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### European Technical Assessment ETA-21/0118 of 2021/01/03

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:

PROFISEAL FSA Wrap

Product family to which the above construction product belongs:

Fire Stopping and Sealing Product:

Penetration Seals

Manufacturer:

CG PROFESSIONAL / Caupo Group OY Temmeksentie 3 90400 Oulu Finland

Manufacturing plant:

A/003

This European Technical Assessment contains:

69 pages including 1 annex 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, September 2017

This version replaces:

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#### Page 2 of 69 of European Technical Assessment ETA-21/0118 issued on 2021-01-03

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#### I. SPECIFIC PARTS OF THE EUROPEAN TECHNICAL ASSESSMENT

#### 1 Technical description of the product

- 1) PROFISEAL FSA Wrap is a pipe closure device used to form penetration seals where combustible pipes and insulated metal pipes penetrate walls and floors.
- 2) The PROFiSEAL FSA Wrap is supplied in Polyethylene bags size according to pipe diameter or supplied in single layer 25 metre rolls. The number of layers necessary are stated in Appendix 1. The wrap is wrapped around the pipe and pushed into the aperture in the separating element/PROFiSEAL FSA Board or cast in with PROFiSEAL FSA Mortar.
- 3) The applicant has submitted a written declaration that the product and/or constituents of the product contains no substances which have been classified as dangerous according to Directive 67/548/EEC and Regulation (EC) No. 1272/2008 and listed in the 'indicative list on dangerous substances' of the EGDS taking into account the installation conditions of the construction product and the release scenarios resulting from there.
  - 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.
- 4) The use category of PROFiSEAL FSA Wrap in relation to BWR 3 (Hygiene, health and environment) is IA1, S/W3

### 2 Specification of the intended uses of the product in accordance with the applicable European Assessment Document (Hereinafter EAD): EAD 350454-00-1104

Detailed information and data is given in Annex A.

The intended use of system PROFiSEAL FSA Wrap is to reinstate the fire resistance performance of flexible wall and rigid wall and floor constructions, where they are penetrated by services.

1) The specific elements of construction that the system PROFiSEAL FSA Wrap may be used to provide a penetration seal in, are as follows:

Flexible walls: The wall must have a minimum thickness of 100 mm and comprise steel studs

or timber studs\* lined on both faces with minimum 2 layers of 12.5 mm thick

boards.

Rigid walls: The wall must have a minimum thickness of 100 mm and comprise concrete,

aerated concrete or masonry, with a minimum density of 650 kg/m3.

Rigid floors: The floor must have a minimum thickness of 150 mm and comprise aerated

concrete or concrete with a minimum density of 650 kg/m3.

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

2) Aperture sizes are given in Appendix A. Under EN 1366-3 rules, results from tests in floors with a penetration seal length of minimum 1000 mm apply to any length as long as the perimeter length to seal area ratio is not smaller than that of the tested penetration seal. The following aperture sizes are therefore allowed where 2400 mm x 1200 mm is described in floors:

Maximum Aperture Sizes within Floors or Between Floors and Walls
1200 mm width x 2400 mm length (tested)
1100 mm width x 2900 mm length
1000 mm width x 4000 mm length
900 mm width x 7000 mm length
≤800 mm width x ∞ (infinite) length

- 3) The system PROFiSEAL FSA Wrap may be used to provide a penetration seal with specific supporting constructions and substrates (for details see Annex A).
- The provisions made in this European Technical Assessment are based on an assumed working life of the PROFISEAL FSA Wrap of 25 years, provided that the conditions laid down in the manufacturers datasheet and instructions for the packaging/transport/storage/installation/use/repair are met. The indications given on the 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 choosing the right products in relation to the expected economically reasonable working life of the works.
- 4) Type X: intended for use at conditions exposed to weathering.

<sup>\*</sup> no part of the penetration seal may be closer than 100 mm to a stud, the cavity must be closed between the penetration seal and the stud, and minimum 100 mm of insulation of class A1 or A2 according to EN 13501-1 must be provided within the cavity between the penetration seal and the stud.

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

Product-type: Pipe Wrap	Intended use: Penetration Seal				
Essential characteristic	Product Performance				
BWR 2 Sa	afety in case of fire				
Reaction to fire	No performance assessed				
Resistance to fire	Annex A				
BWR 3 Hygiene,	health and environment				
Air permeability	No performance assessed				
Water permeability	No performance assessed				
Content, emission and/or release of	Use categories: IA1, S/W3				
dangerous substances	Declaration of manufacturer				
BWR	4 Safety in use				
Mechanical resistance and stability	No performance assessed				
Resistance to impact/movement	No performance assessed				
Adhesion	No performance assessed				
Durability	Х				
BWR 5 Prot	tection against noise				
Airborne sound insulation	No performance assessed				
BWR 6 Energy ec	BWR 6 Energy economy and heat retention				
Thermal properties	No performance assessed				
Water vapour permeability	No performance assessed				

### 4 ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE (HEREINAFTER AVCP) SYSTEM APPLIED, WITH REFERENCE TO ITS LEGAL BASE

According to the decision 1999/454/EC – Commission Decision of date 22nd June 1999 on the procedure for attesting the conformity of construction products pursuant to Article 20(2) of Council Directive 89/106/EEC as regards fire stopping, fire sealing and fire protective products, published in the Official Journal of the European Union (OJEU) L178/52 of 14/07/1999, see http://eur-lex.europa.eu/JOIndex.do) of the European Commission<sup>1</sup>, as amended, the system(s) of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) given in the following table(s) applies (apply).

Product(s)	Intended use(s)	Level(s) or class(es)	System(s)
Fire stopping and Fire Sealing Products	For fire compartmentation and/or fire protection or fire performance	Any	1

### 5 <u>Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD</u>

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

Issued in Copenhagen on 2021-01-03 by

Thomas Bruun

Managing Director, ETA-Danmark

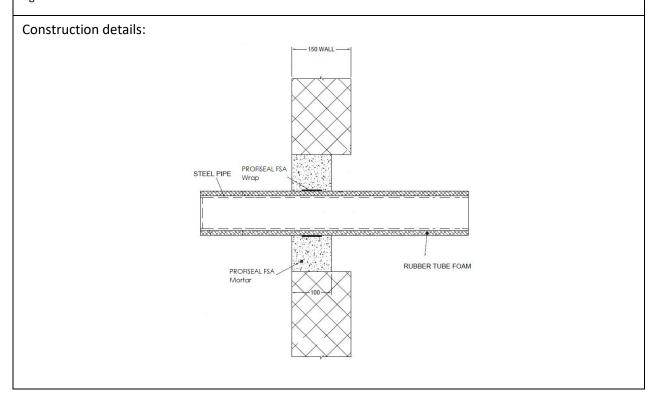
 $<sup>^{1}</sup>$  Official Journal of the European Communities L178/52 of 14/7/1999

### ANNEX A - Resistance to Fire Classification - PROFiSEAL FSA Wrap

#### A.1 Rigid wall constructions with wall thickness of minimum 150 mm

## A.1.1 PROFISEAL FSA Wrap penetration seals, in 100 mm thick PROFISEAL FSA Mortar seals in rigid walls with insulated metal pipes

**Penetration Seal:** CS (Continuous Sustained) insulated metallic pipes fitted at any position within the aperture (min. separation 10 mm from seal edges), with 100 mm PROFISEAL FSA Mortar to either side of the wall. PROFISEAL FSA Wraps are required to be centrally within the seal for pipes with combustible insulation. Maximum seal size 2400 mm wide x 1200 mm high.

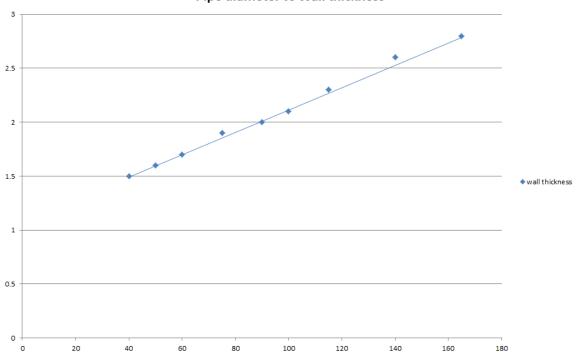


A.1.1.1

Services	Wrap	Insulation	Classification
Mild or stainless steel pipe			
40 mm diameter/1.5-14.2 mm wall		13 mm	
		Elastomeric	
		insulation	EI 240 C/U
	4 55 5 5 6	minimum class B-	
	1 off 50 x 3.6mm	s3,d0 or PE Foam	
	PROFISEAL FSA	insulation	
165 mm diameter/4.5-14.2 mm wall	Wrap, fitted central	9 mm Elastomeric	
		insulation	
		minimum class B-	E 240 C/U, EI 30 C/U
		s3,d0 or PE Foam	
		insulation	
40 mm diameter/1.5-14.2 mm wall*			
50 mm diameter/1.6-14.2 mm wall*			
60 mm diameter/1.7-14.2 mm wall*		42.40	
75 mm diameter/1.9-14.2 mm wall*	1 off 50 x 1.8mm	13 -19 mm Elastomeric	
90 mm diameter/2-14.2 mm wall*	PROFISEAL FSA	insulation minimum class B-	E 240 C/U, EI 60 C/U
100 mm diameter/2.1-14.2 mm wall*	Wrap, fitted central	s3,d0 or PE Foam	2 2 10 4, 0, 21 00 0, 0
115 mm diameter/2.3-14.2 mm wall*		insulation	
140 mm diameter/2.6-14.2 mm wall*			
165 mm diameter/2.8-14.2 mm wall*			

<sup>\*</sup> Typical pipe diameters shown, see below graph for intermediate sizes



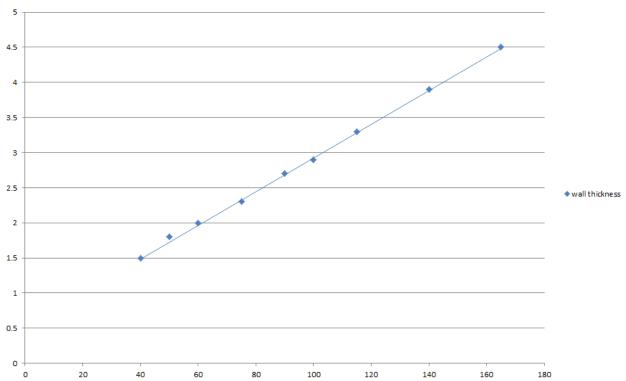


### A.1.1.2

Services	Wrap	Insulation	Classification
Mild or stainless steel pipe			
40 mm diameter/1.5-14.2 mm wall*			
50 mm diameter/1.8-14.2 mm wall*			
60 mm diameter/2-14.2 mm wall*	1 off 50 x 3.6mm PROFiSEAL FSA Wrap, fitted central	13-25 mm	
75 mm diameter/2.3-14.2 mm wall*		Elastomeric	
90 mm diameter/2.7-14.2 mm wall*		insulation minimum class B-	E 180 C/U, EI 60 C/U
100 mm diameter/2.9-14.2 mm wall*		s3,d0 or PE Foam	2 200 0, 0, 2, 00 0, 0
115 mm diameter/3.3-14.2 mm wall*		insulation	
140 mm diameter/3.9-14.2 mm wall*			
165 mm diameter/4.5-14.2 mm wall*			

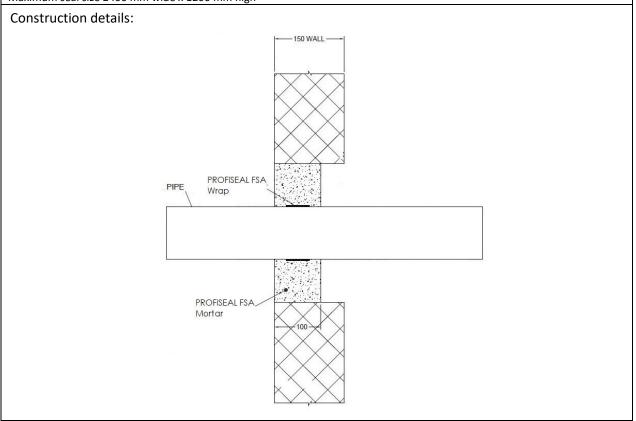
<sup>\*</sup> Typical pipe diameters shown, see below graph for intermediate sizes

### Pipe diameter vs Wall thickness



# A.1.2 PROFISEAL FSA Wrap penetration seals, in 100 mm thick PROFISEAL FSA Mortar seals in rigid walls with plastic pipes

**Penetration Seal:** plastic pipes fitted at any position within the aperture (min. separation 10 mm from seal edges), with 100 mm PROFISEAL FSA Mortar to either side of the wall. PROFISEAL FSA Wraps are required to be centrally within the seal. Maximum seal size 2400 mm wide x 1200 mm high



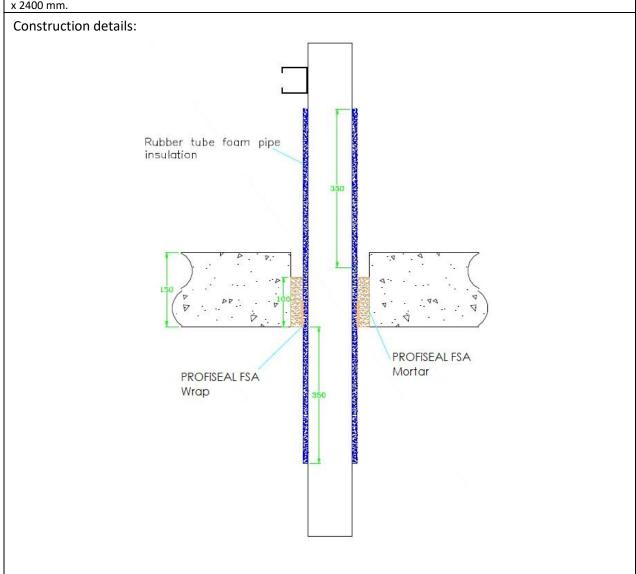
#### A.1.2.1

Services	Wrap	Insulation	Classification
PVC-U pipe according to EN 1329-1,			
EN 1452-1 and EN 1453-1 and			
PVC-C according to EN 1566-1			
315 mm diameter/9.2 mm wall	1 off 75 x 18 mm		EI 120 C/C
	PROFISEAL FSA	None	
	Wrap, fitted central		

#### A.2 Rigid floor constructions with a minimum thickness 150 mm

## A.2.1 PROFISEAL FSA Wrap penetration seals, in 100 mm thick PROFISEAL FSA Mortar seals in rigid floors, with insulated metal pipes

**Penetration Seal:** CS (Continuous Sustained) insulated metallic pipes fitted at any position within the aperture (min. separation 25 mm from seal edges and 30 mm from other services), with 100 mm PROFISEAL FSA Mortar at any position within the floor. PROFISEAL FSA Wraps are required to be fitted around combustible pipe insulation. Maximum seal size 1200 x 2400 mm.

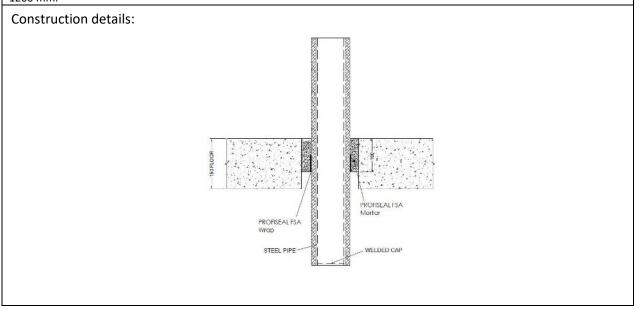


### A.2.1.1

Services	Wrap	Insulation	Classification
Copper pipe			
12 mm diameter/1 mm wall	50 x 3.6 mm	9 mm Elastomeric insulation minimum class B-s3,d0 or foil faced Phenolic Foam insulation	EI 240 C/C
12-54 mm diameter/1-1.2 mm wall	PROFISEAL FSA Wrap fitted to the soffit	13-25 mm Elastomeric insulation minimum class B-s3,d0 or foil faced Phenolic Foam insulation	E 240 C/C, EI 60 C/C
Geberit Mepla MLC (PE-Xb/Aluminium	/PE-HD pipe)	0 51 1 1	
16 mm diameter/2.25 mm wall		9 mm Elastomeric insulation minimum class B-s3,d0 or foil faced Phenolic Foam insulation	EI 240 C/C
16 mm diameter/2.25 mm wall			
20 mm diameter/2.5 mm wall			
26 mm diameter/3 mm wall		9-13 mm Elastomeric	
32 mm diameter/3 mm wall		insulation minimum	5 242 6/6 5/00 6/6
40 mm diameter/3.5 mm wall		class B-s3,d0 or foil faced Phenolic Foam	E 240 C/C, EI 90 C/C
50 mm diameter/4 mm wall	50 x 3.6 mm	insulation	
63 mm diameter/4.5 mm wall	PROFiSEAL FSA Wrap		
75 mm diameter/4.7 mm wall	fitted to the soffit		
16 mm diameter/2.25 mm wall			
20 mm diameter/2.5 mm wall			
26 mm diameter/3 mm wall		13-25 mm	
32 mm diameter/3 mm wall		Elastomeric insulation minimum	
40 mm diameter/3.5 mm wall		class B-s3,d0 or foil	E 180 C/C, EI 90 C/C
50 mm diameter/4 mm wall		faced Phenolic Foam insulation	
63 mm diameter/4.5 mm wall			
75 mm diameter/4.7 mm wall			

# A.2.2 PROFiSEAL FSA Wrap penetration seals, in 100 mm thick PROFiSEAL FSA Mortar seals in rigid floors, with insulated metal pipes

**Penetration Seal:** CS (Continuous Sustained) insulated metallic pipes fitted at any position within the aperture (min. separation 30 mm from seal edges and 30 mm from other services), with 100 mm PROFISEAL FSA Mortar to the top surface of the floor. PROFISEAL FSA Wraps are required to be fitted around combustible pipe insulation. Maximum seal size 2400 mm x 1200 mm.

