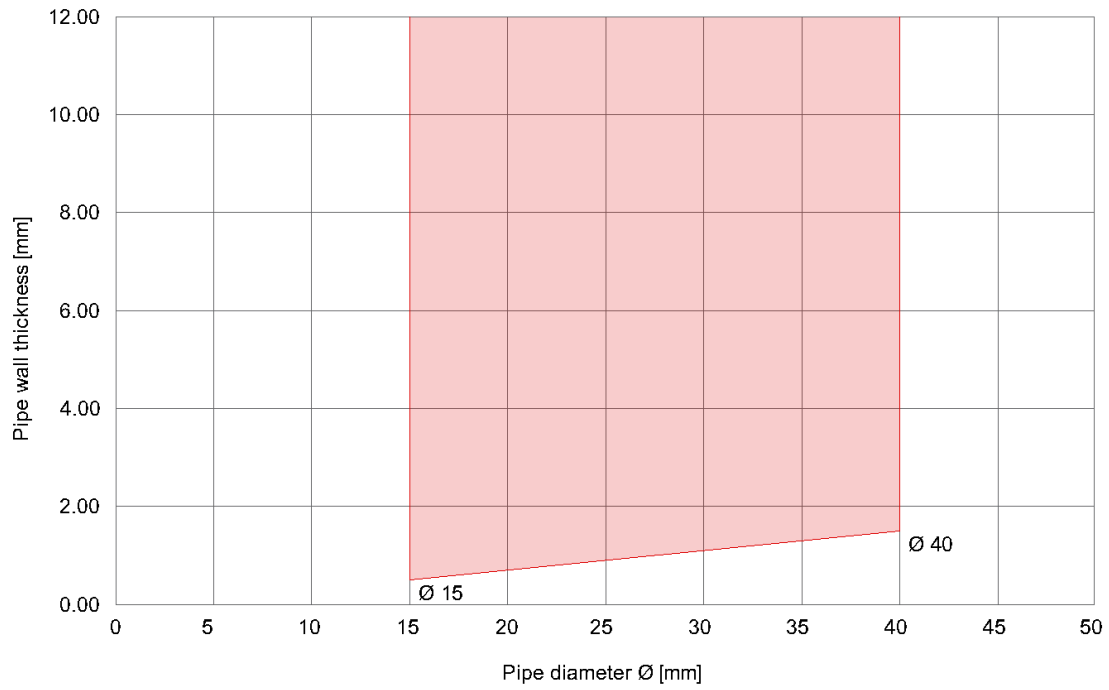
1. FiAM Plus
2. Backing material
3. Pipe
4. Wall

Table B.1.10

Type of penetrant	Sealant thickness	Annular space	Backing material	Classification
Copper pipe, Ø15 mm, 0.5 mm wall thickness	≥10 mm	10 mm	PE backer rod	E 60 – C/U, C/C
Copper pipe, Ø40 mm, 1.5 mm wall thickness				E 60 – C/U, C/C

Pipe support ≤ 250mm from surface of specimen

Penetration Seal: Pipe diameter and wall thickness interpolation for
B.1.10 Double sided penetration seal with copper pipes



Type of penetrant	Classification
Copper pipe Ø15 mm	E 60 – C/U, C/C
Copper pipe Ø40 mm	E 60 – C/U, C/C

B.1.11 Double sided penetration seal with stone wool insulated copper pipes (CS)

Penetration Seal: Copper pipes sealed with fischer FiAM Plus sealant to both sides of the wall, backed with backer rod, seal installed flush with surface of wall, wall thickness ≥100 mm

Construction details:

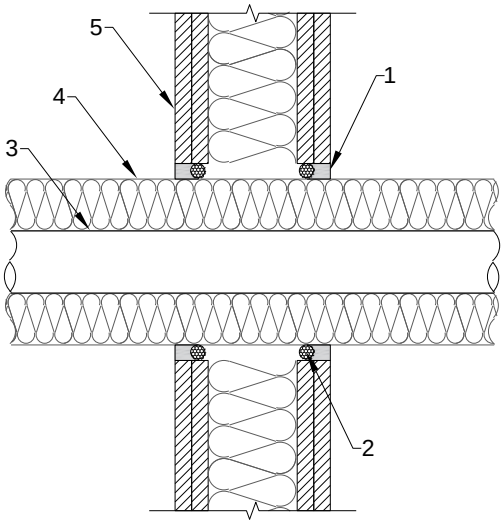


Figure not to scale

Key:

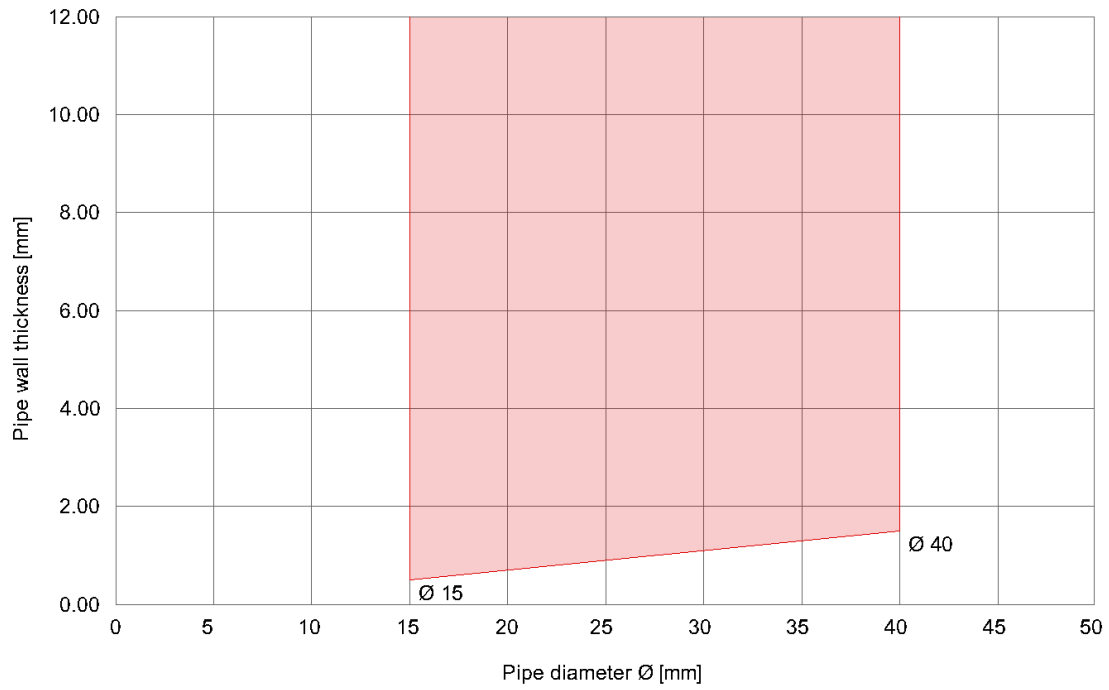
1. FiAM Plus
2. Backing material
3. Pipe
4. Pipe insulation
5. Wall

Table B.1.11

Type of penetrant	Type of pipe insulation	Sealant thickness	Annular space	Backing material	Classification
Copper pipe, Ø15 mm, 0.5 mm wall thickness	Stone wool, ρ ≥ 42 kg/m³, ≥ 50 mm thickness	≥10 mm	10 mm	PE backer rod	EI 60 – U/C, C/U, C/C
Copper pipe, Ø40 mm, 1.5 mm wall thickness					E 60 – U/C, C/U, C/C EI 45 – U/C, C/U, C/C

Pipe support ≤ 250mm from surface of specimen
CS = Continued Sustained

Penetration Seal: Pipe diameter and wall thickness interpolation for
B.1.11 Double sided penetration seal with stone wool insulated copper pipes (CS)



Type of penetrant	Classification
Copper pipe Ø15 mm	EI 60 – U/C, C/U, C/C
Copper pipe Ø40 mm	E 60 – U/C, C/U, C/C EI 45 – U/C, C/U, C/C

B.1.12 Double sided penetration seal with stone wool insulated copper pipes (CI)

Penetration Seal:	Copper pipes sealed with fischer FiAM Plus sealant to both sides of the wall, backed with backer rod, seal installed flush with surface of wall, wall thickness ≥100 mm

Construction details:

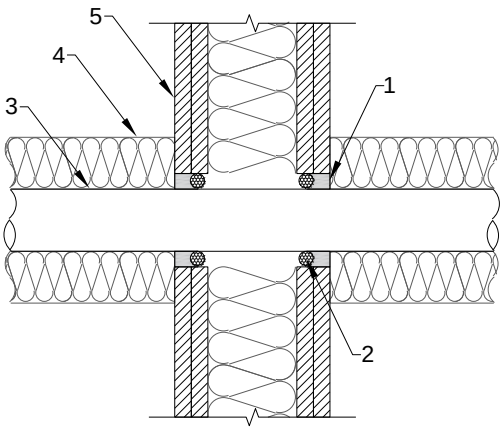


Figure not to scale

Key:

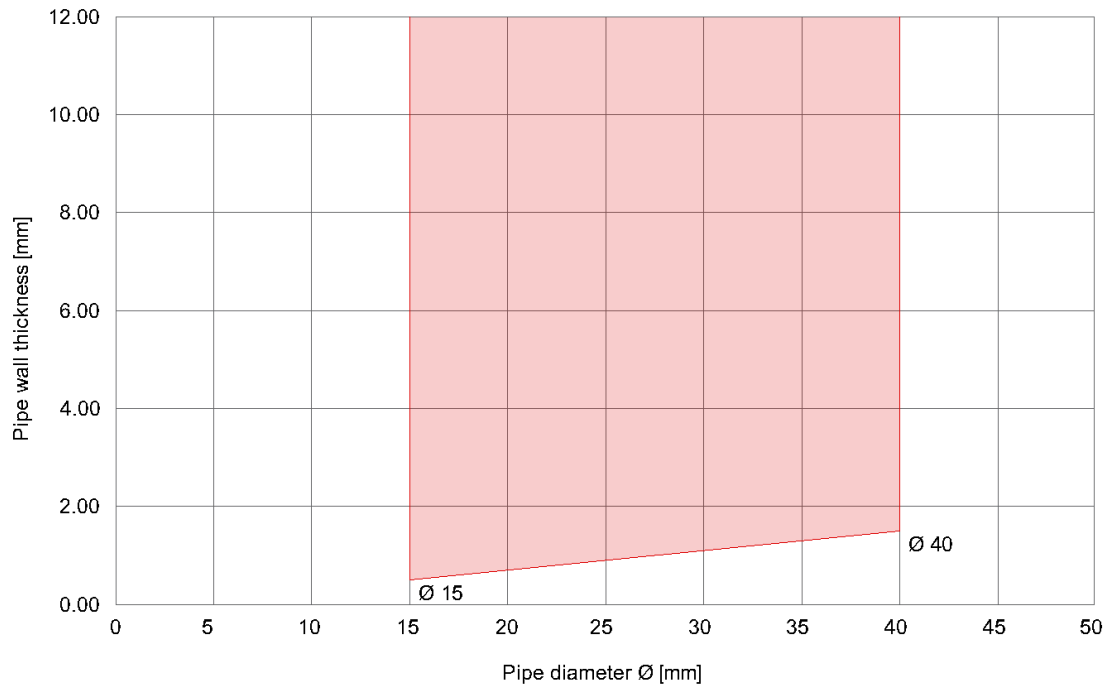
1. FiAM Plus
2. Backing material
3. Pipe
4. Pipe insulation
5. Wall

Table B.1.12

Type of penetrant	Type of pipe insulation	Sealant thickness	Annular space	Backing material	Classification
Copper pipe, Ø15 mm, 0.5 mm wall thickness	Stone wool, ρ ≥ 42 kg/m³, ≥ 50 mm thickness	≥10 mm	10 mm	PE backer rod	EI 60 – U/C, C/U, C/C
Copper pipe, Ø40 mm, 1.5 mm wall thickness					EI 60 – U/C, C/U, C/C

Pipe support ≤ 250mm from surface of specimen
CI = Continued Interrupted

Penetration Seal: Pipe diameter and wall thickness interpolation for
B.1.12 Double sided penetration seal with stone wool insulated copper pipes (CI)



Type of penetrant	Classification
Copper pipe Ø15 mm	EI 60 – U/C, C/U, C/C
Copper pipe Ø40 mm	EI 60 – U/C, C/U, C/C

B.1.13 Double sided penetration seal with rubber type insulated copper pipes (CS)

Penetration Seal:	Copper pipes sealed with fischer FiAM Plus sealant to both sides of the wall, backed with backer rod, seal installed flush with surface of wall, wall thickness ≥100 mm

Construction details:

