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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

MEMBER OF EOTA



European Technical Assessment ETA-22/0037 of 2022/03/01

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:

Pacifyre® A – Fire Protection Acrylic Sealant

Product family to which the
above construction product
belongs:

Fire Stopping and Sealing Product -
Pipe and cable penetration seal.

Manufacturer:

J. van Walraven Holding B.V.
Industrieweg 5
NL-3641 RK Mijdrecht
Tel. + 31 297 23 30 00
Internet www.walraven.com

Manufacturing plant:

Walraven Factory S7

This European Technical
Assessment contains:

32 pages including 26 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 Fire Stopping and Fire Sealing
Products, Part 2 Penetration Seals

This version replaces:

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II SPECIFIC PART OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical description of product

This European Technical Assessment refers to the Pacifyre® A for use as a Penetration Seal.

Pacifyre® A is a one component fire retardant sealant based on a water based acrylic dispersion with plasto-elastic properties, it is delivered in white and grey.

Detailed specifications for identification and performance criteria relevant for fire safety with regard to the construction products are given in annexes 1-29.

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

The construction product Pacifyre® A is intended to be used as a fire stopping sealant for pipe and cable penetration in lightweight walls, rigid walls and rigid floors. It has to be used in combination with a stone wool backfilling.

The specific elements of construction for which Pacifyre® A may be used to provide a penetration seal are as follows:

- Lightweight partition walls with stone wool backing
- Rigid walls: The wall shall have a minimum thickness of 100 mm and comprise concrete or masonry with a minimum density of 550 kg/m³
- Rigid floors: The floor shall have a minimum thickness of 150 mm and comprise concrete with a minimum density of 550 kg/m³.

The supporting construction shall be classified according to EN 13501-2 for the required fire resistance period.

The performances given in Section 3 exclusively relate to this penetration seals (e.g., with respect to the design and arrangement of the components of the penetration seals and the type and position of the services, see annexes 1-29.)

Pacifyre® A can be used as a penetration seal for:

- Single and multiple copper pipes with a stone wool insulation
- Single and multiple steel and stainless-steel pipes with a stone wool insulation
- Single and bundled cables
- Blank penetration

Application in walls:

The Pacifyre® A needs to be applied in a thickness of 12,5 mm on each side of the wall. The backing consists out of stone wool with a reaction to fire class according to EN 13501-1:A1 and a density of ≥ 150 kg/m³. The thickness of the backing needs to be $2x \geq 20$ mm.

Application in floors:

The Pacifyre® A needs to be applied in a thickness of 10 mm on each side of the floor. The backing consists out of stone wool with a reaction to fire class according to EN 13501-1:A1 and a density of ≥ 150 kg/m³. The thickness of the backing needs to be $2x \geq 50$ mm. In some cases, a single side penetration is possible (see annex 15, 16, 17, 22, 23). Both, Pacifyre® A and the backing, needs to be installed just on the top side.

Pipes:

- Single pipes can be installed in angles between 45° and 90° to the supporting construction.
- The pipes tested with pipe end configuration U/C covers C/U and C/C pipe end situations as well.
- Metal pipes with a thermal conductivity lower than the mentioned metal pipe materials are covered.

The verification and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of at least 10 years for Pacifyre® A.

The indications given on the working life cannot be interpreted as a guarantee given by the manufacturer but are to be regarded only as a means for choosing the right product 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 Pacifyre® A Penetration Seal is classified as Euroclass E in accordance with EN 13501-1 + A1 and Delegated Regulation 2016/364.
Resistance to fire	The Pacifyre® A Penetration Seal is permitted in lightweight partition walls with stone wool backing and rigid walls with a thickness of at least 100 mm and comprise concrete or masonry with a minimum density of 550 kg/m ³ and in rigid floors with a thickness of at least 150 mm and comprise concrete with a minimum density of 600 kg/m ³ . The system is classified as described in annex 1-29 in accordance with EN 13501-2
3.3 Hygiene, health and the environment (BWR 3)	
Air permeability	No performance assessed
Water permeability	No performance assessed
Content, emission and/or release of dangerous substances	The manufacturer of the intumescent material "Pacifyre® A" declares the product does not contain dangerous substances detailed in Council Directive 67/548/EEC and Regulation (EC) N° 1272/2008 above the acceptable limits, with reference to submitted ETA-13/0793.**)
3.4 Safety and accessibility in use (BWR 4)	
Mechanical resistance and stability	No performance assessed
Resistance to impact/movement	No performance assessed
Adhesion	Classified as 12,5 %
Durability	The product meets the requirements given in EN 15651-1 and thereby considered durable .
3.5 Protection against noise (BWR 5)	
Airborne sound insulation	$R_{s,w} (C; C_{tr}) \geq 62 (-1;-4)$ dB
3.6 Energy Economy and heat retention (BWR 6)	
Thermal properties	No performance assessed
Water vapour permeability	No performance assessed

*) See additional information in section 3.9.

**) In addition to the specific clauses relating to dangerous substances contained in this European technical approval, 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 Product Directive, these requirements need also to be complied with, when and where they apply.

3.9 General aspects

Durability and serviceability:

The assessment of durability and serviceability is part of testing the essential characteristics. “*Pacifyre*® A” pipe penetration seal fulfils the requirements according to EN 15651-1 Part 5 for indoor usage. With this it also fulfills the requirements for use Category Type Z₂ of the EAD 350454-00-1104 clause 1.2.1 without expecting significant changes of the characteristics relevant for fire sealing and fire stopping properties and the result performance.

Although a penetration seal is intended for indoor applications only, the construction process may result in it being subjected to more exposed conditions for a period before the building is closed. For this case provisions shall be made to protect temporarily exposed penetration seals according to the ETA-holder’s installation instructions.

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

4.1 AVCP system

According to the decision 1999/454/EC of the European Commission, as amended by 2001/596/EC, the system(s) of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) is 1.

In addition, with regard to reaction to fire for products covered by this EAD the applicable European legal act is Decision 1999/454/EC

The systems are: 1,3 and 4.

5 Technical details necessary for the implementation of the AVCP system, as foreseen 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 2022-03-01 by



Thomas Bruun
Managing Director, ETA-Danmark

Pacifyre® A – Fire Protection Acrylic Sealant	
Component name	Characteristics
Pacifyre® A	A one component fire retardant sealant based on water based acrylic dispersion with plasto-elastic properties.

Backing	
Component name	Characteristics
Stone wool board for wall applications	Stone wool with a reaction to fire class according to EN 13501-1: A1 and a density $\geq 150 \text{ kg/m}^3$ with a thickness of $\geq 20 \text{ mm}$.
Stone wool board for floor applications	Stone wool with a reaction to fire class according to EN 13501-1: A1 and a density $\geq 150 \text{ kg/m}^3$ with a thickness of $\geq 50 \text{ mm}$.
Loose mineral wool	Loose stone wool with a classification A1 according to EN 13501-1 with a melting point $\geq 1.000 \text{ }^\circ\text{C}$ (e.g., Rockwool Loose Wool)

Insulations	
Component name	Characteristics
Rockwool 800 / Rockwool 810	Stone wool pipe insulation with a fire reaction of A2L-s1, d0 and a melting temperature of $\geq 1.000^\circ \text{C}$.

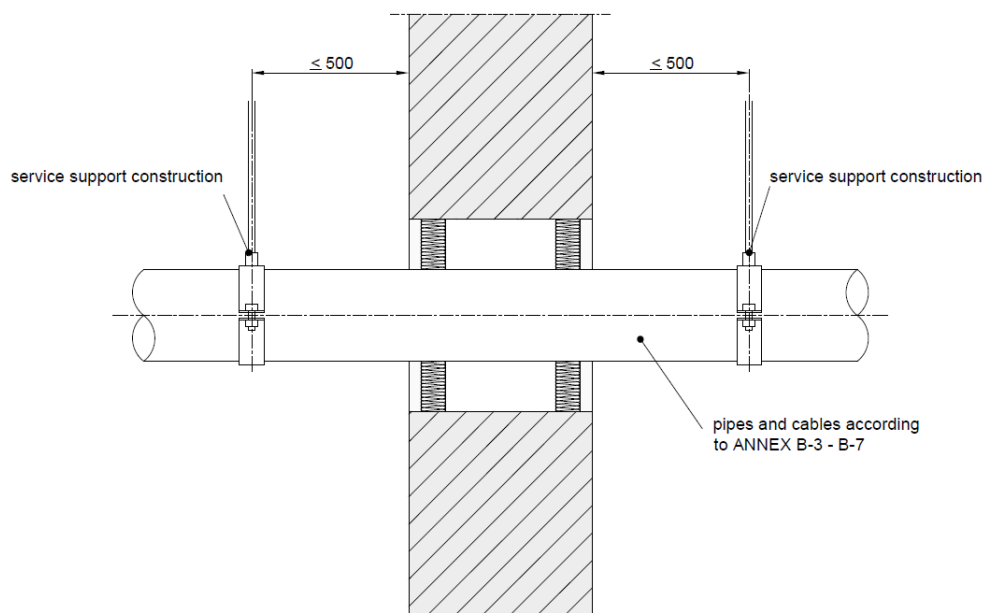
The Pacifyre® A Fire Protection Acrylic Sealant is intended to be used as a pipe or a cable penetration seal to temporarily or permanently reinstate the fire resistance performance of flexible wall constructions, rigid wall constructions and rigid floor constructions, where they have been provided with apertures which penetrated by various pipes or cables.

The Pacifyre® A Fire Protection Acrylic Sealant can be installed in the forms of separating elements as specified in the following table:

Wall or floor constructions	
Separating element	Construction
Flexible walls	<p>Steel studs or timber studs lined on both faces with minimum 2 layers of boards (minimum thickness of 12,5 mm each) or 1 layer of minimum 25 mm thickness with a classification A2-s1, d0 or A1 according to EN 13501-1.</p> <ul style="list-style-type: none"> For timber stud walls there shall be a minimum distance of 100 mm of the penetration seal to any timber stud has to be closed with min.100 mm of insulation with classification A1 or A2 according to EN 13501 -1 Minimum thickness of 100 mm Classification according to EN 13501-2: \geq EI90
Rigid walls	<ul style="list-style-type: none"> Aerated concrete or concrete Minimum thickness of 100 mm Classification according to EN 13501-2: for the required fire resistance period
Rigid floors	<ul style="list-style-type: none"> Aerated concrete or concrete Minimum density of 550 kg/m³ Minimum thickness of 150 mm Classification according to EN 13501-2: for the required fire resistance period

Service support construction in walls**WALL
Application**

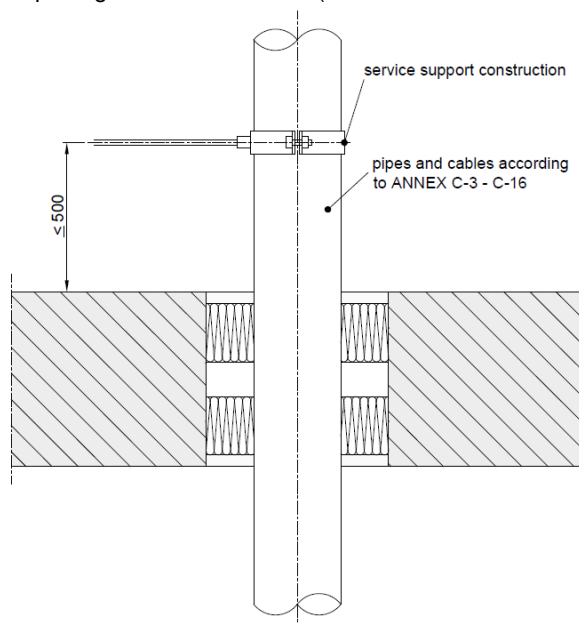
All pipes and cables – in both flexible and rigid walls – have to be supported on both sides of the separating element by service support constructions. This construction can be made by pipe clamps, profiles, studs, bolts etc. made of metal with a melting or decomposition point greater than 1049°C (for instance stainless steel or zinc-plated steel.)



