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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-21/1029 of 2021/11/25

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:	SikaSeal-632 Fire Putty+
Product family to which the above construction product belongs:	Fire Stopping and Sealing Product: • Penetration Seals
Manufacturer:	Sika Services AG Tüffenwies 16 CH-8048 Zurich
Manufacturing plant:	A/003
This European Technical Assessment contains:	41 pages including 2 annexes which form an integral part of the document
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of:	EAD 350454-00-1104
This version replaces:	-

Table of Contents

I. SPECIFIC PARTS OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical description of the product

1) SikaSeal-632 Fire Putty+ is a flexible pad or cord used to reinstate the fire resistance performance of wall and floor constructions where they have been provided with apertures for the penetration of insulated or uninsulated metallic pipes, cables, and pipes or cables into socket boxes.

2) The SikaSeal-632 Fire Putty+ is supplied precut to size with a peel off strip to both faces to prevent it from bonding materials other than for the desired application. The SikaSeal-632 Fire Putty+ is installed by removing the peelable strips and wrapping the pad around the socket box where it penetrates the face of the wall and covering the back face of the box. When installing around service penetrations, the SikaSeal-632 Fire Putty+ is installed by removing the peelable strips and wrapping the pad around the service where it penetrates the face of the wall or floor.

3) The applicant has submitted a written declaration that SikaSeal-632 Fire Putty+ does not contain substances which have to be 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 SikaSeal-632 Fire Putty+ in relation to BWR 3 (Hygiene, health and environment) is IA1.

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.

1) The intended use of SikaSeal-632 Fire Putty+ is to reinstate the fire resistance performance of flexible, masonry or concrete walls and rigid floor constructions where they are penetrated by insulated or uninsulated metallic pipes, cables and the pipe or cable protrusion of socket boxes.

2) The specific elements of construction that the system SikaSeal-632 Fire Putty+ may be used to provide a penetration seal in, are as follows:

   a. Flexible walls: The wall must have a minimum thickness of 100 mm and comprise steel studs lined on both faces with minimum 2 layers of 12.5 mm thick boards.
   b. 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/m^3.
   c. 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/m^3.

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

   Sika Fire Protection Systems which involve seals on both sides of a flexible wall may also be used in the situation where the linear seal is on one side of the wall only and the remaining side of the wall is not punctured at the same point. All fire integrity and thermal insulation ratings for such single-sided seals remain the same as for the equivalent double-sided seal.

3) The System SikaSeal-632 Fire Putty+ may be used to provide a penetration seal for insulated or uninsulated metallic pipes, cables and the pipe or cable protrusion of socket boxes (for details see Annex A).

4) The system SikaSeal-632 Fire Putty+ may be used to seal gaps between 0 mm and 10 mm surrounding cables, cable bundles, non-insulated and insulated pipes, and 137 mm wide by 77 mm high (aperture containing socket box) and be installed in accordance with the manufacturer's instructions. When used with socket boxes, the aperture in the wall shall be as tight as possible to the penetration pipe or cable and any gaps filled with plaster filler.

5) The provisions made in this European Technical Assessment are based on an assumed working life of the SikaSeal-632 Fire Putty+ of 50 years, provided that the conditions laid down in the product datasheet 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.

6) Type Z_2: Intended for uses in internal conditions with humidity lower than 85 % RH excluding temperatures below 0°C, without exposure to rain or UV.

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

Product-type: Intumescent sheet	Intended use: Penetration Seal
Essential characteristic	Product performance
BWR 2 Safety in case of fire	
Reaction to fire	No performance assessed
Resistance to fire	Annex A
BWR 3 Hygiene, health and environment	
Air permeability	Annex B
Water permeability	No performance assessed
Content, emission and/or release of dangerous substances	Use categories: IA1 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	Z_2
BWR 5 Protection against noise	
Airborne sound insulation	Rw ($C;C_{tr}$)= 67 (-2;-7) dB*
BWR 6 Energy economy and heat retention	
Thermal properties	No performance assessed
Water vapour permeability	No performance assessed

*Applicable only for SikaSeal-632 Fire Putty+ Pads in socket boxes

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[1], 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 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

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

Issued in Copenhagen on 2021-11-25 by

Thomas Bruun

Managing Director, ETA-Danmark

[1] Official Journal of the European Communities L178/52 of 14/7/1999

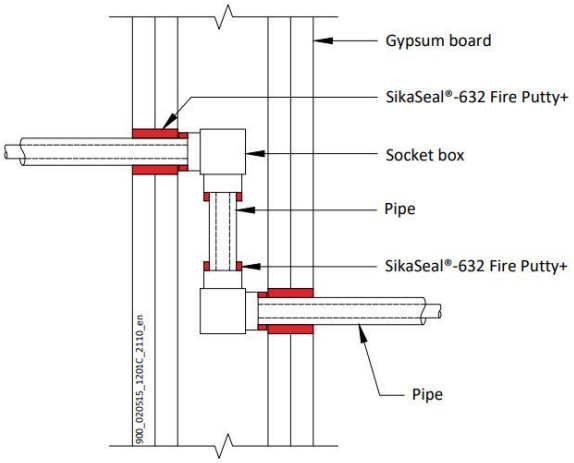
ANNEX A – Resistance to Fire Classification – SikaSeal-632 Fire Putty+

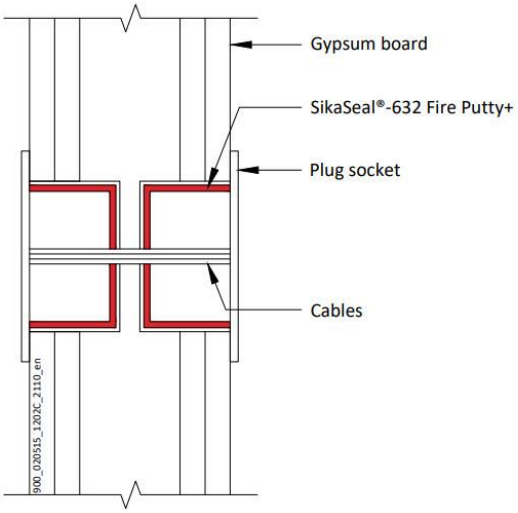
A.1 Flexible wall constructions with wall thickness of minimum 100 mm

A.1.1 Pipe and cable penetration seals with 4 mm thick SikaSeal-632 Fire Putty+ in socket box

Penetration Seal: Socket boxes with 15 mm long SikaSeal-632 Fire Putty+ wrapped around the pipe protrusion from the socket box. Min. 30 mm between cable penetrations.

Construction details:





A.1.1.1 Double side penetration seal with pipes in socket boxes

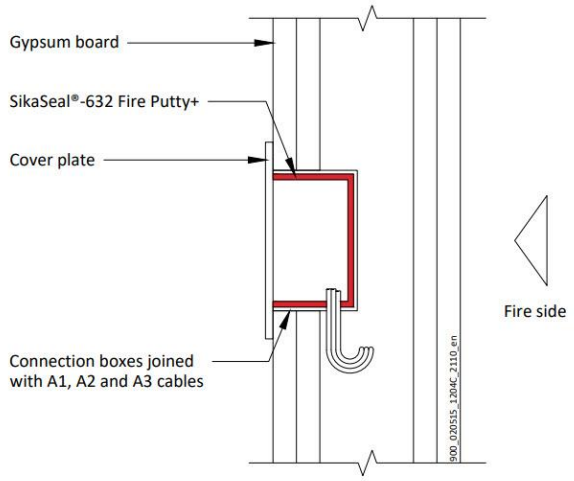
Services	Socket box	SikaSeal-632 Fire Putty+ - mm	Aperture mm	Classification
Høiax 25mm PEX pipe in pipe hose	Single or double Høiax Push Wallbox 15mm*	174 x 64 x 4 mm pad around pipe / 50 Ø x 25 mm at back of the box	63 Ø	**EI 90**
Cables up to 14 mm diameter	UK standard double socket box, maximum 130mm wide x 70mm high x 47mm deep, each with up to 22mm hole cut to accept the cables	Interior of box fully lined with pad	Maximum 135 wide x 75 high	**EI 60**

*Fixed directly to studs or with steel plate between studs.

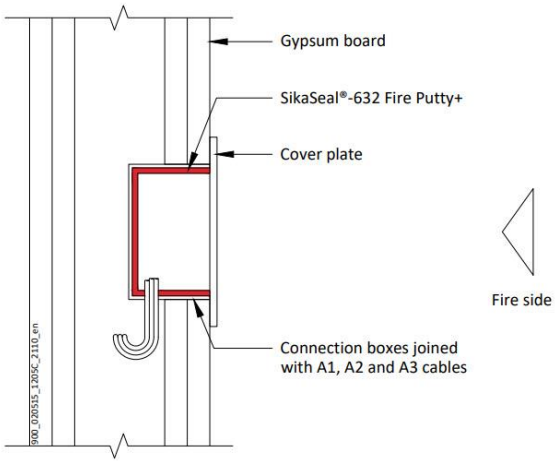
A.1.2 Cable penetration seals with 4 mm thick SikaSeal-632 Fire Putty+ in socket box

Penetration Seal: Socket boxes with SikaSeal-632 Fire Putty+ wrapped around the cable protrusion from the socket box.

Construction details:



Construction details:



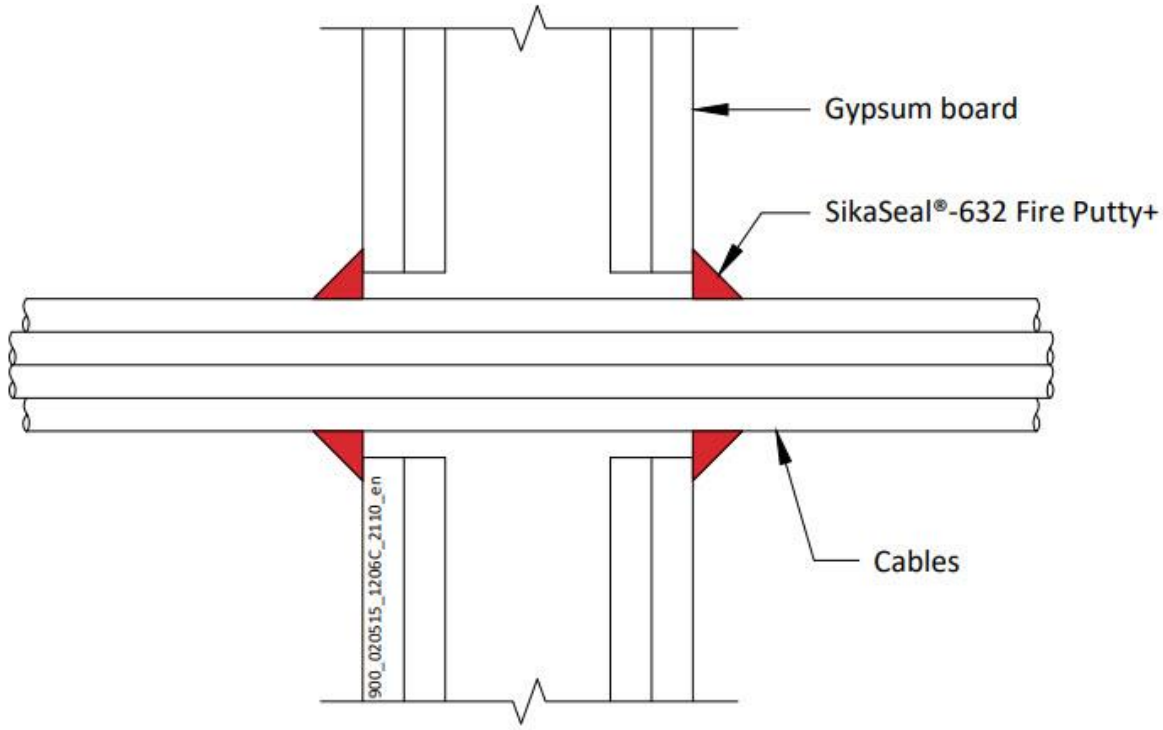
A.1.2.1 Single side penetration seal with cables in socket boxes

Services	Socket box	SikaSeal-632 Fire Putty+	Position	Aperture mm	Classification
Cables up to 14 mm diameter	Schneider Electric Ref. IMT 36026 connection box, 72mm wide x 90mm high x 50mm deep	Fitted lining the back of the back box	Side by side – 1 fitted to each face, or separated	73 wide x 91 High x 51 deep	**E 60, EI 45**
Cables up to 14 mm diameter	Elko 4189 1223720 connection box, 72mm wide x 90mm high x 58mm deep	Interior of box fully lined with pad	Adjacent – 1 fitted to each face, or separated	92 wide x 112 High	**EI 90**
Cables up to 14 mm diameter	ELKO 5421 123740 connection box, 73mm wide x 73mm high x 55mm deep	Interior of box fully lined with pad	Side by side – 1 fitted to each face, or separated	74 wide x 74 High	**EI 90**

A.1.3 Double sided penetration seal with cables

Penetration Seal: Cables (single or bundled up to 50 mm Ø) penetrating through a flexible or rigid wall construction and fitted at any position within the aperture, sealed with a 15mm diameter cord of SikaSeal-632 Fire Putty+ on both sides of the wall. Maximum annular space 10 mm (A1) and minimum separation between penetration seals 30 mm (A2).