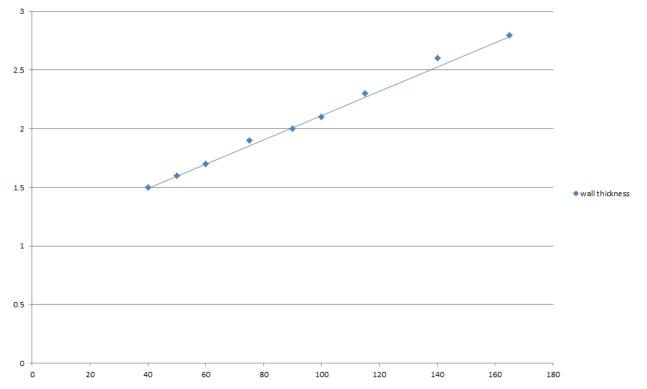


#### A.2.2.1

Services	Wrap	Insulation	Classification
Mild or stainless steel pipe			
40 mm diameter/-14.2 mm wall		13 mm	
		Elastomeric	
		insulation	
		minimum class B-	EI 180 C/U
		s3,d0 or foil faced	
		Phenolic Foam	
		insulation	
40 mm diameter/1.5-14.2 mm wall*	1 off 50 x 1.8 mm		
50 mm diameter/1.6-14.2 mm wall*	PROFISEAL FSA		
60 mm diameter/1.7-14.2 mm wall*	Wrap, fitted at soffit	13 -19 mm	
75 mm diameter/1.9-14.2 mm wall*	SOIIIL	Elastomeric	
90 mm diameter/2-14.2 mm wall*		insulation minimum class B-	
100 mm diameter/2.1-14.2 mm wall*		s3,d0 or foil faced	E 180 C/U, EI 120 C/U
115 mm diameter/2.3-14.2 mm wall*		Phenolic Foam insulation	
140 mm diameter/2.6-14.2 mm wall*		insulation	
165 mm diameter/2.8-14.2 mm wall*			

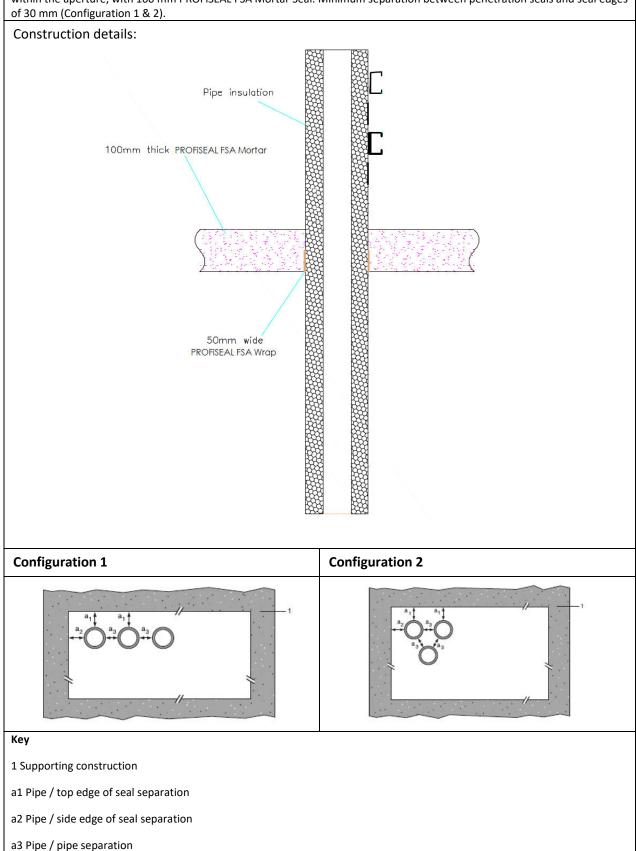
<sup>\*</sup> Typical pipe diameters shown, see below graph for intermediate sizes





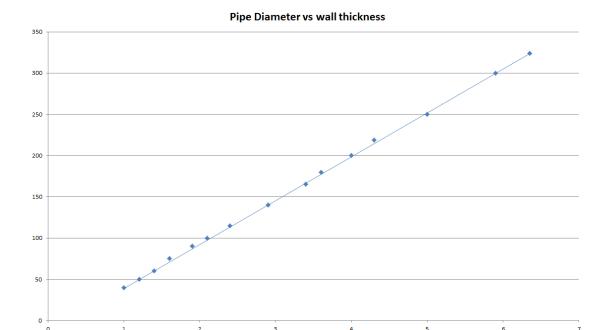
# A.2.3 PROFiSEAL FSA Wrap penetration seal for insulated metal pipes, in PROFiSEAL FSA Mortar Seal, in rigid floors

**Penetration Seal:** CS (Continuous Sustained) insulated metallic pipes sealed with PROFISEAL FSA Wraps, fitted at any position within the aperture, with 100 mm PROFISEAL FSA Mortar Seal. Minimum separation between penetration seals and seal edges of 30 mm (Configuration 1 & 2).



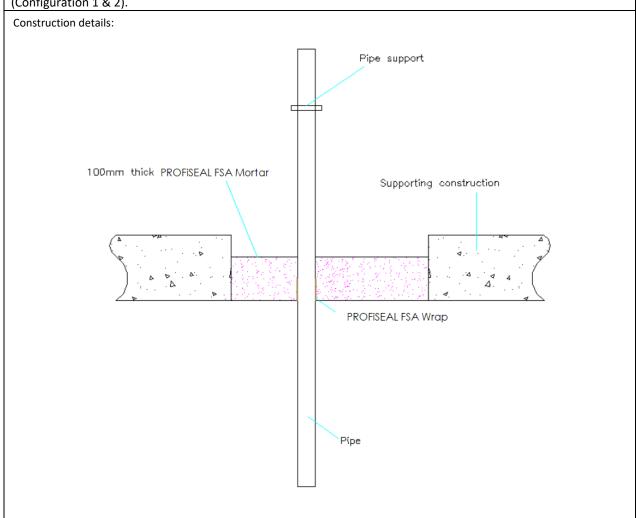
### A.2.3.1

Mild or stainless steel pipe	Insulation	PROFISEAL FSA Wraps	Classification
40 mm diameter/1-14.2 mm wall	25 mm thick Elastomeric insulation minimum class B- s3,d0 or foil faced Phenolic Foam insulation		EI 240 C/U
40 mm diameter/1-14.2 mm wall*			
50 mm diameter/1.2-14.2 mm wall*			
60 mm diameter/1.4-14.2 mm wall*			
75 mm diameter/1.6-14.2 mm wall*			
90 mm diameter/1.9-14.2 mm wall*			
100 mm diameter/2.1-14.2 mm wall*			
115 mm diameter/2.4-14.2 mm wall*	25mm thick Elastomeric	50 x 3.6 mm (2 x 1.8 layer)	
140 mm diameter/2.9-14.2 mm wall*	insulation minimum class B-		E 240 C/U
165 mm diameter/ 3.4-14.2 mm wall*	s3,d0 or foil faced Phenolic Foam insulation		EI 120 C/U
180 mm diameter/ 3.6-14.2 mm wall*			
200 mm diameter/ 4.0-14.2 mm wall*			
219 mm diameter/ 4.3-14.2 mm wall*			
250 mm diameter/ 5.0-14.2 mm wall*			
300 mm diameter/ 5.9-14.2 mm wall*			
324 mm diameter/ 6.35-14.2 mm wall*			
40 mm diameter/1-14.2 mm wall*			
50 mm diameter/1.2-14.2 mm wall*			
60 mm diameter/1.4-14.2 mm wall*			
75 mm diameter/1.6-14.2 mm wall*			
90 mm diameter/1.9-14.2 mm wall*			
100 mm diameter/2.1-14.2 mm wall*			
115 mm diameter/2.4-14.2 mm wall*	25-50mm thick Elastomeric		
140 mm diameter/2.9-14.2 mm wall*	insulation minimum class B-	50 x 5.4 mm	EI 120 C/U
165 mm diameter/ 3.4-14.2 mm wall*	s3,d0 or foil faced Phenolic Foam insulation	(3 x 1.8 layer)	
180 mm diameter/ 3.6-14.2 mm wall*	Foaiii iiisulatioii		
200 mm diameter/ 4.0-14.2 mm wall*			
219 mm diameter/ 4.3-14.2 mm wall*			
250 mm diameter/ 5.0-14.2 mm wall*			
300 mm diameter/ 5.9-14.2 mm wall*			
324 mm diameter/ 6.35-14.2 mm wall*			



# A.2.4 PROFISEAL FSA Wrap penetration seals, in 100 mm deep PROFISEAL FSA Mortar seals in rigid floors, with plastic pipes

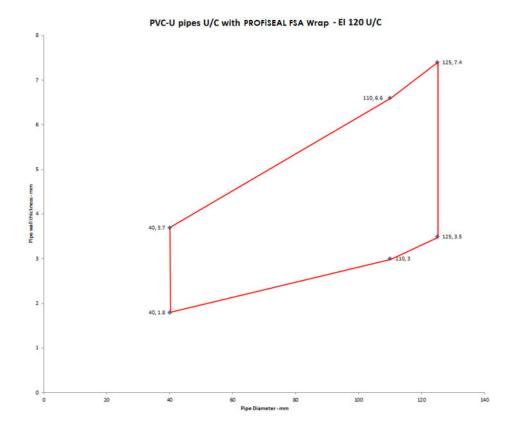
**Penetration Seal:** Plastic pipes fitted at any position within the aperture, with 100 mm PROFISEAL FSA Mortar to the either surface of the floor or anywhere between. PROFISEAL FSA Wraps are required to be fitted to the bottom of the seal, as indicated below. Minimum separation between penetration seals and seal edges of 30 mm (Configuration 1 & 2).

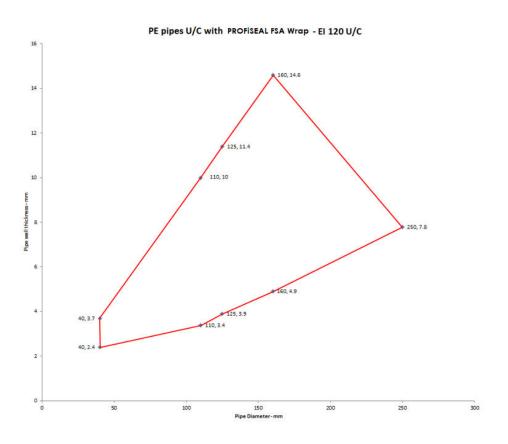


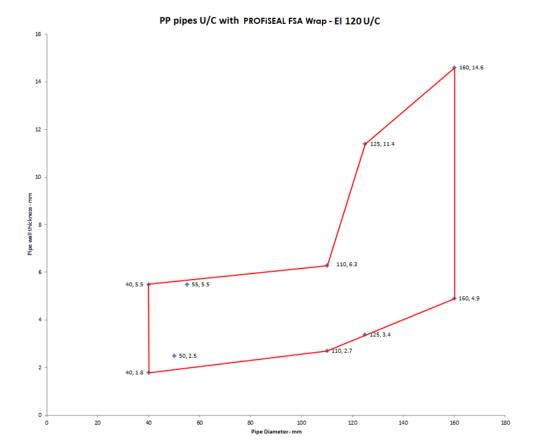
### A.2.4.1

a3 Pipe / pipe separation

4.2.4.1			
Services	Wrap	Maximum aperture	Classification
PVC-U pipe according to EN 1329-1, EN 1452-1 and	d EN 1453-1, PVC-	C according to I	
Up to 40 mm diameter / 1.8-3.7 mm wall	50 x 1.8 mm		E 180 U/U, EI 120 U/U
Up to 110 mm diameter / 3.0-6.6 mm wall	50 x 3.6 mm		EI 240 U/C
Up to 125 mm diameter / 3.5-7.4 mm wall	50 x 7.2 mm	2400 x 1200	EI 120 U/C
Up to 160 mm diameter / 4.5 mm wall	50 x 10.8 mm	mm	EI 240 C/C
Up to 160 mm diameter / 4.5-9.5 mm wall	50 x 10.8 mm		EI 90 C/C
Up to 110 mm diameter/ 2.7-6.6 mm wall, containing up to 90mm Ø bundle of up to 14 mm Ø telecom cables	50 x 3.6 mm		EI 120 U/C
PP pipe according to EN 1451-1	1	l	
Up to 40 mm diameter /1.8-4.4 mm wall	None		EI 120 U/C
Up to 40 mm diameter /1.8-5.5 mm wall	50 x 1.8 mm		EI 120 U/U
Up to 50 mm diameter /2.5-5.5 mm wall	50 x 3.6 mm		EI 240 C/C
Up to 75 mm diameter /3.5-5.5 mm wall	50 x 3.6 mm	2400 x 1200	EI 240 C/C
Up to 110 mm diameter /2.7-6.3 mm wall	50 x 3.6 mm	mm	EI 240 U/C
Up to 125 mm diameter /3.4-11.4 mm wall	50 x 7.2 mm		EI 240 U/C
Up to 160 mm diameter /4.9-14.6 mm wall	50 x 10.8 mm		EI 240 U/C
Up to 110 mm diameter/ 3.4-6.3 mm wall,			
containing up to 90mm $\emptyset$ bundle of up to 14 mm $\emptyset$ telecom cables	50 x 3.6 mm		EI 60 U/C
PE pipe according to EN 1519-1, EN 12201-2 and E	N 12666-1, ABS a	ccording to EN 1	.455-1 and pipes made
from SAN+PVC according to EN 1565-1			
Up to 40 mm diameter / 2.0-4.4 mm wall	None		EI 120 U/C
Up to 40 mm diameter / 2.4-3.7 mm wall	50 x 1.8 mm		EI 240 U/U
Up to 110 mm diameter / 3.4-10.0 mm wall	50 x 3.6 mm	2400 x 1200	EI 120 U/C
Up to 125 mm diameter / 3.9-11.4 mm wall	50 x 7.2 mm		EI 240 U/C
Up to 160 mm diameter / 4.9-14.6 mm wall	50 x 10.8 mm	mm	EI 120 U/C
Up to 250 mm diameter / 7.8 mm wall	75 x 12.6 mm		EI 180 C/C
Up to 110 mm diameter/ 2.7-10.0 mm wall, containing up to 90mm Ø bundle of up to 14 mm Ø telecom cables	50 x 3.6 mm		E 120 U/C, EI 60 U/C
Configuration 1	Configura	tion 2	
	1		
1 Supporting construction a1 Pipe / top edge of seal separation	1		
a2 Pipe / side edge of seal separation			

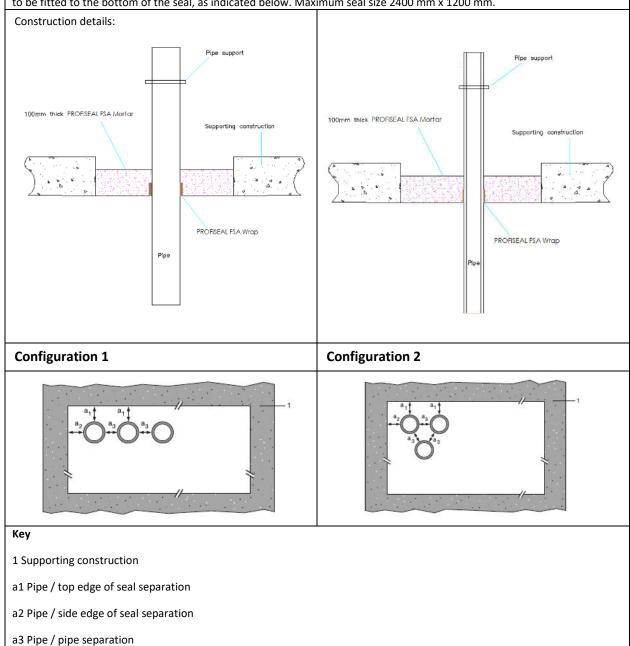






# A.2.5 PROFiSEAL FSA Wrap penetration seals, in 100 mm thick PROFiSEAL FSA Mortar seals in rigid floors, with plastic pipes

**Penetration Seal:** Plastic pipes fitted at any position within the aperture (min. separation 30 mm from seal edges and from other services), with 100 mm PROFISEAL FSA Mortar to the bottom surface of the floor. PROFISEAL FSA Wraps are required to be fitted to the bottom of the seal, as indicated below. Maximum seal size 2400 mm x 1200 mm.