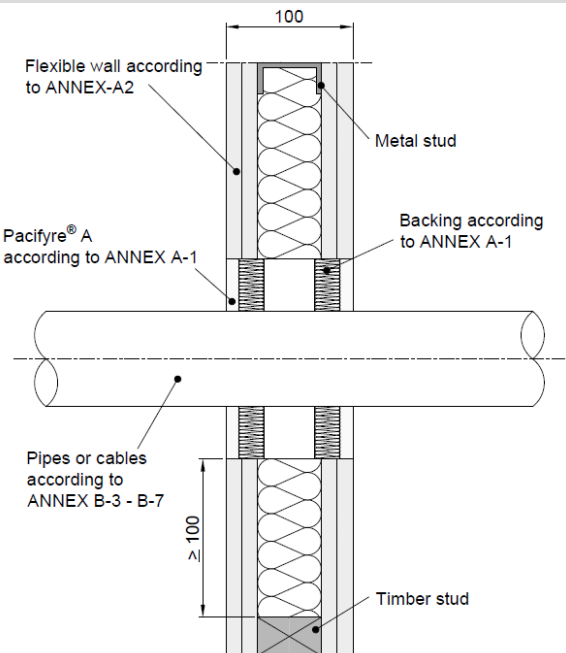
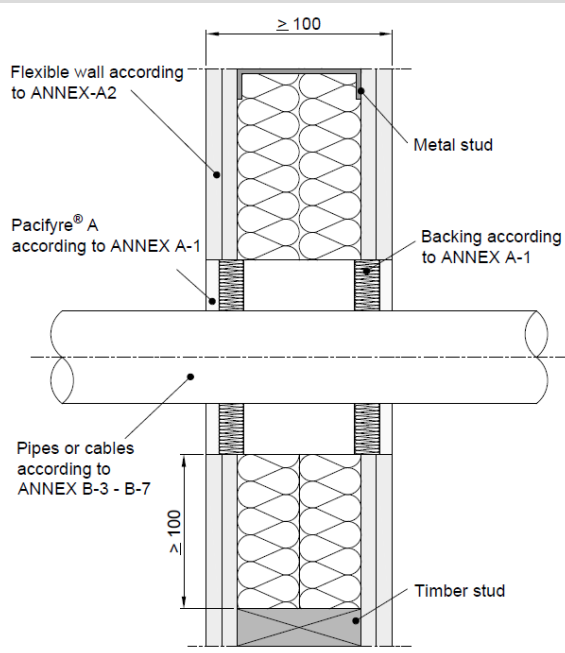
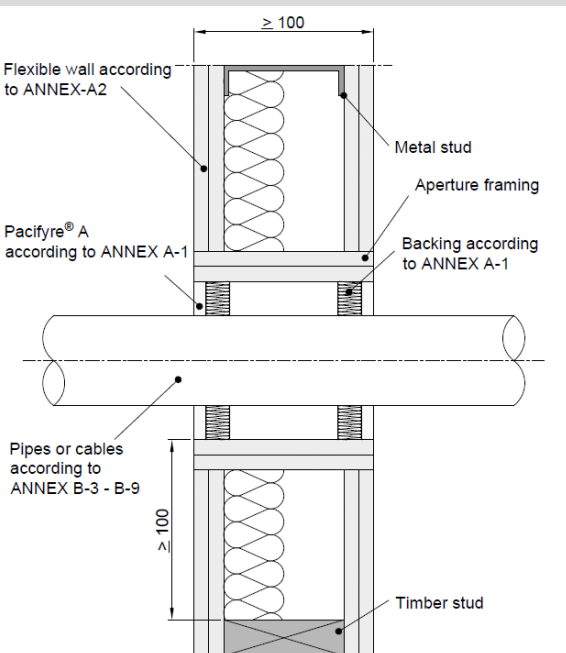
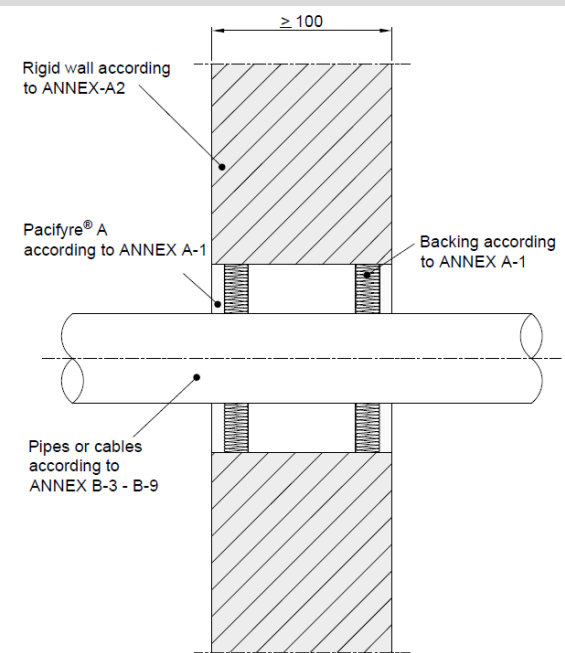
The first support for all types of penetrations has to be at a maximum distance of 500 mm (measured from the surface of the wall).

Service support construction in floors**FLOOR
Application**

All pipes and cables – in rigid floors – have to be supported on the unexposed (top) side of the separating element by service support constructions. This construction can be made by pipe clamps, profiles, studs, bolts etc. made of metal with a melting or decomposition point greater than 1049°C (for instance stainless steel or zinc-plated steel.)

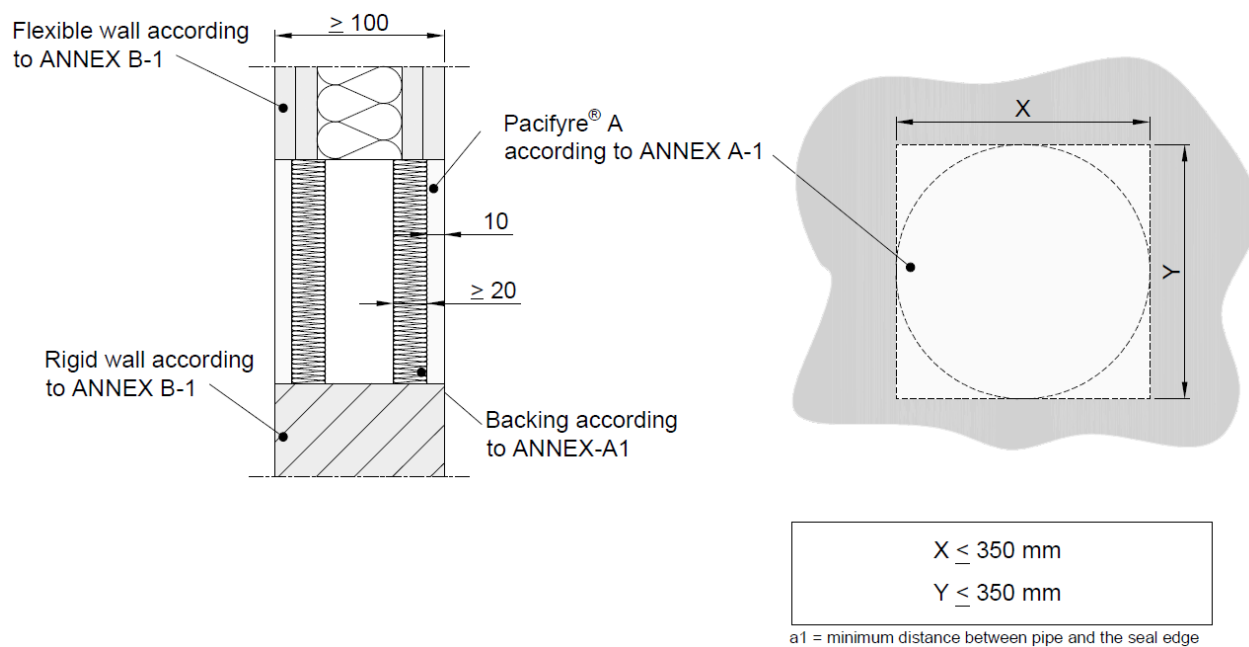


The first support for all types of penetrations has to be at a maximum distance of 500 mm (measured from the surface of the floor).

Double-sided flexible wall construction type a)	Double-sided flexible wall construction type b)
 <p>Flexible wall constructions with ≥ 2 board layers with an overall lining thickness of ≥ 25 mm (2x12,5 mm) on each side of the wall and an stone wool insulation of 50 mm with a density of ≥ 100 kg/m³.</p>	 <p>Flexible wall constructions with ≥ 2 board layers with an overall lining thickness of ≥ 25 mm (2x12,5 mm) on each side of the wall and an stone wool insulation of ≥ 50 mm with a density of ≥ 100 kg/m³.</p>
Double-sided flexible wall construction type c)	Rigid wall construction type d)
 <p>Flexible wall constructions with ≥ 2 board layers with an overall lining thickness of ≥ 25 mm (2x12,5 mm) on each side of the wall and any type of insulation.</p> <p>With an aperture framing with at least 1 layer with an overall thickness of ≥ 25 mm or in case of circular apertures a dimensionally stable sleeve of materials of class A1 or A2.</p>	 <p>Rigid wall construction with a density of ≥ 350 kg/m³.</p>
<p>Pacifyre® A</p> <p>- Installation in different types of flexible and rigid walls -</p>	
<p>ANNEX B-1</p>	

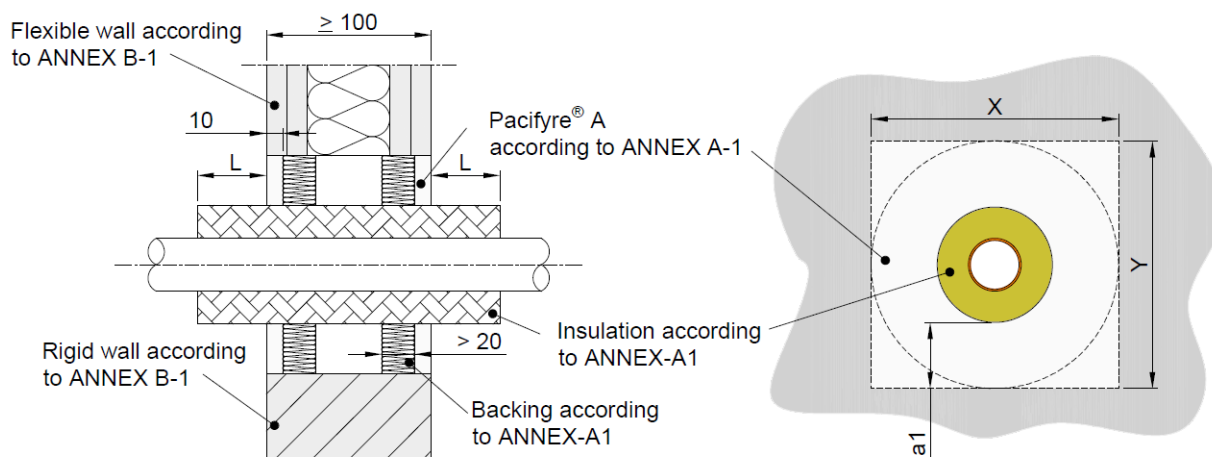
Blank penetration seal | double sided

EI 120



Single copper pipes with intended use as gas, drinking water and heating pipe made out of the below material and dimension:

**WALL
Application**



$$X \leq 350 \text{ mm}$$

$$Y \leq 350 \text{ mm}$$

$$a1 \geq 0 \text{ mm}$$

a1 = minimum distance between pipe and the seal edge

Single copper pipes in flexible and rigid walls acc. to ANNEX B-1 – local insulation (LS)

Pipe material	Outer-Ø	t _{pipe}	t _{insul}	L _{insul}	Classifications	
Copper	$\geq 12 \text{ mm}$	1,0 – 14,2 mm	20 mm	$\geq 450 \text{ mm}$	EI 120 U/C	E 120 U/C
	$\geq 54 \text{ mm}$	2,0 – 14,2 mm	20 mm	$\geq 450 \text{ mm}$	EI 120 U/C	E 120 U/C
	$\geq 88,9 \text{ mm}$	2,0 – 14,2 mm	30 mm	$\geq 950 \text{ mm}$	EI 120 C/U	E 120 C/U

Single copper pipes in flexible and rigid walls acc. to ANNEX B-1 – continued insulation (CS)

Pipe material	Outer-Ø	t _{pipe}	t _{insul}	Classifications	
Copper	$\geq 12 \text{ mm}$	1,0 – 14,2 mm	$\geq 20 \text{ mm}$	EI 120 U/C	E 120 U/C
	$\geq 54 \text{ mm}$	2,0 – 14,2 mm	$\geq 20 \text{ mm}$	EI 120 U/C	E 120 U/C
	$\geq 88,9 \text{ mm}$	2,0 – 14,2 mm	$\geq 30 \text{ mm}$	EI 120 C/U	E 120 C/U

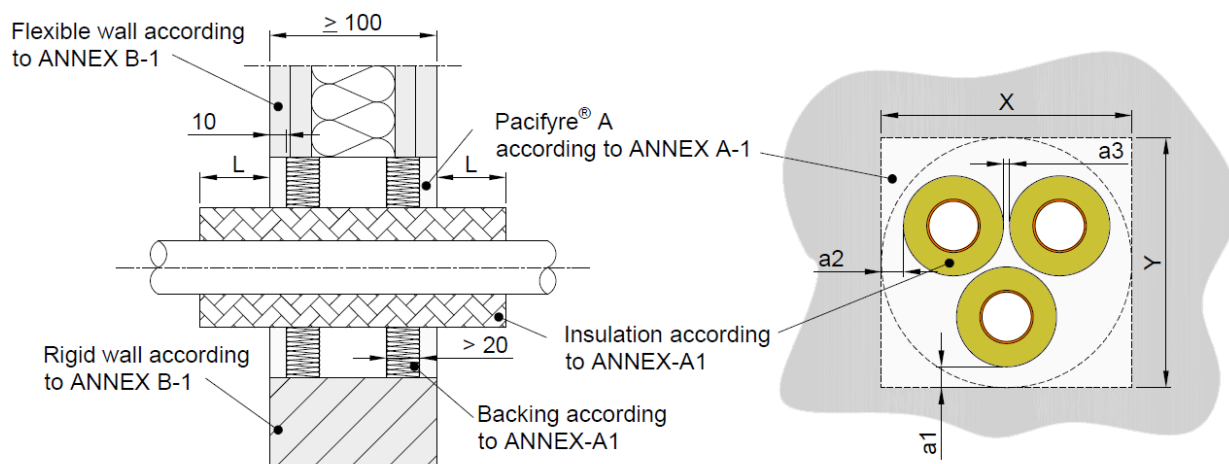
Pacifyre® A

- Installation of single copper pipes in different types of flexible and rigid walls -

ANNEX B-3

Multiple copper pipes with intended use as gas, drinking water and heating pipe made out of the below material and dimension:

**WALL
Application**



$$X \leq 350 \text{ mm}$$

$$Y \leq 350 \text{ mm}$$

$$a1 \geq 0 \text{ mm}$$

$$a2 \geq 0 \text{ mm}$$

$$a3 \geq 0 \text{ mm}$$

a1 = minimum distance between pipe and the top seal edge
a2 = minimum distance between pipe and the side seal edge
a3 = minimum distance between the pipes

Multiple copper pipes in flexible and rigid walls acc. to ANNEX B-1 – local insulation (LS)

Pipe material	Outer-Ø	t _{pipe}	t _{insul}	L _{insul}	Classifications	
Copper	$\geq 12 \text{ mm}$	1,0 – 14,2 mm	20 mm	$\geq 450 \text{ mm}$	EI 120 U/C	E 120 U/C
	$\geq 54 \text{ mm}$	2,0 – 14,2 mm	20 mm	$\geq 450 \text{ mm}$	EI 120 U/C	E 120 U/C

Multiple copper pipes in flexible and rigid walls acc. to ANNEX B-1 – continued insulation (CS)