Construction details:



A.1.3.1

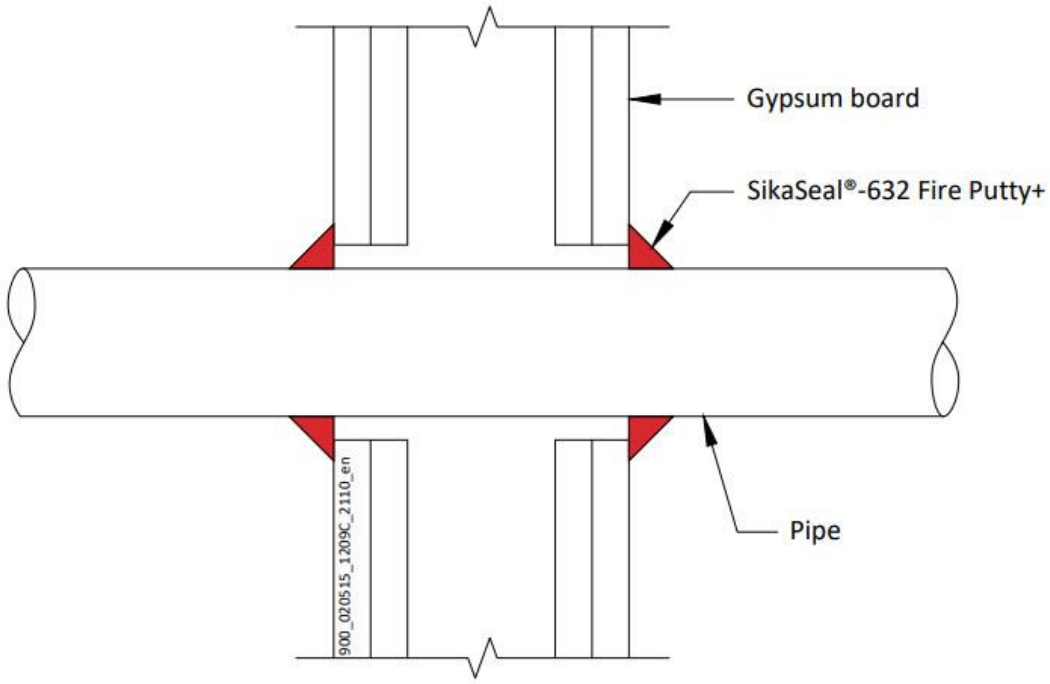
Services	Classification
Blank seal with a 15 mm deep cord of SikaSeal-632 Fire Putty+ on both sides of the wall	**EI 120**
Cables up to 21 mm diameter, single or in a bundle up to 50 mm diameter*	**EI 120**
Cables up to 80 mm diameter, single or in a bundle up to 50 mm diameter*	**EI 60**

* Cable specification from EN 1366-3 standard cable configuration

A.1.4 Double sided penetration seal with metallic pipes

Penetration Seal: Metallic pipes penetrating through a flexible or rigid wall construction and fitted at any position within the aperture, sealed with a 15mm diameter cord of SikaSeal-632 Fire Putty+ on both sides of the wall. Maximum annular space 10 mm (A1) and minimum separation between penetration seals 30 mm (A2).

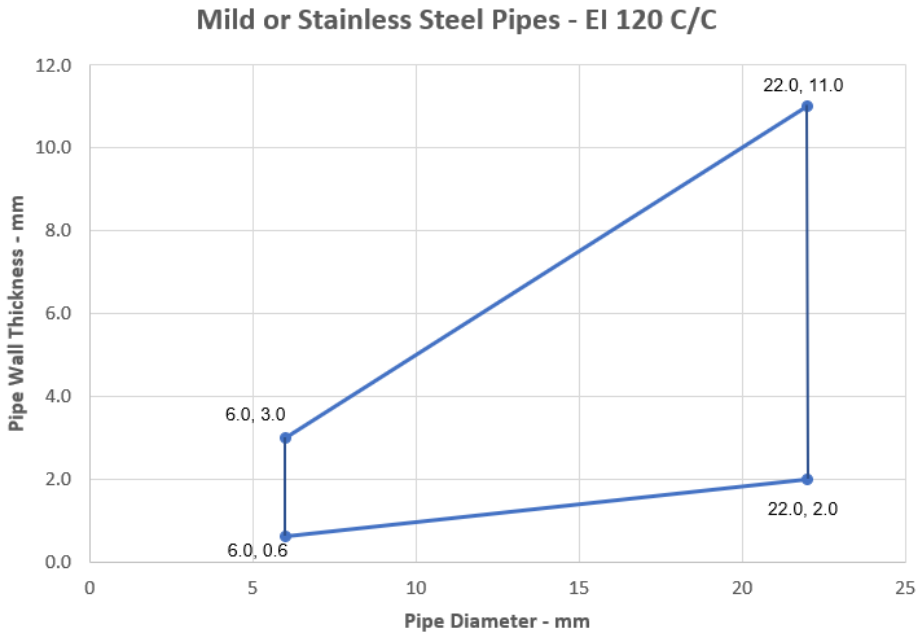
Construction details:

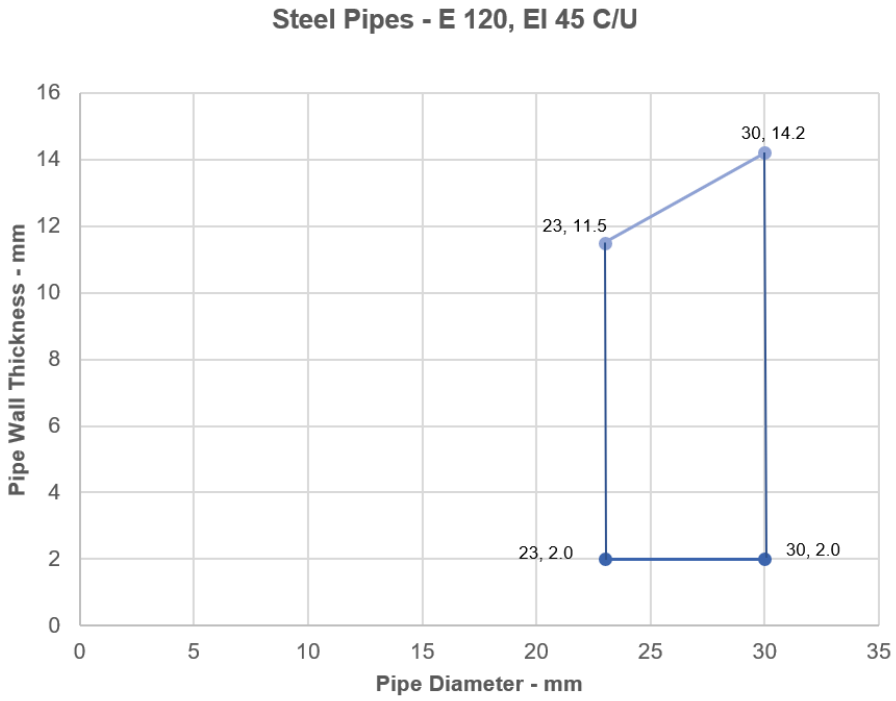


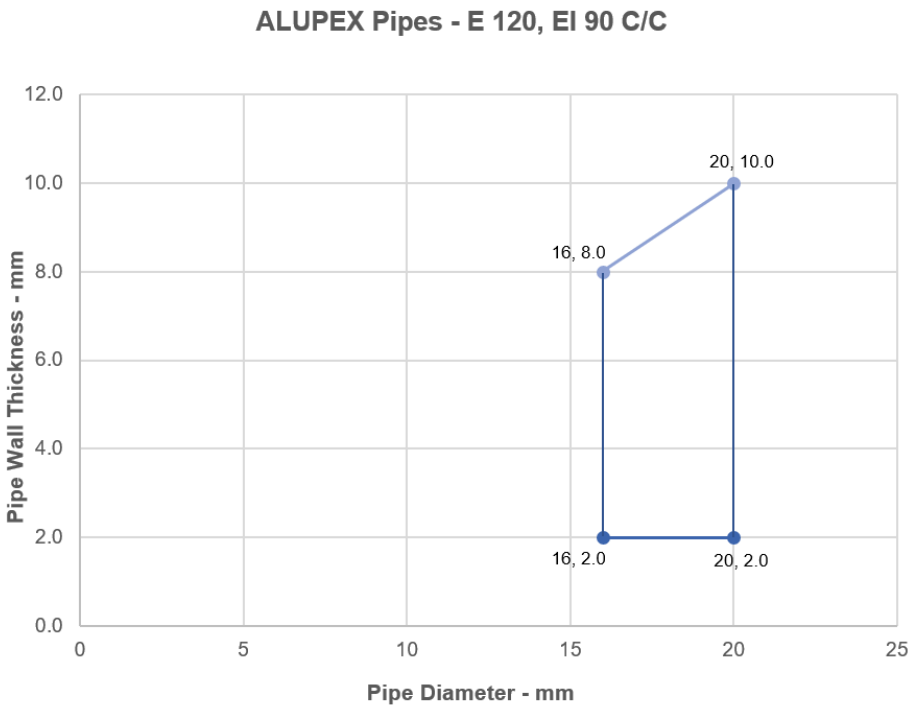
A.1.4.1

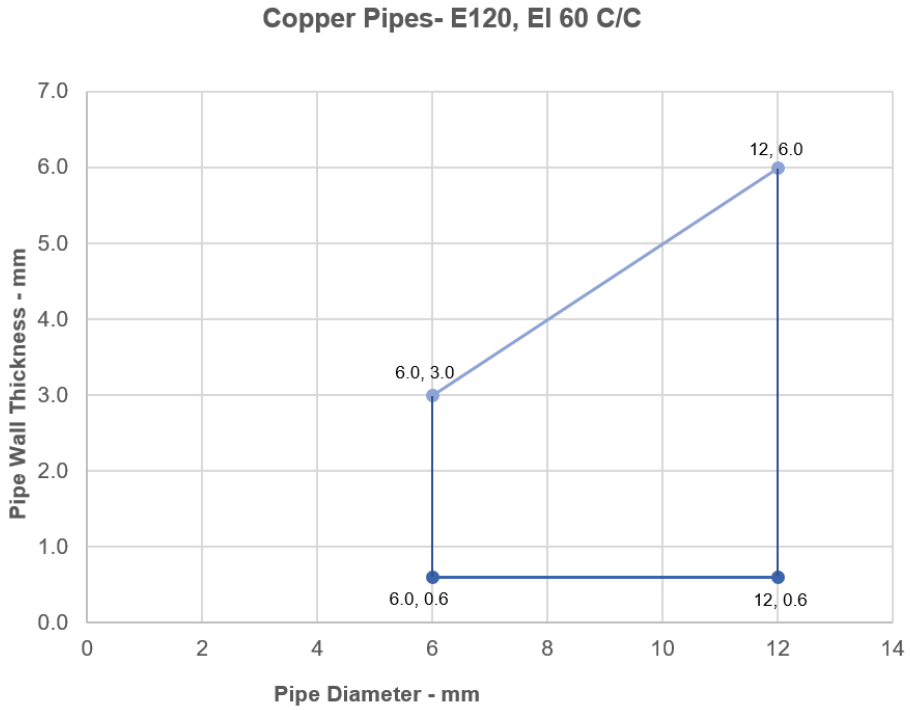
Services	Insulation	Classification
Mild or stainless steel pipe		
Maximum 22 mm diameter*	None needed	**EI 120 C/U**
23-30 mm diameter*	None needed	**E 120, EI 45 C/U**
ALUPEX pipe		
16 mm diameter*	None needed	**EI 120 C/C**
17-20 mm diameter*	None needed	**E 120, EI 90 C/C**
Copper or steel pipe		
6 mm diameter*	None needed	**EI 120 C/C**
7-12 mm diameter*	None needed	**E 120, EI 60 C/C**