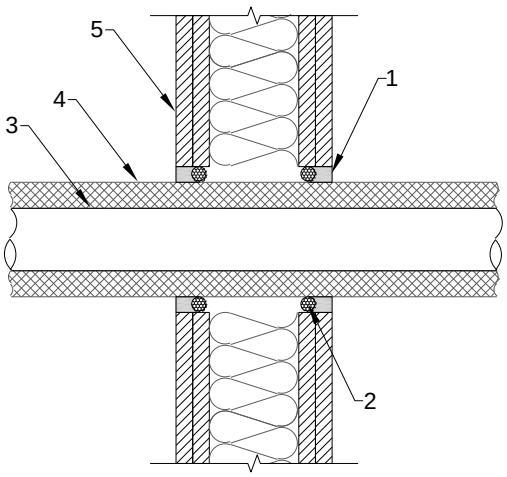


Figure not to scale

Key:

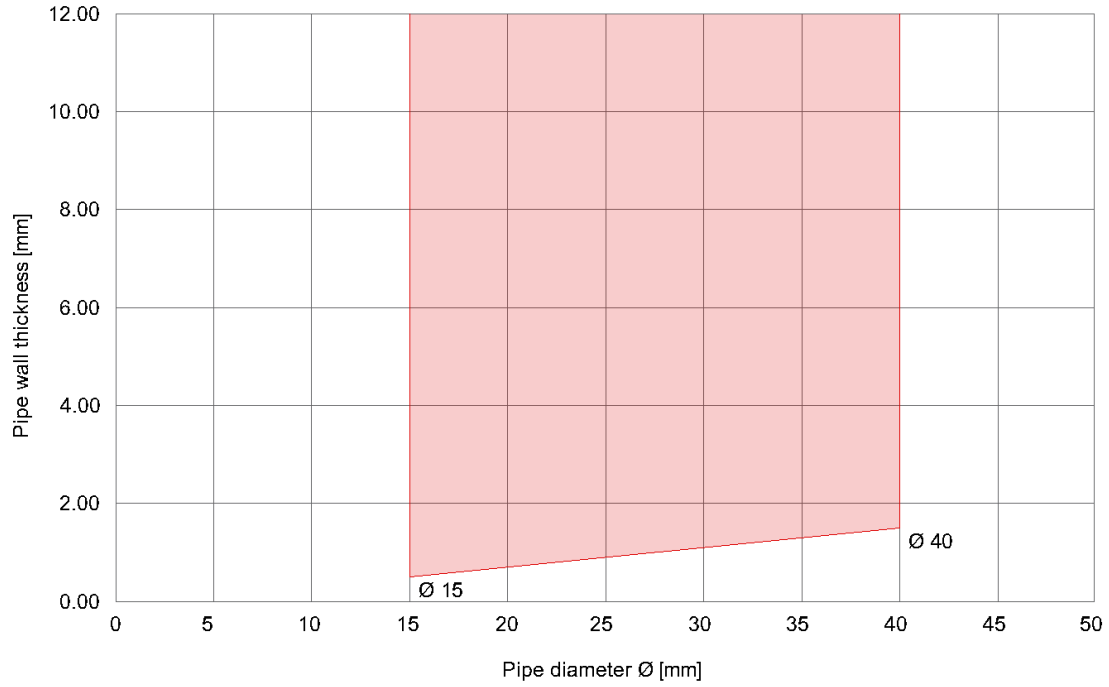
1. FiAM Plus
2. Backing material
3. Pipe
4. Pipe insulation
5. Wall

Table B.1.13

Type of penetrant	Type of pipe insulation	Sealant thickness	Annular space	Backing material	Classification
Copper pipe, Ø15 mm, 0.5 mm wall thickness	Armaflex AF EVO, 13mm thickness	≥20 mm	20 mm	PE backer rod	EI 60 – C/U, C/C
Copper pipe, Ø40 mm, 1.5 mm wall thickness					E 60 – C/U, C/C EI 45 – C/U, C/C

Pipe support ≤ 250mm from surface of specimen
CS = Continued Sustained

Penetration Seal: Pipe diameter and wall thickness interpolation for
B.1.13 Double sided penetration seal with rubber type insulated copper pipes (CS)



Type of penetrant	Classification
Copper pipe Ø15 mm	EI 60 – C/U, C/C
Copper pipe Ø40 mm	E 60 – C/U, C/C EI 45 – C/U, C/C

B.1.14 Double sided penetration seal with combustible pipes

Penetration Seal:	Combustible pipes sealed with fischer FiAM Plus sealant to both sides of the wall, backed with backer rod, seal installed flush with surface of wall, wall thickness ≥100 mm

Construction details:

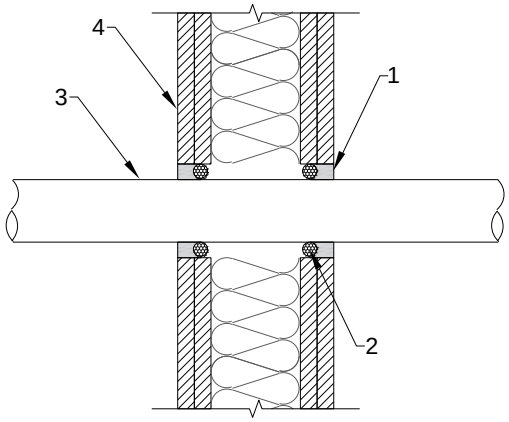


Figure not to scale

Key:

1. FiAM Plus
2. Backing material
3. Pipe
4. Wall

Table B.1.14

Type of penetrant	Sealant thickness	Annular space	Backing material	Classification
PP pipe, Ø50 mm, 2.7 mm wall thickness	≥20 mm	20 mm	PE backer rod	EI 45 – U/C, C/U, C/C
PVC pipe, Ø50 mm, 3.7 mm wall thickness				E 60 – U/C, C/U, C/C EI 15 – U/C, C/U, C/C
PE pipe, Ø50 mm, 3.0 mm wall thickness				EI 60 – U/C, C/U, C/C

Pipe support ≤ 250mm from surface of specimen

B.2 Rigid wall constructions with minimum wall thickness of 115 mm

B.2.1 Double sided penetration seal with cables (service option S)

Penetration Seal: Cables sealed with fischer FiAM Plus sealant to both sides of the wall, backed with stone wool, seal installed flush with surface of wall, wall thickness ≥115 mm

Construction details:

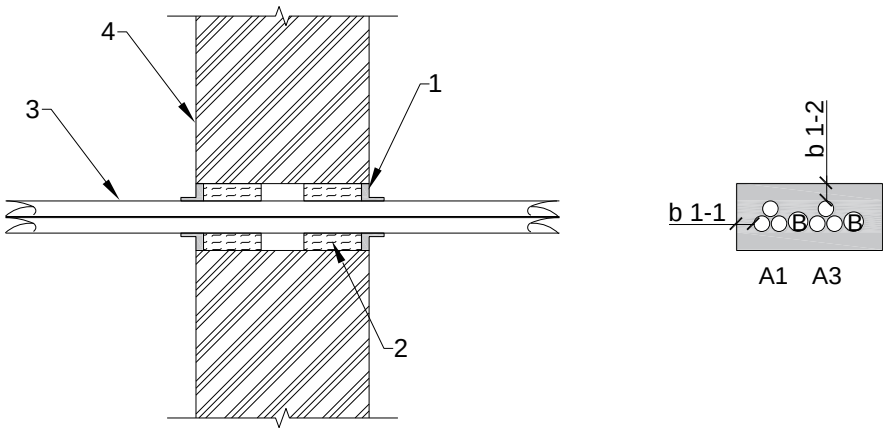


Figure not to scale

Key:

1. FiAM Plus
2. Backing material
3. Cables
4. Wall

Table B.2.1

Type of penetrant	Cable type	Maximum aperture	Sealant thickness	Seal overlap on penetrant	Backing material	Classification
Service option S	Sheathed cables / telecommunication cables / optical fibre cables up to a max. outer diameter of 21 mm without cable carrier	112 x 55 mm	≥5 mm	≥13 mm*	Stone wool ρ ≥60 kg/m³, ≥40 mm thick from both sides**	E 120 EI 45

b 1-1 – side (≥10 mm)
b 1-2 – top / bottom (≥10 mm)
Cable support ≤250 mm from top surface of wall
* overlap with sealant thickness of t ≥3 mm
** ≥10 mm air gap between layers of insulation

B.2.2 Double sided penetration seal with cables (service option M)

Penetration Seal: Cables sealed with fischer FiAM Plus sealant to both sides of the wall, backed with stone wool, seal installed flush with surface of wall, wall thickness ≥115 mm

Construction details:

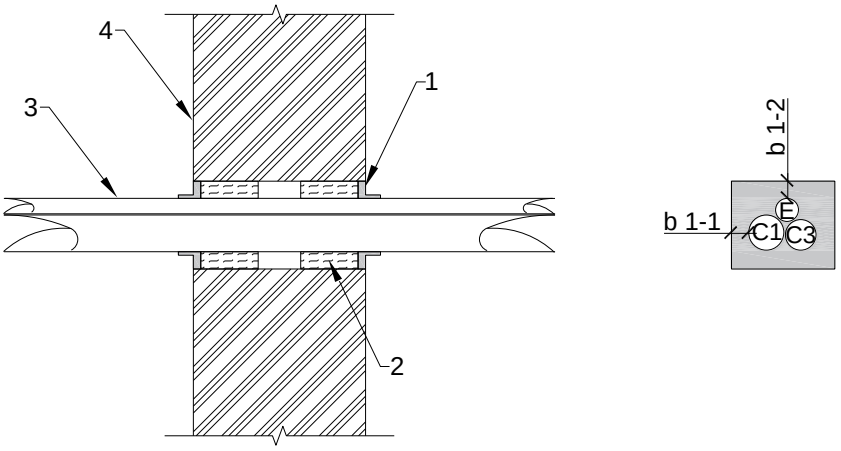


Figure not to scale

Key:

1. FiAM Plus
2. Backing material
3. Cables
4. Wall

Table B.2.2

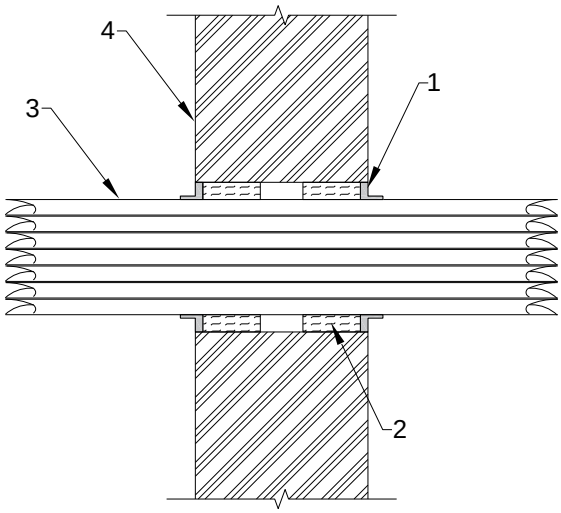
Type of penetrant	Cable type	Maximum aperture size	Sealant thickness	Seal overlap on penetrant	Backing material	Classification
Service option M	Sheathed cables / telecommunication cables / optical fibre cables up to a max. outer diameter of 50 mm without cable carrier	105 x 81 mm	≥5 mm	≥13 mm*	Stone wool ρ ≥60 kg/m³, ≥40 mm thick from both sides**	E 120 EI 30

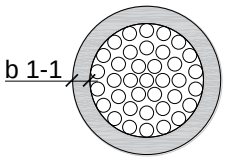
b 1-1 – side (≥10 mm)
b 1-2 – top / bottom (≥10 mm)
Cable support ≤250 mm from top surface of wall
* overlap with sealant thickness of t ≥3 mm
** ≥10 mm air gap between layers of insulation

B.2.3 Double sided penetration seal with cables (tied bundle of cables)

Penetration Seal: Cable bundle sealed with fischer FiAM Plus sealant to both sides of the wall, backed with stone wool, seal installed flush with surface of wall, wall thickness ≥115 mm

Construction details:





F-cable bundle

Figure not to scale

Key:

1. FiAM Plus
2. Backing material
3. Cable bundle
4. Wall

Table B.2.3

Type of penetrant	Cable type	Maximum aperture size	Sealant thickness	Seal overlap on penetrant	Backing material	Classification
Tied bundle of cables	Tied bundles up to 100 mm overall diameter containing sheathed electrical / telecommunication / optical fibre cables up to a max. outer diameter of 21 mm without cable carrier	Ø120 mm	≥5 mm	≥13 mm*	Stone wool ρ ≥60 kg/m³, ≥40 mm thick from both sides**	E 120 EI 45

b 1-1 – side (≤10 mm)

Cable support ≤250 mm from top surface of wall

* overlap with sealant thickness of t ≥3 mm

** ≥10 mm air gap between layers of insulation

B.2.4 Double sided penetration seal with cables supports (service option L)

Penetration Seal: Cable supports, and cables sealed with fischer FiAM Plus sealant to both sides of the wall, backed with stone wool insulation, seal installed flush with surface of wall, wall thickness ≥115 mm