Pipe material	Outer-Ø	t _{pipe}	t _{insul}	Classifications	
Copper	$\geq 12 \text{ mm}$	1,0 – 14,2 mm	$\geq 20 \text{ mm}$	EI 120 U/C	E 120 U/C
	$\geq 54 \text{ mm}$	2,0 – 14,2 mm	$\geq 20 \text{ mm}$	EI 120 U/C	E 120 U/C

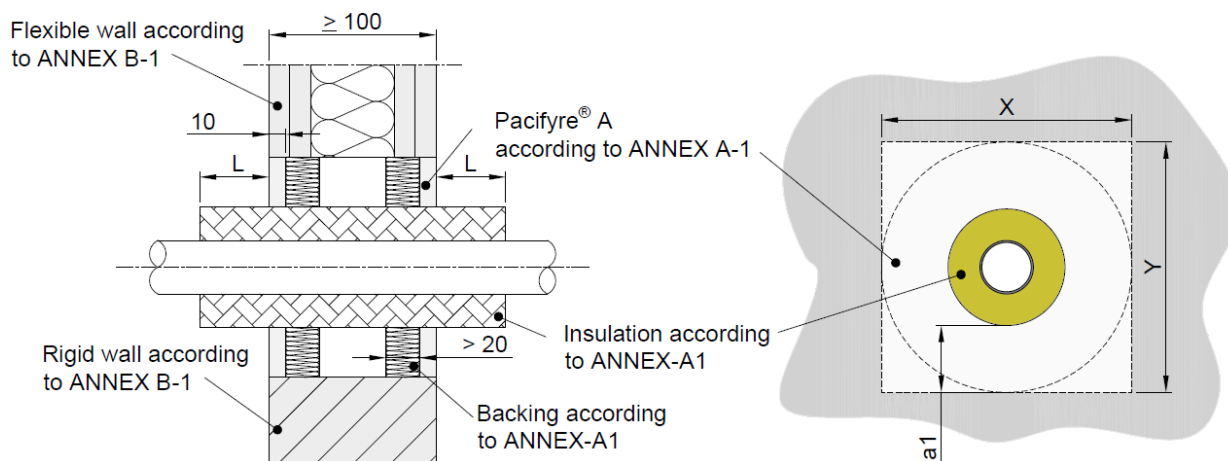
Pacifyre® A

- Installation of multiple copper pipes in different types of flexible and rigid walls -

ANNEX B-4

Single metal pipes with intended use as gas, drinking water and heating pipe made out of the below material and dimension:

**WALL
Application**



$$X \leq 350 \text{ mm}$$

$$Y \leq 350 \text{ mm}$$

$$a1 \geq 0 \text{ mm}$$

a1 = minimum distance between pipe and the seal edge

Single metal pipes in flexible and rigid walls acc. to ANNEX B-1 – local insulation (LS)

Pipe material	Outer-Ø	t _{pipe}	t _{insul}	L _{insul}	Classifications	
Steel / stainless steel	≥ 12 mm	1,0 – 14,2 mm	20 mm	≥ 450 mm	EI 120 U/C	E 120 U/C
	≥ 54 mm	2,0 – 14,2 mm	20 mm	≥ 450 mm	EI 120 U/C	E 120 U/C
	≥ 88,9 mm	2,0 – 14,2 mm	30 mm	≥ 950 mm	EI 120 C/U	E 120 C/U
	≥ 114,3 mm	3,2 – 14,2 mm	30 mm	≥ 950 mm	EI 120 C/U	E 120 C/U
	≥ 219,1 mm*	9,5 – 14,2 mm	30 mm	≥ 950 mm	EI 90 C/U	E 120 C/U

Single metal pipes in flexible and rigid walls acc. to ANNEX B-1 – continued insulation (CS)

Pipe material	Outer-Ø	t _{pipe}	t _{insul}	Classifications	
Steel / stainless steel	≥ 12 mm	1,0 – 14,2 mm	≥ 20 mm	EI 120 U/C	E 120 U/C
	≥ 54 mm	2,0 – 14,2 mm	≥ 20 mm	EI 120 U/C	E 120 U/C
	≥ 88,9 mm	2,0 – 14,2 mm	≥ 30 mm	EI 120 C/U	E 120 C/U
	≥ 114,3 mm	3,2 – 14,2 mm	≥ 30 mm	EI 120 C/U	E 120 C/U
	≥ 219,1 mm*	9,5 – 14,2 mm	≥ 30 mm	EI 90 C/U	E 120 C/U

*installation only in rigid walls ≥ 120 mm

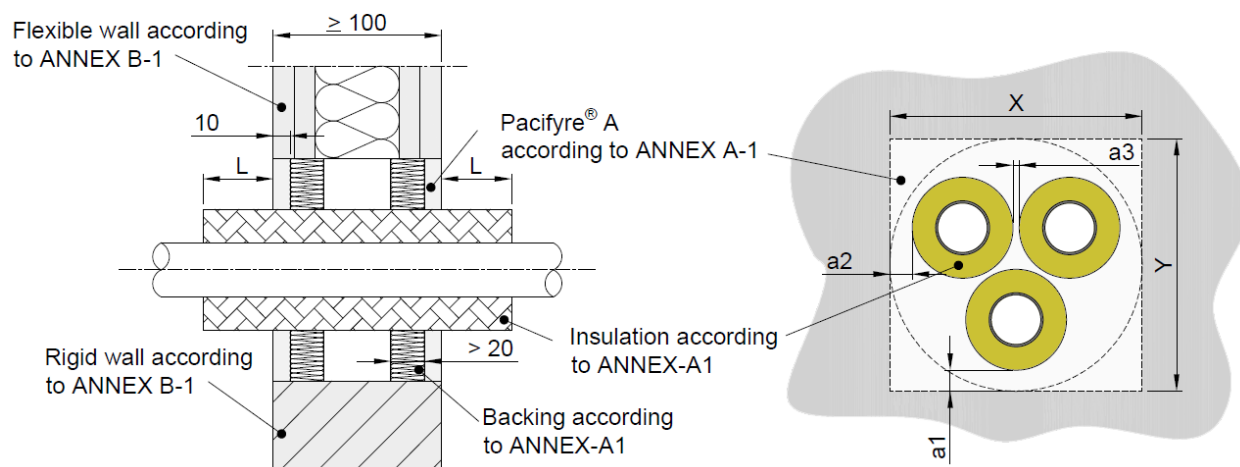
Pacifyre® A

- Installation of single metal pipes in different types of flexible and rigid walls -

ANNEX B-5

Multiple metal pipes with intended use as gas, drinking water and heating pipe made out of the below material and dimension:

**WALL
Application**



$$X \leq 350 \text{ mm}$$

$$Y \leq 350 \text{ mm}$$

$$a1 \geq 0 \text{ mm}$$

$$a2 \geq 0 \text{ mm}$$

$$a3 \geq 0 \text{ mm}$$

a1 = minimum distance between pipe and the top seal edge
a2 = minimum distance between pipe and the side seal edge
a3 = minimum distance between the pipes

Multiple metal pipes in flexible and rigid walls acc. to ANNEX B-1 – local insulation (LS)

Pipe material	Outer-Ø	t _{pipe}	t _{insul}	L _{insul}	Classifications	
Steel / stainless steel	$\geq 12 \text{ mm}$	1,0 – 14,2 mm	20 mm	$\geq 450 \text{ mm}$	EI 120 U/C	E 120 U/C
	$\geq 54 \text{ mm}$	2,0 – 14,2 mm	20 mm	$\geq 450 \text{ mm}$	EI 120 U/C	E 120 U/C

Multiple metal pipes in flexible and rigid walls acc. to ANNEX B-1 – continued insulation (CS)

Pipe material	Outer-Ø	t _{pipe}	t _{insul}	Classifications	
Steel / stainless steel	$\geq 12 \text{ mm}$	1,0 – 14,2 mm	$\geq 20 \text{ mm}$	EI 120 U/C	E 120 U/C
	$\geq 54 \text{ mm}$	2,0 – 14,2 mm	$\geq 20 \text{ mm}$	EI 120 U/C	E 120 U/C

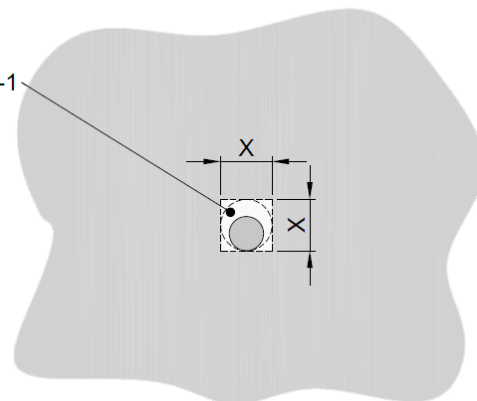
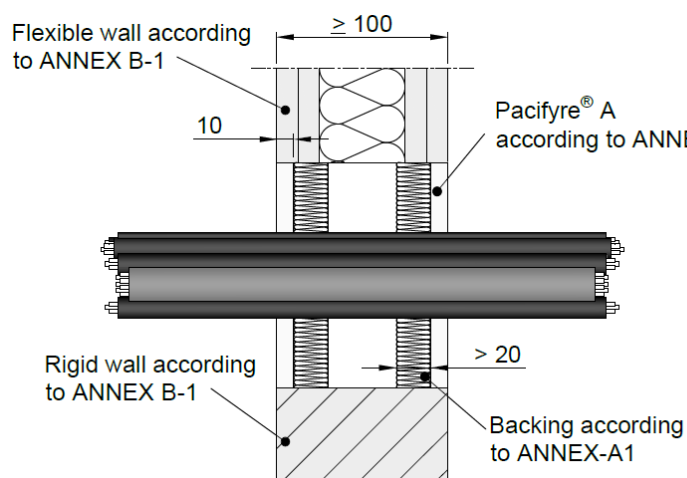
Pacifyre® A

- Installation of multiple metal pipes in different types of flexible and rigid walls -

ANNEX B-6

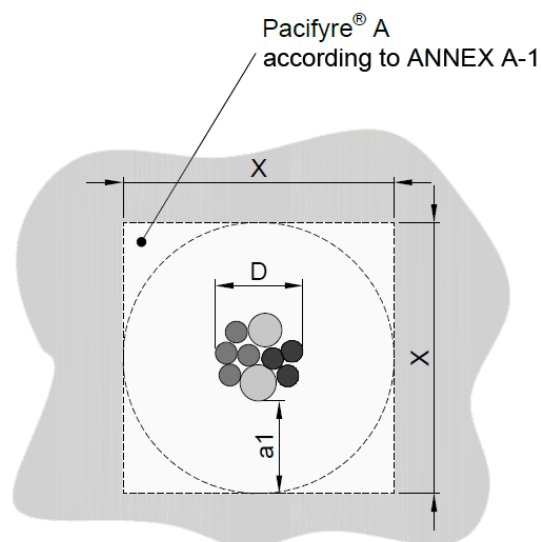
Single and bundled cable penetration of sheathed cables up to \varnothing 21 mm | EI 60 / E 120

**WALL
Application**



The total amount of cross sections of the cables does not exceed **60 %** of the penetration.

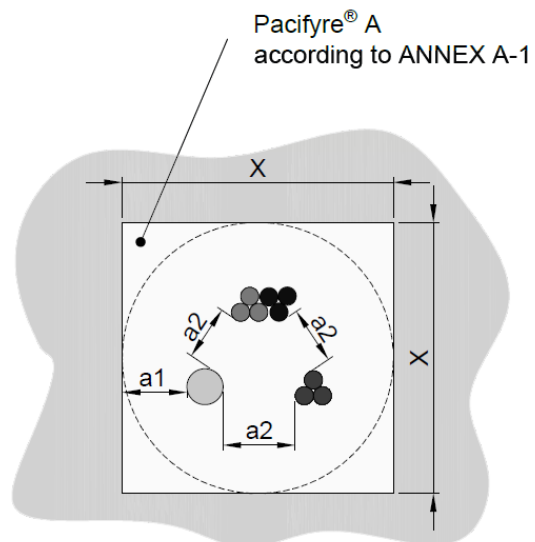
EI 60 / E 120



$$D \leq 50 \text{ mm}$$

$$a1 \geq 0 \text{ mm}$$

$$a2 \geq 0 \text{ mm}$$



$$X_{\max.} \leq 150 \text{ mm} / \varnothing 150 \text{ mm}$$

$$X_{\min.} \leq 30 \text{ mm} / \varnothing 30 \text{ mm}$$

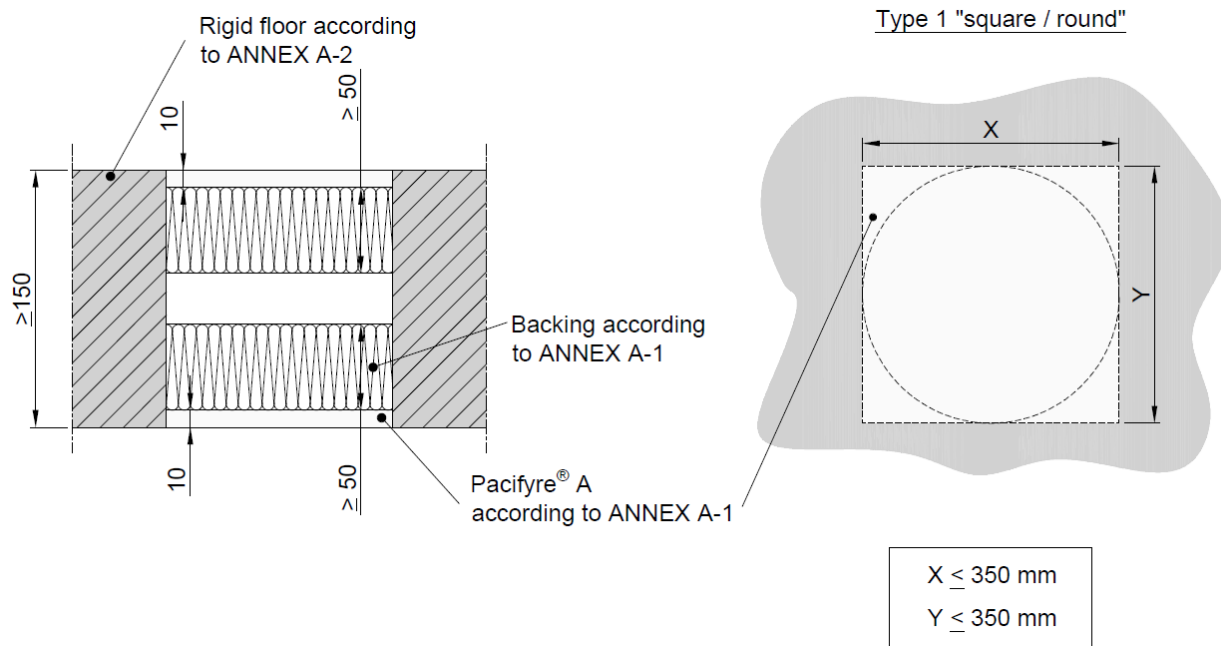
Pacifyre® A

- Installation of single and bundled cables in different types of flexible and rigid walls | EI 60 / E 120 -