*See below graphs for interpolation pipe sizes


Mild or Stainless Steel Pipes - EI 120 C/C
Pipe Wall Thickness - mm
Pipe Diameter - mm
12.0
10.0
8.0
6.0
4.0
2.0
0.0
0
5
10
15
20
25
22.0, 11.0
6.0, 3.0
22.0, 2.0
6.0, 0.6


Steel Pipes - E 120, EI 45 C/U
Pipe Wall Thickness - mm
Pipe Diameter - mm
16
14
12
10
8
6
4
2
0
0
5
10
15
20
25
30
35
30, 14.2
23, 11.5
23, 2.0
30, 2.0

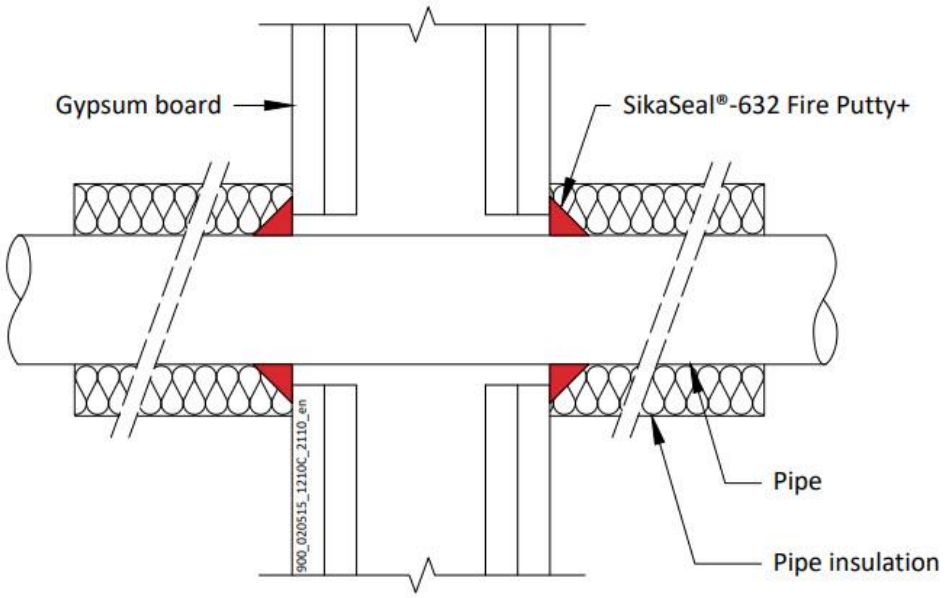

ALUPEX Pipes - E 120, EI 90 C/C
Pipe Wall Thickness - mm
Pipe Diameter - mm
12.0
10.0
8.0
6.0
4.0
2.0
0.0
0
5
10
15
20
25
20, 10.0
16, 8.0
16, 2.0
20, 2.0


Copper Pipes- E120, EI 60 C/C
Pipe Wall Thickness - mm
Pipe Diameter - mm
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
0
2
4
6
8
10
12
14
12, 6.0
6.0, 3.0
6.0, 0.6
12, 0.6

A.1.5 Double sided penetration seal with insulated metallic pipes, Local Interrupted (LI)

Penetration Seal: Metallic pipes insulated with minimum 80 kg/m^3 density mineral wool insulation, Local Interrupted (LI), penetrating through a flexible or rigid wall construction, fitted at any position within the aperture, sealed with a 15mm diameter cord of SikaSeal-632 Fire Putty+ on both sides of the wall. Maximum annular space 10 mm (A1) and minimum separation between penetration seals 30 mm (A2).

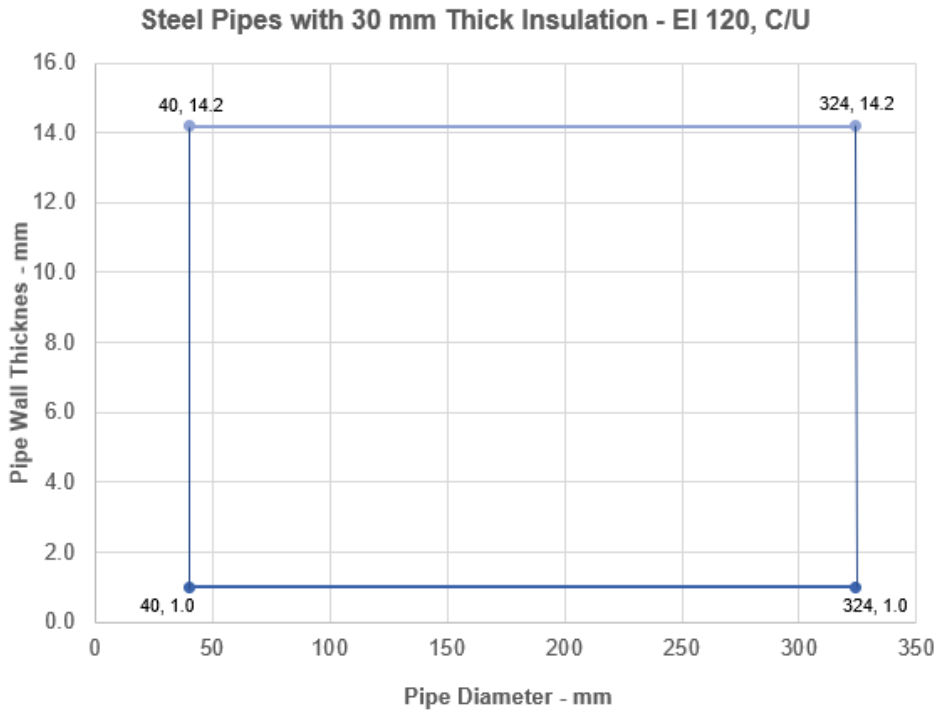
Construction details:

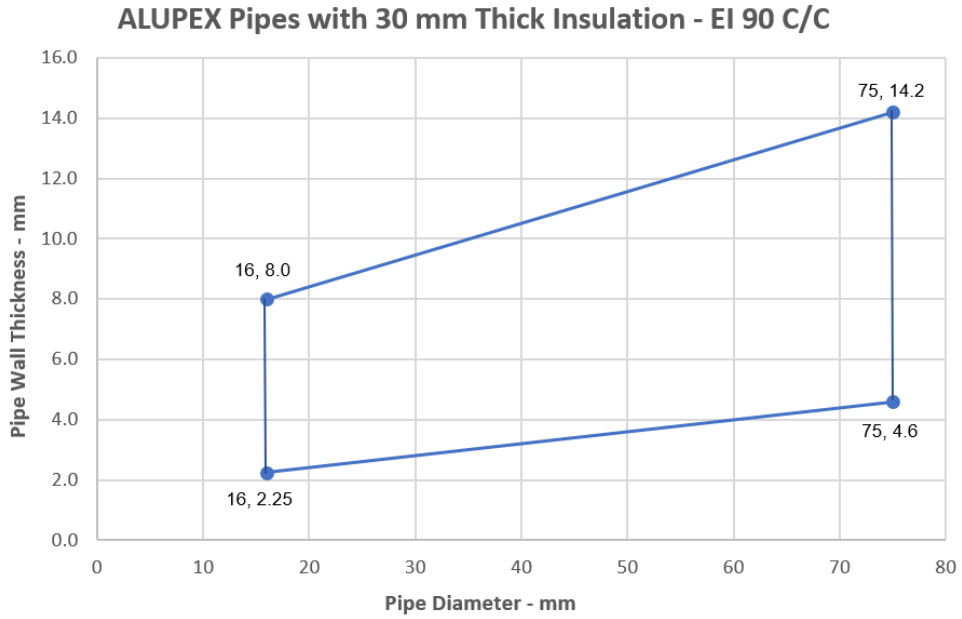


A.1.5.1

Services	Insulation	Classification
Mild or stainless steel pipe, with minimum 80 kg/m^3 density mineral wool insulation		
Maximum 40 mm diameter*	Minimum 20 mm thick insulation, 500 mm long butted up to the wall on both faces	**EI 120 C/U**
40-324 mm diameter*	Minimum 30 mm thick insulation, 500 mm long butted up to the wall on both faces	**EI 120 C/U**
Copper or steel pipe with minimum 80 kg/m^3 density mineral wool insulation		
Maximum 54 mm diameter/1.2-14.2 mm wall	Minimum 20 mm thick insulation, 500 mm long butted up to the wall on both faces	**E 90, EI 60 C/C**
ALUPEX pipe with minimum 80 kg/m^3 density mineral wool insulation		
Maximum 16 mm diameter*	Minimum 20 mm thick insulation, 500 mm long butted up to the wall on both faces	**EI 90 C/C**
Maximum 75 mm diameter*	Minimum 30 mm thick insulation, 500 mm long butted up to the wall on both faces	**EI 90 C/C**

*See below graphs for interpolation pipe sizes

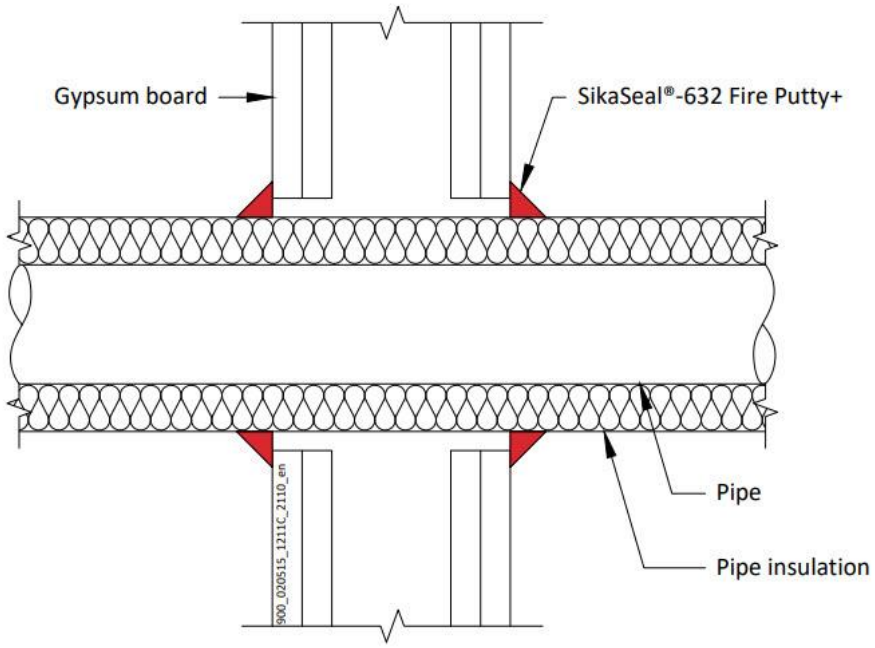

Steel Pipes with 30 mm Thick Insulation - EI 120, C/U
Pipe Wall Thicknes - mm
Pipe Diameter - mm
40, 14.2
324, 14.2
40, 1.0
324, 1.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
0
50
100
150
200
250
300
350


ALUPEX Pipes with 30 mm Thick Insulation - EI 90 C/C
Pipe Wall Thickness - mm
Pipe Diameter - mm
75, 14.2
16, 8.0
75, 4.6
16, 2.25
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
0
10
20
30
40
50
60
70
80

A.1.6 Double sided penetration seal with insulated metallic pipes, Continuous Sustained (CS)

Penetration Seal: Metallic pipes insulated with minimum 80 kg/m^3 density mineral wool insulation, Continuous Sustained (CS), penetrating through a flexible or rigid wall construction, fitted at any position within the aperture, sealed with a 15mm diameter cord of SikaSeal-632 Fire Putty+ on both sides of the wall. Maximum annular space 10 mm (A1) and minimum separation between penetration seals 30 mm (A2).