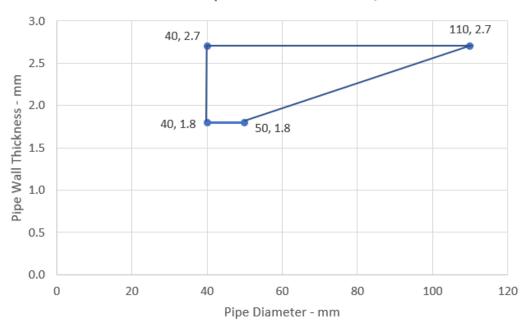


### A.2.5.1

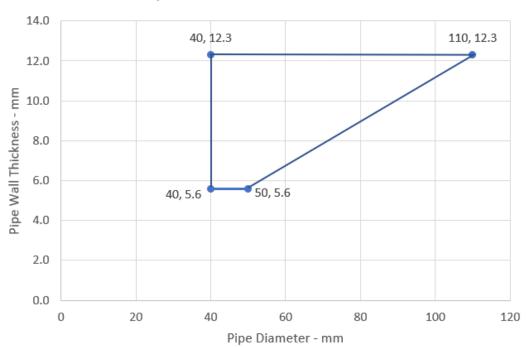
Services	Wrap	Permitted	Classification			
Scribes	· · · · · · · · · · · · · · · · · · ·	configuration for	Ciassification			
		seal separation				
PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1, PVC-C according to EN 1566-1						
	50 x 10.8 mm (6 x					
160 mm diameter / 9.5 mm wall	1.8 layers)	1 & 2	EI 90 U/C			
Uponor Wirsbo PEX pipe in pipe system a	according to ISO 158	75				
Maximum 54 mm diameter/0.4 mm						
wall thickness (outer pipe), 28 mm	50 x 3.6 mm (2 x	1 & 2	EI 120 C/C			
diameter/4.0 mm wall thickness (inner	1.8 layers)	102	Li 120 C/C			
pipe)						
Rehau Raupiano Plus PP-DD according to						
40-50 mm diameter/1.8-2.7 mm wall	50 x 3.6 mm (2 x	1 & 2	EI 120 U/U			
thickness*	1.8 layers)		21 120 0/0			
75-110 mm diameter/2.7 mm wall	50 x 3.6 mm (2 x	1 & 2	EI 120 U/C			
thickness*	1.8 layers)		21 120 0/ 0			
125 mm diameter/3.1 mm wall	50 x 7.2 mm (4 x	1 & 2	E 240 U/C, EI 120			
thickness	1.8 layers)		U/C			
160 mm diameter/3.9 mm wall	50 x 10.8 mm (6 x	1 & 2	EI 120 U/C			
thickness	1.8 layers)		21 120 07 0			
Polo-Kal NG Poloplast PP-MV according t						
32-110 mm diameter/3.4 mm wall	50 x 3.6 mm (2 x	1 & 2	EI 180 U/C			
thickness	1.8 layers)		2. 200 0/ 0			
125 mm diameter/3.9 mm wall	50 x 7.2 mm (4 x	1 & 2	EI 240 U/C			
thickness	1.8 layers)		=:=::00,0			
160 mm diameter/4.3 mm wall	50 x 10.8 mm (6 x	1 & 2	EI 240 U/C			
thickness	1.8 layers)					
Aquatherm Green SDR9 MF PP-RP accord		T				
32 mm diameter/3.6 mm wall thickness	50 x 1.8 mm (1 x	1 & 2	EI 240 C/C			
10.70	1.8 layer)		·			
40-50 mm diameter/5.6-12.3 mm wall	50 x 3.6 mm (2 x	1 & 2	EI 240 C/C			
thickness*	1.8 layers)	100	-			
63-110 mm diameter/12.3 mm wall	50 x 3.6 mm (2 x	1 & 2	EI 240 C/C			
thickness*	1.8 layers)					
Wavin SiTech + PP-M B according to EN 1		l				
32-50 mm diameter/1.8-3.4 mm wall	50 x 3.6 mm (2 x	1 & 2	EI 120 U/U			
thickness*	1.8 layers)					
75-110 mm diameter/3.4 mm wall	50 x 3.6 mm (2 x	1 & 2	EI 120 U/C			
thickness*	1.8 layers)					
Geberit Silent PP according to DIN 4102  32-50 mm diameter/1.8-3.4 mm wall 50 x 3.6 mm (2 x						
thickness*	1.8 layers)	1 & 2	EI 120 U/U			
75-110 mm diameter/3.4 mm wall	50 x 3.6 mm (2 x	1 & 2				
thickness*	1.8 layers)	1 0 2	EI 120 U/C			
CHICKICSS	±.0 layers/	I				

<sup>\*</sup> Typical pipe diameters shown, see below graph for intermediate sizes

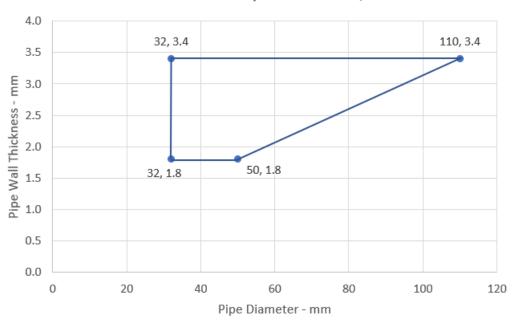
### Rehau Raupiano Plus -EI 120 U/U



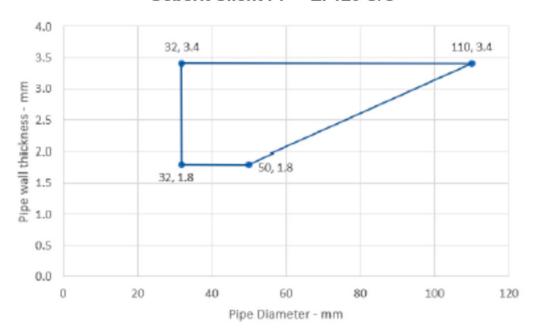
### Aquatherm Green - EI 240 C/C



### Wavin SiTech Pipes - El 120 U/C

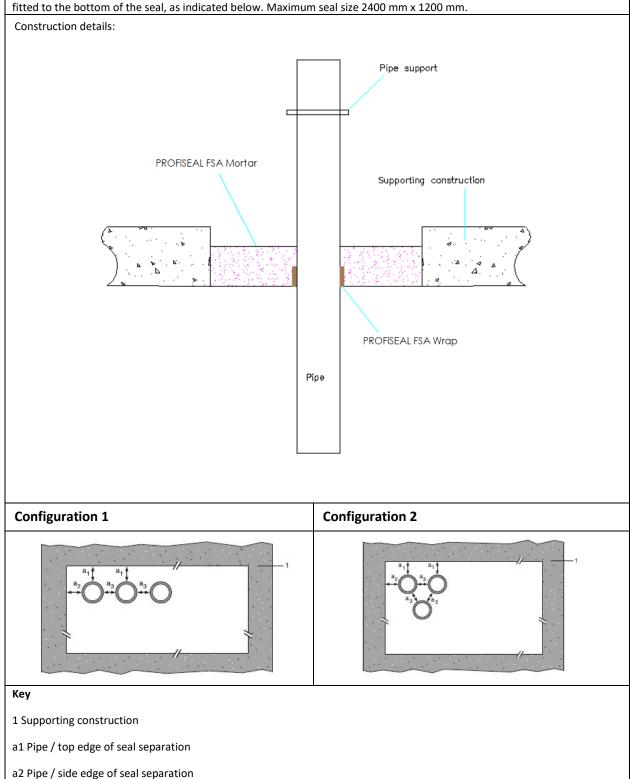


### Geberit Silent PP - EI 120 U/C



# A.2.6 PROFISEAL FSA Wrap penetration seals, in PROFISEAL FSA Mortar seals in rigid floors, with plastic pipes

**Penetration Seal:** Plastic pipes fitted at any position within the aperture (min. separation 30 mm from seal edges and from other services), with PROFISEAL FSA Mortar to the bottom surface of the floor. PROFISEAL FSA Wraps are required to be fitted to the bottom of the seal, as indicated below. Maximum seal size 2400 mm x 1200 mm.