ANNEX B-7

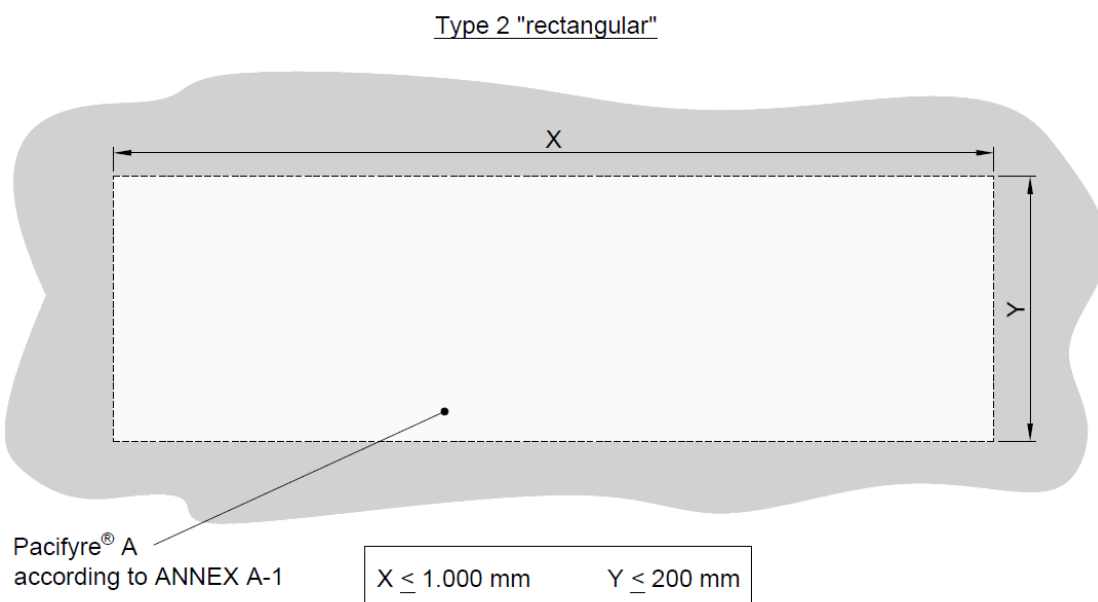
Blank penetration seal | double sided square/round

EI120



Blank penetration seal | double sided rectangular

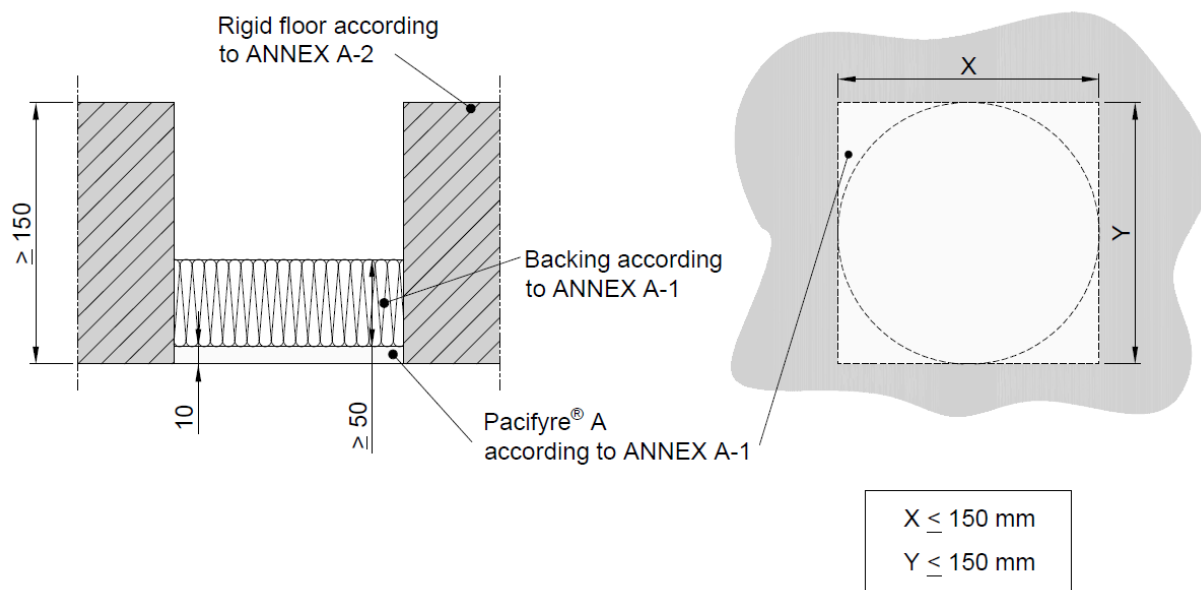
EI120



Blank penetration seal | single sided bottom

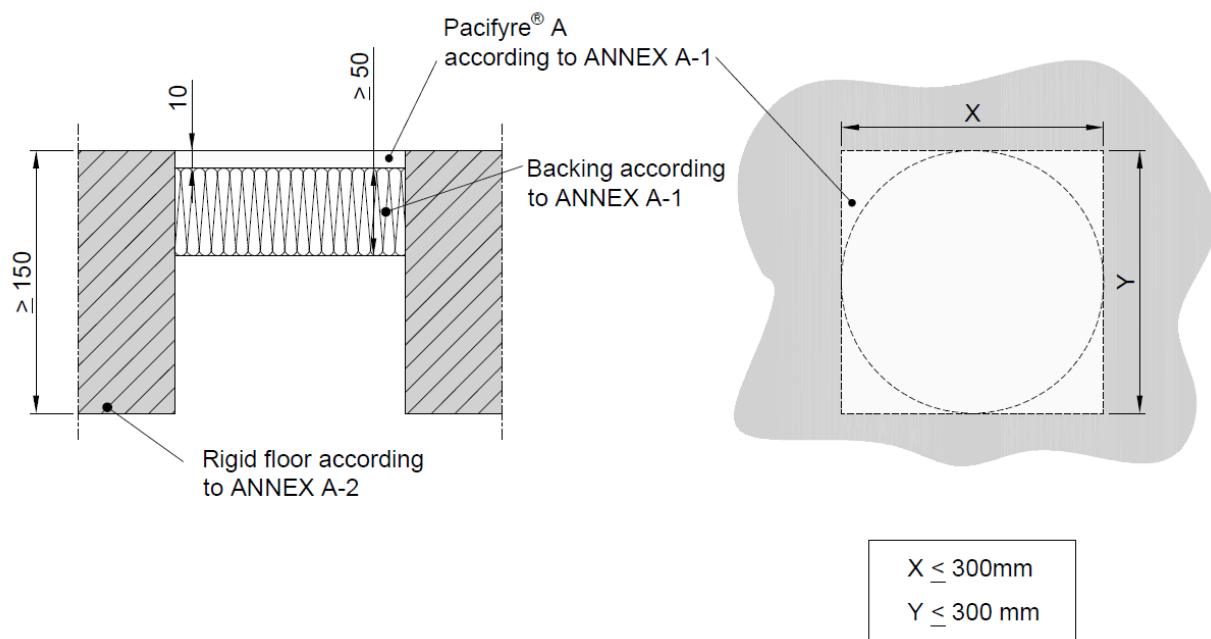
EI60 / E120

Blank penetration seal:



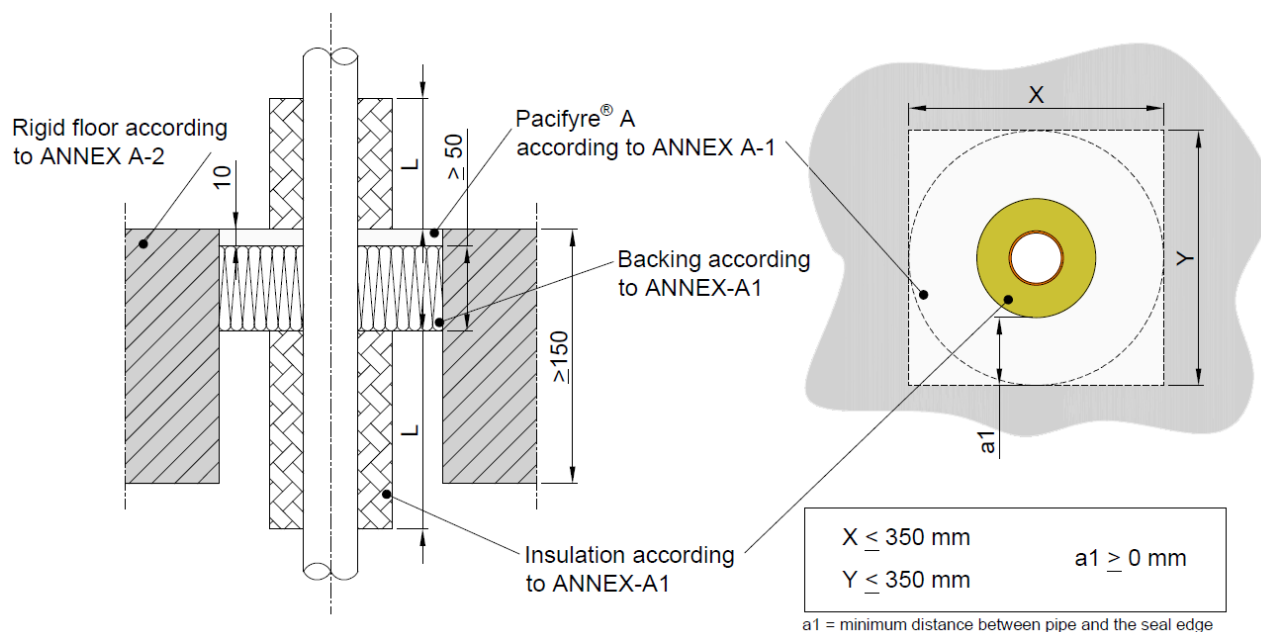
Blank penetration seal | single sided top

EI90 / E120



Single copper pipes with intended use as gas, drinking water and heating pipe made out of the below material and dimension (interrupted insulation):

**FLOOR
Application**



Single copper pipes in rigid floors acc. to ANNEX B-1 – local insulation (LI)

Pipe material	Outer-Ø	t _{pipe}	t _{insul}	L _{insul}	Classifications	
Copper	≥ 12 mm	1,0 – 14,2 mm	20 mm	≥ 1.000 mm	EI 90 C/U	E 120 C/U
	≥ 54 mm	2,0 – 14,2 mm	20 mm	≥ 1.000 mm	EI 90 C/U	E 120 C/U

Single copper pipes in rigid floors acc. to ANNEX B-1 – continued insulation (CI)

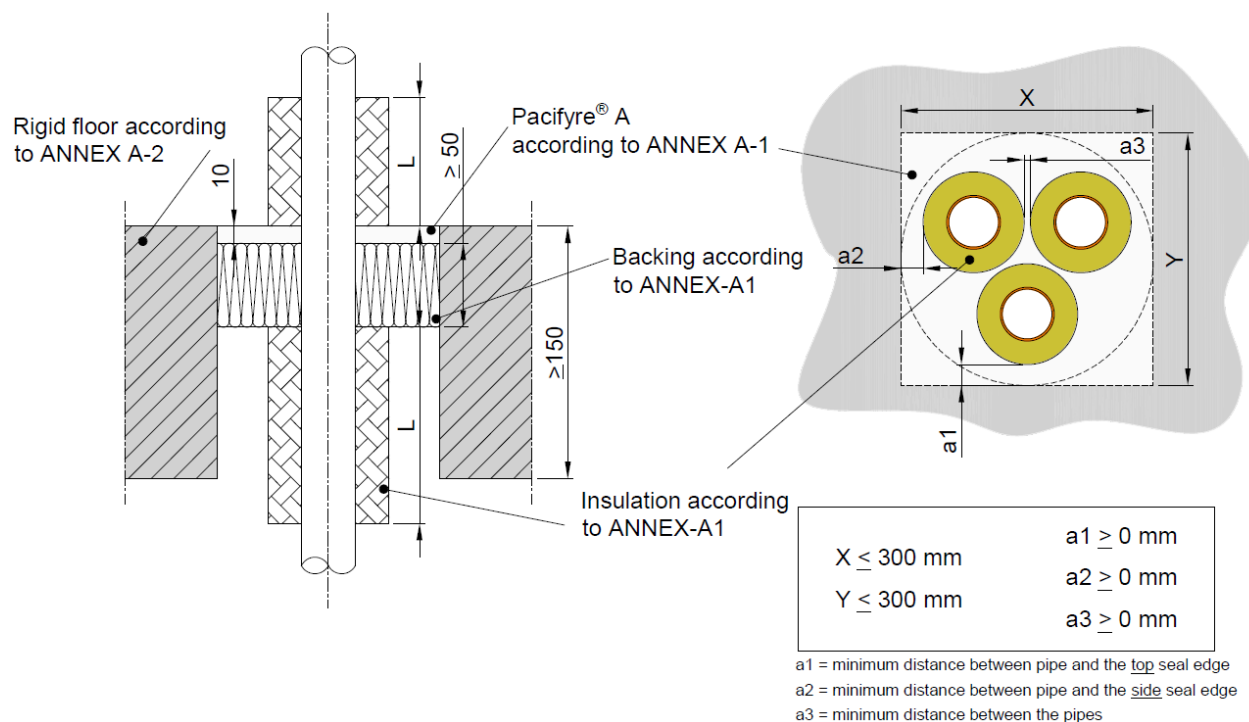
Pipe material	Outer-Ø	t _{pipe}	t _{insul}	Classifications	
Copper	≥ 12 mm	1,0 – 14,2 mm	≥ 20 mm	EI 90 C/U	E 120 C/U
	≥ 54 mm	2,0 – 14,2 mm	≥ 20 mm	EI 90 C/U	E 120 C/U