Construction details:

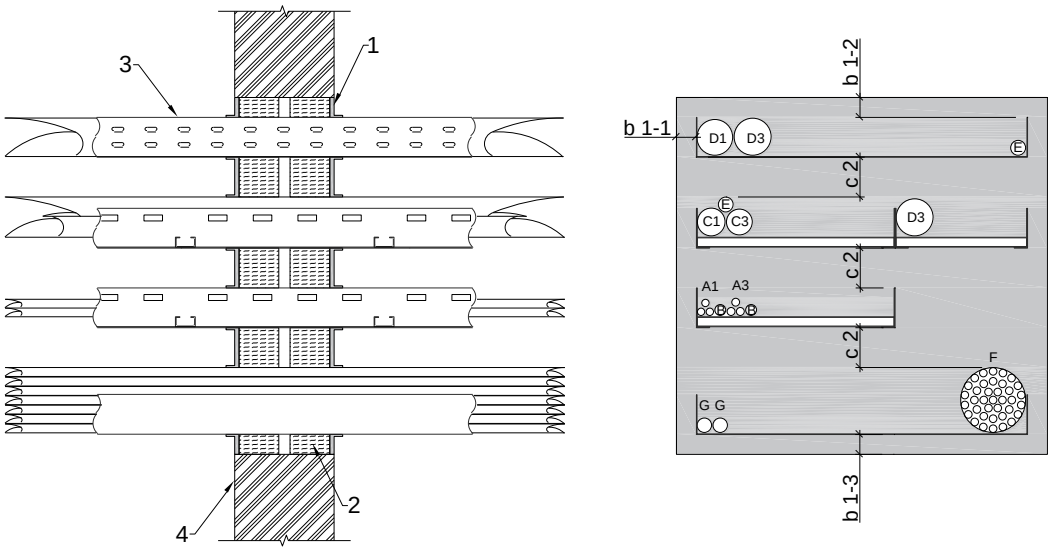


Figure not to scale

Key:

1. FiAM Plus
2. Backing material
3. Cable carrier
4. Wall

Table B.2.4

Type of penetrant	Cable type	Maximum aperture size	Sealant thickness	Seal overlap on penetrant	Backing material	Classification
Service option L	Sheathed cables / telecommunication cables / optical fibre cables up to a max. outer diameter of 80 mm	550 x 500 mm	≥5 mm	≥13 mm*	Stone wool ρ ≥60 kg/m³, ≥40 mm thick from both sides**	E 120 EI 30
	Tied bundles up to 100 mm overall diameter containing sheathed electrical / telecommunication / optical fibre cables up to a max. outer diameter of 21 mm					
	Non-sheathed cables up to a maximum outer diameter of 24 mm					

Minimum working clearance: Distance between cable / cable carrier and the aperture edge

b 1-1 – Distance between a cable/the cable carrier and the aperture edge – aside (≥25 mm)
b 1-2 – Distance between a cable/the cable carrier and the aperture edge – above (≥25 mm)
b 1-3 – Distance between a cable/the cable carrier and the aperture edge – underneath (≥25 mm)
c2 – Distance between a cable/cable carrier and other cables/cable carriers – underneath (≥50 mm)
Cable support (with cable carrier) ≤ 250mm form surface of wall
Cable support (without cable carrier) ≤ 150mm form surface of wall

* overlap with sealant thickness of t ≥3 mm
** ≥10 mm air gap between layers of insulation

B.2.5 Double sided penetration seal with steel pipes

Penetration Seal:	Steel pipes sealed with fischer FiAM Plus sealant to both sides of the wall, backed with backer rod, seal installed flush with surface of wall, wall thickness ≥115 mm

Construction details:

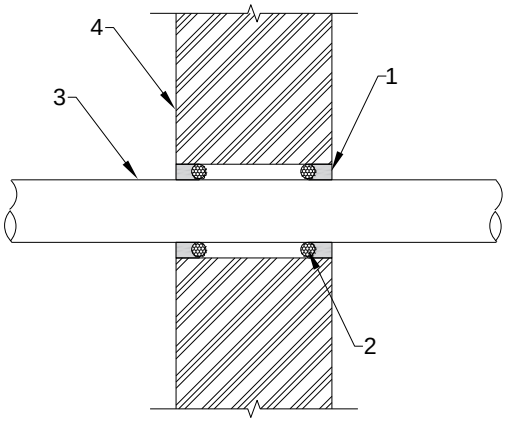


Figure not to scale

Key:

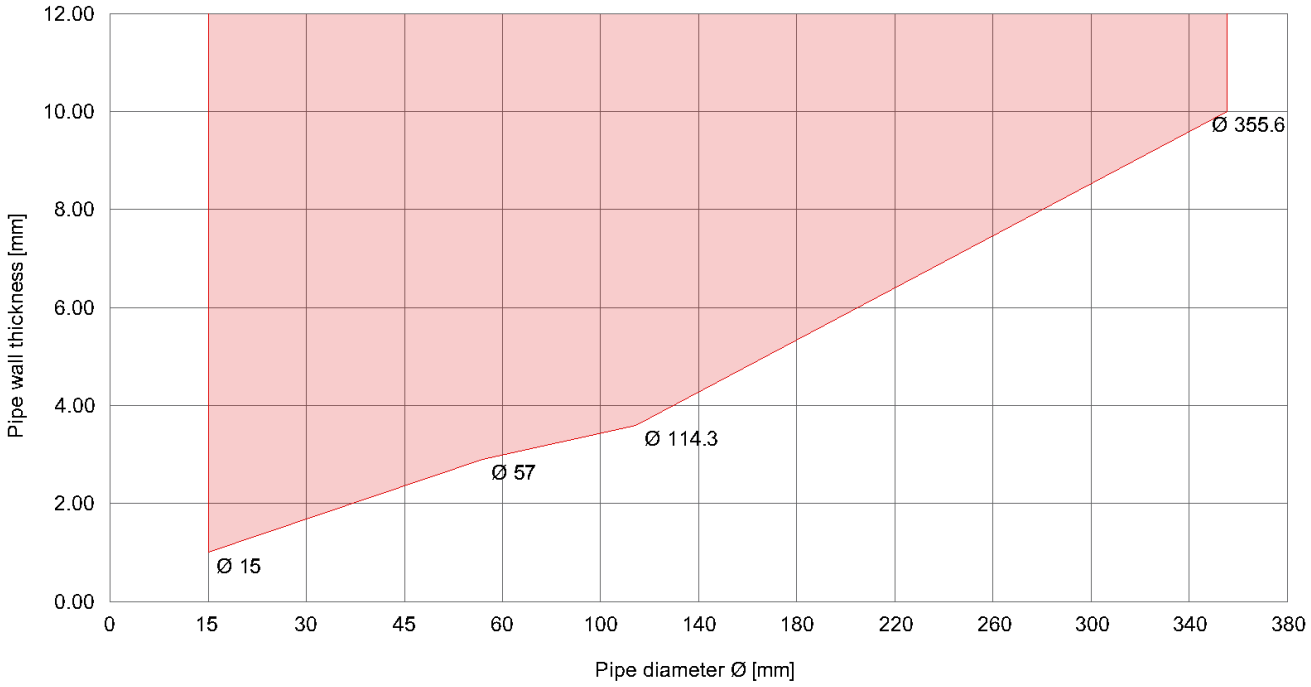
1. FiAM Plus
2. Backing material
3. Pipe
4. Wall

Table B.2.5

Type of penetrant	Sealant thickness	Annular space	Backing material	Classification
Steel pipe, Ø15 mm, 1.0 mm wall thickness	≥10 mm	10 mm	PE backer rod	EI 240 – C/U, C/C
Steel pipe, Ø57 mm, 2.9 mm wall thickness				E 240 – C/U, C/C EI 30 – C/U, C/C
Steel pipe, Ø114.3 mm, 3.6 mm wall thickness				E 240 – C/U, C/C EI 15 – C/U, C/C
Steel pipe, Ø355.6 mm, 10.0 mm wall thickness				E 240 – C/U, C/C EI 20 – C/U, C/C

Pipe support ≤ 250mm from surface of specimen

Penetration Seal: Pipe diameter and wall thickness interpolation for
B.2.5 Double sided penetration seal with steel pipes



Type of penetrant	Classification
Steel pipe Ø15 mm	EI 240 – C/U, C/C
Steel pipe Ø57 mm	E 240 – C/U, C/C EI 30 – C/U, C/C
Steel pipe Ø114.3 mm	E 240 – C/U, C/C EI 15 – C/U, C/C
Steel pipe Ø355.6 mm	E 240 – C/U, C/C EI 20 – C/U, C/C

B.2.6 Double sided penetration seal with stone wool insulated steel pipes (CS)

Penetration Seal: Steel pipes sealed with fischer FiAM Plus sealant to both sides of the wall, backed with stone wool, seal installed flush with surface of wall, wall thickness ≥115 mm

Construction details:

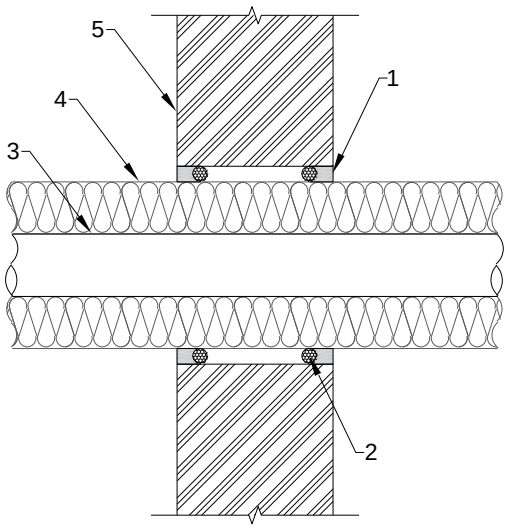


Figure not to scale

Key:

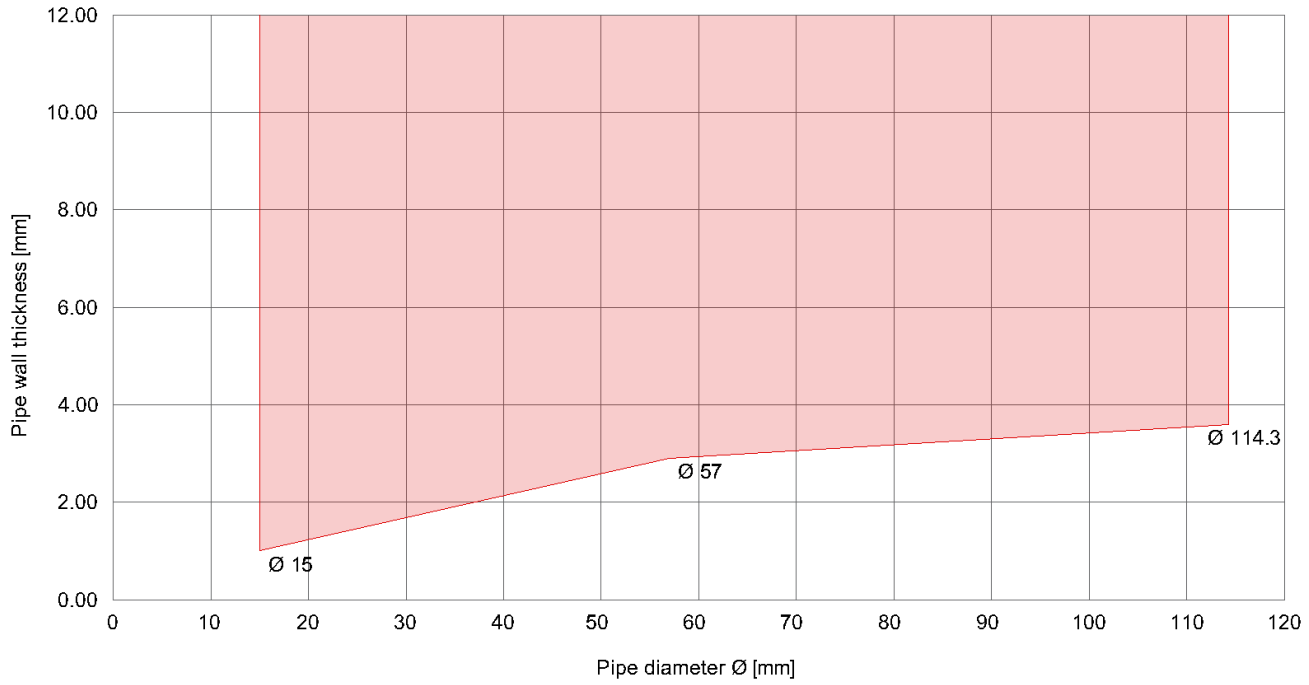
1. FiAM Plus
2. Backing material
3. Pipe
4. Pipe insulation
5. Wall