a3 Pipe / pipe separation

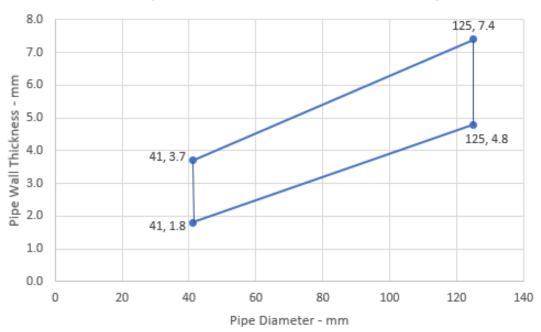
### A.2.6.1

Configuration for seal separation   Diameter 41 mm, wall thickness 1.8-3.7 mm to diameter 125 mm, wall thickness 4.8-7.4 mm to diameter 126 mm, wall thickness 9.5 mm to diameter 126 mm, wall thickness 9.5 mm to diameter 126 mm, wall thickness 1.8 layers)		14/	5 ' 1		ol .t	
Seal Separation   Seal Separation   Diameter 41 mm, wall thickness 1.8-3.7 mm to diameter 125 mm, wall thickness 4.8-7.4 mm to diameter 126 mm, wall thickness 9.5 mm to diameter 7.7 mm wall thickness 4.9-14.6 mm to diameter 7.2.1 mm wall thickness 1.8-1.8 mm to diameter 160 mm, wall thickness 4.9-14.6 mm to diameter 160 mm, wall thickness 4.9-14.6 mm to diameter 160 mm, wall thickness 4.9-14.6 mm to diameter 160 mm, wall thickness 4.9-18.2 mm to diameter 160 mm, wall thickness 5.8-5.5 mm to diameter 160 mm, wall thickness 5.8-5.5 mm to diameter 160 mm, wall thickness 1.8 layers)   Diameter 161 mm, wall thickness 4.9-14.6 mm to diameter 7.7 mm wall thickness 4.9-14.6 mm to diameter 7.0 mm, wall thickness 4.9-18.2 mm to diameter 200 mm, wall thickness 4.9-18.2 mm to diameter 200 mm, wall thickness 4.9-18.2 mm to diameter 200 mm, wall thickness 4.9-18.2 mm to diameter 7.7 mm wall thickness 7.7-28.6 mm to diameter 7.7 mm wall 1.8 layers)   Diameter 160 mm diameter 7.7 mm wall 1.8 layers)   Diameter 160 mm diameter 7.7 mm wall 1.8 layers)   Diameter 160 mm diameter 7.7 mm wall 1.8 layers)   Diameter 160 mm wall 1.8 layers)   Diameter 160 mm diameter 7.7 mm wall 1.8 layers)   Diameter 160 mm diameter 7.7 mm wall 1.8 layers)   Diameter 160 mm diameter 7.7 mm wall 1.8 layers)   Diameter 160 mm d	Services	Wrap	Permitted	Mortar	Classification	
Diameter 41 mm, wall thickness 4.9-14. mm wall thickness 1.9-5 mm to diameter /12.1 mm wall thickness 4.9-14.6 mm wall thickness 4.9-14.6 mm to diameter /14.6 mm wall thickness 4.9-14.6 mm to diameter /17.7 mm wall thickness 4.9-14.6 mm to diameter /14.6 mm wall thickness 4.9-18.2 mm to diameter /13.5 mm wall thickness 4.9-18.2 mm to diameter /13.5 mm wall thickness 4.9-18.2 mm to diameter /17.7 mm wall thickness 7.7-28.6 mm to diameter /17.7 mm wall thick			_	иериі		
Diameter 41 mm, wall thickness 1.8-3.7 mm to diameter 125 mm, wall thickness 4.8-7.4 mm*   18.1 alayers   18.2   150 mm   El 60 U/U   El	,					
thickness 1.8-3.7 mm to diameter 125 mm, wall thickness 4.8-7.4 mm*  125 mm diameter / 7.4 mm wall thickness 4.8-7.4 mm to diameter 126 mm, wall thickness 4.8-7.4 mm to diameter 160 mm, wall thickness 9.5 mm*  160 mm diameter / 9.5 mm wall thickness 9.5 mm wall thickness 1.8 layers)  160 mm diameter / 4.5-9.5 mm wall thickness 1.8 layers)  160 mm diameter / 7.7 mm wall thickness 1.8 layers)  175 x 18 mm (10 x 1.8 layers)  18 2 120 mm El 120 U/U, El 30 U/U  18 2 120 mm El 120 U/U, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 2 120 mm El 120 U/C, El 30 U/U  18 30 mm El 120 U/U  18 4 2 120 mm El 120 U/C, El 30 U/U  18 4 2 120 mm El 120 U						
150 mm   1	I	,	102			
thickness 4.8-7.4 mm* 125 mm diameter / 7.4 mm wall  Diameter 126 mm, wall thickness 4.8-7.4 mm to diameter 160 mm, wall thickness 9.5 mm*  160 mm diameter / 9.5 mm wall 160 mm diameter / 4.5-9.5 mm wall thickness 1.8 layers)  160 mm diameter / 4.5-9.5 mm wall thickness 1.8 layers)  160 mm diameter / 7.7 mm wall thickness 1.8 layers)  1		1.8 layers)	1 & 2	150 mm	EI 60 U/U	
125 mm diameter / 7.4 mm   Sol x 7.2 mm (4 x   1.8 layers)	-					
Diameter 126 mm, wall		50 v 7 2 mm /4 v	1 2. 7			
Diameter 126 mm, wall thickness 4.8-7.4 mm to diameter 160 mm, wall thickness 9.5 mm*   T5 x 10.8 mm (6 x 1.8 layers)   1		•	1 & 2	150 mm	EI 120 U/U	
thickness 4.8-7.4 mm to diameter 160 mm, wall thickness 9.5 mm*  160 mm diameter / 9.5 mm wall 1.8 layers)  160 mm diameter / 9.5 mm wall 1.8 layers)  160 mm diameter / 9.5 mm wall 1.8 layers)  160 mm diameter / 4.5-9.5 mm wall thickness		1.0 layers)				
1.8 layers   1   150 mm   El 30 U/U   thickness 9.5 mm*   1   150 mm   El 30 U/U   thickness 9.5 mm*   1   150 mm   El 120 U/U   El 120 U/U   El 30 U/U   El 120 U/U   El 30 U/U   El 120 U/U   El 30 U/U   El 120 U/U   El 120 U/U   El 120 U/C   El 120		75 x 10 8 mm /6 x			F 120 II/II	
Thickness 9.5 mm*   Thic		·	1	150 mm		
160 mm diameter / 9.5 mm		1.0 layers)			2130070	
Mail   1.8 layers   1   150 mm   El 30 U/U		75 x 7.2 mm (4 x			E 120 U/U.	
160 mm diameter / 4.5-9.5   mm wall thickness   1.8 layers   1 & 2   120 mm   El 120 U/C, El 120 C/C	<u> </u>	1	1	150 mm		
The state of the	-				-	
315 mm diameter / 7.7 mm	,	· ·	1 & 2	120 mm	• •	
Diameter 161 mm, wall thickness 4.5-9.5 mm to diameter 41 mm, wall thickness 4.5-1.2 mm to diameter 160 mm, wall thickness 4.9-14.6 mm wall thickness 4.9-14.6 mm to diameter 200 mm, wall thickness 4.9-18.2 mm to diameter 200 mm, wall thickness 4.9-18.2 mm to diameter 200 mm, wall thickness 4.9-18.2 mm to diameter 315 mm, wall thickness 7.7-28.6 mm*  315 mm diameter / 7.7 mm wall thickness 7.7-28.6 mm to diameter 7.7-28.6 75 x 18 mm (10 x 1.8 layers)  315 mm diameter / 7.7-28.6 75 x 18 mm (10 x 1.8 layers)  To mm to manuel thickness 4.9-18.2 mm to diameter 315 mm, wall thickness 7.7-28.6 mm to diameter 7.7-28.6 75 x 18 mm (10 x 1.8 layers)  To make a to	315 mm diameter / 7.7 mm		4	120	FI 420 C/C	
thickness 4.5-9.5 mm to diameter 315 mm, wall thickness 7.7-12.1 mm*  315 mm diameter / 12.1 mm wall thickness  PP pipe according to EN 1451-1  Diameter 41 mm, wall thickness 1.8-5.5 mm to diameter 160 mm, wall thickness 4.9-14.6 mm*  160 mm diameter / 14.6 mm wall thickness 4.9-14.6 mm to diameter 200 mm, wall thickness 4.9-18.2 mm to diameter 201 mm, wall thickness 4.9-18.2 mm to diameter 315 mm, wall thickness 4.9-18.2 mm to diameter 315 mm, wall thickness 7.7-28.6 mm*  315 mm diameter / 7.7 mm wall thickness 7.7-28.6 mm*  315 mm diameter / 7.7-28.6	wall thickness	1.8 layers)	1	120 mm	EI 120 C/C	
1.8 layers   1   120 mm   El 90 C/C	Diameter 161 mm, wall					
1.8 layers   1.8	thickness 4.5-9.5 mm to	75 x 18 mm (10 x	1	120 mm	EI 00 C/C	
1	diameter 315 mm, wall	1.8 layers)	1	120 111111	E1 90 C/C	
The image is a second image	thickness 7.7-12.1 mm*					
PP pipe according to EN 1451-1  Diameter 41 mm, wall thickness 1.8-5.5 mm to diameter 160 mm, wall thickness 4.9-14.6 mm wall thickness 4.9-14.6 mm to diameter 200 mm, wall thickness 4.9-18.2 mm*  Diameter 201 mm, wall thickness 4.9-18.2 mm to diameter 315 mm, wall thickness 7.7-28.6 mm*  315 mm diameter / 7.7 mm wall wall wall thickness 7.7-28.6 mm  To x 18 layers)  To x 10.8 mm (6 x 1 8 2 150 mm	315 mm diameter / 12.1 mm	75 x 18 mm (10 x	1	120 mm	EI 00 C/C	
Diameter 41 mm, wall thickness 1.8-5.5 mm to diameter 160 mm, wall thickness 4.9-14.6 mm*       75 x 10.8 mm (6 x 1.8 layers)       1 & 2 150 mm       EI 120 U/C         160 mm diameter / 14.6 mm wall thickness 4.9-14.6 mm to diameter 200 mm, wall thickness 4.9-18.2 mm*       75 x 10.8 mm (6 x 1.8 layers)       1 & 2 150 mm       EI 240 U/U         Diameter 200 mm, wall thickness 4.9-18.2 mm*       75 x 10.8 mm (6 x 1.8 layers)       1 & 2 120 mm       EI 240 C/C         Diameter 201 mm, wall thickness 4.9-18.2 mm to diameter 315 mm, wall thickness 7.7-28.6 mm*       75 x 18 mm (10 x 1.8 layers)       N/A       150 mm       EI 60 C/C         315 mm diameter / 7.7 mm wall       75 x 18 mm (10 x 1.8 layers)       N/A       150 mm       EI 180 C/C         315 mm diameter / 7.7-28.6       75 x 18 mm (10 x 1.8 layers)       1 50 mm       EI 180 C/C	wall thickness	1.8 layers)	1	120 111111	E1 90 C/C	
thickness 1.8-5.5 mm to diameter 160 mm, wall thickness 4.9-14.6 mm*  160 mm diameter / 14.6 mm wall thickness 4.9-14.6 mm to diameter 200 mm, wall thickness 4.9-18.2 mm*  Diameter 201 mm, wall thickness 4.9-18.2 mm to diameter 315 mm, wall thickness 7.7-28.6 mm*  315 mm diameter / 7.7 mm wall wall thickness 7.7-28.6 mm*  To x 10.8 mm (6 x 1.8 layers)  1 & 2	PP pipe according to EN 1451-1					
diameter 160 mm, wall thickness 4.9-14.6 mm*       1.8 layers)       150 mm       El 120 0/C         160 mm diameter / 14.6 mm wall       75 x 7.2 mm (4 x 1.8 layers)       1 & 2       150 mm       El 240 U/U         Diameter 161 mm, wall thickness 4.9-14.6 mm to diameter 200 mm, wall thickness 4.9-18.2 mm*       75 x 10.8 mm (6 x 1.8 layers)       1 & 2       120 mm       El 240 C/C         Diameter 201 mm, wall thickness 4.9-18.2 mm to diameter 315 mm, wall thickness 7.7-28.6 mm*       75 x 18 mm (10 x 1.8 layers)       N/A       150 mm       El 60 C/C         315 mm diameter / 7.7 mm wall wall       75 x 18 mm (10 x 1.8 layers)       N/A       150 mm       El 180 C/C         315 mm diameter / 7.7-28.6       75 x 18 mm (10 x 1.8 layers)       1 50 mm       El 60 C/C	Diameter 41 mm, wall					
1.8 layers   160 mm, wall thickness 4.9-14.6 mm		75 x 10.8 mm (6 x	1 & 2	150 mm	FI 120 II/C	
160 mm diameter / 14.6 mm wall  Diameter 161 mm, wall thickness 4.9-14.6 mm to diameter 200 mm, wall thickness 4.9-18.2 mm*  Diameter 201 mm, wall thickness 4.9-18.2 mm to diameter 315 mm, wall thickness 7.7-28.6 mm*  315 mm diameter / 7.7 mm wall wall 315 mm diameter / 7.7-28.6  To x 10.8 mm (6 x 1.8 layers)  1 & 2		1.8 layers)		130 111111	Li 120 0/C	
Diameter 161 mm, wall thickness 4.9-14.6 mm to diameter 200 mm, wall thickness 4.9-18.2 mm*   Thickness 4.9-18.2 mm to diameter 315 mm, wall thickness 7.7-28.6 mm*   Thi						
Diameter 161 mm, wall thickness 4.9-14.6 mm to diameter 200 mm, wall thickness 4.9-18.2 mm*  Diameter 201 mm, wall thickness 4.9-18.2 mm to diameter 315 mm, wall thickness 7.7-28.6 mm*  315 mm diameter / 7.7 mm wall wall wall 315 mm diameter / 7.7-28.6 75 x 18 mm (10 x 1.8 layers)  To make the state of		-	1 & 2	150 mm	EI 240 U/U	
thickness 4.9-14.6 mm to diameter 200 mm, wall thickness 4.9-18.2 mm*  Diameter 201 mm, wall thickness 4.9-18.2 mm to diameter 315 mm, wall thickness 7.7-28.6 mm*  315 mm diameter / 7.7 mm wall 315 mm diameter / 7.7-28.6  Thickness 4.9-18.2 mm to 1.8 layers)  75 x 18 mm (10 x 1.8 layers)	-	1.8 layers)				
diameter 200 mm, wall thickness 4.9-18.2 mm*       1.8 layers)       1 & 2       120 mm       El 240 C/C         Diameter 201 mm, wall thickness 4.9-18.2 mm to diameter 315 mm, wall thickness 7.7-28.6 mm*       75 x 18 mm (10 x 1.8 layers)       N/A       150 mm       El 60 C/C         315 mm diameter / 7.7 mm wall wall       75 x 18 mm (10 x 1.8 layers)       N/A       150 mm       El 180 C/C         315 mm diameter / 7.7-28.6       75 x 18 mm (10 x 1.8 layers)       To mm       El 180 C/C		75 10 0 /6				
diameter 200 mm, wall thickness 4.9-18.2 mm*       1.8 layers)         Diameter 201 mm, wall thickness 4.9-18.2 mm to diameter 315 mm, wall thickness 7.7-28.6 mm*       75 x 18 mm (10 x 1.8 layers)         315 mm diameter / 7.7 mm wall wall       75 x 18 mm (10 x 1.8 layers)         315 mm diameter / 7.7-28.6       75 x 18 mm (10 x 1.8 layers)         315 mm diameter / 7.7-28.6       75 x 18 mm (10 x 1.8 layers)		`	1 & 2	120 mm	EI 240 C/C	
Diameter 201 mm, wall thickness 4.9-18.2 mm to diameter 315 mm, wall thickness 7.7-28.6 mm*  315 mm diameter / 7.7 mm wall wall  315 mm diameter / 7.7-28.6 75 x 18 mm (10 x 1.8 layers)		1.8 layers)				
thickness 4.9-18.2 mm to diameter 315 mm, wall thickness 7.7-28.6 mm*  315 mm diameter / 7.7 mm wall  315 mm diameter / 7.7-28.6  315 mm diameter / 7.7-28.6  75 x 18 mm (10 x 1.8 layers)						
diameter 315 mm, wall thickness 7.7-28.6 mm*       1.8 layers)       N/A       150 mm       El 60 C/C         315 mm diameter / 7.7 mm wall       75 x 18 mm (10 x 1.8 layers)       N/A       150 mm       El 180 C/C         315 mm diameter / 7.7-28.6       75 x 18 mm (10 x 1.8 layers)       1       150 mm       Fl 60 C/C	1	75 v 10 mains (10)				
thickness 7.7-28.6 mm*  315 mm diameter / 7.7 mm wall  315 mm diameter / 7.7-28.6  75 x 18 mm (10 x 1.8 layers)			N/A	150 mm	EI 60 C/C	
315 mm diameter / 7.7 mm wall	I	1.0 ldyers)				
wall 1.8 layers) N/A 150 mm El 180 C/C 315 mm diameter / 7.7-28.6 75 x 18 mm (10 x 1 150 mm Fl 60 C/C		75 v 18 mm /10 v				
315 mm diameter / 7.7-28.6 75 x 18 mm (10 x 1 150 mm FI 60 C/C			N/A	150 mm	EI 180 C/C	
mm wall   1 8 lavers)	mm wall	1.8 layers)	1	150 mm	EI 60 C/C	

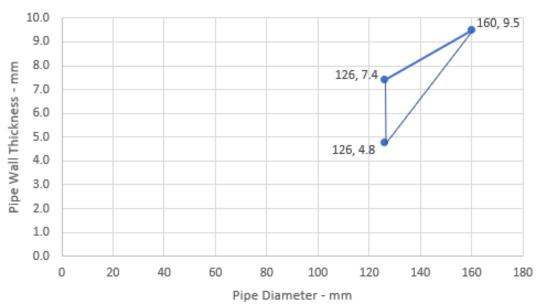
Services	Wrap	Permitted configuration for seal separation	Mortar depth	Classification			
PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made							
from SAN+PVC according to EN 1565-1							
Diameter 126 mm, wall thickness 3.9-11.4 mm to diameter 160 mm, wall thickness 14.6*	75 x 18 mm (10 x 1.8 layers)	N/A	150 mm	E 240 U/U, EI 120 U/U			
160 mm diameter / 14.6 mm wall	75 x 7.2 mm (4 x 1.8 layers)	1 & 2	150 mm	E 240 U/U, EI 120 U/U			
Diameter 161 mm, wall thickness 4.9-14.6 mm to diameter 315 mm, wall thickness 9.7-18.7 mm*	75 x 18 mm (10 x 1.8 layers)	N/A	150 mm	EI 60 C/C			

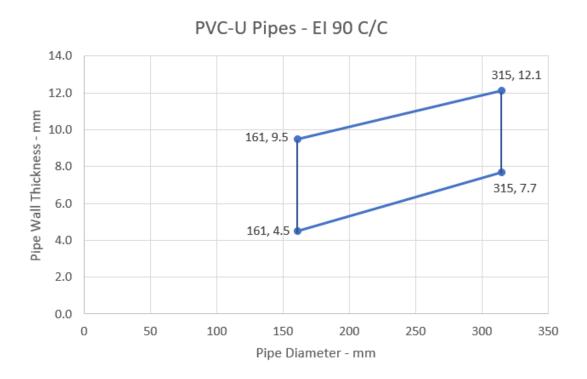
<sup>\*</sup> Typical pipe diameters shown, see below graph for intermediate sizes

PVC-U Pipes 41-125 mm Diameter - EI 60 U/U

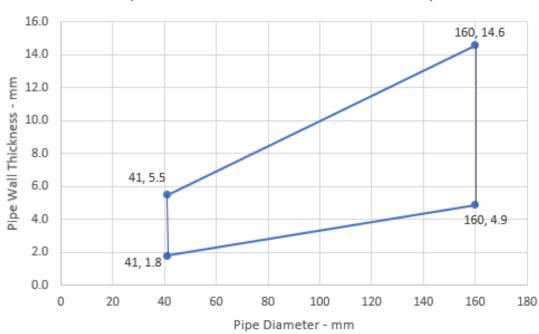


PVC-U Pipes 126-160 mm Diameter - E 120 U/U, EI 30 U/U

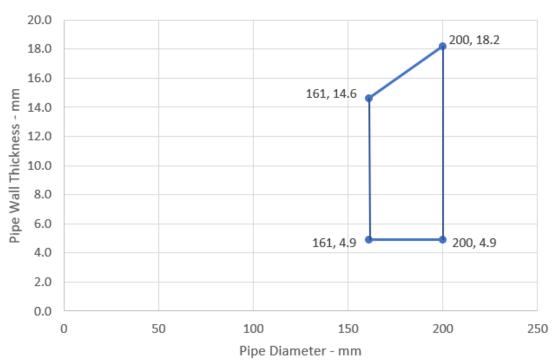




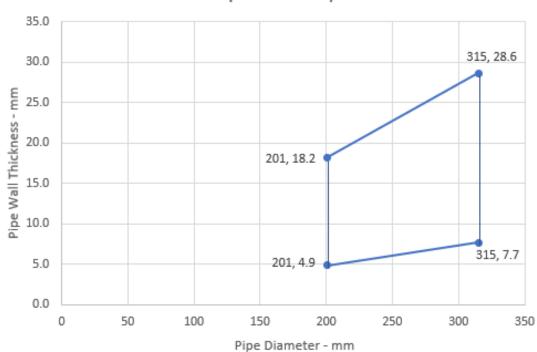




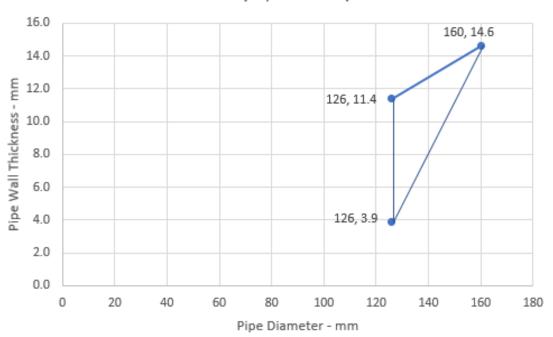




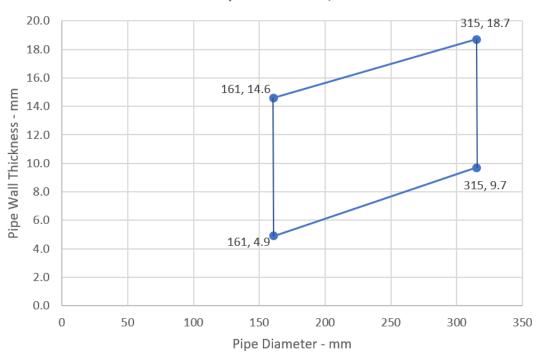




### PE Pipes 126-160 mm Diameter -E 240 U/U, EI 120 U/U

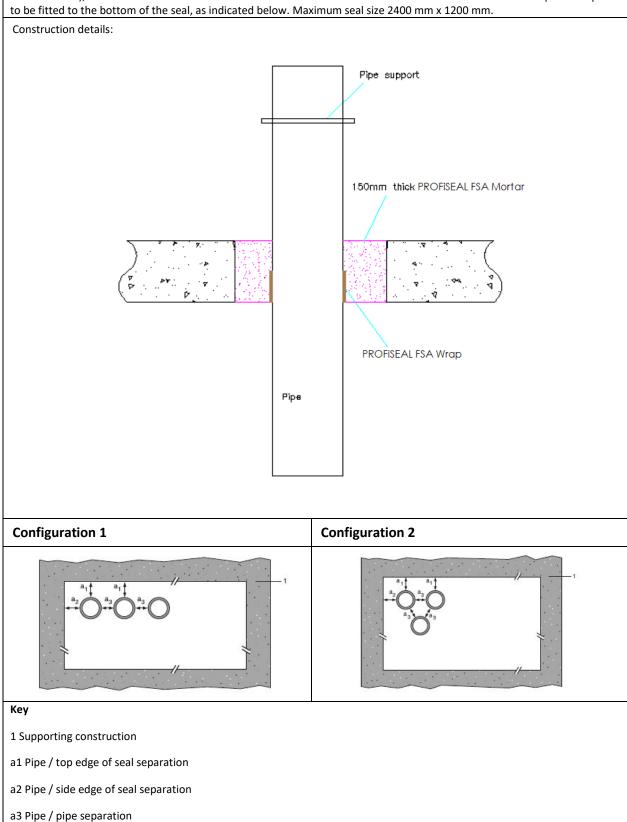






# A.2.7 PROFISEAL FSA Wrap penetration seals, in 150 mm thick PROFISEAL FSA Mortar seals in rigid floors, with plastic pipes

**Penetration Seal:** Plastic pipes fitted at any position within the aperture (min. separation 30 mm from seal edges and from other services), with 150 mm PROFISEAL FSA Mortar to the bottom surface of the floor. PROFISEAL FSA Wraps are required to be fitted to the bottom of the seal, as indicated below. Maximum seal size 2400 mm x 1200 mm.