Pacifyre® A
- Installation of single copper pipes in rigid floors -

ANNEX C-3

Multiple copper pipes with intended use as gas, drinking water and heating pipe made out of the below material and dimension (interrupted insulation):

**FLOOR
Application**



Multiple copper pipes in rigid floors acc. to ANNEX B-1 – local insulation (LI)

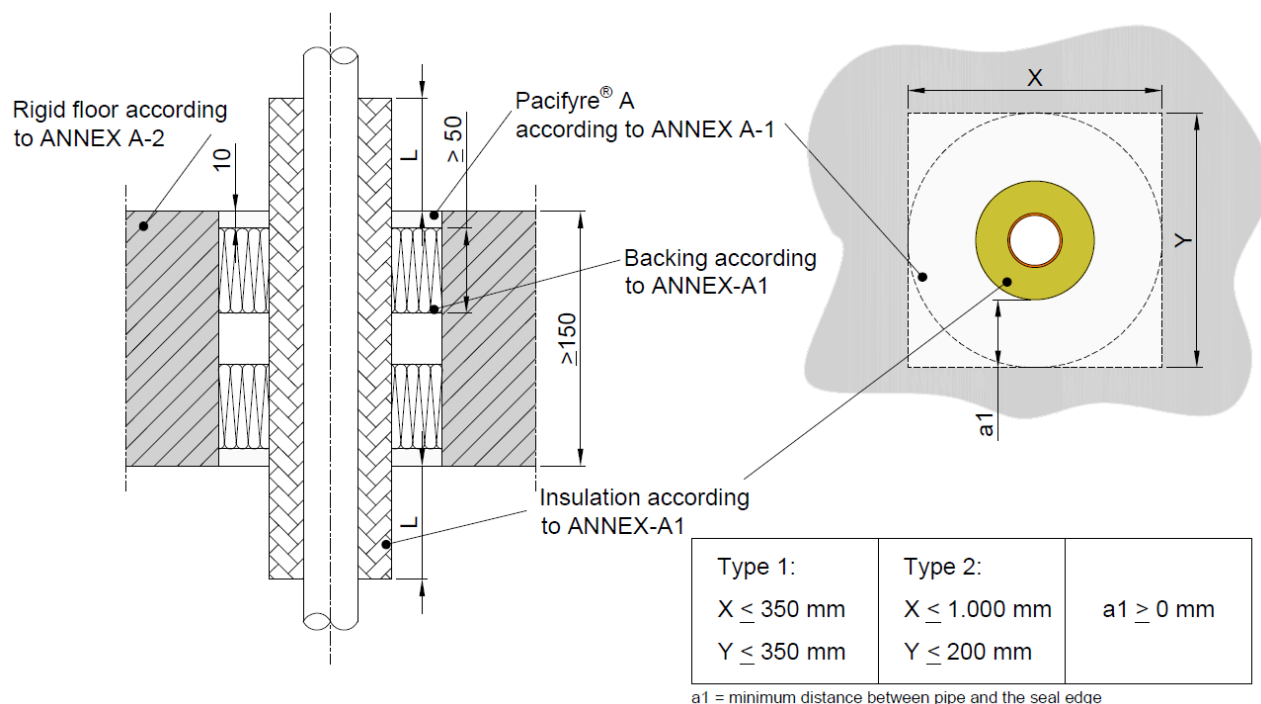
Pipe material	Outer-Ø	t _{pipe}	t _{insul}	L _{insul}	Classifications	
Copper	≥ 12 mm	1,0 – 14,2 mm	20 mm	≥ 1.000 mm	EI 90 C/U	E 120 C/U
	≥ 54 mm	2,0 – 14,2 mm	20 mm	≥ 1.000 mm	EI 90 C/U	E 120 C/U

Multiple copper pipes in rigid floors acc. to ANNEX B-1 – continued insulation (CI)

Pipe material	Outer-Ø	t _{pipe}	t _{insul}	Classifications	
Copper	≥ 12 mm	1,0 – 14,2 mm	≥ 20 mm	EI 90 C/U	E 120 C/U
	≥ 54 mm	2,0 – 14,2 mm	≥ 20 mm	EI 90 C/U	E 120 C/U

Single copper pipes with intended use as gas, drinking water and heating pipe made out of the below material and dimension:

**FLOOR
Application**



Single copper pipes in rigid floors acc. to ANNEX B-1 – local insulation (LS)

Pipe material	Outer-Ø	t _{pipe}	t _{insul}	L _{insul}	Classifications	
Copper	≥ 54 mm	2,0 – 14,2 mm	30 mm	≥ 925 mm	EI 120 C/U	E 120 C/U
	≥ 88,9 mm	2,0 – 14,2 mm	30 mm	≥ 925 mm	EI 120 C/U	E 120 C/U

Single copper pipes in rigid floors acc. to ANNEX B-1 – continued insulation (CS)

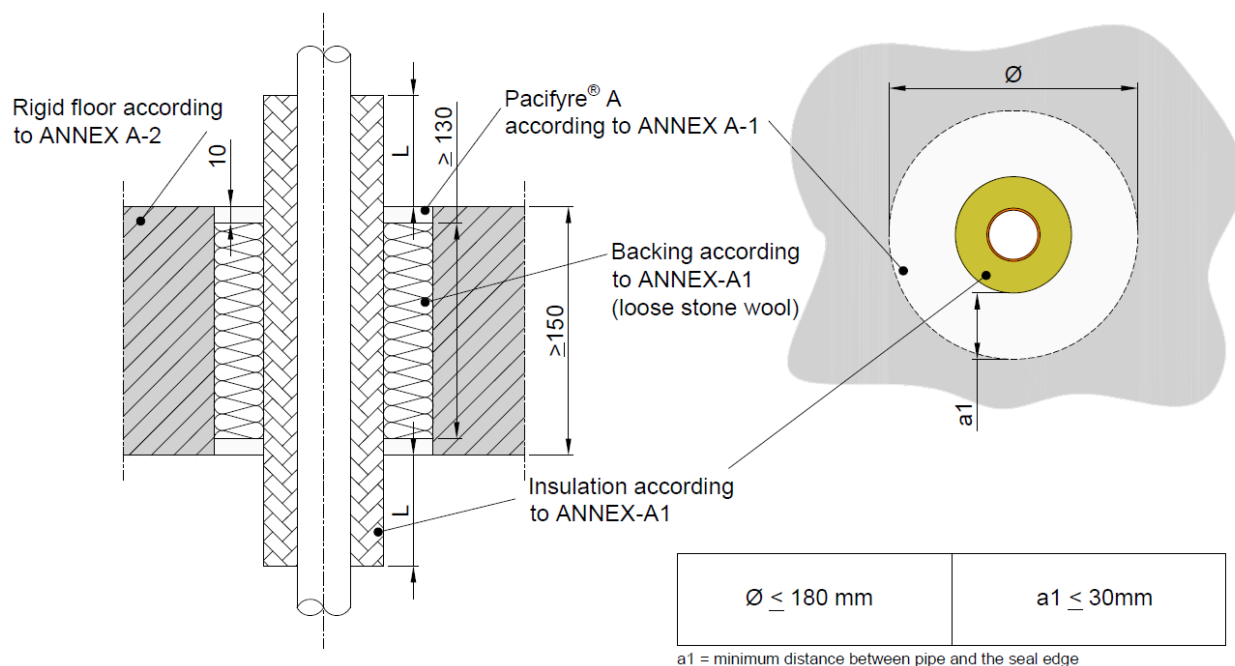
Pipe material	Outer-Ø	t _{pipe}	t _{insul}	Classifications	
Copper	≥ 54 mm	2,0 – 14,2 mm	≥ 30 mm	EI 120 C/U	E 120 C/U
	≥ 88,9 mm	2,0 – 14,2 mm	≥ 30 mm	EI 120 C/U	E 120 C/U

Pacifyre® A
- Installation of single copper pipes in rigid floors -

ANNEX C-5

Single copper pipes with intended use as gas, drinking water and heating pipe made out of the below material and dimension (with loose mineral wool):

**FLOOR
Application**



Single copper pipes in rigid floors acc. to ANNEX B-1 – local insulation (LS)

Pipe material	Outer-Ø	t_{pipe}	t_{insul}	L_{insul}	Classifications	
Copper	$\geq 12 \text{ mm}$	1,0 – 14,2 mm	20 mm	$\geq 1.000 \text{ mm}$	EI 120 C/U	E 120 C/U
	$\geq 54 \text{ mm}$	2,0 – 14,2 mm	20 mm	$\geq 1.000 \text{ mm}$	EI 120 C/U	E 120 C/U
	$\geq 88,9 \text{ mm}$	2,0 – 14,2 mm	30 mm	$\geq 925 \text{ mm}$	EI 30 C/U	E 120 C/U

Single copper pipes in rigid floors acc. to ANNEX B-1 – continued insulation (CS)

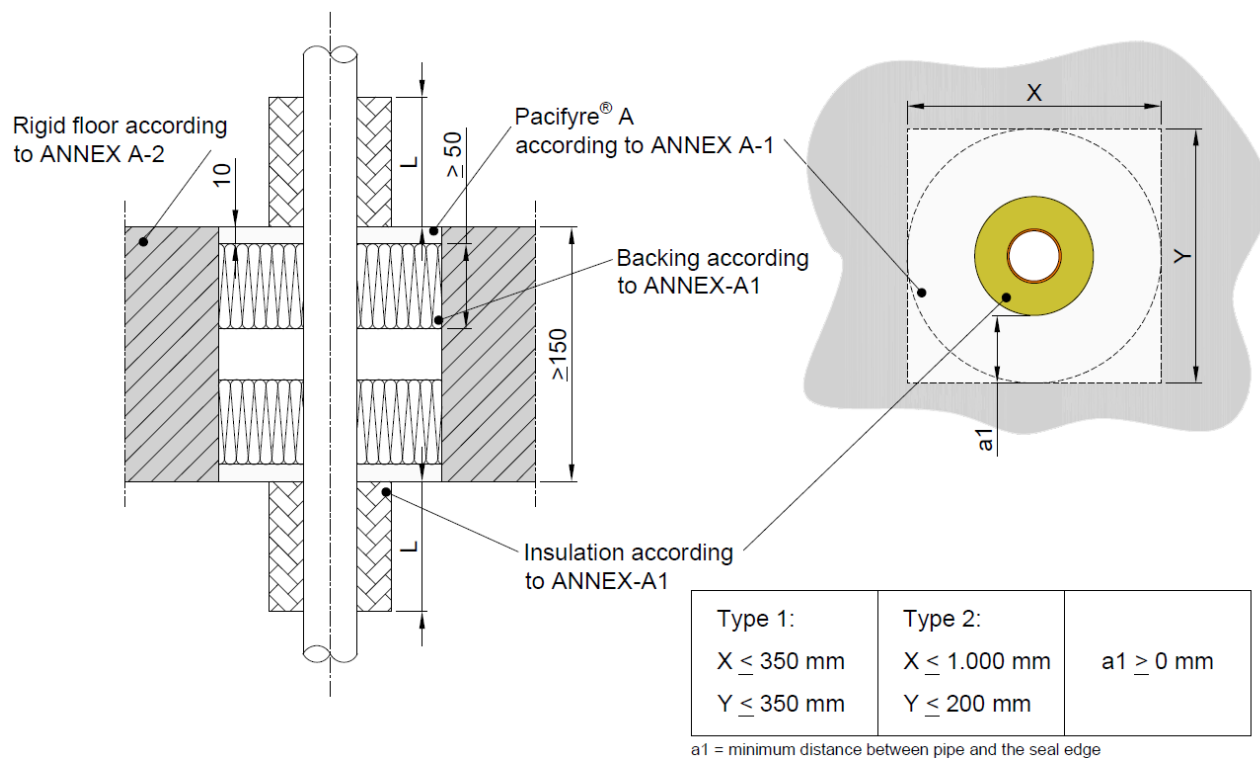
Pipe material	Outer-Ø	t_{pipe}	t_{insul}	Classifications	
Copper	$\geq 12 \text{ mm}$	1,0 – 14,2 mm	$\geq 20 \text{ mm}$	EI 120 C/U	E 120 C/U
	$\geq 54 \text{ mm}$	2,0 – 14,2 mm	$\geq 20 \text{ mm}$	EI 120 C/U	E 120 C/U
	$\geq 88,9 \text{ mm}$	2,0 – 14,2 mm	$\geq 30 \text{ mm}$	EI 30 C/U	E 120 C/U

Pacifyre® A
- Installation of single copper pipes in rigid floors -

ANNEX C-6

Single copper pipes with intended use as gas, drinking water and heating pipe made out of the below material and dimension (interrupted insulation):

**FLOOR
Application**



Single copper pipes in rigid floors acc. to ANNEX B-1 – local insulation (LI)

Pipe material	Outer-Ø	t _{pipe}	t _{insul}	L _{insul}	Classifications	
Copper	≥ 12 mm	1,0 – 14,2 mm	20 mm	≥ 1.000 mm	EI 120 C/U	E 120 C/U
	≥ 54 mm	2,0 – 14,2 mm	20 mm	≥ 1.000 mm	EI 120 C/U	E 120 C/U
	≥ 88,9 mm	2,0 – 14,2 mm	30 mm	≥ 1.000 mm	EI 30 C/U	E 120 C/U