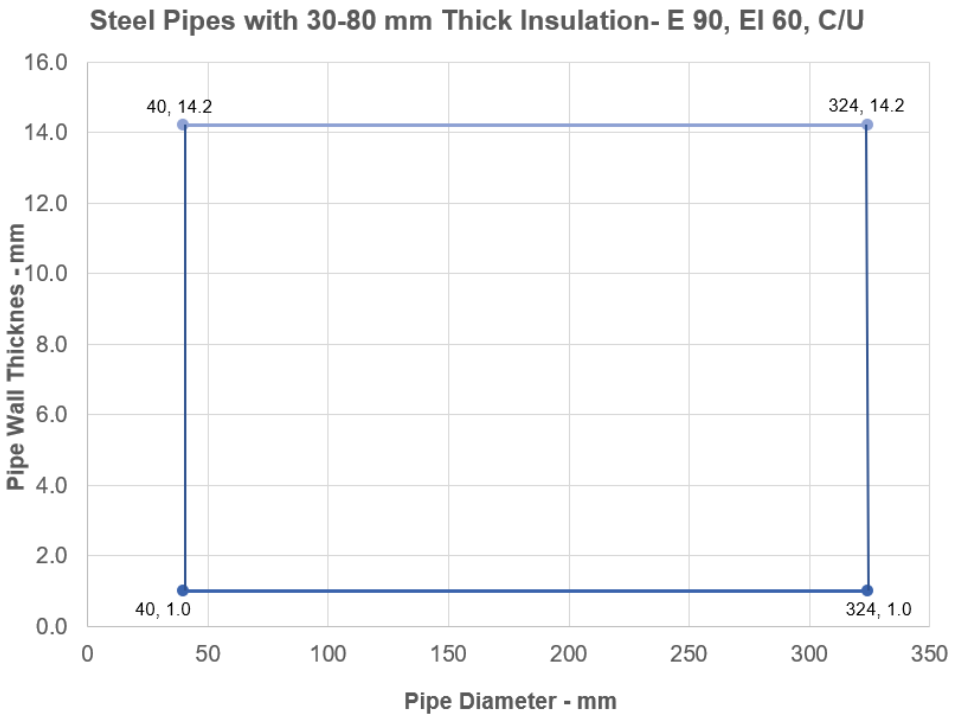
Construction details:

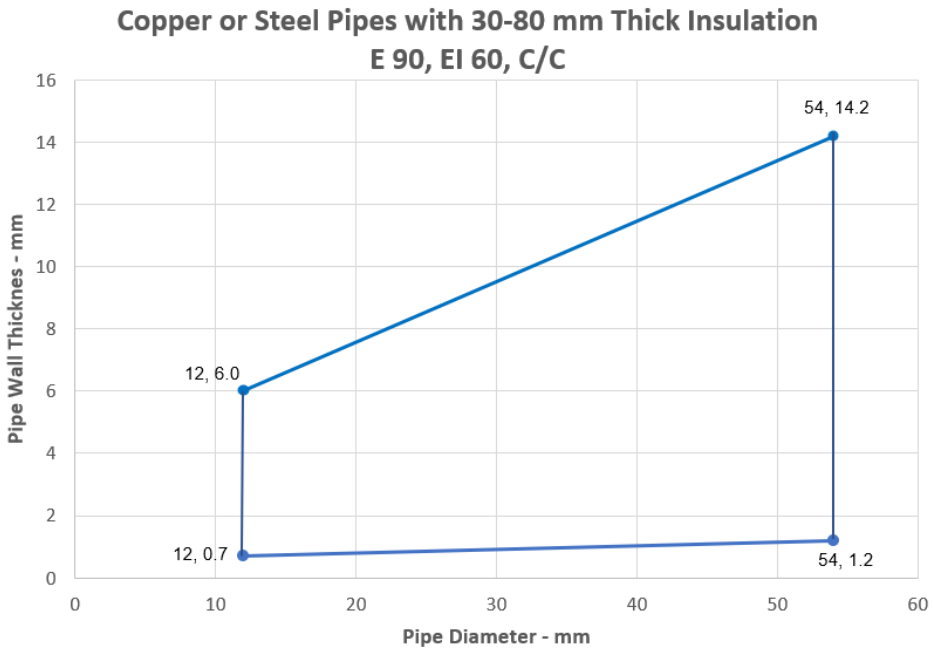


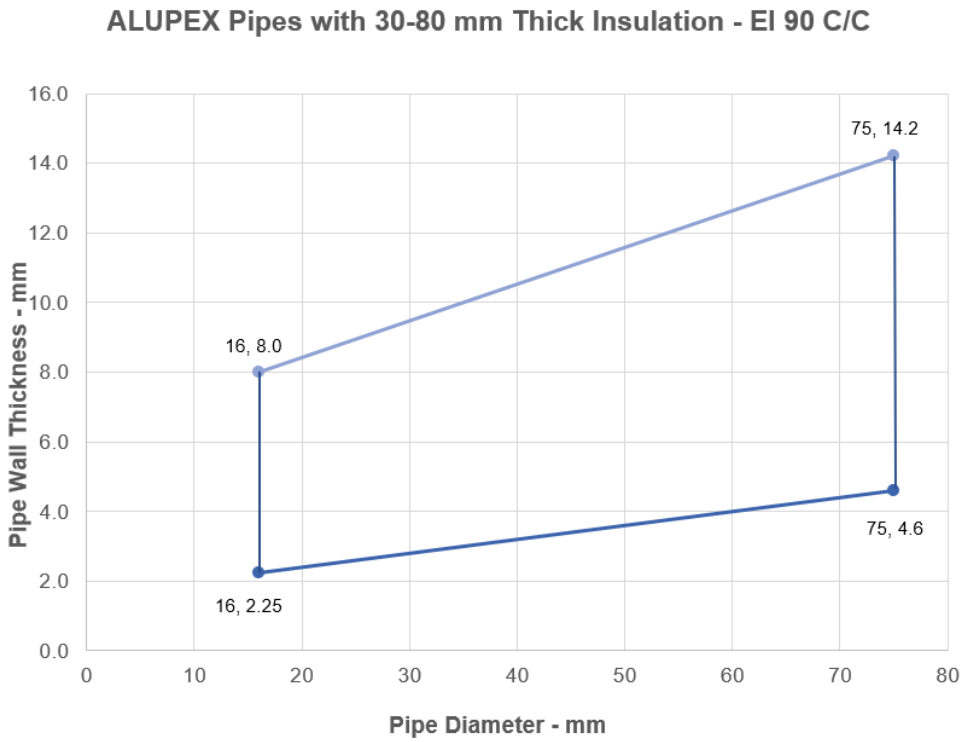
A.1.6.1

Services	Insulation	Classification
Mild or stainless steel pipe, with minimum 80 kg/m^3 density mineral wool insulation		
Maximum 40 mm diameter*	20 mm thick	**EI 120 C/U**
40-324 mm diameter*	30-80 mm thick	**E 90, EI 60 C/U**
Copper or steel pipe with minimum 80 kg/m^3 density mineral wool insulation		
Maximum 12 mm diameter/0.7-6.0 mm wall*	20 mm thick	**E90, EI 60 C/C**
Maximum 54 mm diameter/1.2-14.2 mm wall,	30-80 mm thick	**E 90, EI 60 C/C**
ALUPEX pipe with minimum 80 kg/m^3 density mineral wool insulation		
Maximum 16 mm diameter*	20 mm thick	**EI 90 C/C**
Maximum 75 mm diameter*	30-80 mm thick	**EI 90 C/C**

*See below graphs for interpolation pipe sizes


Steel Pipes with 30-80 mm Thick Insulation- E 90, EI 60, C/U
Pipe Wall Thicknes - mm
Pipe Diameter - mm
40, 14.2
324, 14.2
40, 1.0
324, 1.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
0
50
100
150
200
250
300
350


Copper or Steel Pipes with 30-80 mm Thick Insulation
E 90, EI 60, C/C
Pipe Wall Thicknes - mm
Pipe Diameter - mm
54, 14.2
12, 6.0
12, 0.7
54, 1.2
16
14
12
10
8
6
4
2
0
0
10
20
30
40
50
60

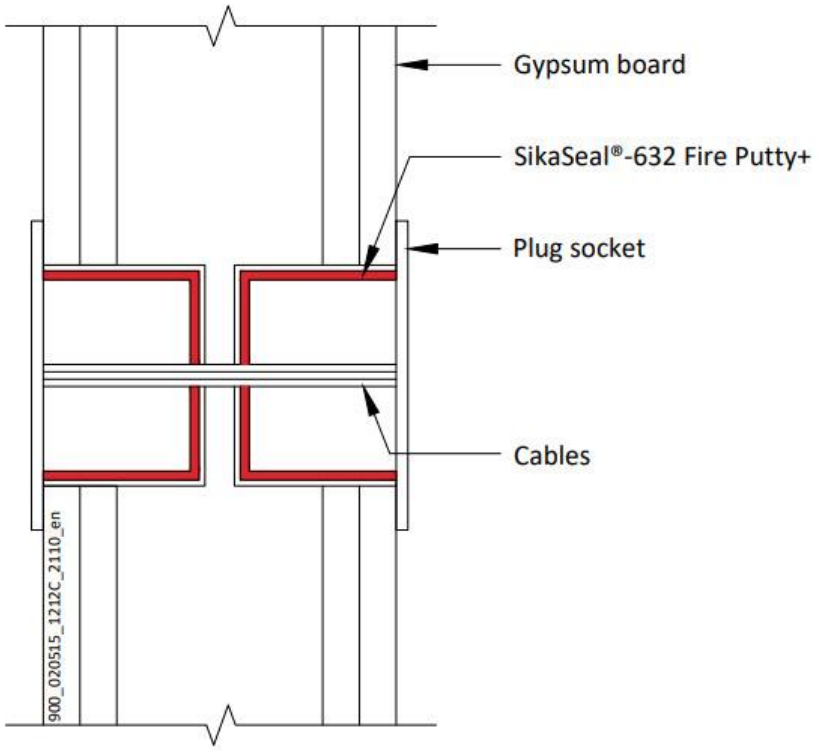

ALUPEX Pipes with 30-80 mm Thick Insulation - EI 90 C/C
Pipe Wall Thickness - mm
Pipe Diameter - mm
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
0
10
20
30
40
50
60
70
80
75, 14.2
16, 8.0
75, 4.6
16, 2.25

A.2 Flexible wall constructions with wall thickness of minimum 120 mm

A.2.1 Cable penetration seals with 4 mm thick SikaSeal-632 Fire Putty+ in socket box

Penetration Seal: Socket boxes with SikaSeal-632 Fire Putty+ wrapped around the cable protrusion from the socket box.