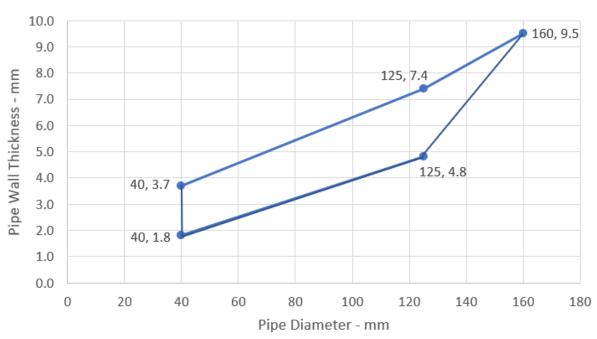


### A.2.7.1

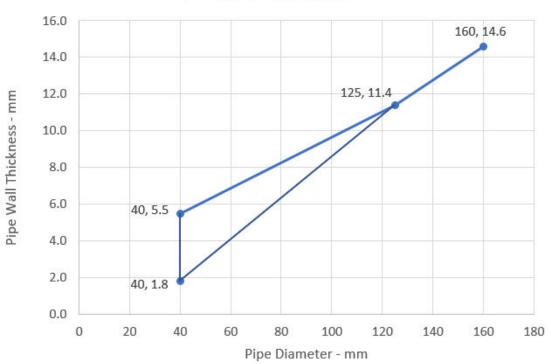
Services	Wrap	Permitted configuration for seal separation	Classification				
PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1, PVC-C according to EN 1566-1							
Up to 40 mm diameter/1.8-3.7 mm wall*	50 x 1.8		EI 120 U/U				
Up to 125 mm diameter / 4.8-7.4 mm wall*	mm diameter / 4.8-7.4 mm wall* 50 x 7.2 mm 1 & 2		EI 60 U/U				
Up to 160 mm diameter/9.5 mm wall*	75 x 7.2 mm		E 120 U/U, EI 30 U/U				
PP pipe according to EN 1451-1							
Up to 40 mm diameter/1.8-5.5 mm wall*	50 x 1.8		EI 120 U/U				
Up to 125 mm diameter / 11.4 mm wall*	50 x 7.2 mm	1 & 2	EI 240 U/U				
Up to 160 mm diameter/14.6 mm wall*	75 x 7.2 mm		EI 240 U/U				
PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1							
Up to 40 mm diameter/2.4-3.7 mm wall*	50 x 1.8 mm		EI 240 U/U				
Up to 110 mm diameter/3.4-10 mm wall*	75 x 5.4 mm	1 & 2	EI 240 U/U				
Up to 125 mm diameter/11.4 mm wall*	50 x 7.2 mm	1 & 2	EI 240 U/U				
Up to 160 mm diameter/4.9-14.6 mm wall*	75 x 7.2 mm		EI 120 U/U				

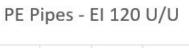
<sup>\*</sup> Typical pipe diameters shown, see below graph for intermediate sizes

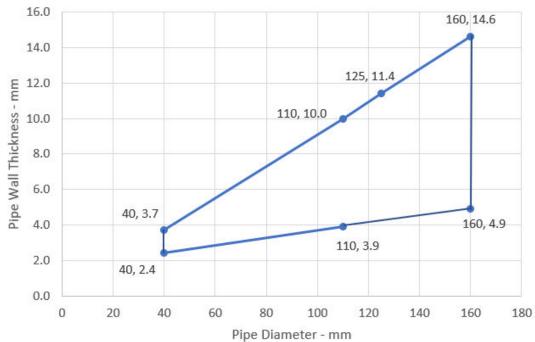






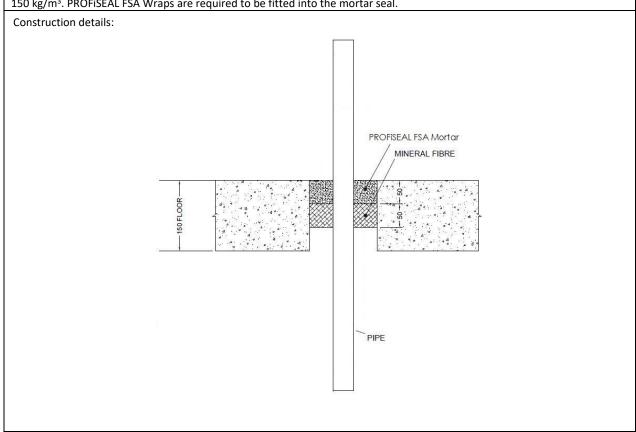






# A.2.8 PROFiSEAL FSA Wrap penetration seals, in 50 mm deep PROFiSEAL FSA Mortar seals, backed with 50 mm stone wool, in rigid floors, with plastic pipes

**Penetration Seal:** Plastic pipes (single) fitted at any position within the aperture (min. separation 30 mm from seal edges and 30 mm from other services), with 50 mm PROFISEAL FSA Mortar flush with the top of floor, backed with 50 mm stone wool 150 kg/m<sup>3</sup>. PROFISEAL FSA Wraps are required to be fitted into the mortar seal.

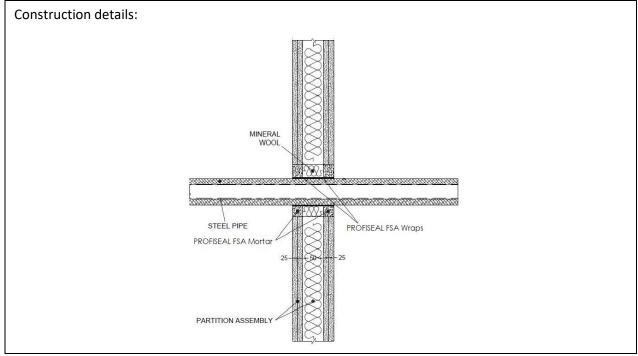


#### A.2.8.1

Services	Wrap	Maximum aperture	Classification
PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1			
HOIH SAINTF VC according to LIV 1303-1			
110 mm diameter / 4.3 mm wall	50 x 2 mm	2400 x 1200 mm	EI 60 C/C

- A.3 Flexible and rigid wall constructions with a minimum thickness 100 mm
- A.3.1 PROFiSEAL FSA Wrap penetration seal for insulated metal pipes, in seals comprising 25 mm deep PROFiSEAL FSA Mortar to both faces backed with 50 mm mineral fibre board, installed within flexible or rigid wall

**Penetration Seal:** CS (Continuous Sustained) insulated metallic pipes fitted at any position within the aperture (min. separation 30 mm from seal edges), with 25 mm PROFISEAL FSA Mortar to both sides of the wall, backed with 50 mm stone wool board 150 kg/m³ or 50 mm PROFISEAL FSA Mortar to both sides of the wall without backing\*. PROFISEAL FSA Wraps are required to be fitted to both faces of the seal.

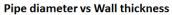


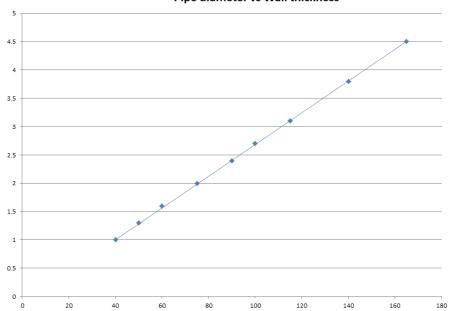
<sup>\*</sup> Maximum seal size of 2400 mm wide x 1200 mm high

A.3.1.1

Services	Wrap	Insulation	Classification
Mild or stainless steel pipe			
40 mm diameter/1-14.2 mm wall	2 off 50 x 1.8 mm		
	PROFISEAL FSA Wrap,		EI 120 C/U
	one fitted flush to		2. 120 0, 0
	each face of seal		
40 mm diameter/1-14.2 mm wall*			
50 mm diameter/1.3-14.2 mm wall*		13 mm	
60 mm diameter/1.6-14.2 mm wall*		Elastomeric	
75 mm diameter/2-14.2 mm wall*	2 off 50 x 3.6 mm	insulation minimum class	
90 mm diameter/2.4-14.2 mm wall*	PROFiSEAL FSA Wrap, one fitted flush to	B-s3,d0 or PE Foam insulation	E 120 C/U, EI 60 C/U
100 mm diameter/2.7-14.2 mm wall*	each face of seal	Foaiii iiisulatioii	E 120 C/O, El 60 C/O
115 mm diameter/3.1-14.2 mm wall*			
140 mm diameter/3.8-14.2 mm wall*			
165 mm diameter/ 4.5-14.2 mm wall*			

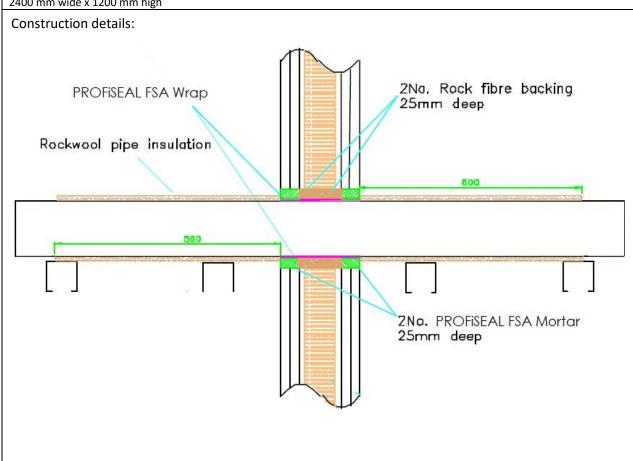
<sup>\*</sup> Typical pipe diameters shown, see below graph for intermediate sizes





# A.3.2 PROFISEAL FSA Wrap penetration seal for composite pipes, in seals comprising 25 mm deep PROFISEAL FSA Mortar to both faces backed with 50 mm mineral fibre board, installed within flexible or rigid wall

**Penetration Seal:** 500 mm (min.)\* LI (Local Interrupted) or CI (Continuous Interrupted) insulated metallic (and composite) pipes (single) fitted at any position within the aperture (min. separation 30 mm from seal edges and from other services), with 25 mm PROFiSEAL FSA Mortar to both sides of the wall backed with 50 mm stone wool board 150 kg/m3. Maximum seal size 2400 mm wide x 1200 mm high

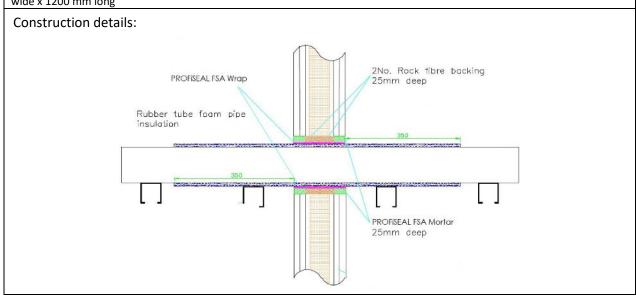


#### A.3.2.1

Services	Insulation	Classification
Geberit Mepla MLC (PE-Xb/Aluminium/PE-HD) pipe		
16 mm diameter/2.25 mm wall		
20 mm diameter/2.5 mm wall		
26 mm diameter/3 mm wall		
32 mm diameter/3 mm wall	Minimum 20 mm stone	FI 130 C/C
40 mm diameter/3.5 mm wall	wool, minimum 80 kg/m³	EI 120 C/C
50 mm diameter/4 mm wall		
63 mm diameter/4.5 mm wall		
75 mm diameter/4.7 mm wall		

# A.3.3 PROFISEAL FSA Wrap penetration seal for insulated metal & composite pipes, in seals comprising 25 mm deep PROFISEAL FSA Mortar to both faces backed with 50 mm mineral fibre board, installed within flexible or rigid wall

**Penetration Seal:** CS (Continuous Sustained) insulated metallic and composite pipes fitted at any position within the aperture (min. separation 25 mm from seal edges), with 25 mm PROFiSEAL FSA Mortar to both sides of the wall, backed with 25 mm stone wool 150 kg/m3\*. PROFiSEAL FSA Wraps are required to be fitted to both faces of the seal. Maximum seal size 2400 mm wide x 1200 mm long

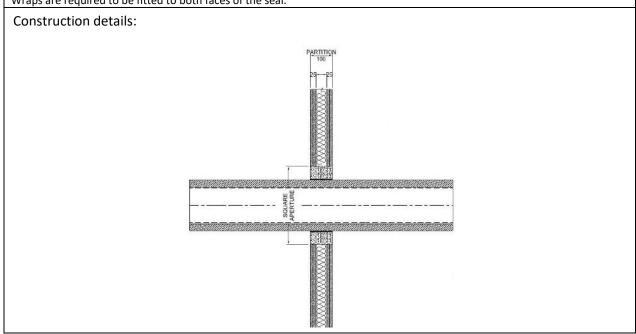


#### A.3.3.1

Services	Wrap	Insulation	Classification
Copper pipe			
12-54 mm diameter/1-1.2 mm wall	50 x 3.6 mm PROFiSEAL FSA Wrap fitted to both sides of the seal	9-25 mm Elastomeric insulation minimum class B-s3,d0 or PE Foam insulation	EI 120 C/C
Geberit Mepla MLC (PE-Xb/Aluminium	/PE-HD pipe)		
16 mm diameter/2.25 mm wall			
20 mm diameter/2.5 mm wall			
26 mm diameter/3 mm wall	50 2 . 6	0.25	
32 mm diameter/3 mm wall	50 x 3.6 mm PROFiSEAL FSA Wrap	9-25 mm Elastomeric insulation minimum	EL 120 C/C
40 mm diameter/3.5 mm wall	fitted to both sides of the seal	class B-s3,d0 or PE Foam insulation	EI 120 C/C
50 mm diameter/4 mm wall	the seal	Foam insulation	
63 mm diameter/4.5 mm wall			
75 mm diameter/4.7 mm wall			

### A.3.4 PROFISEAL FSA Wrap penetration seal for insulated metal pipes, in seals comprising 50 mm deep PROFISEAL FSA Mortar to both faces, installed within flexible or rigid wall

**Penetration Seal:** CS (Continuous Sustained) insulated metallic pipes fitted at any position within the aperture (min. separation 30 mm from seal edges), 50 mm PROFISEAL FSA Mortar to both sides of the wall without backing\*. PROFISEAL FSA Wraps are required to be fitted to both faces of the seal.