Single copper pipes in rigid floors acc. to ANNEX B-1 – continued insulation (CI)

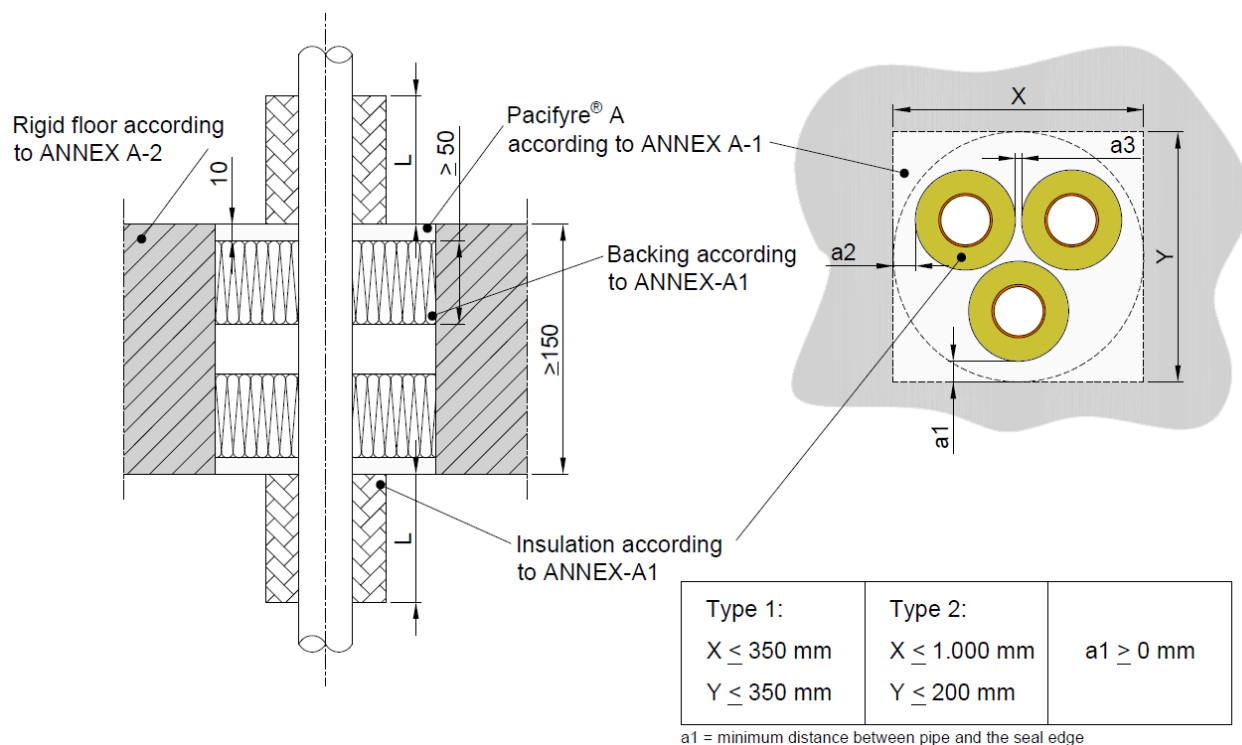
Pipe material	Outer-Ø	t _{pipe}	t _{insul}	Classifications	
Copper	≥ 12 mm	1,0 – 14,2 mm	≥ 20 mm	EI 120 C/U	E 120 C/U
	≥ 54 mm	2,0 – 14,2 mm	≥ 20 mm	EI 120 C/U	E 120 C/U
	≥ 88,9 mm	2,0 – 14,2 mm	≥ 30 mm	EI 120 C/U	E 120 C/U

Pacifyre® A
- Installation of single copper pipes in rigid floors -

ANNEX C-7

Multiple copper pipes with intended use as gas, drinking water and heating pipe made out of the below material and dimension (interrupted insulation):

**FLOOR
Application**



Multiple copper pipes in rigid floors acc. to ANNEX B-1 – local insulation (LI)

Pipe material	Outer-Ø	t _{pipe}	t _{insul}	L _{insul}	Classifications	
Copper	≥ 12 mm	1,0 – 14,2 mm	20 mm	≥ 1.000 mm	EI 120 C/U	E 120 C/U
	≥ 54 mm	2,0 – 14,2 mm	20 mm	≥ 1.000 mm	EI 120 C/U	E 120 C/U
	≥ 88,9 mm	2,0 – 14,2 mm	30 mm	≥ 1.000 mm	EI 30 C/U	E 120 C/U

Multiple copper pipes in rigid floors acc. to ANNEX B-1 – continued insulation (CI)

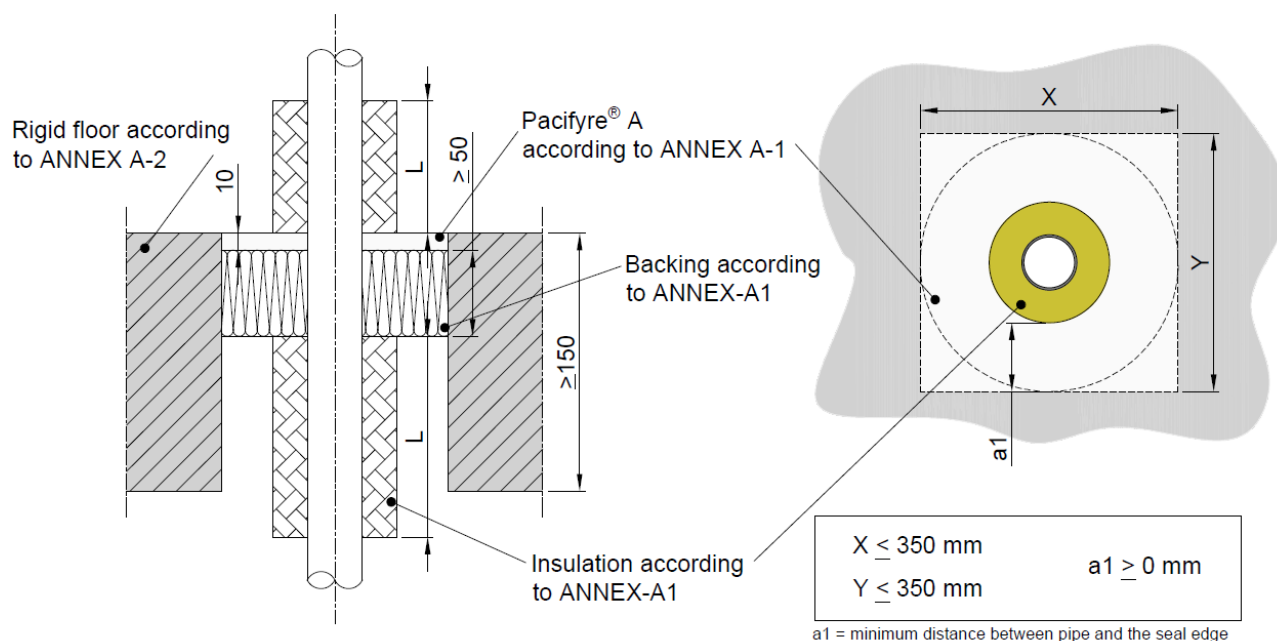
Pipe material	Outer-Ø	t _{pipe}	t _{insul}	Classifications	
Copper	≥ 12 mm	1,0 – 14,2 mm	≥ 20 mm	EI 120 C/U	E 120 C/U
	≥ 54 mm	2,0 – 14,2 mm	≥ 20 mm	EI 120 C/U	E 120 C/U
	≥ 88,9 mm	2,0 – 14,2 mm	≥ 30 mm	EI 120 C/U	E 120 C/U

Pacifyre® A
- Installation of multiple copper pipes in rigid floors -

ANNEX C-8

Single metal pipes with intended use as gas, drinking water and heating pipe made out of the below material and dimension (interrupted insulation):

**FLOOR
Application**



Single metal pipes in rigid floors acc. to ANNEX B-1 – local insulation (LI)

Pipe material	Outer-Ø	t _{pipe}	t _{insul}	L _{insul}	Classifications	
Steel / stainless steel	≥ 12 mm	1,0 – 14,2 mm	20 mm	≥ 1.000 mm	EI 90 C/U	E 120 C/U
	≥ 54 mm	2,0 – 14,2 mm	20 mm	≥ 1.000 mm	EI 90 C/U	E 120 C/U

Single metal pipes in rigid floors acc. to ANNEX B-1 – continued insulation (CI)

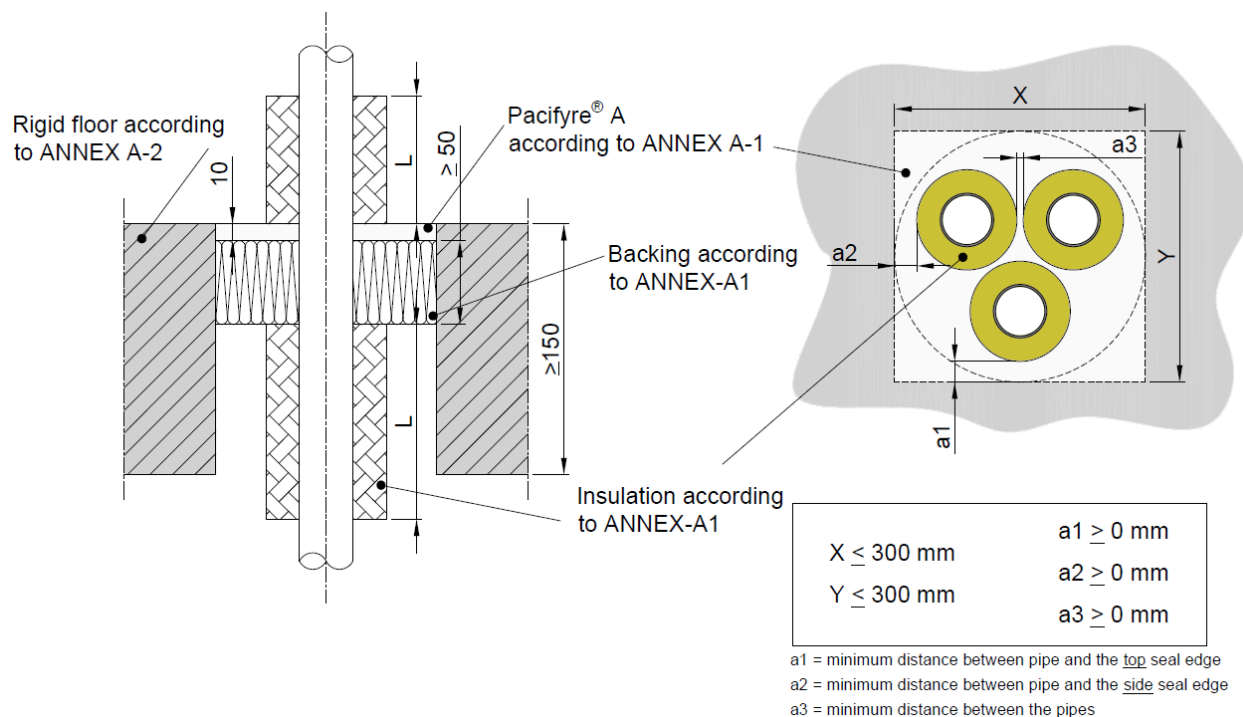
Pipe material	Outer-Ø	t _{pipe}	t _{insul}	Classifications	
Steel / stainless steel	≥ 12 mm	1,0 – 14,2 mm	≥ 20 mm	EI 90 C/U	E 120 C/U
	≥ 54 mm	2,0 – 14,2 mm	≥ 20 mm	EI 90 C/U	E 120 C/U

Pacifyre® A
- Installation of single metal pipes in rigid floors -

ANNEX C-9

Multiple metal pipes with intended use as gas, drinking water and heating pipe made out of the below material and dimension (interrupted insulation):

**FLOOR
Application**



Multiple metal pipes in rigid floors acc. to ANNEX B-1 – local insulation (LI)

Pipe material	Outer-Ø	t _{pipe}	t _{insul}	L _{insul}	Classifications	
Steel / stainless steel	≥ 12 mm	1,0 – 14,2 mm	20 mm	≥ 1.000 mm	EI 90 C/U	E 120 C/U
	≥ 54 mm	2,0 – 14,2 mm	20 mm	≥ 1.000 mm	EI 90 C/U	E 120 C/U

Multiple metal pipes in rigid floors acc. to ANNEX B-1 – continued insulation (CI)