Construction details:



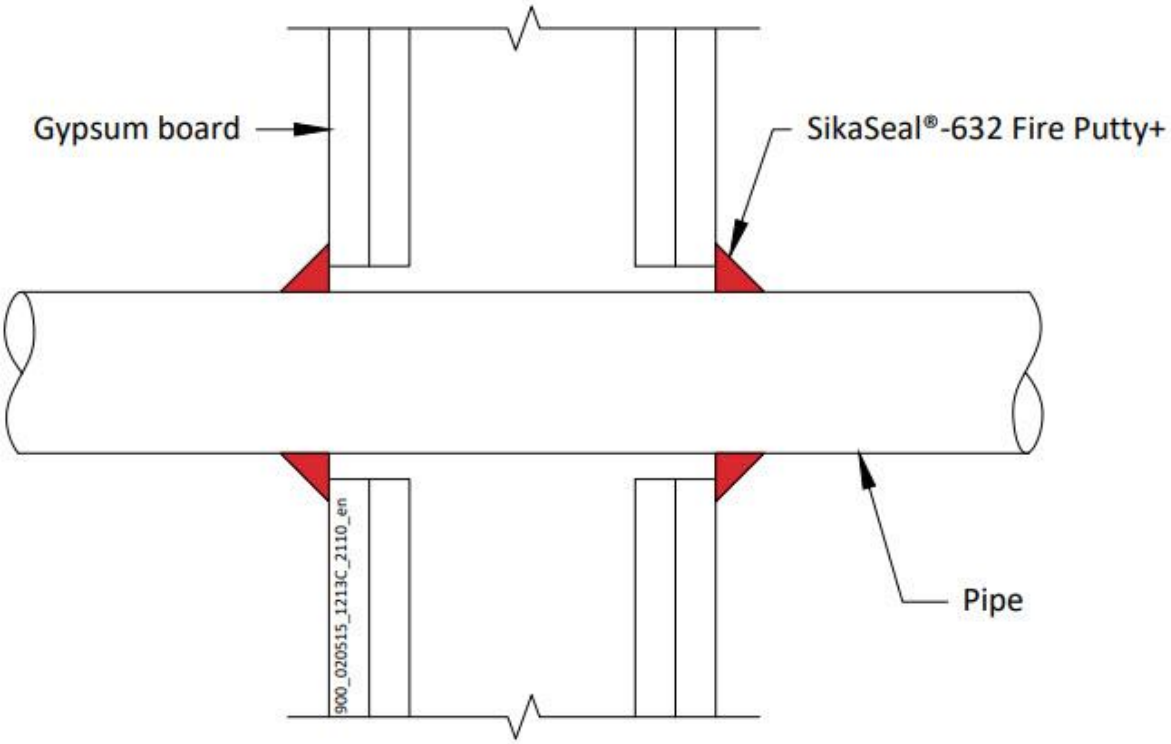
A.2.1.1 Double side penetration seal with cables in socket boxes

Services	Socket box	SikaSeal-632 Fire Putty+	Position	Aperture mm	Classification
Cables up to 14 mm diameter	UK standard double socket box, maximum 130mm wide x 70mm high x 48mm deep, each with a 25mm wide x 14mm high knock out section centrally located at the bottom back angle of the box to accept the cables	Interior of box fully lined with pad	Back to back – 1 fitted to each face, or separated	Maximum 135 wide x 72 High	**EI 120**
2.5 mm twin and earth cables					

A.2.2 Double sided penetration seal with metallic pipes

Penetration Seal: Metallic pipes penetrating through a flexible or rigid wall construction and fitted at any position within the aperture, sealed with a 15mm diameter cord of SikaSeal-632 Fire Putty+ on both sides of the wall. Maximum annular space 10 mm (A1) and minimum separation between penetration seals 30 mm (A2).

Construction details:



A.2.2.1

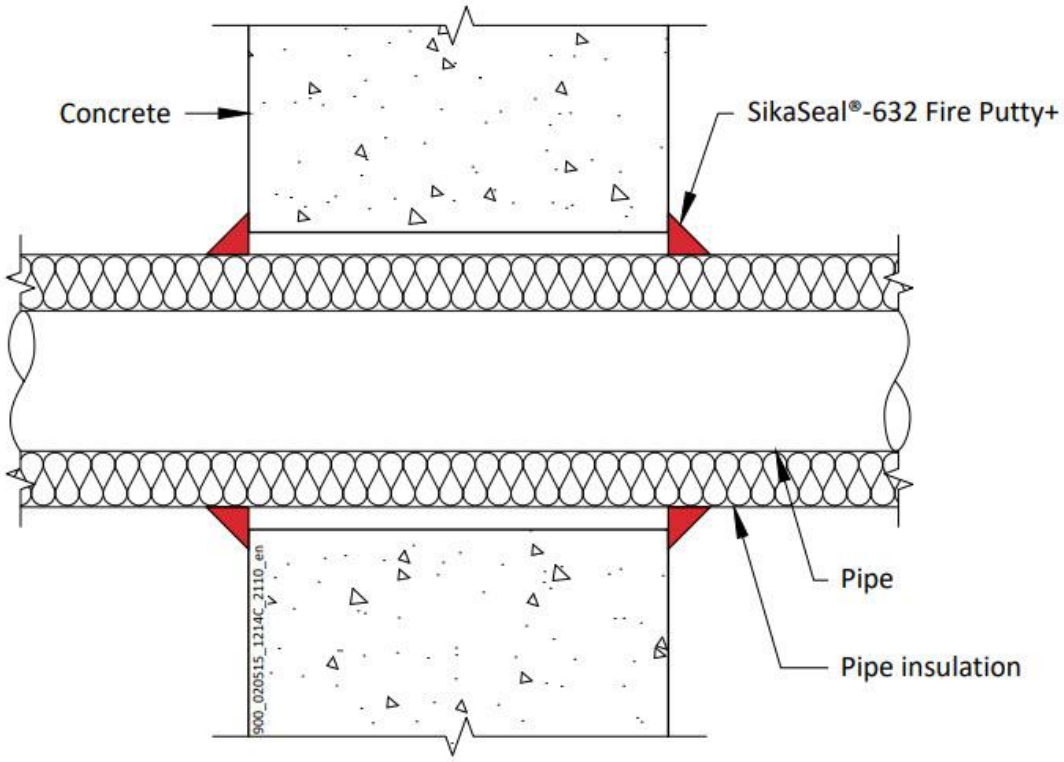
Services	Insulation	Classification
Mild or stainless steel pipe		
Maximum 324 mm diameter/6.35-14.2 mm wall	None needed	**E 90, EI 20 C/U**
ALUPEX pipe		
Maximum 75 mm diameter/4.6-14.2 mm wall	None needed	**EI 90 C/C**
Copper or steel pipe		
Maximum 54 mm diameter/1.2-14.2 mm wall	None needed	**E 90, EI 15 C/C**

A.3 Rigid wall constructions with wall thickness of minimum 150 mm

A.3.1 Double sided penetration seal with insulated metallic pipes, Continuous Sustained (CS)

Penetration Seal: Metallic pipes insulated with minimum 80 kg/m^3 density mineral wool insulation, Continuous Sustained (CS), penetrating through a rigid wall construction, fitted at any position within the aperture, sealed with a 15mm diameter cord of SikaSeal-632 Fire Putty+ on both sides of the wall. Maximum annular space 10 mm (A1) and minimum separation between penetration seals 30 mm (A2).

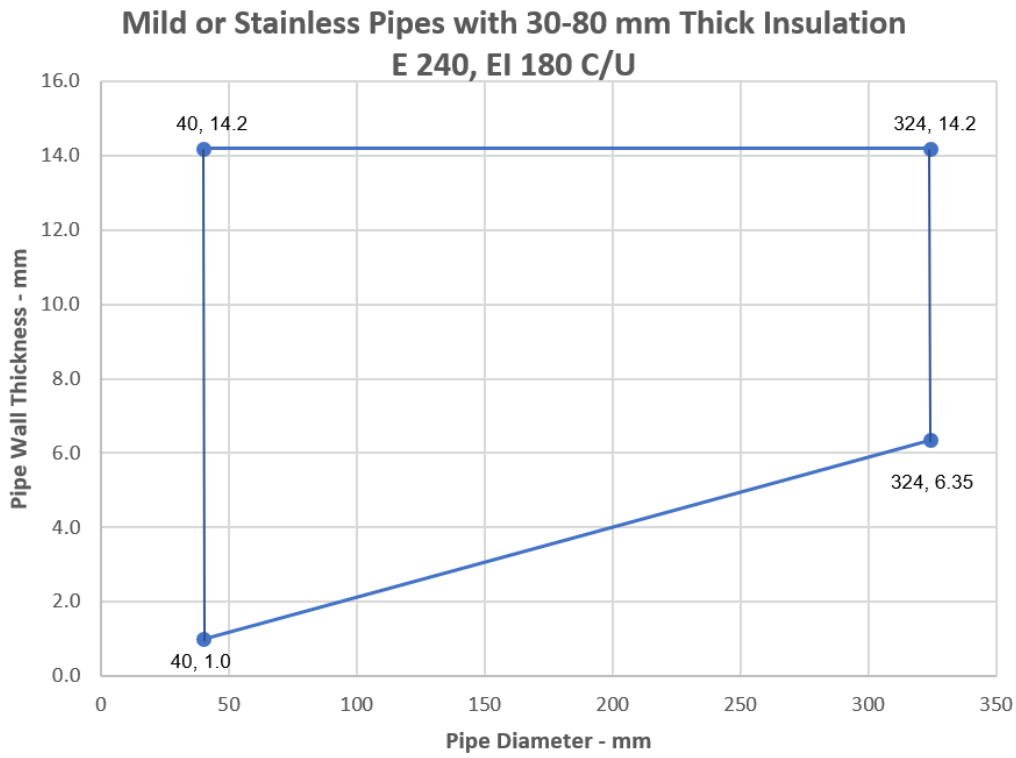
Construction details:

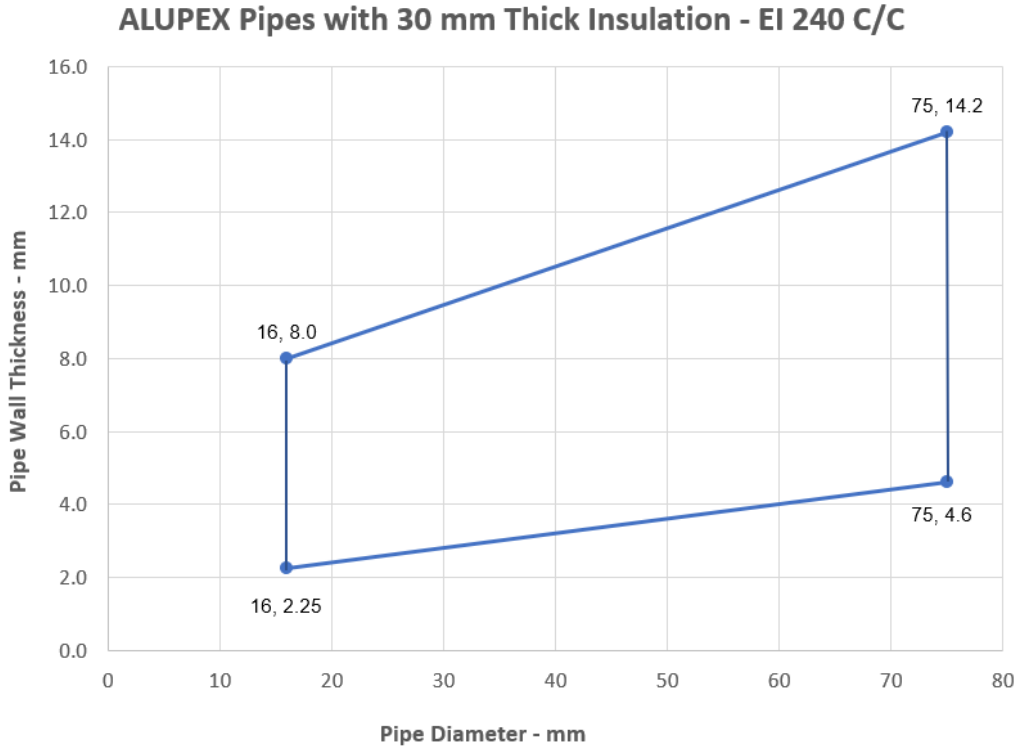


A.3.1.1

Services	Insulation	Classification
Mild or stainless steel pipe, with minimum 80 kg/m^3 density mineral wool insulation		
Maximum 40 mm diameter*	20 mm thick	**EI 120 C/U**
Maximum 324 mm diameter*	30-80 mm thick	**E 240, EI 180 C/U**
Copper or steel pipe with minimum 80 kg/m^3 density mineral wool insulation		
Maximum 54 mm diameter/1.2-14.2 mm wall	20 mm thick	**E 240, EI 120 C/C**
ALUPEX pipe with minimum 80 kg/m^3 density mineral wool insulation		
Maximum 16 mm diameter*	20 mm thick	**EI 240 C/C**
Maximum 75 mm diameter*	30 mm thick	**EI 240 C/C**