Table B.2.6

Type of penetration	Type of pipe insulation	Sealant thickness	Annular space	Backing material	Classification
Steel pipe, Ø15 mm, 1.0 mm wall thickness	Stone wool, ρ ≥ 100 kg/m³, ≥ 50 mm thickness	≥10 mm	10 mm	PE backer rod	E 240 – U/C, C/U, C/C EI 120 – U/C, C/U, C/C
Steel pipe, Ø57 mm, 2.9 mm wall thickness					E 240 – U/C, C/U, C/C EI 120 – U/C, C/U, C/C
Steel pipe, Ø114.3 mm, 3.6 mm wall thickness					E 240 – U/C, C/U, C/C EI 90 – U/C, C/U, C/C

Pipe support ≤ 250mm from surface of specimen
CS = Continued Sustained

Penetration Seal: Pipe diameter and wall thickness interpolation for
B.2.6 Double sided penetration seal with stone wool insulated steel pipes (CS)



Type of penetrant	Classification
Steel pipe Ø15 mm	E 240 – U/C, C/U, C/C EI 120 – U/C, C/U, C/C
Steel pipe Ø57 mm	E 240 – U/C, C/U, C/C EI 120 – U/C, C/U, C/C
Steel pipe Ø114.3 mm	E 240 – U/C, C/U, C/C EI 90 – U/C, C/U, C/C

B.2.7 Double sided penetration seal with stone wool insulated steel pipes (CI)

Penetration Seal:	Steel pipes sealed with fischer FiAM Plus sealant to both sides of the wall, backed with stone wool, seal installed flush with surface of wall, wall thickness ≥115 mm

Construction details:

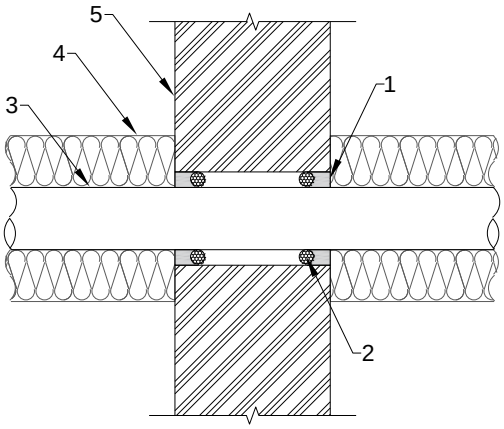


Figure not to scale

Key:

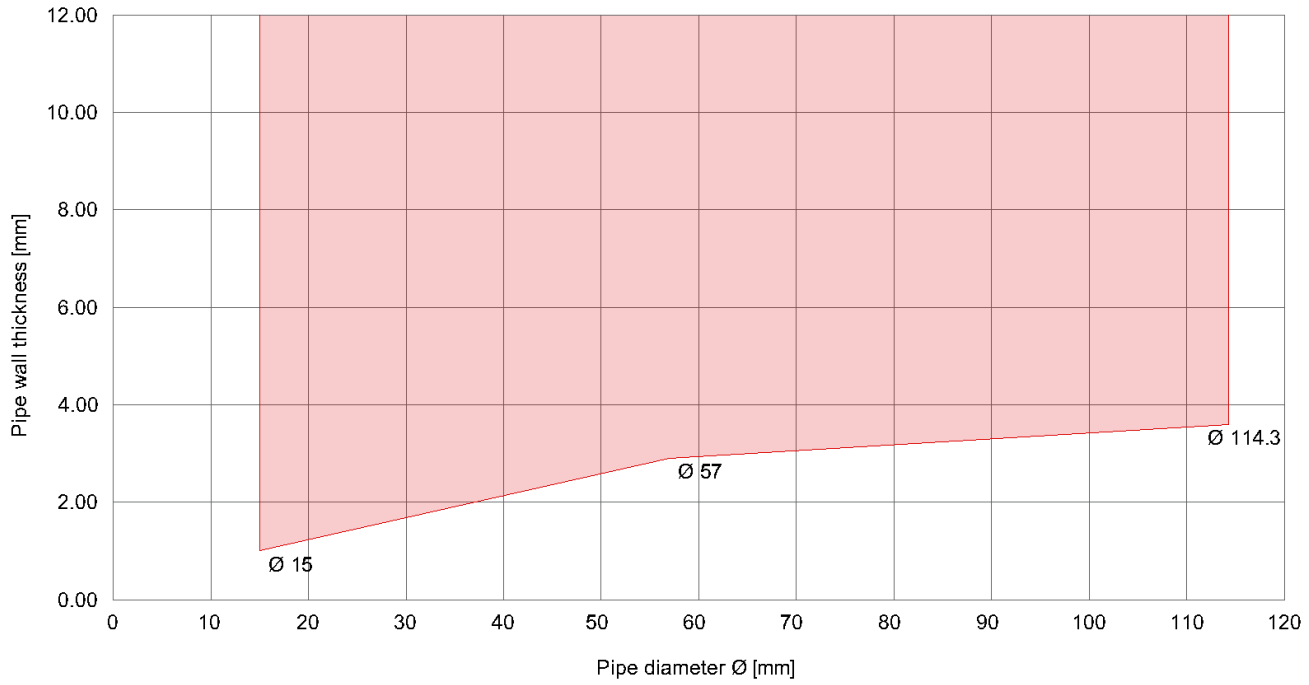
1. FiAM Plus
2. Backing material
3. Pipe
4. Pipe insulation
5. Wall

Table B.2.7

Type of penetration	Type of pipe insulation	Sealant thickness	Annular space	Backing material	Classification
Steel pipe, Ø15 mm, 1.0 mm wall thickness	Stone wool, ρ ≥ 100 kg/m³, ≥50 mm thickness	≥10 mm	10 mm	PE backer rod	EI 240 – U/C, C/U, C/C
Steel pipe, Ø57 mm, 2.9 mm wall thickness					E 240 – U/C, C/U, C/C EI 180 – U/C, C/U, C/C
Steel pipe, Ø114.3 mm, 3.6 mm wall thickness					E 240 – U/C, C/U, C/C EI 90 – U/C, C/U, C/C

Pipe support ≤ 250mm from surface of specimen
CI = Continued Interrupted

Penetration Seal: Pipe diameter and wall thickness interpolation for
B.2.7 Double sided penetration seal with stone wool insulated steel pipes (CI)



Type of penetrant	Classification
Steel pipe Ø15 mm	EI 240 – U/C, C/U, C/C
Steel pipe Ø57 mm	E 240 – U/C, C/U, C/C EI 180 – U/C, C/U, C/C
Steel pipe Ø114.3 mm	E 240 – U/C, C/U, C/C EI 90 – U/C, C/U, C/C

B.2.8 Double sided penetration seal with rubber type insulated steel pipes (CS)

Penetration Seal:	Steel pipes sealed with fischer FiAM Plus sealant to both sides of the wall, backed with backer rod, seal installed flush with surface of wall, wall thickness ≥115 mm

Construction details:

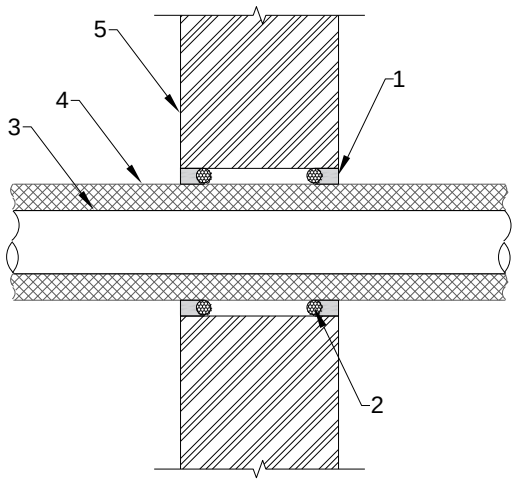


Figure not to scale

Key:

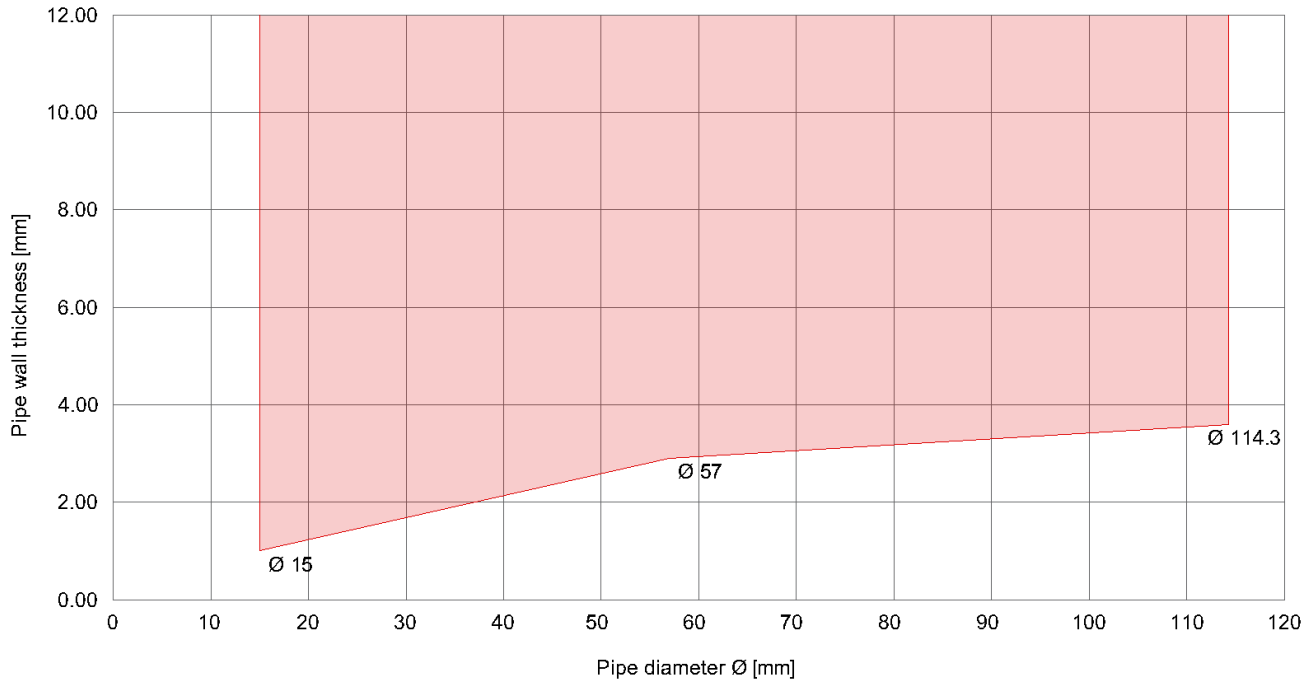
1. FiAM Plus
2. Backing material
3. Pipe
4. Pipe insulation
5. Wall

Table B.2.8

Type of penetrant	Type of pipe insulation	Sealant thickness	Annular space	Backing material	Classification
Steel pipe, Ø15 mm, 1.0 mm wall thickness	Armaflex AF EVO, 13 mm – 15mm thickness	≥20 mm	20 mm	PE backer rod	E I120 – C/U, C/C
Steel pipe, Ø57 mm, 2.9 mm wall thickness					E 120 – C/U, C/C EI 90 – C/U, C/C
Steel pipe, Ø57 mm, 2.9 mm wall thickness	Armaflex AF EVO, 25 mm thickness				E 120 – C/U, C/C EI 90 – C/U, C/C
Steel pipe, Ø114.3 mm, 3.6 mm wall thickness					EI 60 – C/U, C/C

Pipe support ≤ 250mm from surface of specimen
CS = Continued Sustained

Penetration Seal: Pipe diameter and wall thickness interpolation for
B.2.8 Double sided penetration seal with rubber type insulated steel pipes (CS)



Type of penetrant	Classification
Steel pipe Ø15 mm (13mm Armaflex)	EI 120 – C/U, C/C
Steel pipe Ø57 mm (13mm Armaflex)	E 120 – C/U, C/C EI 90 – C/U, C/C
Steel pipe Ø57 mm (25mm Armaflex)	E 120 – C/U, C/C EI 90 – C/U, C/C
Steel pipe Ø114.3 mm (25mm Armaflex)	EI 60 – C/U, C/C

B.2.9 Double sided penetration seal with copper pipes

Penetration Seal:	Copper pipes sealed with fischer FiAM Plus sealant to both sides of the wall, backed with backer rod, seal installed flush with surface of wall, wall thickness ≥115 mm

Construction details:

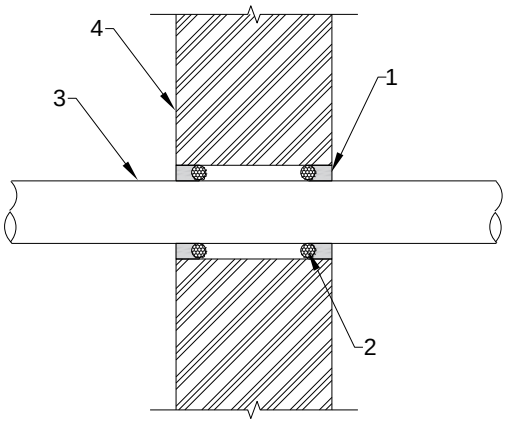


Figure not to scale

Key:

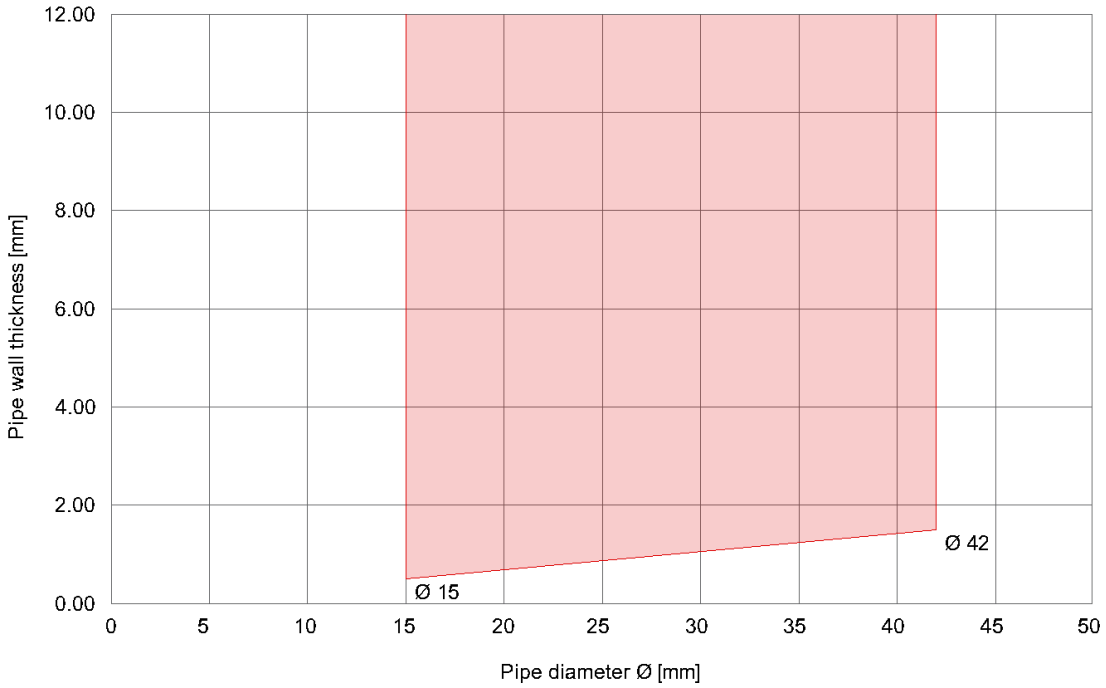
1. FiAM Plus
2. Backing material
3. Pipe
4. Wall

Table B.2.9

Type of penetrant	Sealant thickness	Annular space	Backing material	Classification
Copper pipe, Ø15 mm, 0.5 mm wall thickness	≥10 mm	10 mm	PE backer rod	E 240 – C/U, C/C EI 15 – C/U, C/C
Steel pipe, Ø42 mm, 1.5 mm wall thickness				E 240 – C/U, C/C

Pipe support ≤ 250mm from surface of specimen

Penetration Seal: Pipe diameter and wall thickness interpolation for
B.2.9 Double sided penetration seal with copper pipes



Type of penetrant	Classification
Copper pipe Ø15 mm	E 240 – C/U, C/C EI 15 – C/U, C/C
Copper pipe Ø42 mm	E 240 – C/U, C/C

B.2.10 Double sided penetration seal with stone wool insulated copper pipes (CS)

Penetration Seal: Copper pipes sealed with fischer FiAM Plus sealant to both sides of the wall, backed with stone wool, seal installed flush with surface of wall, wall thickness ≥115 mm

Construction details:

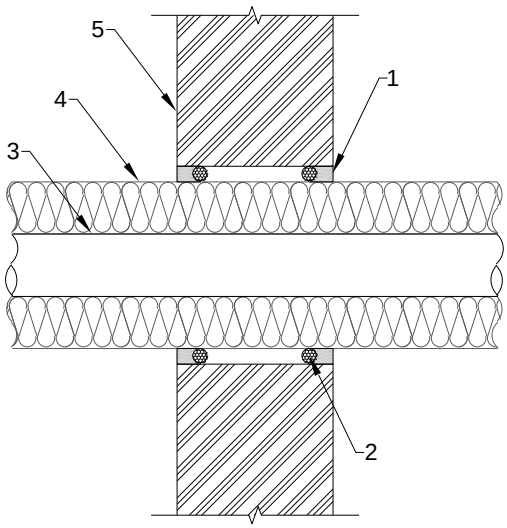


Figure not to scale

Key:

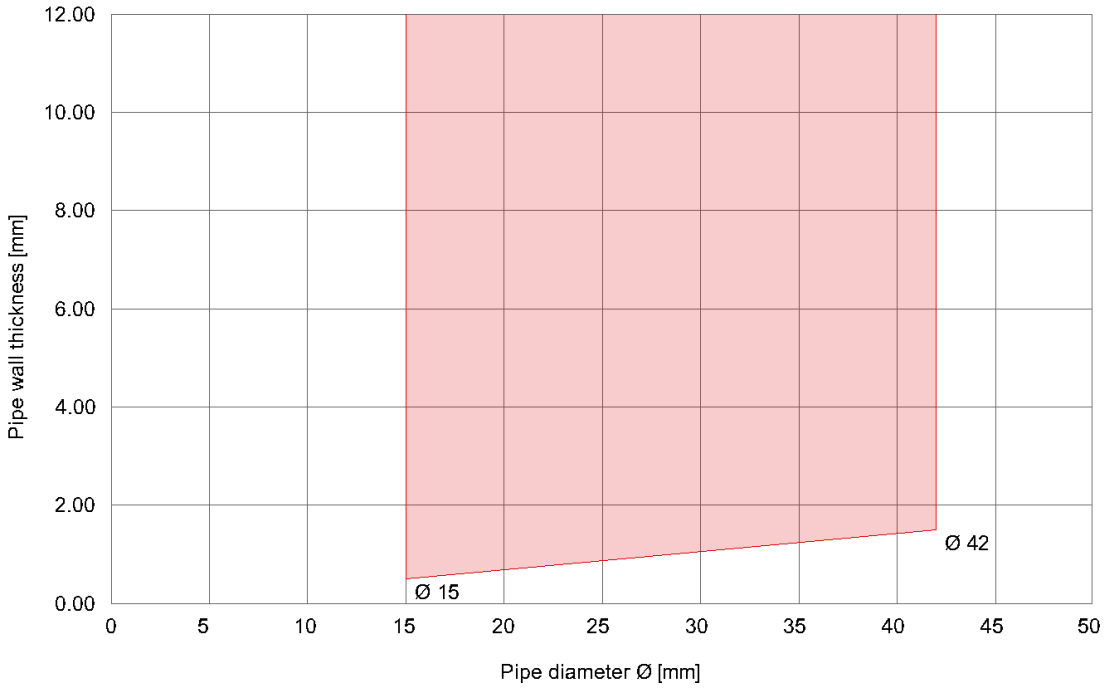
1. FiAM Plus
2. Backing material
3. Pipe
4. Pipe insulation
5. Wall

Table B.2.10

Type of penetration	Type of pipe insulation	Sealant thickness	Annular space	Backing material	Classification
Copper pipe, Ø15 mm, 0.5 mm wall thickness	Stone wool, ρ ≥100 kg/m³, ≥50 mm thickness	≥10 mm	10 mm	PE backer rod	E 240 – U/C, C/U, C/C EI 180 – U/C, C/U, C/C
Steel pipe, Ø42 mm, 1.5 mm wall thickness					E 240 – U/C, C/U, C/C EI 120 – U/C, C/U, C/C

Pipe support ≤ 250mm from surface of specimen
CS = Continued Sustained

Penetration Seal: Pipe diameter and wall thickness interpolation for
B.2.10 Double sided penetration seal with stone wool insulated copper pipes (CS)



Type of penetrant	Classification
Copper pipe Ø15 mm	E 240 – U/C, C/U, C/C EI 180 – U/C, C/U, C/C
Copper pipe Ø42 mm	E 240 – U/C, C/U, C/C EI 120 – U/C, C/U, C/C

B.2.11 Double sided penetration seal with stone wool insulated copper pipes (CI)

Penetration Seal:	Copper pipes sealed with fischer FiAM Plus sealant to both sides of the wall, backed with stone wool, seal installed flush with surface of wall, wall thickness ≥115 mm

Construction details:

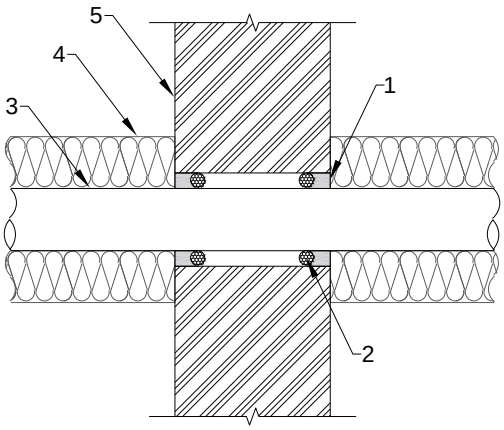


Figure not to scale

Key:

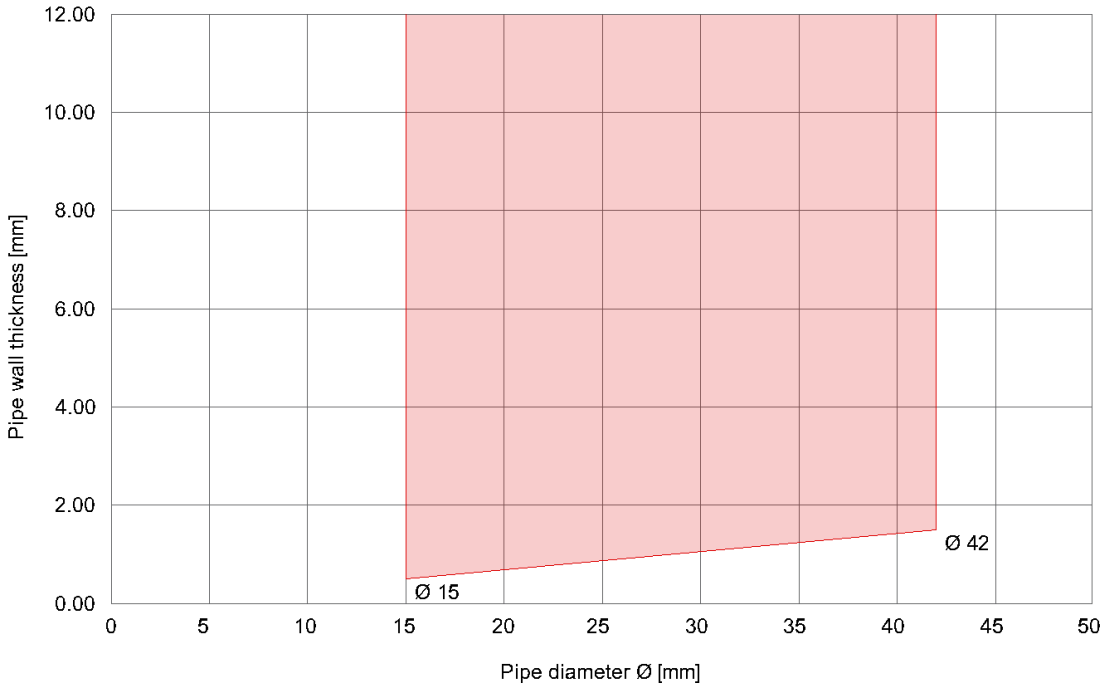
1. FiAM Plus
2. Backing material
3. Pipe
4. Pipe insulation
5. Wall

Table B.2.11

Type of penetration	Type of pipe insulation	Sealant thickness	Annular space	Backing material	Classification
Copper pipe, Ø15 mm, 0.5 mm wall thickness	Stone wool, ρ ≥100 kg/m³, ≥50 mm thickness	≥10 mm	10 mm	PE backer rod	EI 240 – U/C, C/U, C/C
Steel pipe, Ø42 mm, 1.5 mm wall thickness					E 240 – U/C, C/U, C/C EI 180 – U/C, C/U, C/C

Pipe support ≤ 250mm from surface of specimen
CI = Continued Interrupted

Penetration Seal: Pipe diameter and wall thickness interpolation for
B.2.11 Double sided penetration seal with stone wool insulated copper pipes (CI)



Type of penetrant	Classification
Copper pipe Ø15 mm	EI 240 – U/C, C/U, C/C
Copper pipe Ø42 mm	E 240 – U/C, C/U, C/C EI 180 – U/C, C/U, C/C