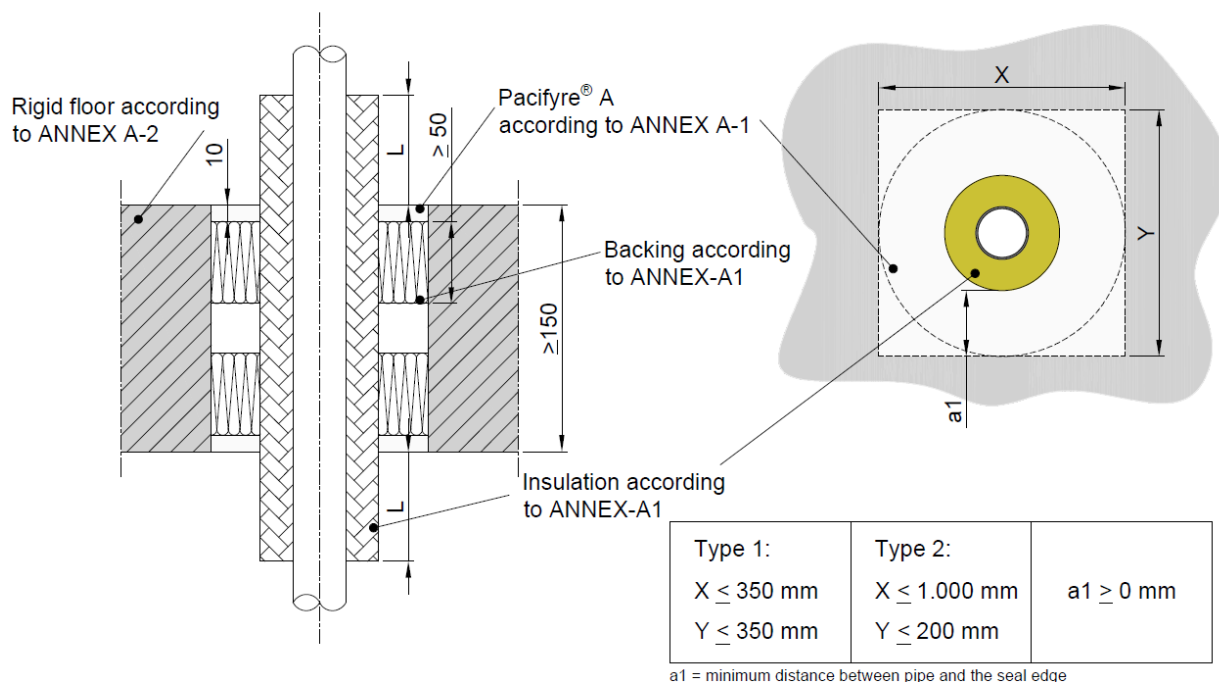
Pipe material	Outer-Ø	t _{pipe}	t _{insul}	Classifications	
Steel / stainless steel	≥ 12 mm	1,0 – 14,2 mm	≥ 20 mm	EI 90 C/U	E 120 U/C
	≥ 54 mm	2,0 – 14,2 mm	≥ 20 mm	EI 90 C/U	E 120 C/U

Pacifyre® A
- Installation of multiple metal pipes in rigid floors -

ANNEX C-10

Single metal pipes with intended use as gas, drinking water and heating pipe made out of the below material and dimension:

**FLOOR
Application**



Single metal pipes in rigid floors acc. to ANNEX B-1 – local insulation (LS)

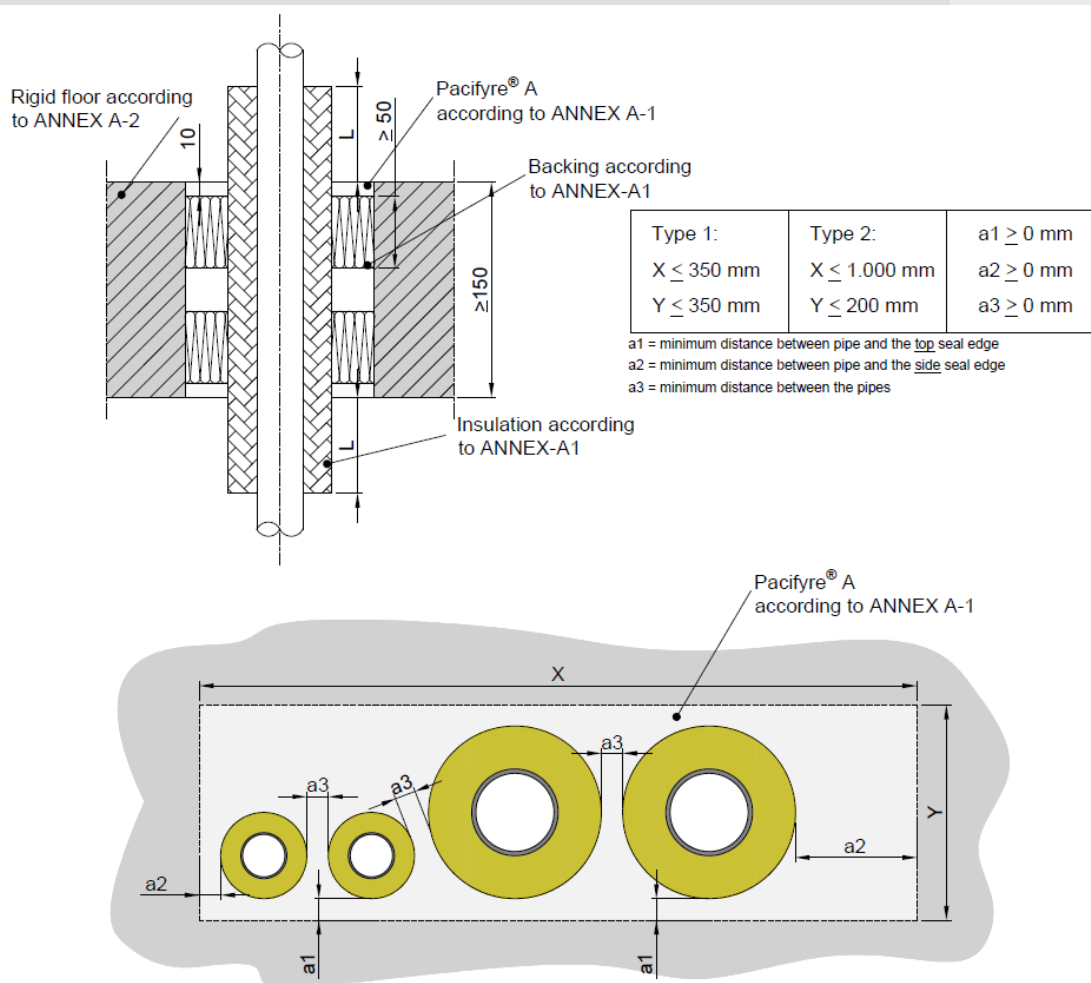
Pipe material	Outer-Ø	t_{pipe}	t_{insul}	L_{insul}	Classifications	
Steel / stainless steel	$\geq 17,2 \text{ mm}$	1,8 – 14,2 mm	20 mm	$\geq 500 \text{ mm}$	EI 120 C/U	E 120 C/U
	$\geq 33,7 \text{ mm}$	2,6 – 14,2 mm	20 mm	$\geq 500 \text{ mm}$	EI 120 C/U	E 120 C/U
	$\geq 60,3 \text{ mm}$	2,9 – 14,2 mm	30 mm	$\geq 450 \text{ mm}$	EI 120 C/U	E 120 C/U
	$\geq 88,9 \text{ mm}$	2,0 – 14,2 mm	30 mm	$\geq 925 \text{ mm}$	EI 120 C/U	E 120 C/U
	$\geq 114,3 \text{ mm}$	3,6 – 14,2 mm	30 mm	$\geq 1.000 \text{ mm}$	EI 120 C/U	E 120 C/U

Single metal pipes in rigid floors acc. to ANNEX B-1 – continued insulation (CS)

Pipe material	Outer-Ø	t_{pipe}	t_{insul}	Classifications	
Steel / stainless steel	$\geq 17,2 \text{ mm}$	1,8 – 14,2 mm	$\geq 20 \text{ mm}$	EI 120 C/U	E 120 C/U
	$\geq 33,7 \text{ mm}$	2,6 – 14,2 mm	$\geq 20 \text{ mm}$	EI 120 C/U	E 120 C/U
	$\geq 88,9 \text{ mm}$	2,0 – 14,2 mm	$\geq 30 \text{ mm}$	EI 120 C/U	E 120 C/U
	$\geq 114,3 \text{ mm}$	3,6 – 14,2 mm	$\geq 30 \text{ mm}$	EI 120 C/U	E 120 C/U

Multiple metal pipes with intended use as gas, drinking water and heating pipe made out of the below material and dimension:

**FLOOR
Application**



Multiple metal pipes in rigid floors acc. to ANNEX B-1 – local insulation (LS)

Pipe material	Outer-Ø	t _{pipe}	t _{insul}	L _{insul}	Classifications	
Steel / stainless steel	≥ 17,2 mm	1,8 – 14,2 mm	20 mm	≥ 500 mm	EI 120 C/U	E 120 C/U
	≥ 33,7 mm	2,6 – 14,2 mm	20 mm	≥ 500 mm	EI 120 C/U	E 120 C/U
	≥ 60,3 mm	2,9 – 14,2 mm	30 mm	≥ 450 mm	EI 120 C/U	E 120 C/U

Multiple metal pipes in rigid floors acc. to ANNEX B-1 – continued insulation (CS)

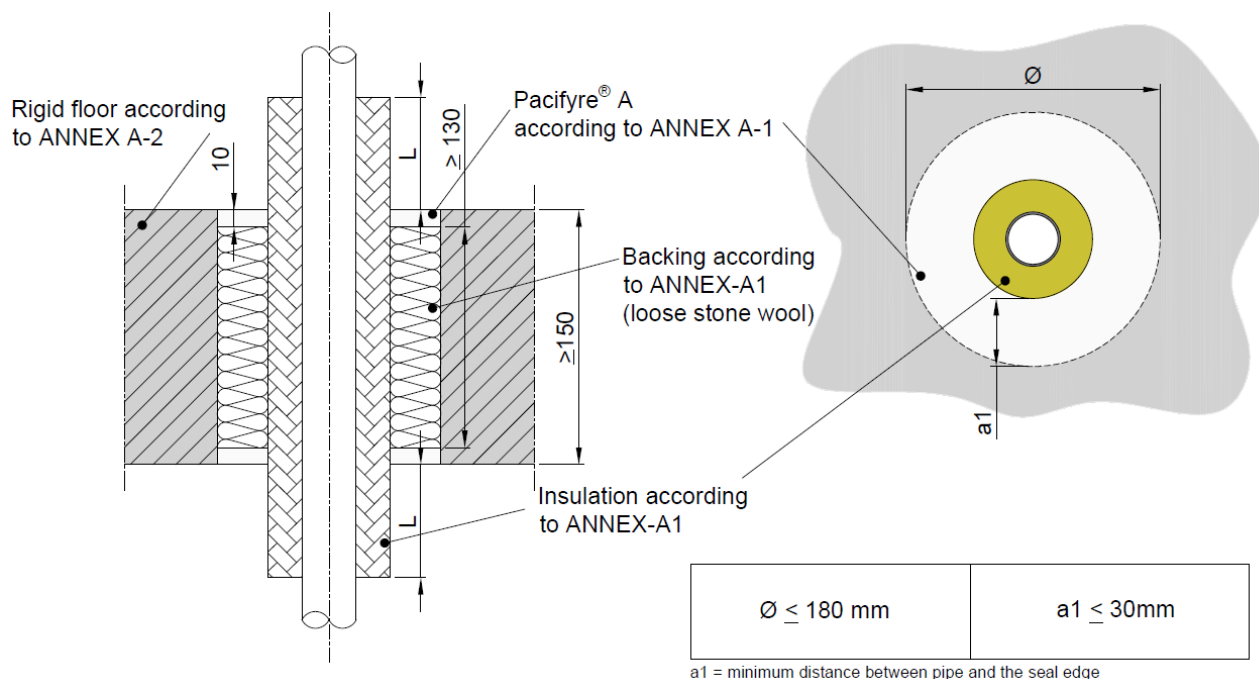
Pipe material	Outer-Ø	t _{pipe}	t _{insul}	Classifications	
Steel / stainless steel	≥ 17,2 mm	1,8 – 14,2 mm	≥ 20 mm	EI 120 C/U	E 120 C/U
	≥ 33,7 mm	2,6 – 14,2 mm	≥ 20 mm	EI 120 C/U	E 120 C/U
	≥ 60,3 mm	2,9 – 14,2 mm	≥ 30 mm	EI 120 C/U	E 120 C/U

Pacifyre® A
- Installation of multiple metal pipes in rigid floors -

ANNEX C-12

Single metal pipes with intended use as gas, drinking water and heating pipe made out of the below material and dimension (with loose mineral wool):

**FLOOR
Application**



Single metal pipes in rigid floors acc. to ANNEX B-1 – local insulation (LS)

Pipe material	Outer-Ø	t _{pipe}	t _{insul}	L _{insul}	Classifications	
Steel / stainless steel	≥ 12 mm	1,0 – 14,2 mm	20 mm	≥ 1.000 mm	EI 120 C/U	E 120 C/U
	≥ 54 mm	2,0 – 14,2 mm	20 mm	≥ 1.000 mm	EI 120 C/U	E 120 C/U
	≥ 88,9 mm	2,0 – 14,2 mm	30 mm	≥ 925 mm	EI 30 C/U	E 120 C/U

Single copper pipes in rigid floors acc. to ANNEX B-1 – continued insulation (CS)

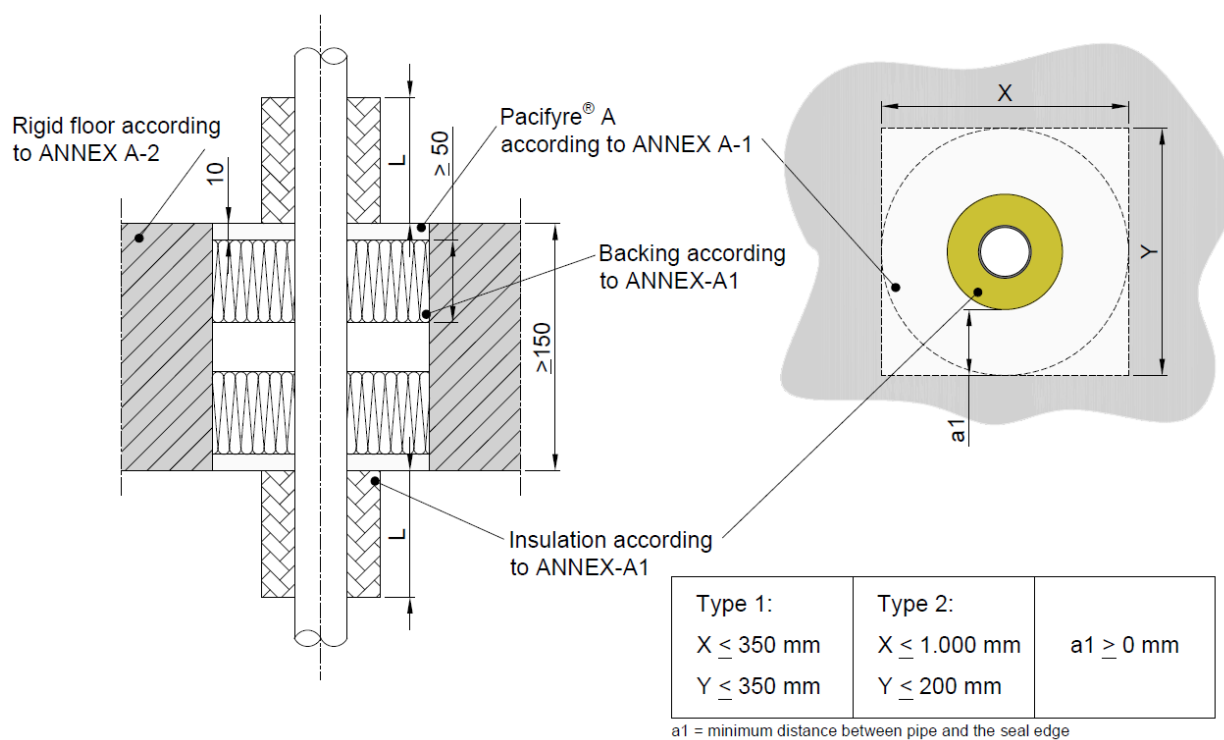
Pipe material	Outer-Ø	t _{pipe}	t _{insul}	Classifications	
Steel / stainless steel	≥ 12 mm	1,0 – 14,2 mm	≥ 20 mm	EI 120 C/U	E 120 C/U
	≥ 54 mm	2,0 – 14,2 mm	≥ 20 mm	EI 120 C/U	E 120 C/U
	≥ 88,9 mm	2,0 – 14,2 mm	≥ 30 mm	EI 30 C/U	E 120 C/U