*See below graphs for interpolation pipe sizes


Mild or Stainless Pipes with 30-80 mm Thick Insulation
E 240, EI 180 C/U
Pipe Wall Thickness - mm
Pipe Diameter - mm
40, 14.2
324, 14.2
324, 6.35
40, 1.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
0
50
100
150
200
250
300
350

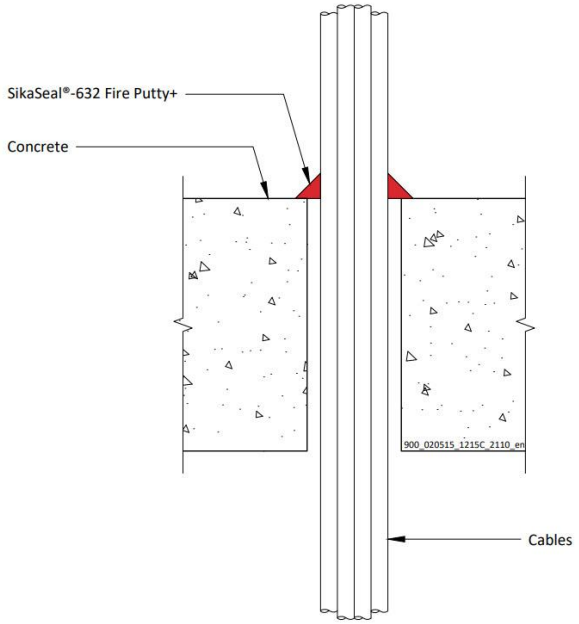

ALUPEX Pipes with 30 mm Thick Insulation - EI 240 C/C
Pipe Wall Thickness - mm
Pipe Diameter - mm
75, 14.2
16, 8.0
75, 4.6
16, 2.25
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
0
10
20
30
40
50
60
70
80

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

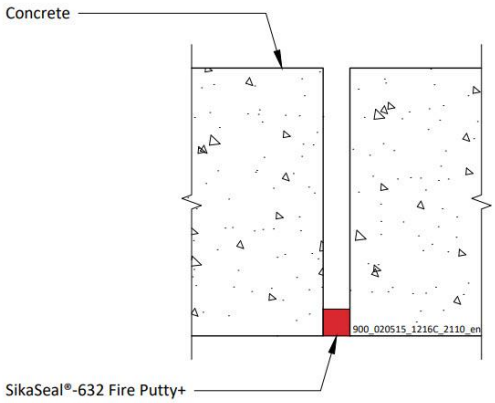
A.4.1 Single sided penetration seal with cables

Penetration Seal: Cables (single or bundled up to 50 mm Ø) penetrating through a rigid floor construction and fitted at any position within the aperture, sealed with a 15mm diameter cord of SikaSeal-632 Fire Putty+ on the top face of the floor. Maximum annular space 10 mm (A1) and minimum separation between penetration seals 30 mm (A2). When incorporating blank penetration seals, the aperture is sealed with 15mm wide by 15mm thick cord of SikaSeal-632 Fire Putty+, applied flush with the bottom face of the floor.

Construction details:



Construction details:



A.4.1.1

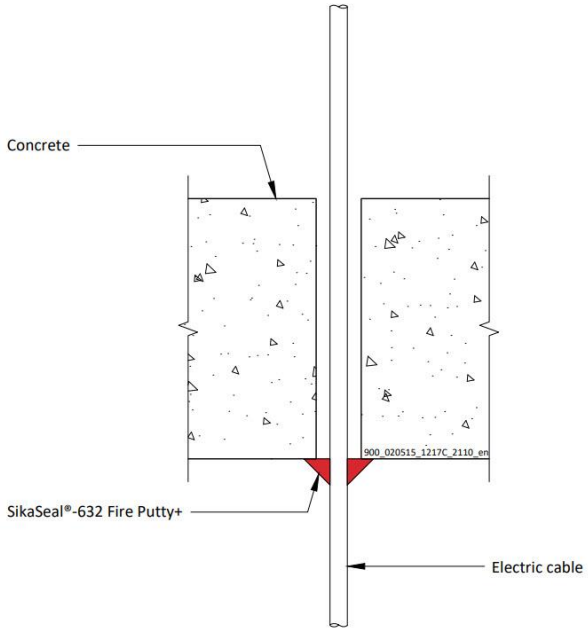
Services	Classification
None (blank)	**E 120, EI 30**
Cables up to 21 mm diameter in tied bundles up to 50 mm diameter*	**E 120, EI 60**
Cables up to 21 mm diameter*	**EI 120**
Cables 22-50 mm diameter*	**E 120, EI 90**
Cables 51-80 mm diameter*	**E 120, EI 60**
Single ‘A1’ type cable*	**EI 240**
Single ‘C3’ type cable*	**EI 240**
Single ‘E’ type cable*	**EI 120**
Single ‘D1’ type cable*	**EI 120**
Single ‘D2’ type cable*	**EI 120**
Single ‘D3’ type cable*	**E 240, EI 60**

* Cable specification from EN 1366-3 standard cable configuration

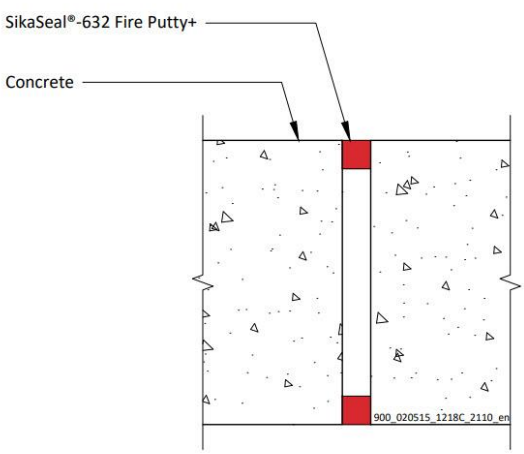
A.4.2 Single sided penetration seal with cables

Penetration Seal: Cables (single or bundled up to 75 mm Ø) penetrating through a rigid floor construction and fitted at any position within the aperture, sealed with a 15mm diameter cord of SikaSeal-632 Fire Putty+ on the bottom face of the floor. Maximum annular space 10 mm (A1) and minimum separation between penetration seals 30 mm (A2). When incorporating blank penetration seals, the aperture is sealed with 15mm wide by 15mm thick cord of SikaSeal-632 Fire Putty+, applied flush with both faces of the floor.

Construction details:



Construction details:



A.4.2.1

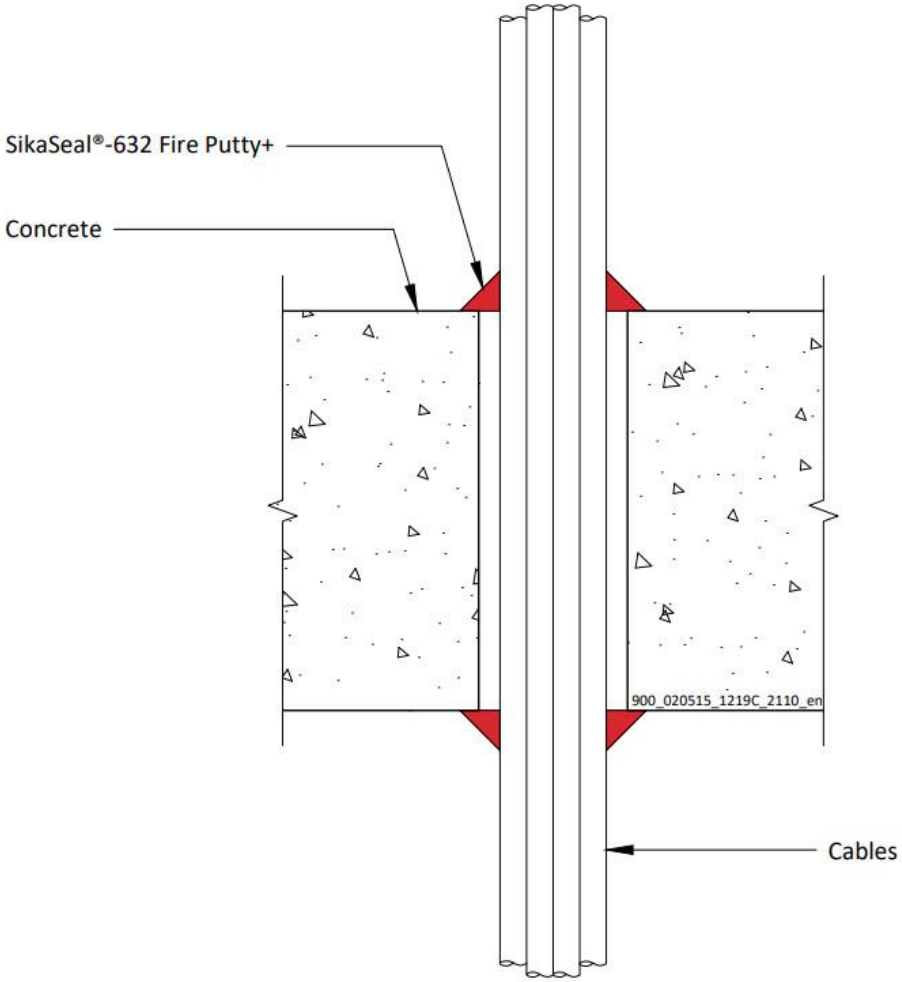
Services	Seal size	Classification
None (blank)	15mm deep	**EI 120**
Cables up to 21 mm diameter in tied bundles up to 75mm diameter*	15 mm diameter cord	**E 60, EI 45**
Cables up to 21 mm diameter*		**E 120, EI 60**
Cables 22-80 mm diameter*		**E 90, EI 45**

* Cable specification from EN 1366-3 standard cable configuration

A.4.3 Double sided penetration seal with cables

Penetration Seal: Cables (single or bundled up to 50 mm Ø) penetrating through a rigid floor construction and fitted at any position within the aperture, sealed with a 15mm diameter cord of SikaSeal-632 Fire Putty+ on both sides of the floor. Maximum annular space 10 mm (A1) and minimum separation between penetration seals 30 mm (A2).