B.2.12 Double sided penetration seal with rubber type insulated copper pipes (CS)

Penetration Seal: Copper pipes sealed with fischer FiAM Plus sealant to both sides of the wall, backed with backer rod, seal installed flush with surface of wall, wall thickness ≥115 mm

Construction details:

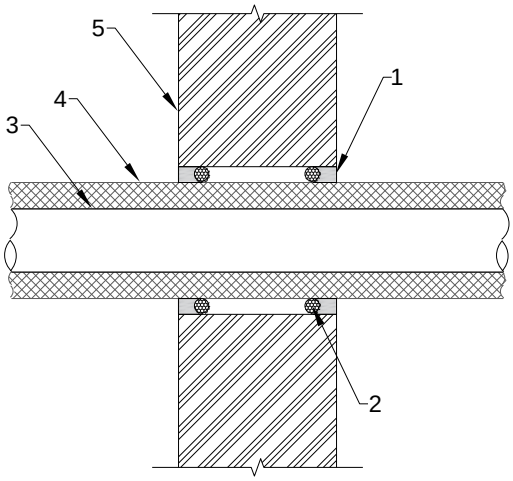


Figure not to scale

Key:

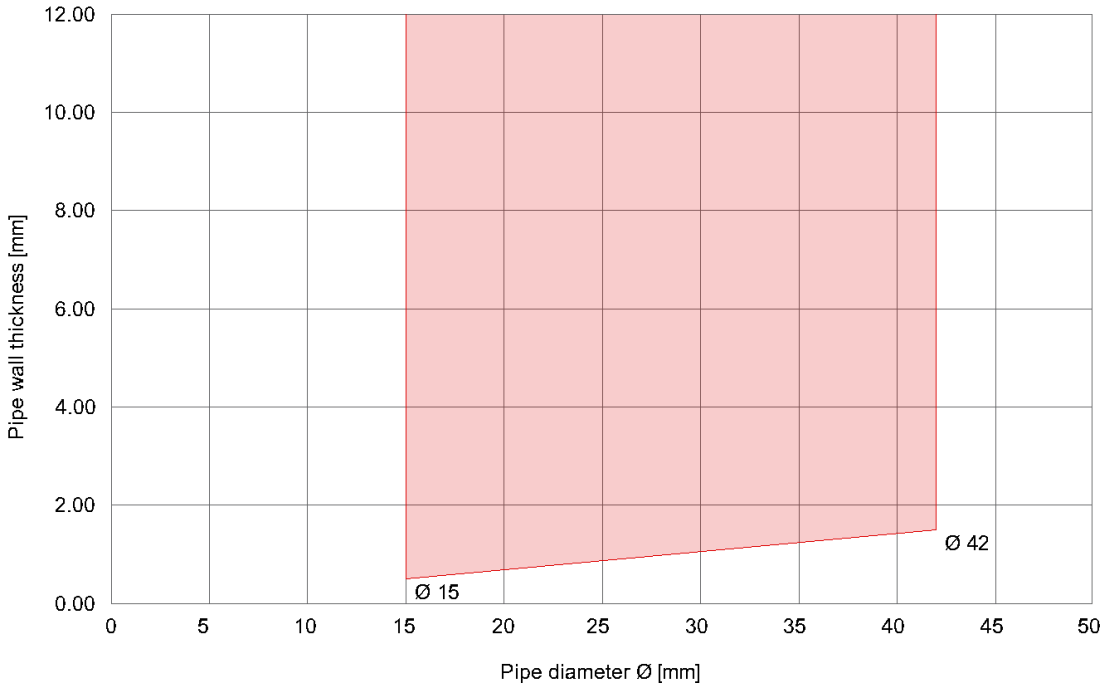
1. FiAM Plus
2. Backing material
3. Pipe
4. Pipe insulation
5. Wall

Table B.2.12

Type of penetrant	Type of pipe insulation	Sealant thickness	Annular space	Backing material	Classification
Copper pipe, Ø15 mm, 0.5 mm wall thickness	Armaflex AF EVO, 13 mm thickness	≥20 mm	20 mm	PE backer rod	EI 120 – C/U, C/C
Copper pipe, Ø42 mm, 1.5 mm wall thickness					E 120 – C/U, C/C EI 60 – C/U, C/C

Pipe support ≤ 250mm from surface of specimen
CS = Continued Sustained

Penetration Seal: Pipe diameter and wall thickness interpolation for
B.2.12 Double sided penetration seal with rubber type insulated copper pipes (CS)



Type of penetrant	Classification
Copper pipe Ø15 mm	EI 120 – C/U, C/C
Copper pipe Ø42 mm	E 120 – C/U, C/C EI 60 – C/U, C/C

B.2.13 Double sided penetration seal with combustible pipes

Penetration Seal:	Combustible pipes sealed with fischer FiAM Plus sealant to both sides of the wall, backed with backer rod, seal installed flush with surface of wall, wall thickness ≥115 mm

Construction details:

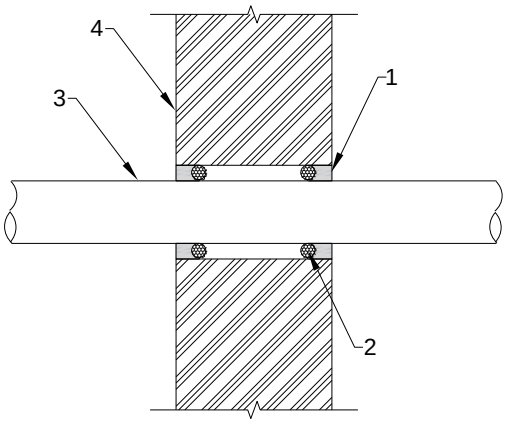


Figure not to scale

Key:

1. FiAM Plus
2. Backing material
3. Pipe
4. Wall

Table B.2.13

Type of penetrant	Sealant thickness	Annular space	Backing material	Classification
PP pipe, Ø50 mm, 2.7 mm wall thickness	≥20 mm	20 mm	PE backer rod	EI 60 – U/C, C/C
PVC pipe, Ø50 mm, 3.7 mm wall thickness				EI 120 – U/C, C/C
PE pipe, Ø50 mm, 3.0 mm wall thickness				EI 90 – U/C, C/C

Pipe support ≤ 250mm from surface of specimen

B.3 Rigid floor constructions with minimum floor thickness of 150 mm

B.3.1 One sided penetration seal with steel pipes

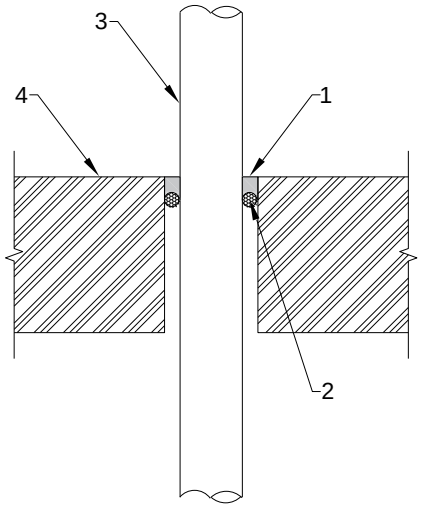
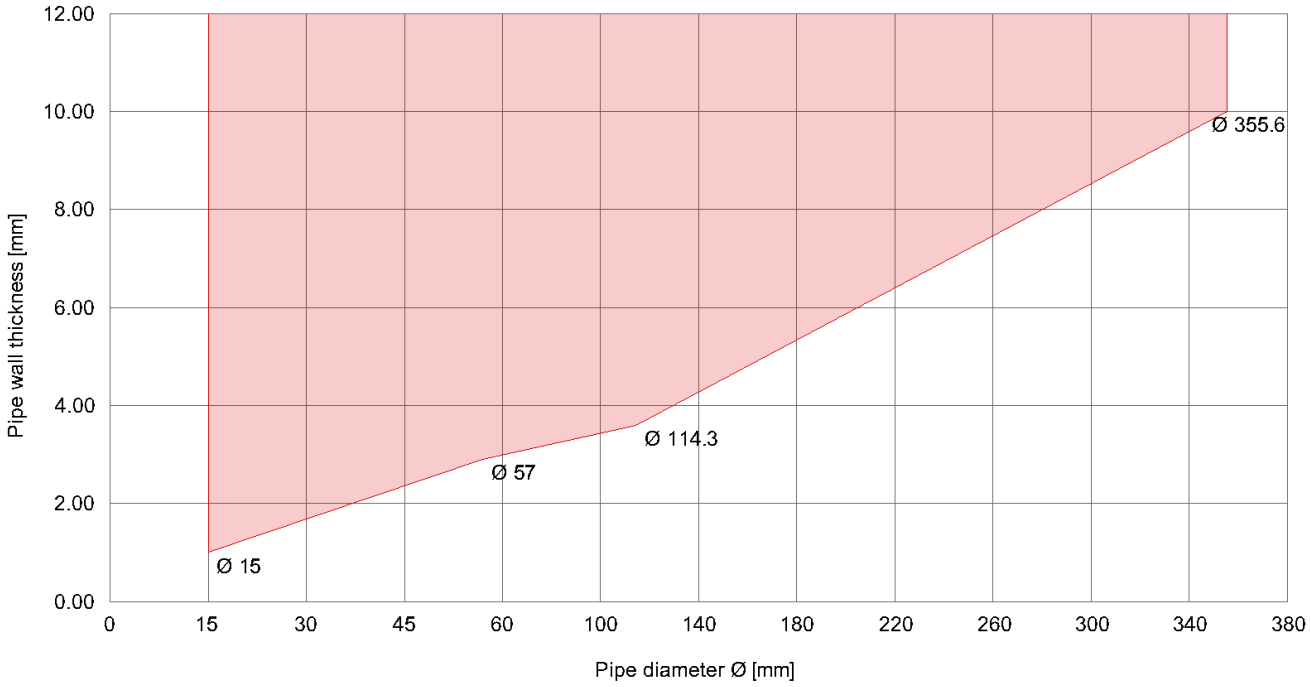
Penetration Seal:	Steel pipes sealed with fischer FiAM Plus sealant to upper side of the floor, backed with backer rod, seal installed flush with surface of floor, floor thickness ≥150 mm
Construction details:  Figure not to scale	Key: 1. FiAM Plus 2. Backing material 3. Pipe 4. Floor

Table B.3.1

Type of penetrant	Sealant thickness	Annular space	Backing material	Classification
Steel pipe, Ø15 mm, 1.0 mm wall thickness	≥10 mm	10 mm	PE backer rod	E 240 – C/U, C/C EI 180 – C/U, C/C
Steel pipe, Ø57 mm, 2.9mm wall thickness				E 240 – C/U, C/C EI 45 – C/U, C/C
Steel pipe, Ø114.3 mm, 3.6 mm wall thickness				E 240 – C/U, C/C EI 30 – C/U, C/C
Steel pipe, Ø355.6 mm, 10.0 mm wall thickness				E 180 – C/U, C/C EI 30 – C/U, C/C
				E 240 – C/C EI 30 – C/C

Pipe support ≤ 250mm from surface of specimen

Penetration Seal: Pipe diameter and wall thickness interpolation for
B.3.1 One sided penetration seal with steel pipes



Type of penetrant	Classification
Steel pipe Ø15 mm	E 240 – C/U, C/C EI 180 – C/U, C/C
Steel pipe Ø57 mm	E 240 – C/U, C/C EI 45 – C/U, C/C
Steel pipe Ø114.3 mm	E 240 – C/U, C/C EI 30 – C/U, C/C
Steel pipe Ø355.6 mm	E 240 – C/C EI 30 – C/C

B.3.2 One sided penetration seal with stone wool insulated steel pipes (CS)

Penetration Seal:	Steel pipes sealed with fischer FiAM Plus sealant to upper side of the floor, backed with backer rod, seal installed flush with surface of floor, floor thickness ≥150 mm

Construction details:

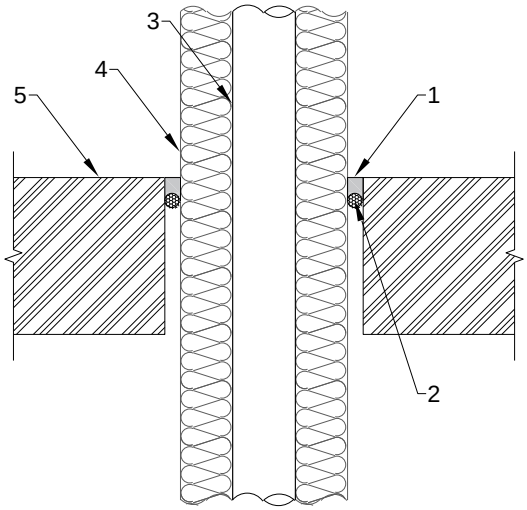


Figure not to scale

Key:

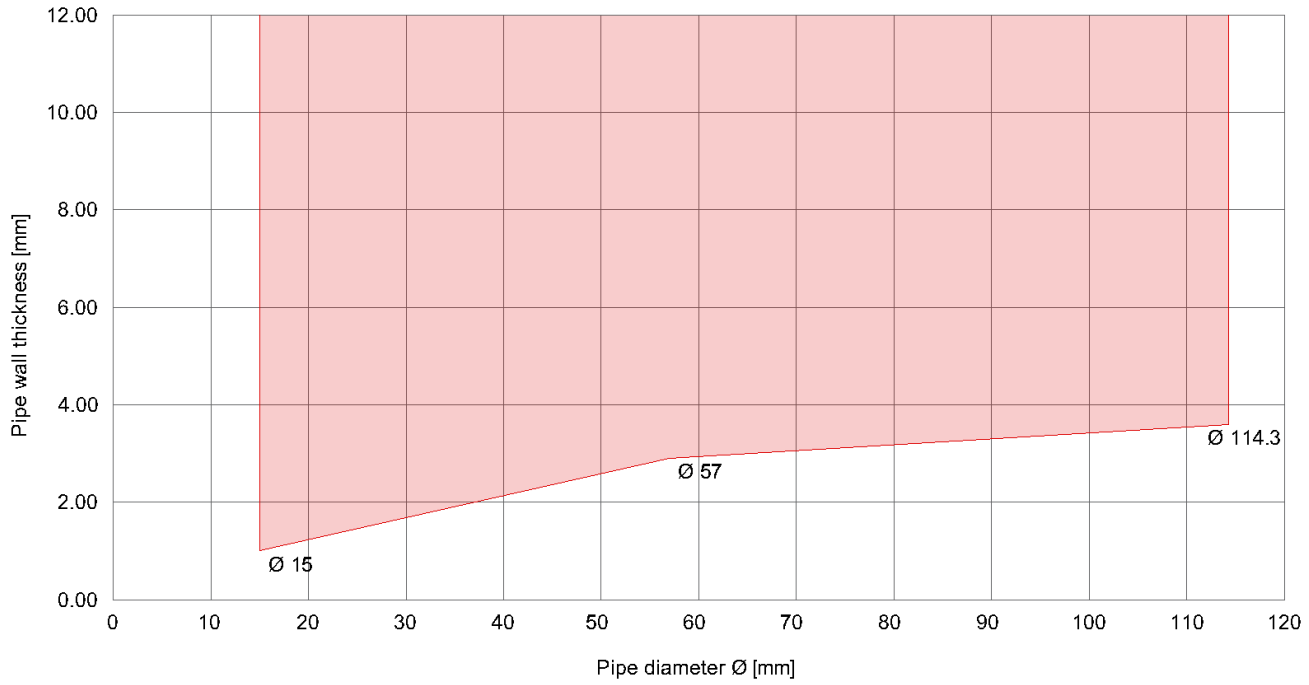
1. FiAM Plus
2. Backing material
3. Pipe
4. Pipe insulation
5. Floor

Table B.3.2

Type of penetrant	Type of pipe insulation	Sealant thickness	Annular space	Backing material	Classification
Steel pipe, Ø15 mm, 1.0 mm wall thickness	Stone wool, ρ ≥42 kg/m³, ≥50 mm thickness	≥10 mm	10 mm	PE backer rod	E 240 – U/C, C/U, C/C EI 120 – U/C, C/U, C/C
Steel pipe, Ø57 mm, 2.9mm wall thickness					E 240 – U/C, C/U, C/C EI 60 – U/C, C/U, C/C
Steel pipe, Ø114.3 mm, 3.6 mm wall thickness					E 240 – U/C, C/U, C/C EI 90 – U/C, C/U, C/C

Pipe support ≤ 250mm from surface of specimen
CS = Continued Sustained

Penetration Seal: Pipe diameter and wall thickness interpolation for
B.3.2 One sided penetration seal with stone wool insulated steel pipes (CS)



Type of penetrant	Classification
Steel pipe Ø15 mm	E 240 – U/C, C/U, C/C EI 120 – U/C, C/U, C/C
Steel pipe Ø57 mm	E 240 – U/C, C/U, C/C EI 60 – U/C, C/U, C/C
Steel pipe Ø114.3 mm	E 240 – U/C, C/U, C/C EI 90 – U/C, C/U, C/C

B.3.3 One sided penetration seal with rubber type insulated steel pipes (CS)

Penetration Seal:	Steel pipes sealed with fischer FiAM Plus sealant to upper side of the floor, backed with backer rod, seal installed flush with surface of floor, floor thickness ≥150 mm

Construction details:

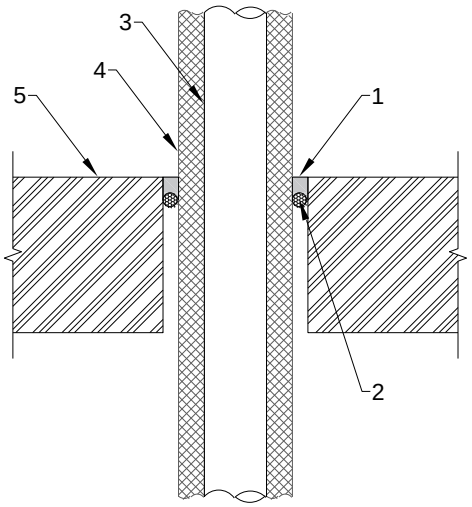


Figure not to scale

Key:

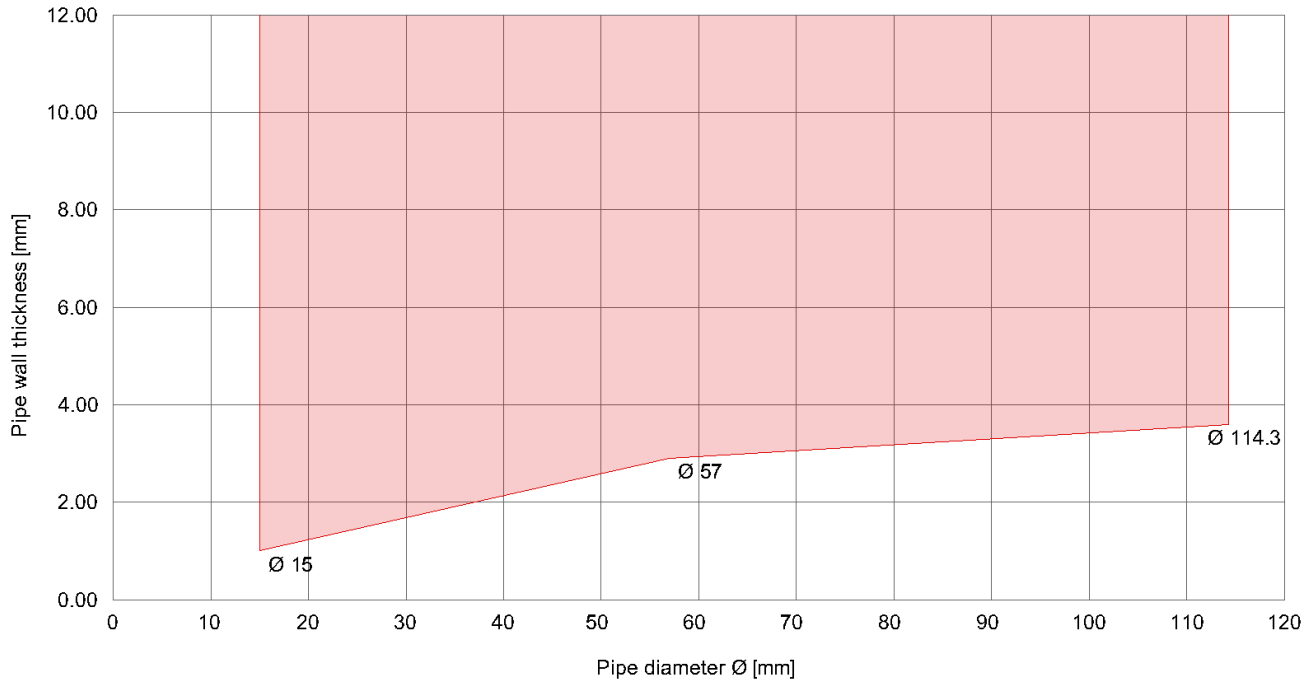
1. FiAM Plus
2. Backing material
3. Pipe
4. Pipe insulation
5. Floor

Table B.3.3

Type of penetrant	Type of pipe insulation	Sealant thickness	Annular space	Backing material	Classification
Steel pipe, Ø15 mm, 1.0 mm wall thickness	Armaflex AF EVO, 13 mm – 25mm thickness	≥25 mm	20 mm	PE backer rod	EI 120 – C/U, C/C
Steel pipe, Ø57 mm, 2.9mm wall thickness					E 120 – C/U, C/C EI 90 – C/U, C/C
Steel pipe, Ø57 mm, 2.9 mm wall thickness	Armaflex AF EVO, 25 mm thickness				EI 120 – C/U, C/C
Steel pipe, Ø114.3 mm, 3.6 mm wall thickness					E 120 – C/U, C/C EI 90 – C/U, C/C

Pipe support ≤ 250mm from surface of specimen
CS = Continued Sustained

Penetration Seal: Pipe diameter and wall thickness interpolation for
B.3.3 One sided penetration seal with rubber type insulated steel pipes (CS)



Type of penetrant	Classification
Steel pipe Ø15 mm (13mm Armaflex)	EI 120 – C/U, C/C
Steel pipe Ø57 mm (13mm Armaflex)	E 120 – C/U, C/C EI 90 – C/U, C/C
Steel pipe Ø57 mm (25mm Armaflex)	EI 120 – C/U, C/C
Steel pipe Ø114.3 mm (25mm Armaflex)	E 120 – C/U, C/C EI 90 – C/U, C/C

B.3.4 One sided penetration seal with copper pipes

Penetration Seal:	Copper pipes sealed with fischer FiAM Plus sealant to upper side of the floor, backed with backer rod, seal installed flush with surface of floor, floor thickness ≥150 mm

Construction details:

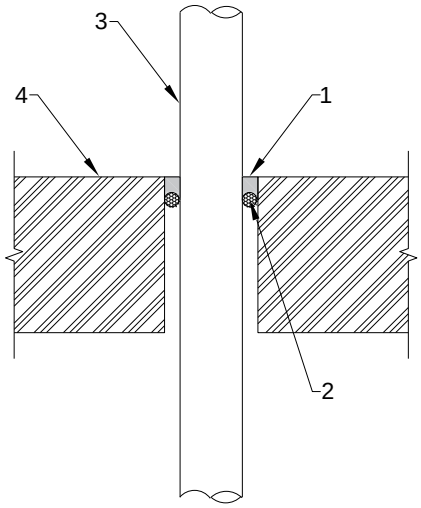


Figure not to scale

Key:

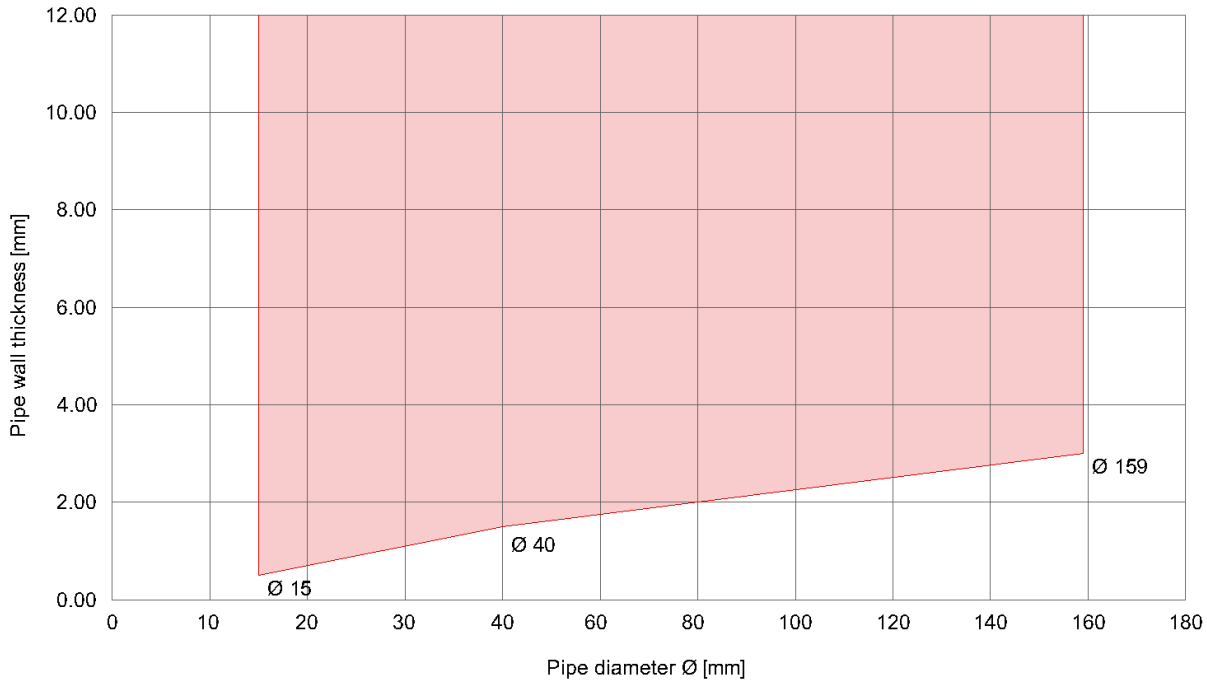
1. FiAM Plus
2. Backing material
3. Pipe
4. Floor