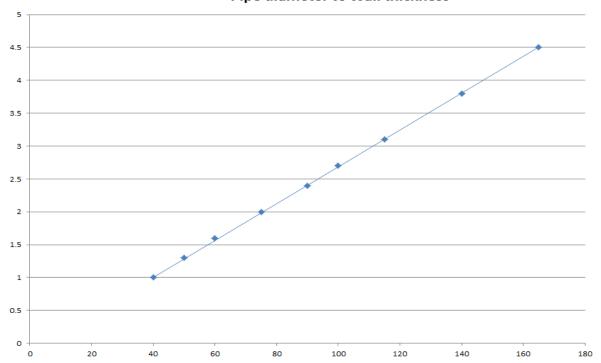
<sup>\*</sup> Maximum seal size of 2400 mm wide x 1200 mm high

#### A.3.4.1

Services	Wrap	Insulation	Classification
Mild or stainless steel pipe			
40 mm diameter/1-14.2 mm wall*			
50 mm diameter/1.3-14.2 mm wall*			
60 mm diameter/1.6-14.2 mm wall*			
75 mm diameter/2-14.2 mm wall*	2 off 50 x 3.6 mm	13 -32 mm Elastomeric	
90 mm diameter/2.4-14.2 mm wall*	PROFISEAL FSA Wrap,	insulation	
100 mm diameter/2.7-14.2 mm wall*	one fitted flush to each face of seal	minimum class B-s3,d0 or PE	E 120 C/U, EI 60 C/U
115 mm diameter/3.1-14.2 mm wall*		Foam insulation	
140 mm diameter/3.8-14.2 mm wall*			
165 mm diameter/ 4.5-14.2 mm wall*			

<sup>\*</sup> Typical pipe diameters shown, see below graph for intermediate sizes

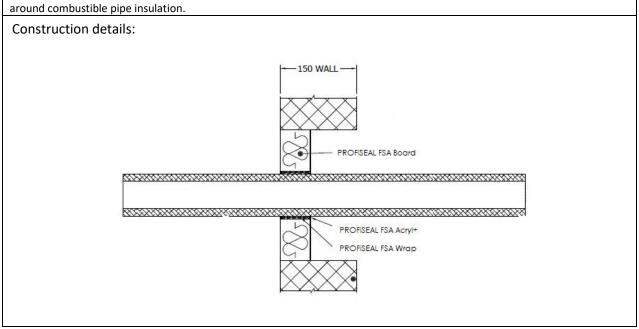
### Pipe diameter vs Wall thickness



#### A.4 Rigid wall constructions with floor thickness of minimum 150 mm

# A.4.1 PROFiSEAL FSA Wrap penetration seal for insulated metal pipes, in 1x PROFiSEAL FSA Board 2-S seals, in rigid walls

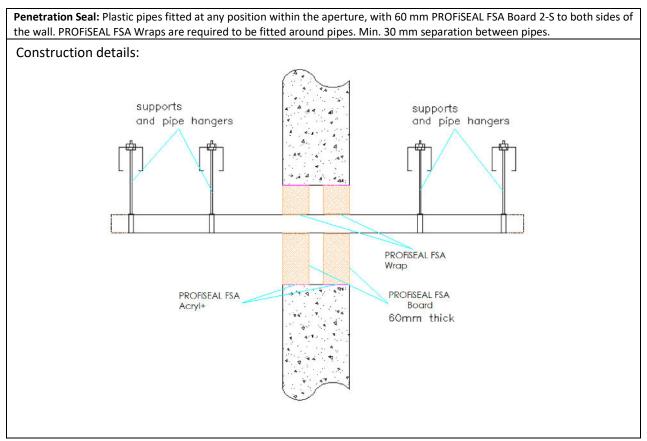
**Penetration Seal:** CS (Continuous Sustained) insulated metallic pipes fitted at any position within the aperture, with 60 mm PROFISEAL FSA Board 2-S to either side of the wall (or anywhere in between). PROFISEAL FSA Wraps are required to be fitted around combustible pipe insulation.



#### A.4.1.1

Services	Wrap	Insulation	Classification
Mild or stainless steel pipe			
165 mm diameter/ 4.5-14.2 mm		9-25 mm	
wall	50 x 1.8 mm	Elastomeric	E 120 U/C, E 120 C/U, E 120
	PROFISEAL FSA Wrap	insulation	C/C, EI 45 U/C, EI 45 C/U,
	fitted centrally	minimum class B-	EI 45 C/C
	increa centrally	s3,d0 or PE Foam	11 43 6/6
		insulation	

# A.4.2 PROFiSEAL FSA Wrap penetration seal for insulated metal pipes, in 2x PROFiSEAL FSA Board 2-S seals, in rigid walls

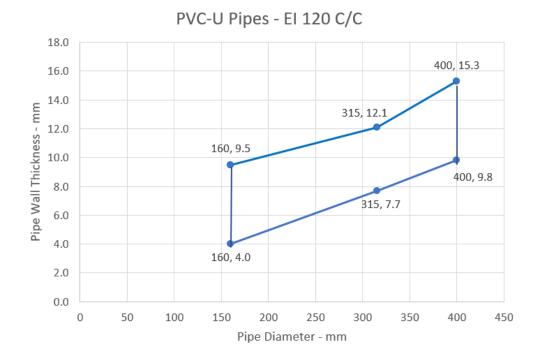


#### A.4.2.1

Services	Wrap	Classification
PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1	1453-1 and PVC-C accord	ling to EN 1566-1
Up to 40 mm diameter / 1.9-3.0 mm wall	50 x 1.8 mm	
Up to 110 mm diameter / 2.7-6.6 mm wall	50 x 3.6 mm	EI 240 U/C
Up to 125 mm diameter / 4.7-7.4 mm wall	50 x 7.2 mm	El 240 0/C
Up to 160 mm diameter / 4.0-9.5 mm wall*	50 x 10.8 mm	
Up to 315 mm diameter/7.7-12.1 mm wall thickness*#	75 x 18 mm	EI 120 C/C
Up to 400 mm diameter/9.8-15.3 mm wall thickness*#	75 x 28.8 mm	EI 120 C/C
PE pipe according to EN 1519-1, EN 12201-2 and EN 126	666-1, ABS according to I	EN 1455-1 and pipes made
from SAN+PVC according to EN 1565-1		
Up to 40 mm diameter / 2.4-4.6 mm wall	50 x 1.8 mm	
Up to 110 mm diameter / 3.4-10.0 mm wall	50 x 3.6 mm	EI 240 U/C
Up to 125 mm diameter / 3.9-7.4 mm wall	50 x 7.2 mm	E1 240 0/C
Up to 160 mm diameter / 4.9-9.5 mm wall	50 x 10.8 mm	
PP pipe according to EN 1451-1		
Up to 40 mm diameter / 1.8-5.5 mm wall	50 x 1.8 mm	EI 240 U/C
Up to 110 mm diameter / 2.7-10.0 mm wall	50 x 3.6 mm	
Up to 125 mm diameter / 3.1-11.4 mm wall	50 x 7.2 mm	EI 240 C/C
Up to 160 mm diameter / 4.9-14.6 mm wall	50 x 10.8 mm	

<sup>\*</sup> Typical pipe diameters shown, see below graph for intermediate sizes.

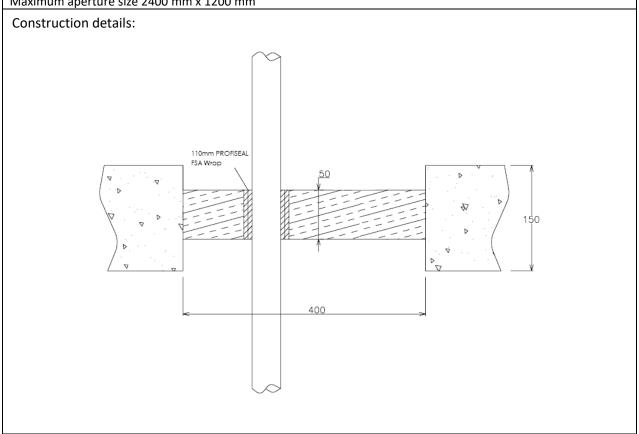
<sup>#</sup> Configuration 1 & 2



#### A.5 Rigid floor constructions with floor thickness of minimum 150 mm

### A.5.1 PROFiSEAL FSA Wrap penetration seal for plastic pipes, in 1x PROFiSEAL FSA Board 2-S, in rigid floors

**Penetration Seal:** Combustible pipes fitted at any position within the aperture, with 50 mm PROFiSEAL FSA Board 2-S at mid-depth of the floor. PROFiSEAL FSA Wraps are required to be fitted around combustible pipe insulation. Maximum aperture size 2400 mm x 1200 mm

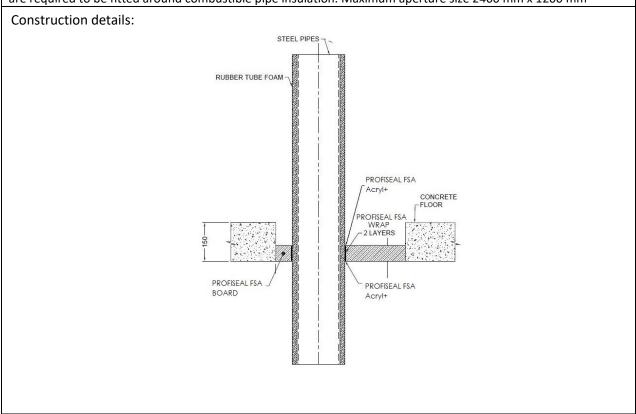


#### A.5.1.1

Services	Wrap	Classification
PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1*	50 x 3.6 mm PROFiSEAL FSA Wrap	EI 90 U/C, EI 90 C/C
110 mm diameter/ 3.4mm wall		

# A.5.2 PROFiSEAL FSA Wrap penetration seal for insulated metal pipes, in 1x PROFiSEAL FSA Board 2-S, in rigid floors

**Penetration Seal:** CS (Continuous Sustained) insulated metallic pipes fitted at any position within the aperture, with 60 mm PROFiSEAL FSA Board 2-S to either side of the floor (or anywhere in between). PROFiSEAL FSA Wraps are required to be fitted around combustible pipe insulation. Maximum aperture size 2400 mm x 1200 mm

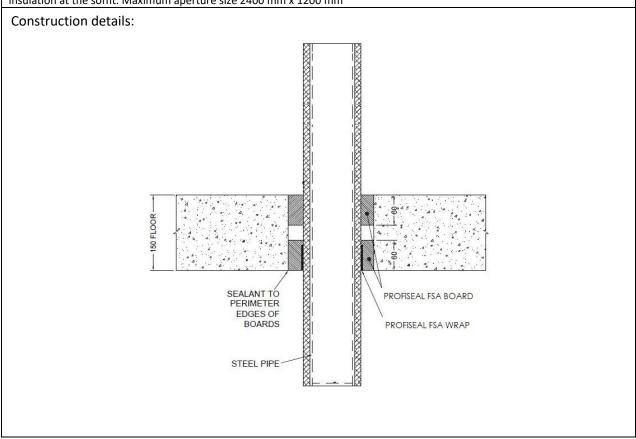


#### A.5.2.1

Services	Wrap Insulation		Classification
Mild or stainless steel pipe			
165 mm diameter/ 4.5-14.2 mm	50 x 3.6 mm PROFiSEAL FSA Wrap	13 mm Elastomeric insulation minimum class B- s3,d0 or foil faced Phenolic Foam insulation	E 90 C/U, EI 45 C/U
wall	fitted at bottom of seal	19 mm Elastomeric insulation minimum class B- s3,d0 or foil faced Phenolic Foam insulation	EI 90 C/U

# A.5.3 PROFiSEAL FSA Wrap penetration seal for insulated metal pipes in 2x PROFiSEAL FSA Board 2-S (separated), in rigid floors

**Penetration Seal:** CS (Continuous Sustained) insulated metallic pipes fitted at any position within the aperture, with 60 mm PROFISEAL FSA Board 2-S to both sided of the floor. PROFISEAL FSA Wraps are required to be fitted around combustible pipe insulation at the soffit. Maximum aperture size 2400 mm x 1200 mm

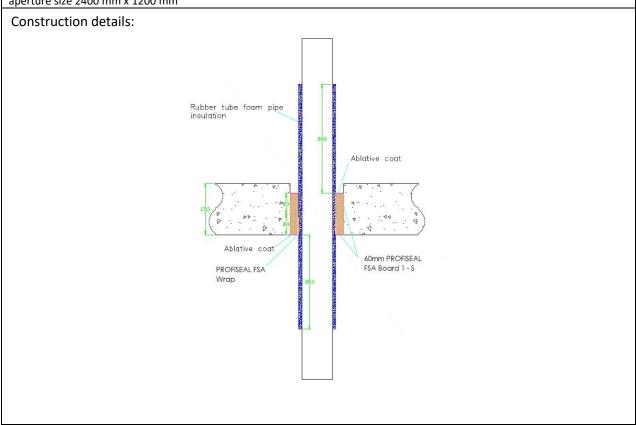


#### A.5.3.1 Double side penetration seal with pipes

Services	Wrap	Insulation	Classification
Mild or stainless steel pipe			
40 mm diameter/ 1-14.2 mm wall	50 x 1.8 mm PROFiSEAL FSA Wrap	13 mm Elastomeric insulation minimum class B- s3,d0 or foil faced Phenolic Foam insulation	E 180 C/U, EI 120 C/U

# A.5.4 PROFiSEAL FSA Wrap penetration seal for insulated metal pipes, in 2x PROFiSEAL FSA Board 2-S (back to back), in rigid floors

**Penetration Seal:** CS (Continuous Sustained) insulated metallic and composite pipes fitted at any position within the aperture, with two layers of 60 mm PROFiSEAL FSA Board 1-S installed together to either side of the floor (or anywhere in between). PROFiSEAL FSA Wraps are required to be fitted around combustible pipe insulation at the bottom of the seal. Maximum aperture size 2400 mm x 1200 mm



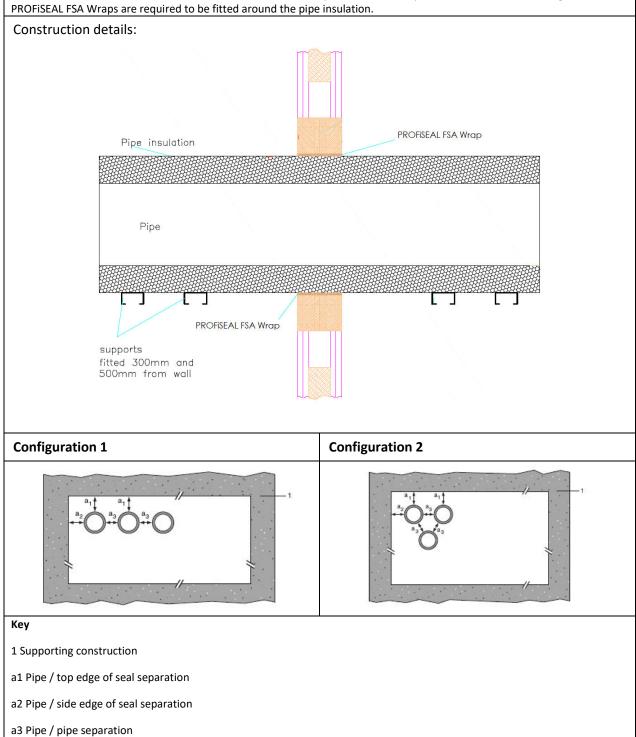
#### A.5.4.1

Services	Wrap	Insulation	Classification
Copper pipe			
12-54 mm diameter/1-1.2 mm wall	50 x 3.6 mm PROFiSEAL FSA Wrap	9-13 mm Elastomeric insulation minimum class B-s3,d0 or foil faced Phenolic Foam insulation	E240 C/C, EI 60 C/C
12-54 mm diameter/1-1.2 mm wall	fitted to both sides of the seal	13-25 mm Elastomeric insulation minimum class B-s3,d0 or foil faced Phenolic Foam insulation	E 180 C/C, EI 45 C/C
Geberit Mepla MLC (PE-Xb/Aluminium	/PE-HD pipe)		
16 mm diameter/2.25 mm wall 20 mm diameter/2.5 mm wall 26 mm diameter/3 mm wall 32 mm diameter/3 mm wall 40 mm diameter/3.5 mm wall 50 mm diameter/4 mm wall 63 mm diameter/4.5 mm wall 75 mm diameter/4.7 mm wall	50 x 3.6 mm PROFiSEAL FSA Wrap	9 mm Elastomeric insulation minimum class B-s3,d0 or foil faced Phenolic Foam insulation	EI 120 C/C
16 mm diameter/2.25 mm wall 20 mm diameter/2.5 mm wall 26 mm diameter/3 mm wall 32 mm diameter/3 mm wall 40 mm diameter/3.5 mm wall 50 mm diameter/4 mm wall 63 mm diameter/4.5 mm wall 75 mm diameter/4.7 mm wall	fitted to both sides of the seal	13-25 mm Elastomeric insulation minimum class B-s3,d0 or foil faced Phenolic Foam insulation	E 60 C/C, EI 45 C/C

#### A.6 Flexible wall constructions according to 2. 1)

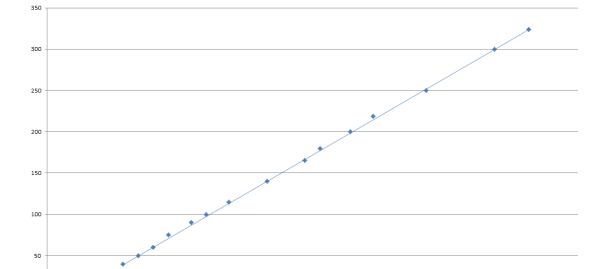
### A.6.1 PROFISEAL FSA Wrap penetration seal for insulated metal pipes, in 2x PROFISEAL FSA Board 1-S in flexible or rigid walls

**Penetration Seal:** CS (Continuous Sustained) insulated metallic pipes fitted at any position within the aperture, with 50 mm PROFISEAL FSA Board 1-S to both sides of the wall. Minimum separation between penetration seals and seal edges of 30 mm. PROFISEAL FSA Wraps are required to be fitted around the pipe insulation.