Construction details:



A.4.3.1

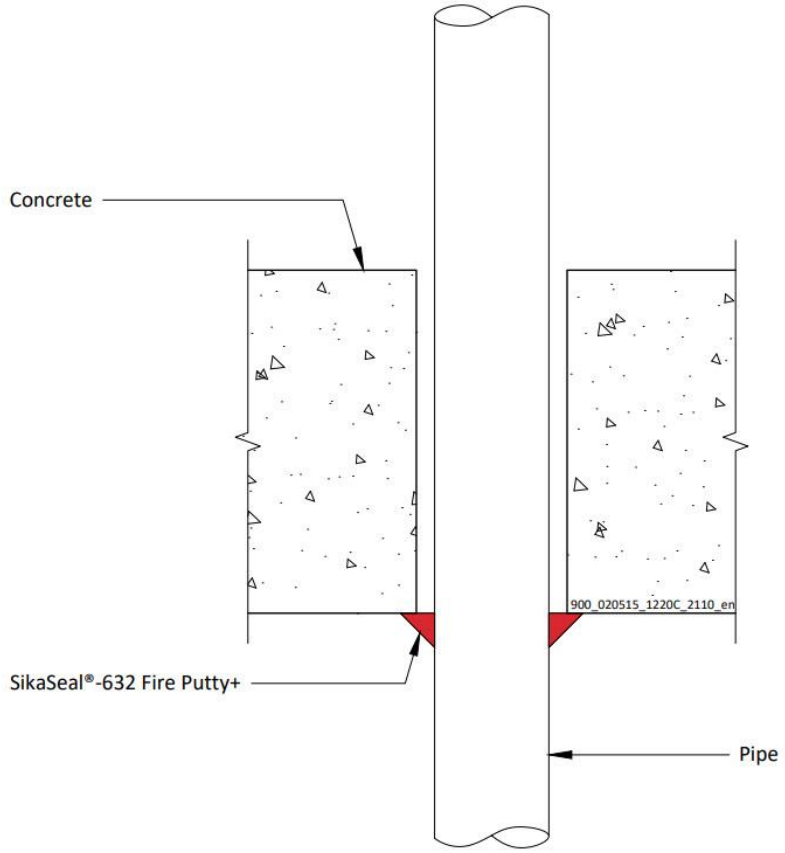
Services	Seal size	Classification
Cables up to 21 mm diameter in tied bundles up to 50 mm diameter*	15 mm diameter cord	**EI 240**

* Cable specification from EN 1366-3 standard cable configuration

A.4.4 Single sided penetration seal with metallic pipes

Penetration Seal: Metallic pipes penetrating through a rigid floor construction and fitted at any position within the aperture, sealed with a 15mm diameter cord of SikaSeal-632 Fire Putty+ on the bottom face of the floor. Maximum annular space 10 mm (A1) and minimum separation between penetration seals 30 mm (A2).

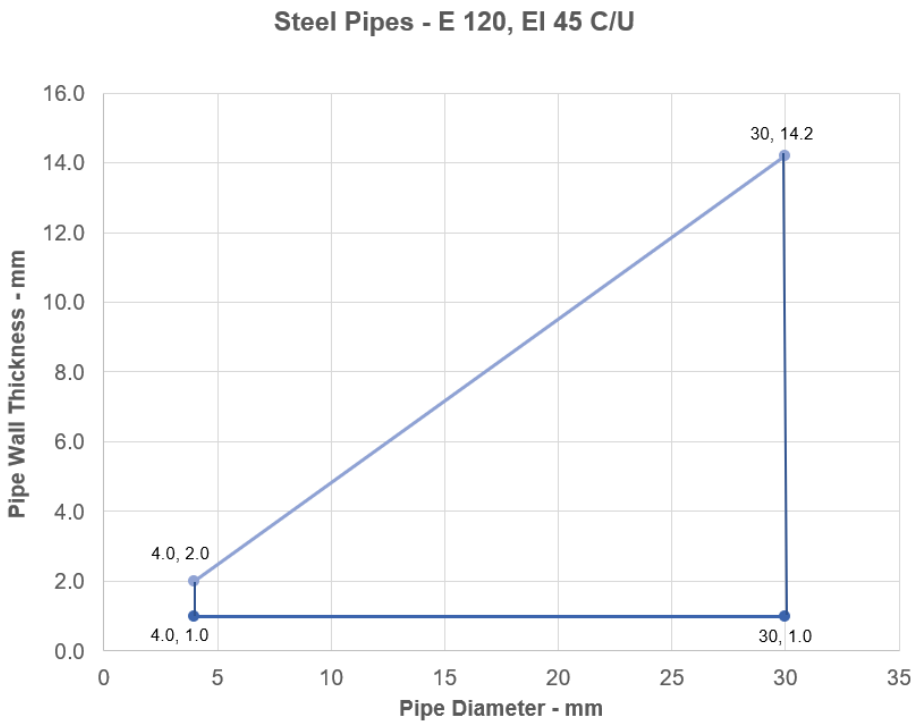
Construction details:

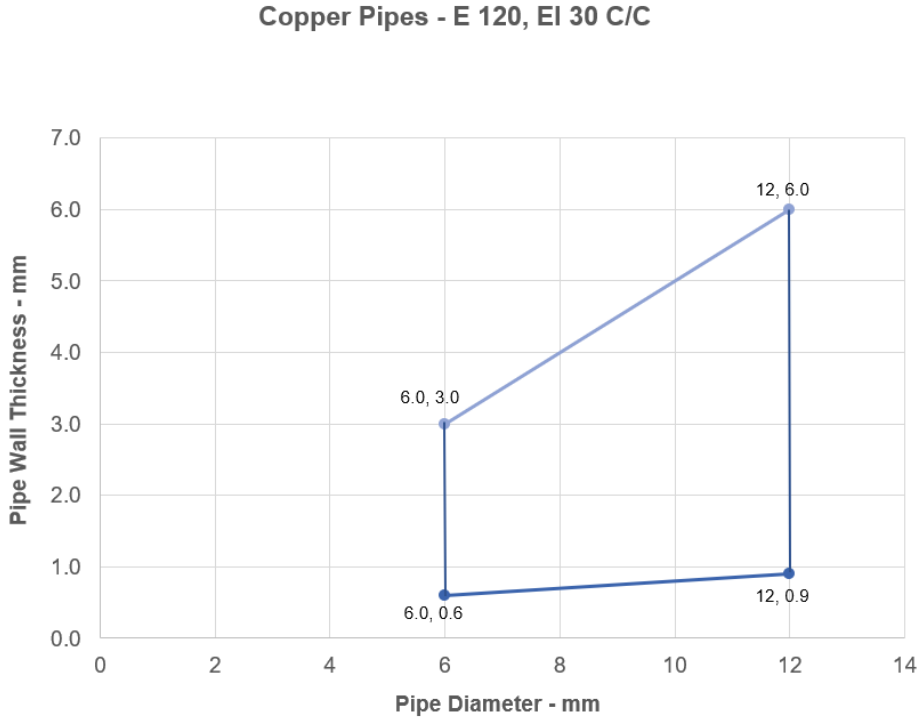


A.4.4.1

Services	Insulation	Classification
Mild or stainless steel pipe		
4 mm diameter*	None needed	**EI 120 C/U**
5-30 mm diameter*	None needed	**E 120, EI 45 C/U**
Copper or steel pipe		
6 mm diameter*	None needed	**E 120, EI 90 C/C**
7-12 mm diameter*	None needed	**E 120, EI 30 C/C**

*See below graphs for interpolation pipe sizes

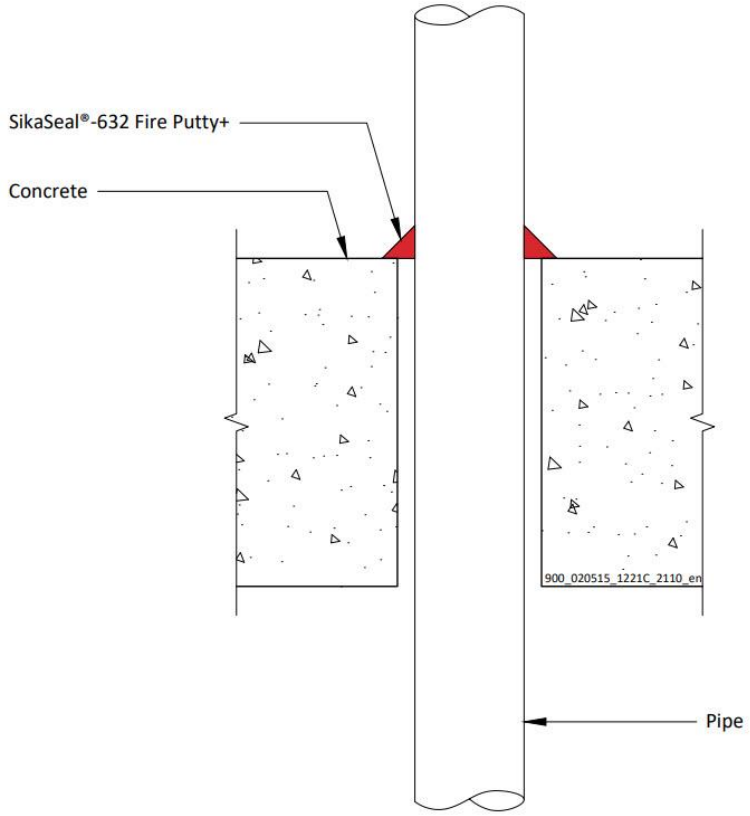

Steel Pipes - E 120, EI 45 C/U
Pipe Wall Thickness - mm
Pipe Diameter - mm
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
0
5
10
15
20
25
30
35
30, 14.2
4.0, 2.0
4.0, 1.0
30, 1.0


Copper Pipes - E 120, EI 30 C/C
Pipe Wall Thickness - mm
Pipe Diameter - mm
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
0
2
4
6
8
10
12
14
12, 6.0
6.0, 3.0
6.0, 0.6
12, 0.9

A.4.5 Single sided penetration seal with metallic pipes

Penetration Seal: Metallic pipes penetrating through a rigid floor construction and fitted at any position within the aperture, sealed with a 15mm diameter cord of SikaSeal-632 Fire Putty+ on the top face of the floor. Maximum annular space 10 mm (A1) and minimum separation between penetration seals 30 mm (A2).