Pacifyre® A
- Installation of single metal pipes in rigid floors -

ANNEX C-13

Single metal pipes with intended use as gas, drinking water and heating pipe made out of the below material and dimension (interrupted insulation):

**FLOOR
Application**



Single metal pipes in rigid floors acc. to ANNEX B-1 – local insulation (LI)

Pipe material	Outer-Ø	t_{pipe}	t_{insul}	L_{insul}	Classifications	
Steel / stainless steel	$\geq 12 \text{ mm}$	1,0 – 14,2 mm	20 mm	$\geq 1.000 \text{ mm}$	EI 120 C/U	E 120 C/U
	$\geq 54 \text{ mm}$	2,0 – 14,2 mm	20 mm	$\geq 1.000 \text{ mm}$	EI 120 C/U	E 120 C/U
	$\geq 54 \text{ mm}$	2,0 – 14,2 mm	30 mm	$\geq 1.000 \text{ mm}$	EI 90 C/U	E 120 C/U
	$\geq 88,9 \text{ mm}$	2,0 – 14,2 mm	30 mm	$\geq 1.000 \text{ mm}$	EI 30 C/U	E 120 C/U
	$\geq 114,3 \text{ mm}$	3,6 – 14,2 mm	30 mm	$\geq 1.000 \text{ mm}$	EI 120 C/U	E 120 C/U
	$\geq 219,3 \text{ mm}$	5,9 – 14,2 mm	40 mm	$\geq 1.000 \text{ mm}$	EI 120 C/U	E 120 C/U

Single metal pipes in rigid floors acc. to ANNEX B-1 – continued insulation (CI)

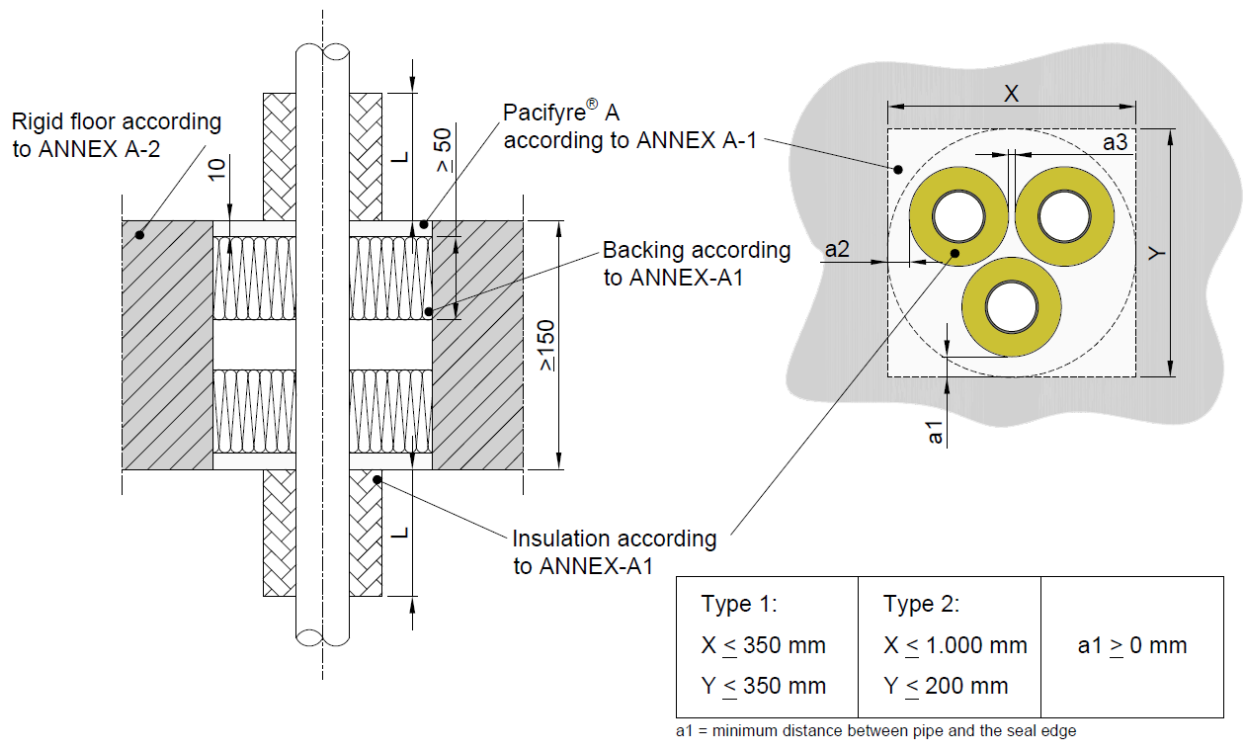
Pipe material	Outer-Ø	t_{pipe}	t_{insul}	Classifications	
Steel / stainless steel	$\geq 12 \text{ mm}$	1,0 – 14,2 mm	$\geq 20 \text{ mm}$	EI 120 C/U	E 120 C/U
	$\geq 54 \text{ mm}$	2,0 – 14,2 mm	$\geq 20 \text{ mm}$	EI 120 C/U	E 120 C/U
	$\geq 88,9 \text{ mm}$	2,0 – 14,2 mm	$\geq 30 \text{ mm}$	EI 120 C/U	E 120 C/U
	$\geq 114,3 \text{ mm}$	3,6 – 14,2 mm	$\geq 30 \text{ mm}$	EI 120 C/U	E 120 C/U
	$\geq 219,3 \text{ mm}$	5,9 – 14,2 mm	$\geq 40 \text{ mm}$	EI 120 C/U	E 120 C/U

Pacifyre® A
- Installation of single metal pipes in rigid floors -

ANNEX C-14

Multiple metal pipes with intended use as gas, drinking water and heating pipe made out of the below material and dimension (interrupted insulation):

**FLOOR
Application**



Multiple metal pipes in rigid floors acc. to ANNEX B-1 – local insulation (LI)

Pipe material	Outer-Ø	t _{pipe}	t _{insul}	L _{insul}	Classifications	
Steel / stainless steel	≥ 12 mm	1,0 – 14,2 mm	20 mm	≥ 1.000 mm	EI 120 C/U	E 120 C/U
	≥ 54 mm	2,0 – 14,2 mm	20 mm	≥ 1.000 mm	EI 120 C/U	E 120 C/U
	≥ 54 mm	2,0 – 14,2 mm	30 mm	≥ 1.000 mm	EI 90 C/U	E 120 C/U
	≥ 88,9 mm	2,0 – 14,2 mm	30 mm	≥ 1.000 mm	EI 30 C/U	E 120 C/U
	≥ 108,0 mm	2,9 – 14,2 mm	30 mm	≥ 1.000 mm	EI 30 C/U	E 60 C/U
	≥ 114,3 mm	3,6 – 14,2 mm	30 mm	≥ 1.000 mm	EI 30 C/U	E 60 C/U

Multiple metal pipes in rigid floors acc. to ANNEX B-1 – continued insulation (CI)

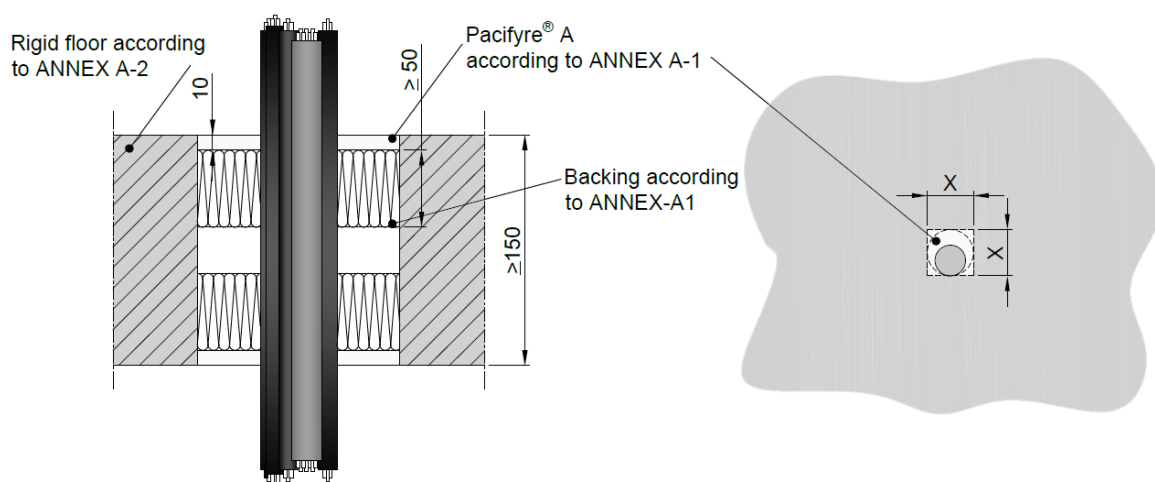
Pipe material	Outer-Ø	t _{pipe}	t _{insul}	Classifications	
Steel / stainless steel	≥ 12 mm	1,0 – 14,2 mm	≥ 20 mm	EI 120 C/U	E 120 C/U
	≥ 54 mm	2,0 – 14,2 mm	≥ 20 mm	EI 120 C/U	E 120 C/U
	≥ 88,9 mm	2,0 – 14,2 mm	≥ 30 mm	EI 120 C/U	E 120 C/U
	≥ 108,0 mm	2,9 – 14,2 mm	≥ 30 mm	EI 45 C/U	E 60 C/U
	≥ 114,3 mm	3,6 – 14,2 mm	≥ 30 mm	EI 45 C/U	E 60 C/U

Pacifyre® A
- Installation of multiple metal pipes in rigid floors -

ANNEX C-15

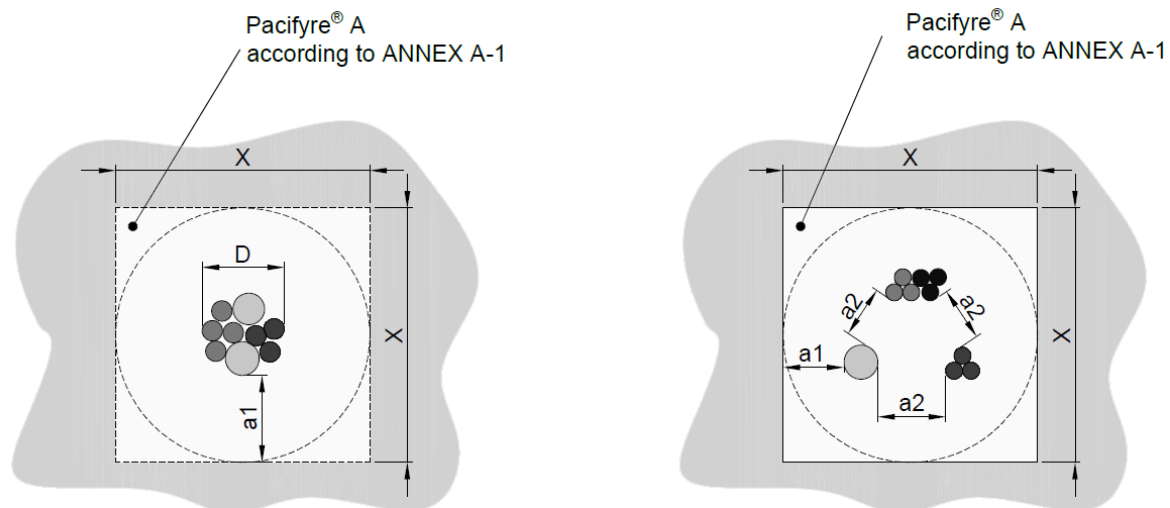
Single and bundled cable penetration of sheathed cables up to Ø 21 mm | EI 60 / EI 90 / E 120

**FLOOR
Application**



The total amount of cross sections of the cables does not exceed **60 %** of the penetration.

EI 60 / EI 90 / E 120



$D \leq 30 \text{ mm (EI90 / E120)}$
 $D \leq 50 \text{ mm (EI60 / E120)}$

$a1 \geq 0 \text{ mm}$

$a2 \geq 0 \text{ mm}$

$X_{\text{max.}} \leq 150 \text{ mm / } \varnothing 150 \text{ mm}$

$X_{\text{min.}} \leq 30 \text{ mm / } \varnothing 30 \text{ mm}$

Pacifyre® A
 - Installation of single and bundled cables in rigid floors | EI 60 / EI 90 / E 120 -

ANNEX C-16