A.6.1.1

Mild or stainless steel pipe	Insulation	PROFISEAL FSA Wraps	Classification
40 mm diameter/1-14.2 mm wall  40 mm diameter/1-14.2 mm wall*	32 mm thick Elastomeric insulation minimum class B- s3,d0 or PE Foam insulation		
50 mm diameter/1.2-14.2 mm wall*  60 mm diameter/1.4-14.2 mm wall*			
75 mm diameter/1.6-14.2 mm wall* 90 mm diameter/1.9-14.2 mm wall*			
100 mm diameter/2.1-14.2 mm wall*  115 mm diameter/2.4-14.2 mm wall*		3 layers 50 x	EI 90 C/U
140 mm diameter/2.9-14.2 mm wall*  165 mm diameter/ 3.4-14.2 mm wall*	32-50 mm thick Elastomeric insulation minimum class B-s3,d0 or PE Foam insulation	1.8 mm	E1 90 C/ 0
180 mm diameter/ 3.6-14.2 mm wall*			
200 mm diameter/ 4.0-14.2 mm wall* 219 mm diameter/ 4.3-14.2 mm wall*			
250 mm diameter/ 5.0-14.2 mm wall*  300 mm diameter/ 5.9-14.2 mm wall*			
324 mm diameter/ 6.35-14.2 mm wall*			



Pipe Diameter vs wall thickness

# A.6.2 PROFiSEAL FSA Wrap penetration seal for insulated metal pipes, in 2x PROFiSEAL FSA Board 1-S, in flexible or rigid walls

Penetration Seal: CS (Continuous Sustained) insulated metallic pipes fitted at any position within the aperture, with 50 mm PROFISEAL FSA Board 1-S to both sides of the wall. PROFISEAL FSA Wraps are required to be fitted around the pipe insulation.

Construction details:

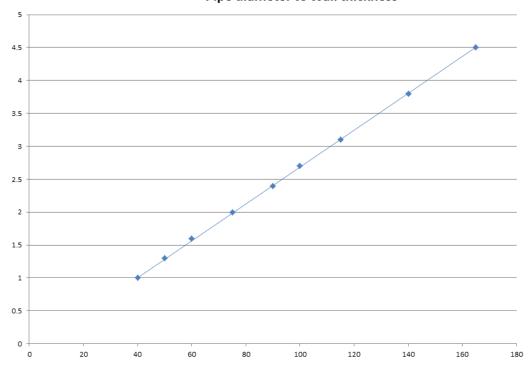
PARTITION PIPE BOARDS BOARDS SECTION PROFISEAL FSA WRAP PROFISEAL FSA BOARDS BO

#### A.6.2.1

Services	Wrap	Insulation	Classification
Mild or stainless steel pipe			
40 mm diameter/1-14.2 mm wall	50 x 1.8 mm PROFiSEAL FSA Wrap fitted centrally	13 mm Elastomeric insulation minimum class B-s3,d0 or PE Foam insulation	EI 120 U/C, EI 120 U/U, EI 120 C/U, EI 120 C/C
40 mm diameter/1-14.2 mm wall*			
50 mm diameter/1.3-14.2 mm wall*			
60 mm diameter/1.6-14.2 mm wall*		42 22	
75 mm diameter/2-14.2 mm wall*	2 off 50 x 3.6 mm PROFiSEAL FSA Wrap, one fitted flush to each face of seal	13 - 32mm Elastomeric	E 120 U/C, E 120 U/U,
90 mm diameter/2.4-14.2 mm wall*		insulation minimum class	E 120 C/U, E 120 C/C, EI 60 U/C, EI 60 U/U,
100 mm diameter/2.7-14.2 mm wall*		B-s3,d0 or PE	EI 60 C/U, EI 60 C/C
115 mm diameter/3.1-14.2 mm wall*		Foam insulation	
140 mm diameter/3.8-14.2 mm wall*			
165 mm diameter/ 4.5-14.2 mm wall*			

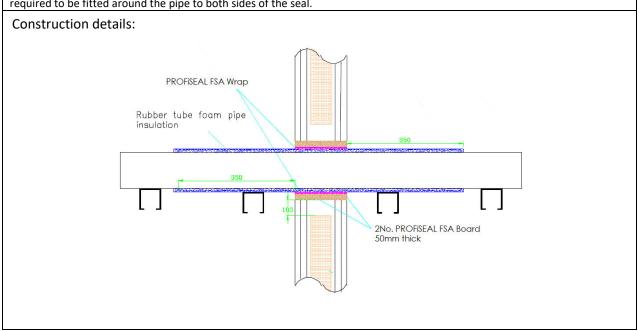
<sup>\*</sup> Typical pipe diameters shown, see below graph for intermediate sizes

### Pipe diameter vs Wall thickness



# A.6.3 PROFiSEAL FSA Wrap penetration seal for insulated metal pipes, in 2x PROFiSEAL FSA Board 1-S, in flexible or rigid walls

**Penetration Seal:** LS (Local Sustained) or CS (Continuous Sustained) insulated metallic and composite pipes (single) fitted at any position within the aperture, with 50 mm PROFISEAL FSA Board 1-S to both sides of the wall. PROFISEAL FSA Wraps are required to be fitted around the pipe to both sides of the seal.



#### A.6.3.1

Services	Wrap	Insulation	Classification
Copper pipe			
12 mm diameter/1 mm wall		9 mm Elastomeric insulation minimum class B-s3,d0 or PE Foam insulation	EI 120 C/C
12-54 mm diameter/1-1.2 mm wall	50 x 3.6 mm PROFISEAL FSA Wrap fitted to both sides of the seal	9-13 mm Elastomeric insulation minimum class B-s3,d0 or PE Foam insulation	E 120 C/C, EI 90 C/C
12-54 mm diameter/1-1.2 mm wall	the seal	13-25 mm Elastomeric insulation minimum class B-s3,d0 or PE Foam insulation	E 120 C/C, EI 60 C/C
Geberit Mepla MLC (PE-Xb/Aluminium/PE-HD pipe)*			
16 mm diameter/2.25 mm wall 20 mm diameter/2.5 mm wall			
26 mm diameter/3 mm wall 32 mm diameter/3 mm wall	50 x 3.6 mm	9-25 mm Elastomeric	
40 mm diameter/3.5 mm wall	PROFISEAL FSA Wrap fitted to both sides of the seal	insulation minimum class B-s3,d0 or PE Foam insulation	EI 120 C/C
50 mm diameter/4 mm wall 63 mm diameter/4.5 mm wall 75 mm diameter/4.7 mm wall			

# A.6.4 PROFiSEAL FSA Wrap penetration seal for insulated metal pipes, in 2x PROFiSEAL FSA Board 1-S, in flexible or rigid walls

P Penetration Seal: Combustible pipes (single) fitted central within the aperture, with PROFISEAL FSA Board 1-S to both sides of the wall. PROFISEAL FSA Wraps are required to be fitted around the pipe.

Construction details:

SEALANT TO PERIMETER EDGES OF BOARD

PROFISEAL FSA WRAP

PIPE

PROFISEAL FSA BOARD

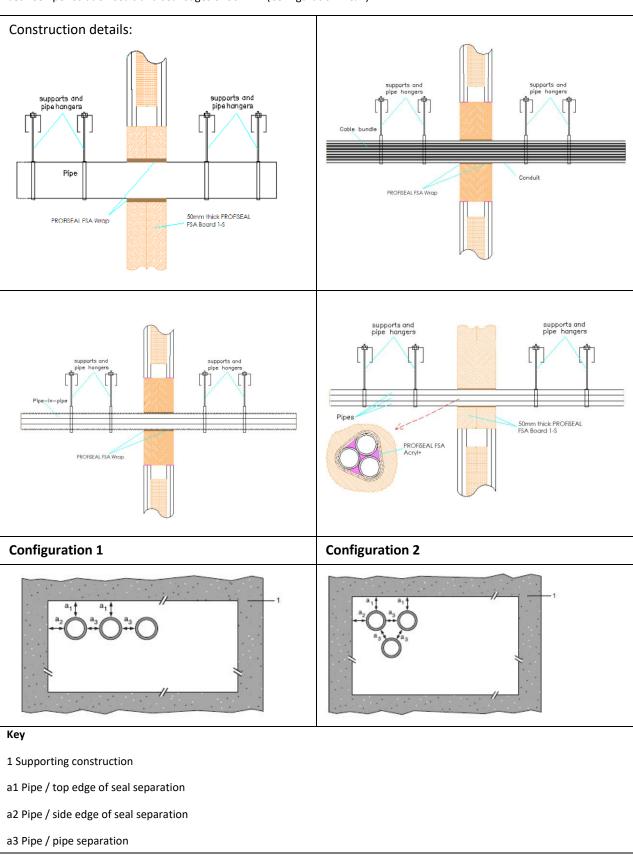
PARTITION ASSEMBLY

#### A.6.4.1

Services	Pipe Wrap	Classification
PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1	PROFiSEAL FSA Wrap 75 x 18 mm fitted centrally around the pipe	EI 45 C/C
315 mm Ø/9.2 mm wall		

# A.6.5 PROFISEAL FSA Wrap penetration seal for plastic pipes, in 2x PROFISEAL FSA Board 1-S, in flexible or rigid walls

**Penetration Seal:** Combustible pipes sealed with PROFiSEAL FSA Wrap, to both sides of the wall. Minimum separation between penetration seals and seal edges of 30 mm. (Configuration 1 & 2).



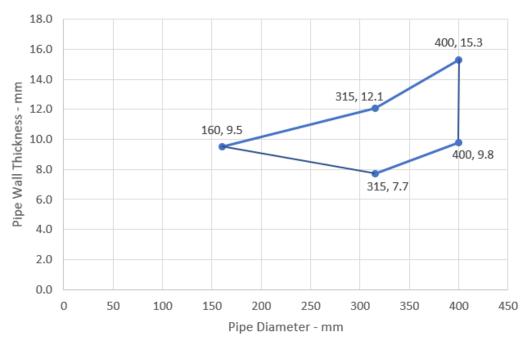
#### A.6.5.1

Services	Wraps	Permitted	Classification	
PVC-U pipe according to EN 1329-1, EN	(both sides)	configuration for		
1452-2 and EN 1453-1 and PVC-C		seal separation		
according to EN 1566-1				
Diameter up to 40 mm, wall thickness 1.9	50 x 1.8 mm (1		EI 120 U/U, EI 120 C/U,	
– 3.0 mm	layer)	1 & 2 between PVC-	EI 120 U/C, EI 120 C/C	
Diameter up to 110 mm, wall thickness	50 x 3.6 mm (2 x	U/PVC-C,		
2.7 - 6.6 mm	1.8 layer)	PE/ABS/SAN+PVC		
Diameter up to 125 mm, wall thickness	50 x 5.4 mm (3 x	and PP pipes in any	E 120 U/C, E 120 C/C	
3.7 – 7.4 mm	1.8 layer)	combination	EI 90 U/C, EI 90 C/C	
Diameter up to 160 mm, wall thickness	50 x 7.2 mm (4 x	Combination		
9.5 mm *	1.8 layer)			
Diameter up to 315 mm, wall thickness	50 x 18 mm (10 x	n/a	EI 90 C/C	
7.7-12.1 mm*	1.8 layers)		L1 30 C/C	
Diameter up to 400 mm, wall thickness	50 x 28.8 mm	n/a	EI 90 C/C	
9.8-15.3 mm*	(16 x 1.8 layers)		E1 30 C/C	
Diameter up to 110 mm, wall thickness				
2.7–6.6 mm, fully or partially filled	50 x 3.6 mm (2 x	1 & 2	E 120 U/C, EI 90 U/C	
conduits with cables up to 14 mm	1.8 layers)		E 120 0/C, El 90 0/C	
diameter				
PE pipe according to EN 1519-1, EN 12201-	2 and EN 12006-1, A	BS according to EN 145	55-1 and pipes made	
from SAN+PVC according to EN 1565-1				
Diameter up to 40 mm, wall thickness 2.4	50 x 1.8 mm (1		EI 120 U/U, EI 120 C/U,	
– 3.7 mm	layer)	4.0.2 hatron on DVC	EI 120 U/C, EI 120 C/C	
Diameter up to 110 mm, wall thickness	50 x 3.6 mm (2 x	1 & 2 between PVC-		
4.2 - 10 mm	1.8 layer)	U/PVC-C,		
Diameter up to 125 mm, wall thickness	50 x 5.4 mm (3 x	PE/ABS/SAN+PVC	E 120 U/C, E 120 C/C	
4.8 – 12 mm	1.8 layer)	and PP pipes in any combination	EI 90 U/C, EI 90 C/C	
Diameter up to 160 mm, wall thickness	50 x 7.2 mm (4 x	Combination		
14.6 mm	1.8 layer)			
Diameter up to 110 mm, wall thickness				
4.2–10 mm, fully or partially filled	50 x 3.6 mm (2 x	1 & 2	E 120 U/C, EI 90 U/C	
conduits with cables up to 14 mm	1.8 layers)		E 120 0/C, El 90 0/C	
diameter				
PP pipe according to EN 1852-1: 2009				
Diameter up to 40 mm, wall thickness 1.8	50 x 1.8 mm (1		EI 120 U/U, EI 120 C/U,	
– 5.5 mm	layer)		EI 120 U/C, EI 120 C/C	
Diameter up to 110 mm, wall thickness	50 x 3.6 mm (2 x	1 & 2 between PVC-	EI 90 U/U, EI 90 C/U,	
2.7 - 15.1 mm	1.8 layer)	U/PVC-C,	EI 90 U/C, EI 90 C/C	
Diameter up to 125 mm, wall thickness	50 x 5.4 mm (3 x	PE/ABS/SAN+PVC	, , , , , ,	
3.1 – 17.1 mm	1.8 layer)	and PP pipes in any	E 120 U/C, E 120 C/C	
Diameter up to 160 mm, wall thickness	50 x 7.2 mm (4 x	combination	EI 90 U/C, EI 90 C/C	
21.9 mm	'		Li 30 0/ C, Li 30 C/ C	
	1.8 layer)			
Diameter up to 110 mm, wall thickness	F0 v 2 6 /2 ··	102		
2.7–15.1 mm, fully or partially filled	50 x 3.6 mm (2 x	1 & 2	E 120 U/C, EI 90 U/C	
conduits with cables up to 14 mm diameter	1.8 layers)			
Uponor Wirsbo PEX pipe in pipe system according to ISO 15875				
	ording to 150 158/5		FI 120 C/C	
Diameter up to 54 mm/4.0 mm wall	F0 v 2 6 /2 ··	1 & 2	EI 120 C/C	
thickness (outer pipe), 28 mm	50 x 3.6 mm (2 x			
diameter/0.4 mm wall thickness (inner	1.8 layers)			
pipe)				