Table B.3.4

Type of penetrant	Sealant thickness	Annular space	Backing material	Classification
Copper pipe, Ø15 mm, 0.5 mm wall thickness	≥10 mm	10 mm	PE backer rod	E 240 – C/U, C/C EI 15 – C/U, C/C
Copper pipe, Ø40 mm, 1.5 mm wall thickness				E 240 – C/U, C/C
Copper pipe, Ø159 mm, 3.0 mm wall thickness				E 240 – C/U, C/C EI 15 – C/U, C/C

Pipe support ≤ 250mm from surface of specimen

Penetration Seal: Pipe diameter and wall thickness interpolation for
B.3.4 One sided penetration seal with copper pipes



Type of penetrant	Classification
Copper pipe Ø15 mm	E 240 – C/U, C/C EI 15 – C/U, C/C
Copper pipe Ø40 mm	E 240 – C/U, C/C
Copper pipe Ø159 mm	E 240 – C/U, C/C EI 15 – C/U, C/C

B.3.5 One sided penetration seal with stone wool insulated copper pipes (CS)

Penetration Seal:	Copper pipes sealed with fischer FiAM Plus sealant to upper side of the floor, backed with backer rod, seal installed flush with surface of floor, floor thickness ≥150 mm

Construction details:

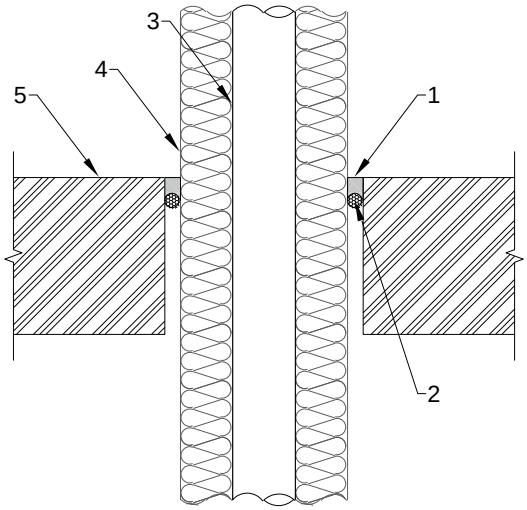


Figure not to scale

Key:

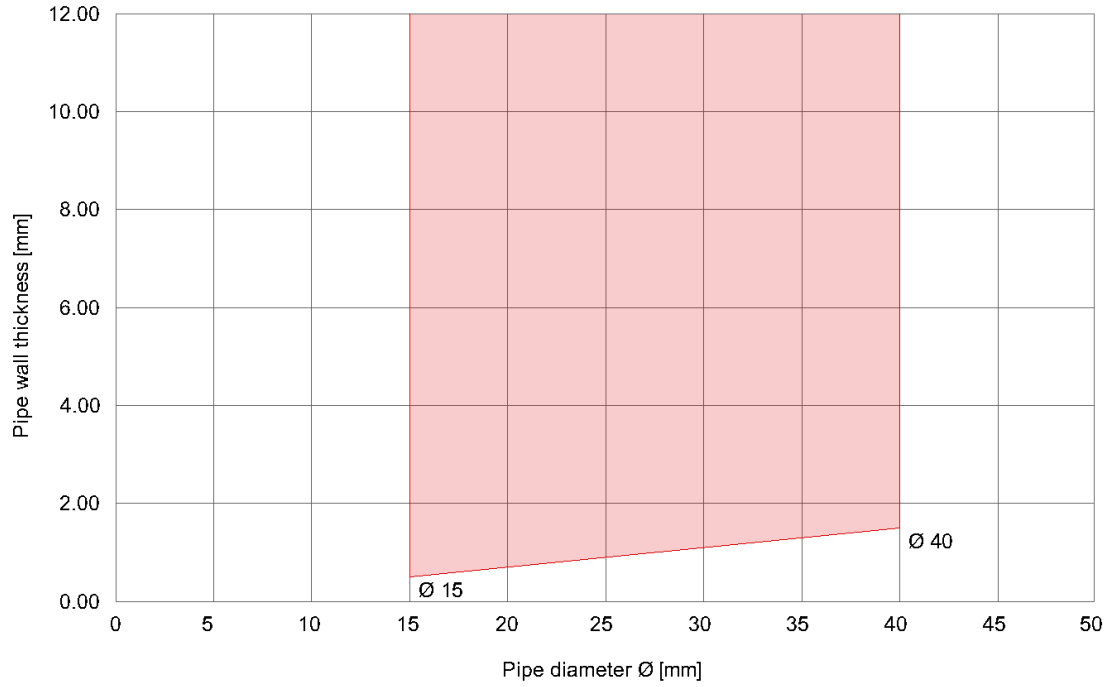
1. FiAM Plus
2. Backing material
3. Pipe
4. Pipe insulation
5. Floor

Table B.3.5

Type of penetrant	Type of pipe insulation	Sealant thickness	Annular space	Backing material	Classification
Copper pipe, Ø15 mm, 0.5 mm wall thickness	Stone wool, ρ ≥42 kg/m³, ≥50 mm thickness	≥10 mm	20 mm	PE backer rod	E 240 – U/C, C/U, C/C EI 30 – U/C, C/U, C/C
Copper pipe, Ø40 mm, 1.5 mm wall thickness					E 240 – U/C, C/U, C/C EI 45 – U/C, C/U, C/C

Pipe support ≤ 250mm from surface of specimen
CS = Continued Sustained

Penetration Seal: Pipe diameter and wall thickness interpolation for
B.3.5 One sided penetration seal with stone wool insulated copper pipes (CS)



Type of penetrant	Classification
Copper pipe Ø15 mm	E 240 – U/C, C/U, C/C EI 30 – U/C, C/U, C/C
Copper pipe Ø40 mm	E 240 – U/C, C/U, C/C EI 45 – U/C, C/U, C/C

B.3.6 One sided penetration seal with rubber type insulated copper pipes (CS)

Penetration Seal:	Copper pipes sealed with fischer FiAM Plus sealant to upper side of the floor, backed with backer rod, seal installed flush with surface of floor, floor thickness ≥150 mm

Construction details:

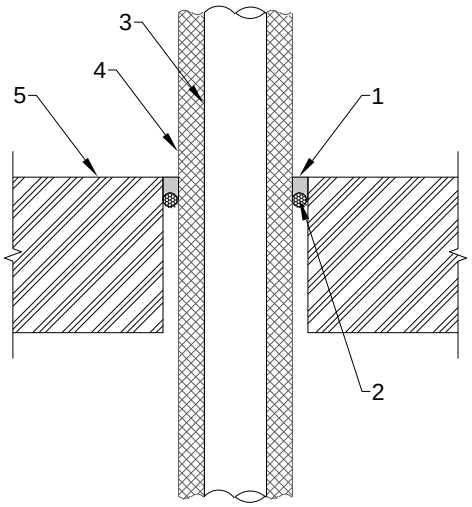


Figure not to scale

Key:

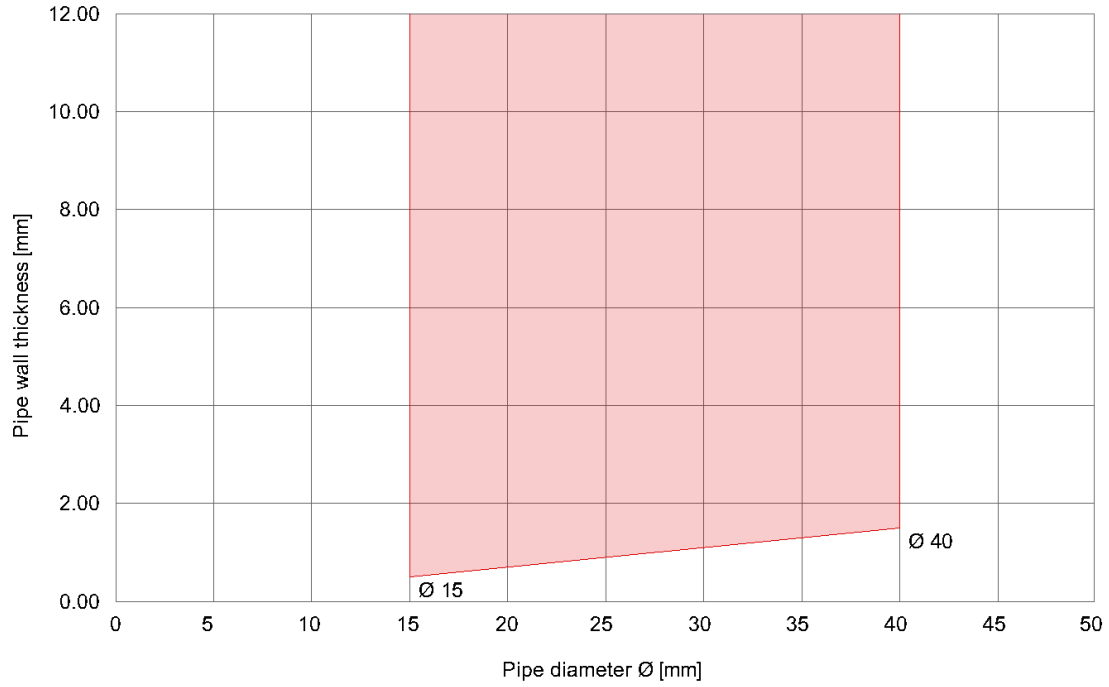
1. FiAM Plus
2. Backing material
3. Pipe
4. Pipe insulation
5. Floor

Table B.3.6

Type of penetrant	Type of pipe insulation	Sealant thickness	Annular space	Backing material	Classification
Copper pipe, Ø15 mm, 0.5 mm wall thickness	Armaflex AF EVO, 13 mm thickness	≥25 mm	20 mm	PE backer rod	EI 120 – C/U, C/C
Copper pipe, Ø40 mm, 1.5 mm wall thickness					E 120 – C/U, C/C EI 60 – C/U, C/C

Pipe support ≤ 250mm from surface of specimen
CS = Continued Sustained

Penetration Seal: Pipe diameter and wall thickness interpolation for
B.3.6 One sided penetration seal with rubber type insulated copper pipes (CS)



Type of penetrant	Classification
Copper pipe Ø15 mm	EI 120 – C/U, C/C
Copper pipe Ø40 mm	E 120 – C/U, C/C EI 60 – C/U, C/C

B.3.7 One sided penetration seal with combustible pipes

Penetration Seal: Combustible pipes sealed with fischer FiAM Plus sealant to upper side of the floor, backed with backer rod, seal installed flush with surface of floor, floor thickness ≥150 mm

Construction details:

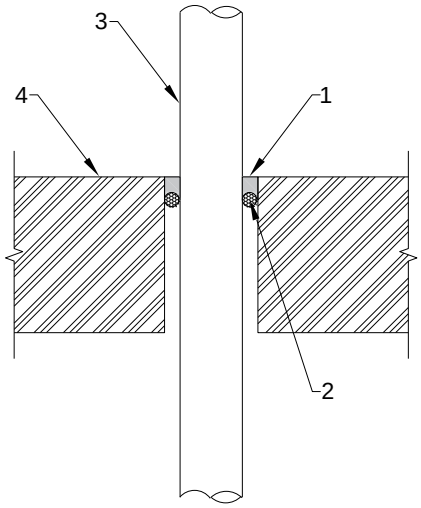


Figure not to scale

Key:

1. FiAM Plus
2. Backing material
3. Pipe
4. Floor

Table B.3.7

Type of penetrant	Sealant thickness	Annular space	Backing material	Classification
PP pipe, Ø50 mm, 1.8 mm wall thickness	≥20 mm	20 mm	PE backer rod	EI 30 – U/C, C/C
PP pipe, Ø50 mm, 2.7 mm wall thickness				EI 90 – U/C, C/C
PVC pipe, Ø50 mm, 3.7 mm wall thickness				E 120 – U/C, C/C EI 60 – U/C, C/C
PE pipe, Ø50 mm, 3.0 mm wall thickness				E 45 – U/C, C/C EI 30 – U/C, C/C

Pipe support ≤ 250mm from surface of specimen