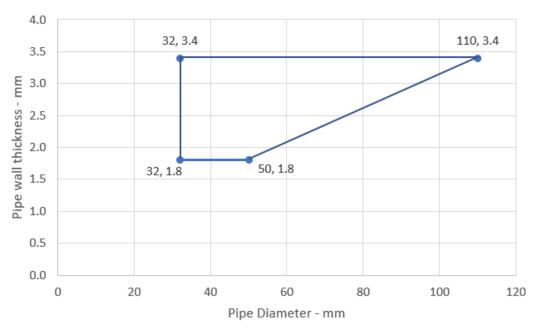
Uponor Wirsbo PEX double pipe in pipe system				
Diameter up to 25 mm pipes, wall	50 x 3.6 mm (2 x	1 & 2	EI 90 C/C	
thickness 0.6 mm, in bundles up to 50	1.8 layers)			
mm				
BluePower Multilayer pipe according to EN	1451-1			
32-50 mm diameter/1.8 mm wall	50 x 3.6 mm (2 x	1 & 2	EI 90 U/U	
thickness*	1.8 layers)			
75-110 mm diameter/3.4 mm wall	50 x 3.6 mm (2 x	1 & 2	EI 90 C/U	
thickness*	1.8 layers)			
Rehau Raupiano Plus PP-DD according to D	1			
40-50 mm diameter/1.8-2.7 mm wall	50 x 3.6 mm (2 x	1 & 2	EI 120 U/U	
thickness*	1.8 layers)			
75-110 mm diameter/2.7 mm wall	50 x 3.6 mm (2 x	1 & 2	EI 120 U/C	
thickness*	1.8 layers)			
125 mm diameter/3.9 mm wall thickness	50 x 7.2 mm (4 x	1 & 2	EI 120 U/C	
	1.8 layers)			
160 mm diameter/3.9 mm wall thickness	50 x 10.8 mm (6	1 & 2	EI 120 U/C	
	x 1.8 layers)			
Polo-Kal NG Poloplast PP-MV according to				
32-50 mm diameter/2.0-3.4 mm wall	50 x 3.6 mm (2 x	1 & 2	EI 120 U/U	
thickness*	1.8 layers)			
75-110 mm diameter/3.4 mm wall	50 x 3.6 mm (2 x	1 & 2	EI 120 U/C	
thickness*	1.8 layers)			
125 mm diameter/3.9 mm wall thickness	50 x 7.2 mm (4 x	1 & 2	EI 120 U/C	
, , , , , , , , , , , , , , , , , , , ,	1.8 layers)			
160 mm diameter/4.9 mm wall thickness	50 x 10.8 mm (6	1 & 2	EI 120 U/C	
200 mm diameter, no mm wan emouness	x 1.8 layers)	102	2. 220 0, 0	
Aquatherm Green SDR9 MF PP-RP according to ISO 21003				
Aquatici iii dicen abita ivii iii iii decoraii	15 to 100 21000			
32 mm diameter/3.0 mm wall thickness	50 x 1.8 mm (1 x	1 & 2	E 120 C/C, EI 90 C/C	
	1.8 layer)			
40-50 mm diameter/5.6-12.3 mm wall	50 x 3.6 mm (2 x	1 & 2	E 120 C/C, EI 90 C/C	
thickness*	1.8 layers)			
63-110 mm diameter/12.3 mm wall	50 x 3.6 mm (2 x	1 & 2	E 120 C/C, EI 90 C/C	
thickness*	1.8 layers)			
Wavin SiTech + PP-M B according to EN 13501-1				
32-50 mm diameter/1.8-3.4 mm wall	50 x 3.6 mm (2 x	1 & 2	E 120 U/U, EI 90 U/U	
thickness*	1.8 layers)	· ·	, , , .	
75-110 mm diameter/3.4 mm wall	50 x 3.6 mm (2 x	1 & 2	E 120 U/C, EI 60 U/C	
thickness*	1.8 layers)		, ,, =, =, =, =,	
Geberit Silent PP according to DIN 4102				
32-50 mm diameter/1.8-3.4 mm wall	50 x 3.6 mm (2 x	1 & 2	EI 120 U/U	
thickness*	1.8 layers)	1 0. 2	L. 120 0/ 0	
75-110 mm diameter/3.4 mm wall	50 x 3.6 mm (2 x	1 & 2	EI 120 U/C	
thickness*	1.8 layers)	1 0. 2	LI 120 0/C	
UHCKITCSS	1.0 layers)			

<sup>\*</sup>See below graph for interpolation pipe sizes

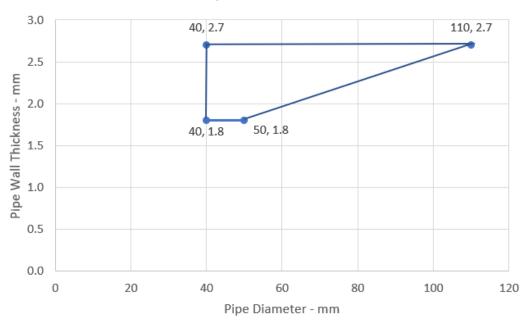




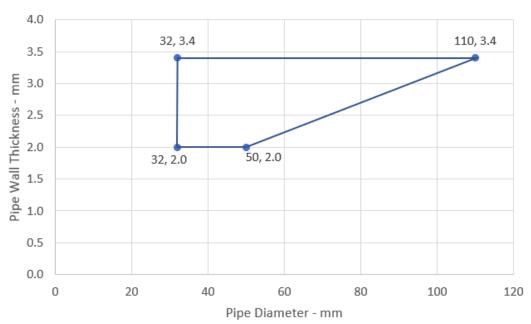
### BluePower - EI 90 C/U



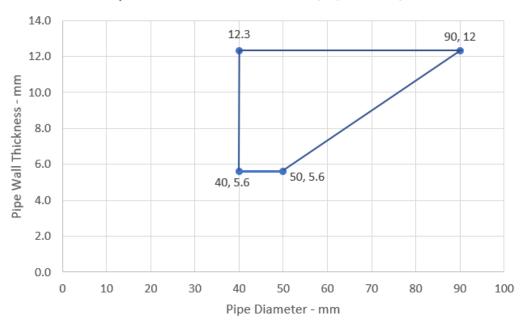
### Rehau Raupiano Plus -EI 120 U/C



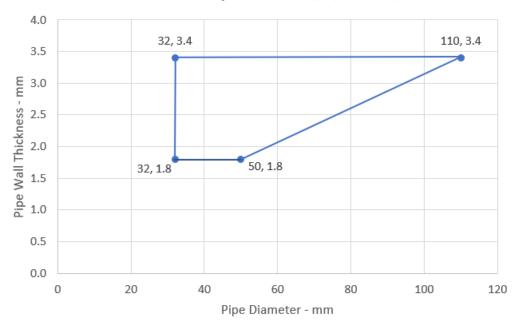
### Polo-Kal NG - EI 120 U/C



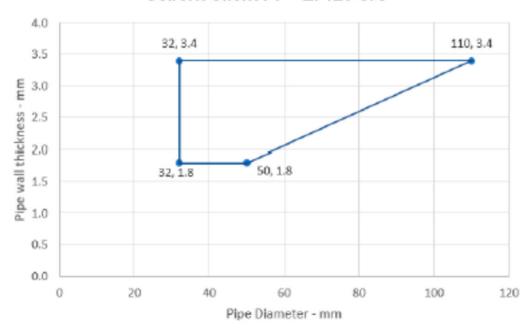
### Aquatherm Green - E 120 C/C, EI 90 C/C



### Wavin SiTech Pipes - E120 C/C, EI 60 C/C

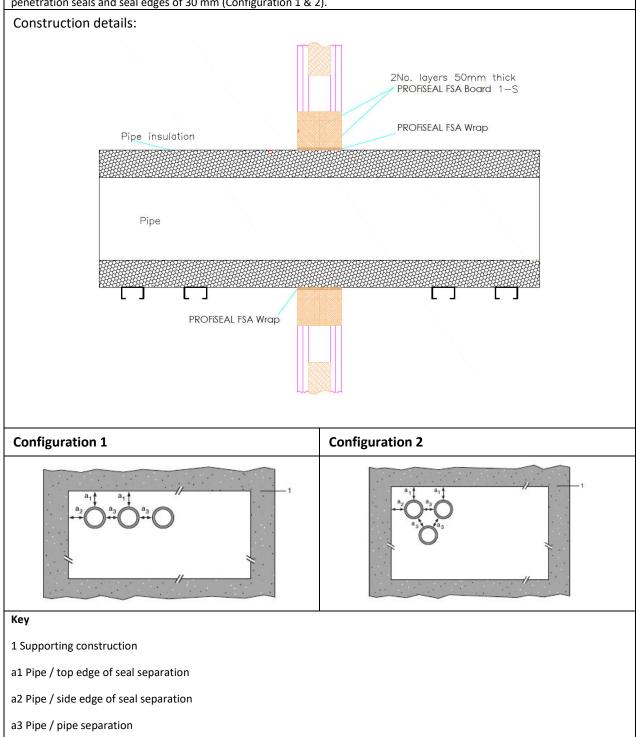


### Geberit Silent PP - EI 120 U/C



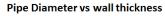
# A.6.6 PROFiSEAL FSA Wrap penetration seal for insulated metal pipes, in 2x PROFiSEAL FSA Board 1-S, in flexible or rigid walls

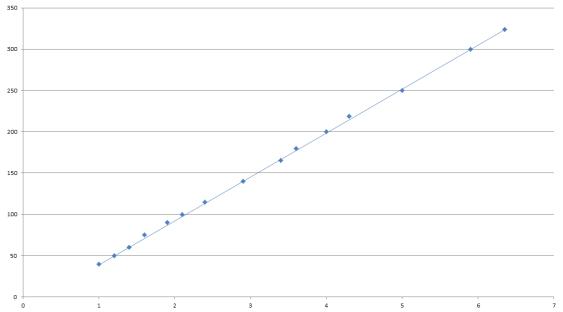
**Penetration Seal:** CS (Continuous Sustained) insulated metallic pipes sealed with PROFiSEAL FSA Wraps, fitted at any position within the aperture, with 50 mm PROFiSEAL FSA Board 1-S to both sides of the wall. Minimum separation between penetration seals and seal edges of 30 mm (Configuration 1 & 2).



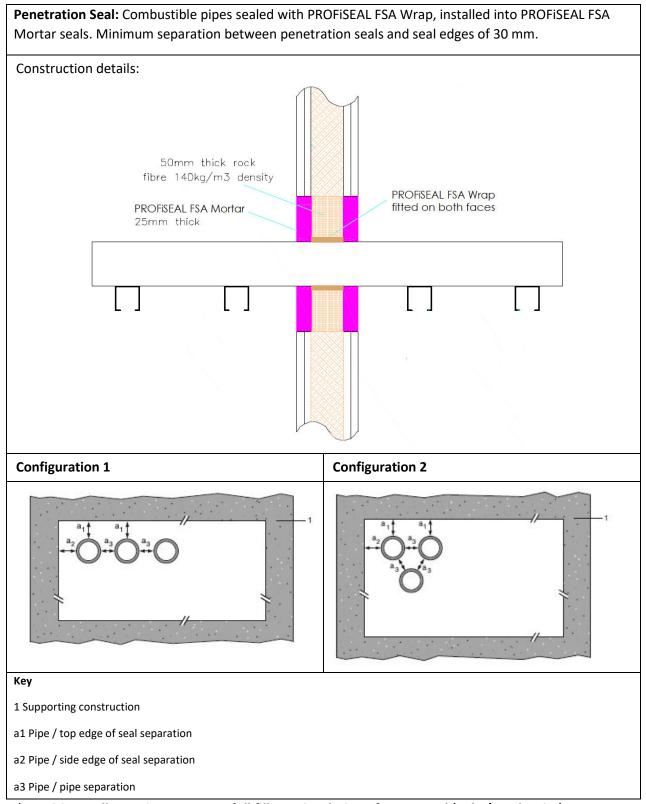
A.6.6.1

Mild or stainless steel pipe	Insulation	PROFISEAL FSA Wrap	Classification
40 mm diameter/1-14.2 mm wall	32 mm thick Elastomeric insulation minimum class B- s3,d0 or PE Foam insulation		
40 mm diameter/1-14.2 mm wall*			
50 mm diameter/1.2-14.2 mm wall*			
60 mm diameter/1.4-14.2 mm wall*			
75 mm diameter/1.6-14.2 mm wall*			
90 mm diameter/1.9-14.2 mm wall*			
100 mm diameter/2.1-14.2 mm wall*			
115 mm diameter/2.4-14.2 mm wall*	32-50 mm thick Elastomeric	50 x 5.4 mm (3 x 1.8 layer)	EI 90 C/U
140 mm diameter/2.9-14.2 mm wall*	insulation minimum class B-	(3 x 1.0 layer)	
165 mm diameter/ 3.4-14.2 mm wall*	s3,d0 or PE Foam insulation		
180 mm diameter/ 3.6-14.2 mm wall*			
200 mm diameter/ 4.0-14.2 mm wall*			
219 mm diameter/ 4.3-14.2 mm wall*			
250 mm diameter/ 5.0-14.2 mm wall*			
300 mm diameter/ 5.9-14.2 mm wall*			
324 mm diameter/ 6.35-14.2 mm wall*			





### A.6.7 Penetration seal in PROFiSEAL FSA Mortar seals, in flexible\* and rigid walls minimum 100 mm thick



<sup>\*</sup> Partition wall must incorporate a full fill core insulation of Stonewool (35kg/m3 density)

#### A.6.7.1

Services	Wraps	Permitted configuration	Classification
PVC-U pipe according to EN 1329-1, EN	(both sides)	for seal separation	
1452-2 and EN 1453-1 and PVC-C			
according to EN 1566-1			
Diameter up to 40 mm, wall thickness	50 x 1.8 mm		E 120 U/C, E 120 C/U,
3.0 – 4.3 mm	(1 layer)		EI 60 U/C, EI 60 C/C
Diameter up to 110 mm, wall thickness	50 x 3.6 mm	1 & 2 between PVC-	E 120 U/C, E 120 C/C
2.7 - 6.6 mm	(2 x 1.8 layer)	U/PVC-C,	EI 90 U/C, EI 90 C/C
Diameter up to 125 mm, wall thickness	50 x 5.4 mm	PE/ABS/SAN+PVC and PP	EI 120 U/C, EI 120 C/C
3.7 – 7.4 mm	(3 x 1.8 layer)	pipes in any combination	El 120 0/C, El 120 C/C
Diameter up to 160 mm, wall thickness	50 x 7.2 mm		EI 60 U/C, EI 60 C/C
3.2 - 9.5 mm	(4 x 1.8 layer)		E1 60 0/C, E1 60 C/C
PE pipe according to EN 1519-1, EN 1220 from SAN+PVC according to EN 1565-1		5-1, ABS according to EN 145	5-1 and pipes made
Diameter up to 40 mm, wall thickness	50 x 1.8 mm		EI 120 U/C, EI 120 C/C
3.2 – 3.7 mm	(1 layer)		Li 120 0/ c, Li 120 c/ c
Diameter up to 110 mm, wall thickness	50 x 3.6 mm		EI 60 U/C, EI 60 C/C
4.2 - 10 mm	(2 x 1.8 layer)	1 & 2 between PVC-	21 00 07 0, 21 00 07 0
Diameter up to 125 mm, wall thickness	50 x 5.4 mm	U/PVC-C,	EI 120 U/C, EI 120 C/C
12 mm	(3 x 1.8 layer)	PE/ABS/SAN+PVC and PP	21 120 07 0, 21 120 07 0
Diameter up to 160 mm, wall thickness		pipes in any combination	E 120 U/C, E 120 C/C
4.9 – 12.0 mm	50 x 7.2 mm		L 120 0/ C, L 120 C/ C
Diameter up to 160 mm, wall thickness	(4 x 1.8 layer)		EI 90 U/C, EI 90 C/C
12.0 mm			21 30 07 C, 21 30 C/ C
PP pipe according to EN 1852-1: 2009		,	
Diameter up to 40 mm, wall thickness	50 x 1.8 mm		EI 120 U/C, EI 120 C/C
4.0 – 5.5 mm	(1 layer)		E1 120 0/C, E1 120 C/C
Diameter up to 110 mm, wall thickness	50 x 3.6 mm		E 120 U/C, E 120 C/C
6.6 mm	(2 x 1.8 layer)	1 & 2 between PVC-	EI 90 U/C, EI 90 C/C
Diameter up to 125 mm, wall thickness	50 x 5.4 mm	U/PVC-C,	E 120 U/C, E 120 C/C
17.1 mm	(3 x 1.8 layer)	PE/ABS/SAN+PVC and PP	EI 90 U/C, EI 90 C/C
Diameter up to 160 mm, wall thickness	, ,	pipes in any combination	
4.0 - 21.9 mm	50 x 7.2 mm	, , , , , , , , , , , , , , , , , , , ,	E 120 U/C, E 120 C/C
Diameter up to 160 mm, wall thickness 21.9 mm	(4 x 1.8 layer)		EI 60 U/C, EI 60 C/C