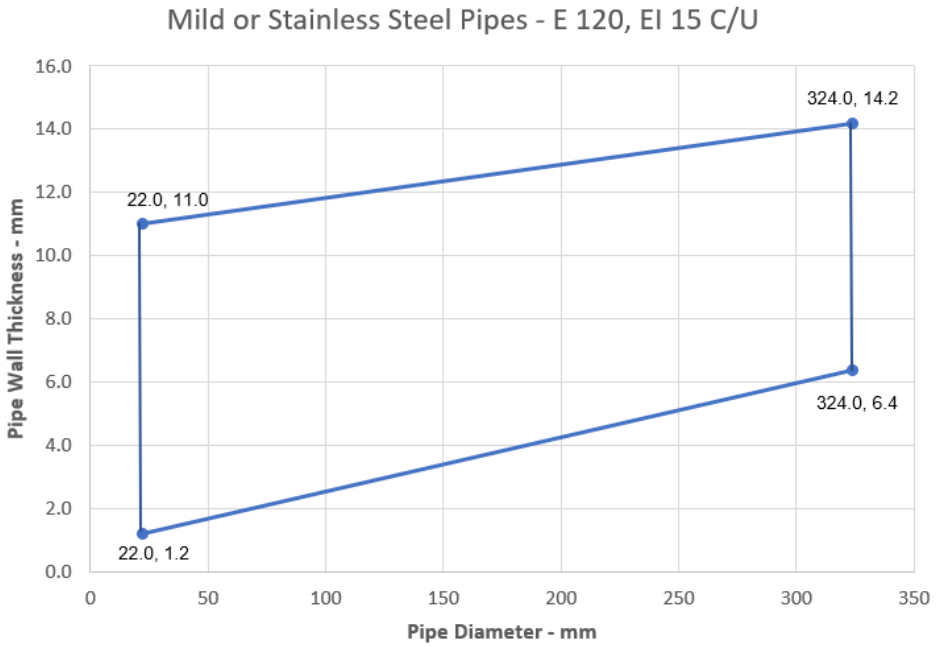
Construction details:

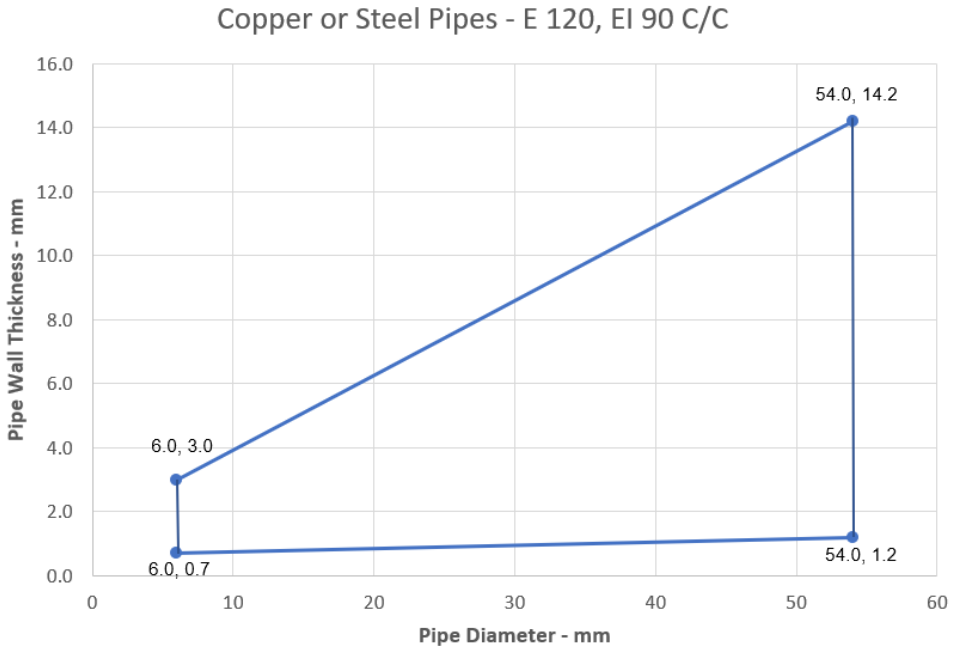


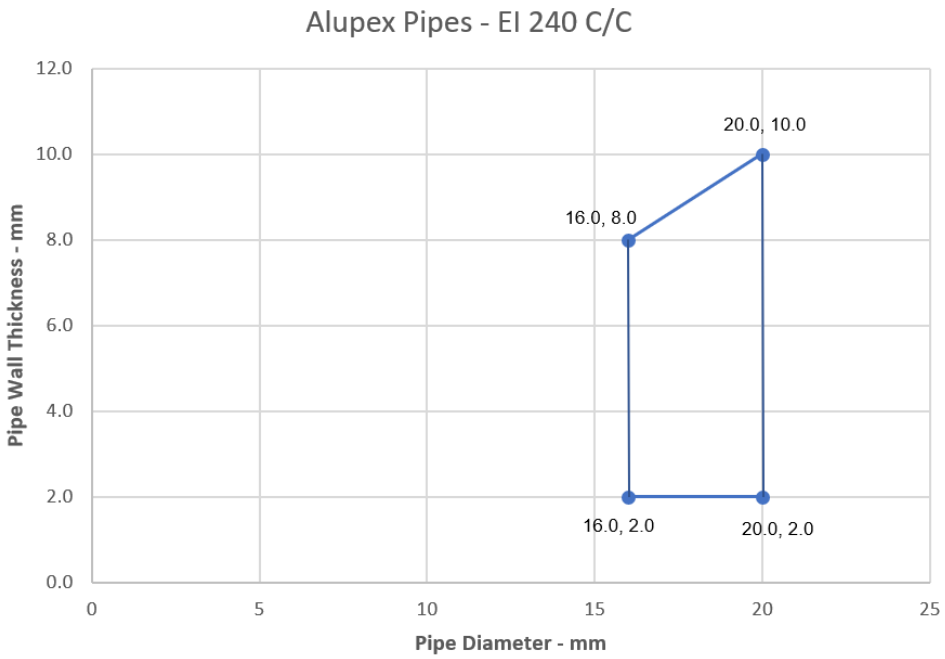
A.4.5.1

Services	Insulation	Classification
Mild or stainless steel pipe		
Maximum 22 mm diameter/1.2-11.0 mm wall*	None needed	**EI 120 C/U**
Maximum 324 mm diameter/6.35-14.2 mm wall*	None needed	**E 240, EI 15 C/U**
Copper or steel pipe		
6 mm diameter*	None needed	**EI 120 C/C**
7-10 mm diameter*	None needed	**E 120, EI 90 C/C**
Maximum 54 mm diameter/1.2-14.2 mm wall	None needed	**E 120 C/C**
ALUPEX pipe		
16-20 mm diameter*	None needed	**EI 240 C/C**
Maximum 75 mm diameter/4.6-14.2 mm wall	None needed	**E 45, EI 30 C/C**

*See below graphs for interpolation pipe sizes


Mild or Stainless Steel Pipes - E 120, EI 15 C/U
Pipe Wall Thickness - mm
Pipe Diameter - mm
324.0, 14.2
22.0, 11.0
324.0, 6.4
22.0, 1.2
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
0
50
100
150
200
250
300
350

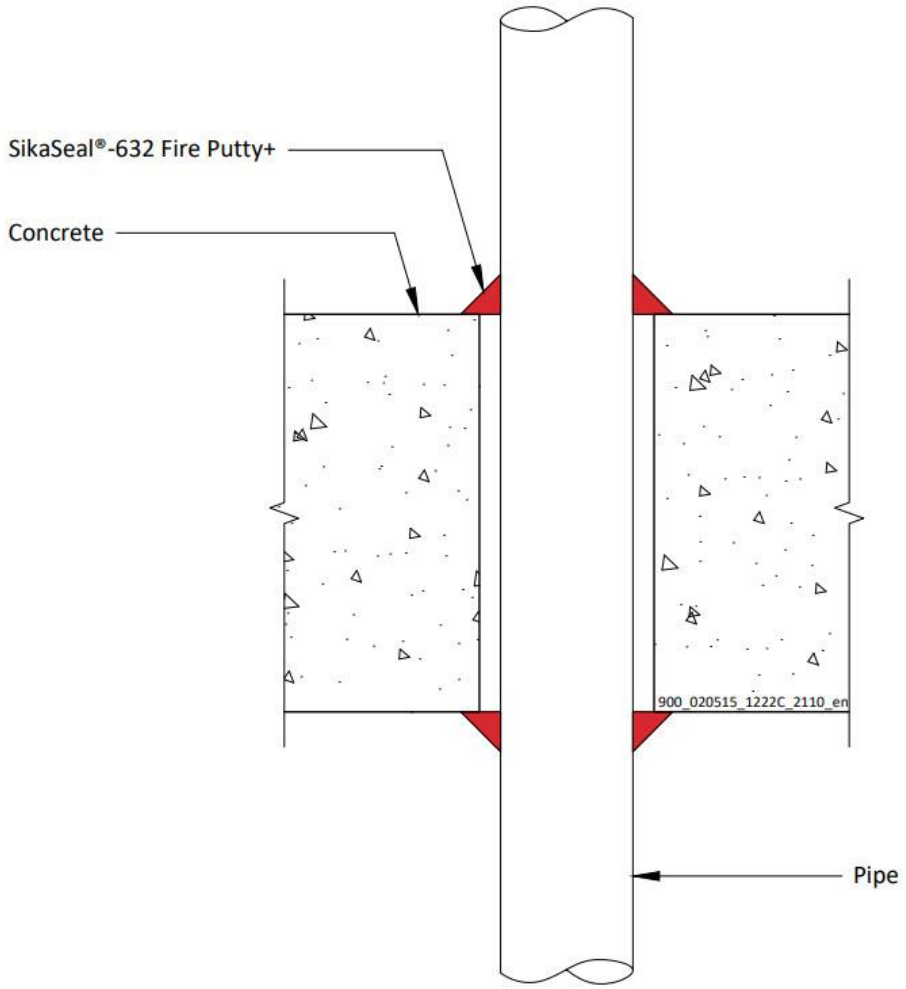

Copper or Steel Pipes - E 120, EI 90 C/C
Pipe Wall Thickness - mm
Pipe Diameter - mm
54.0, 14.2
6.0, 3.0
6.0, 0.7
54.0, 1.2
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
0
10
20
30
40
50
60


Alupex Pipes - EI 240 C/C
Pipe Wall Thickness - mm
Pipe Diameter - mm
12.0
10.0
8.0
6.0
4.0
2.0
0.0
0
5
10
15
20
25
20.0, 10.0
16.0, 8.0
16.0, 2.0
20.0, 2.0

A.4.6 Double sided penetration seal with metallic pipes

Penetration Seal: Metallic pipes penetrating through a rigid floor construction and fitted at any position within the aperture, sealed with a 15mm diameter cord of SikaSeal-632 Fire Putty+ on both sides of the floor. Maximum annular space 10 mm (A1) and minimum separation between penetration seals 30 mm (A2).

Construction details:



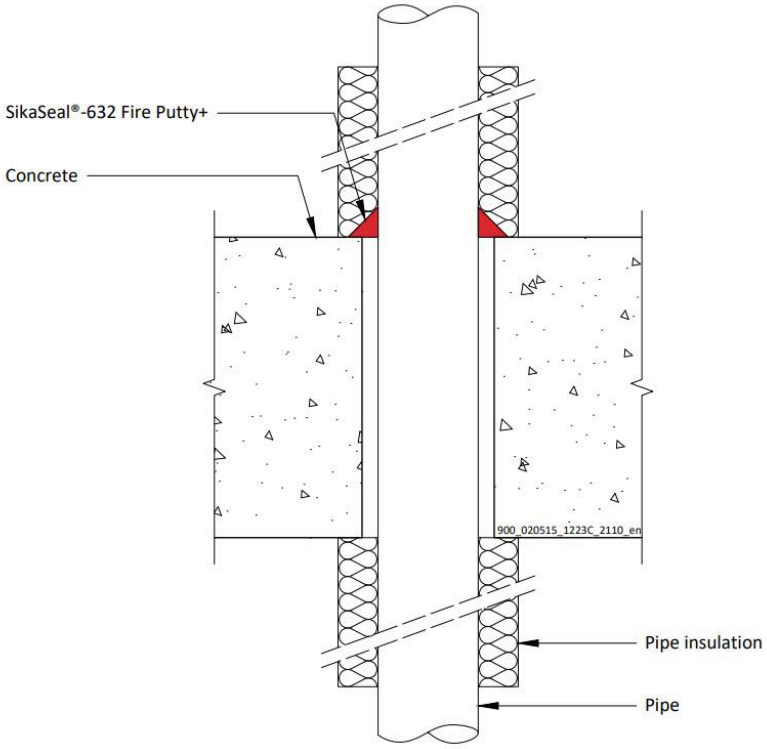
A.4.6.1

Services	Insulation	Classification
Copper or steel pipe		
Maximum 10 mm diameter/0.7-14.2 mm wall	None needed	**E 240, EI 180 C/C**

A.4.7 Single sided penetration seal with insulated metallic pipes, Local Interrupted (LI)

Penetration Seal: Metallic pipes insulated with minimum 80 kg/m^3 density mineral wool insulation, Local Interrupted (LI), penetrating through a rigid floor construction, fitted at any position within the aperture, sealed with a 15 mm diameter cord of SikaSeal-632 Fire Putty+ on the top face of the floor. Maximum annular space 10 mm (A1) and minimum separation between penetration seals 30 mm (A2).

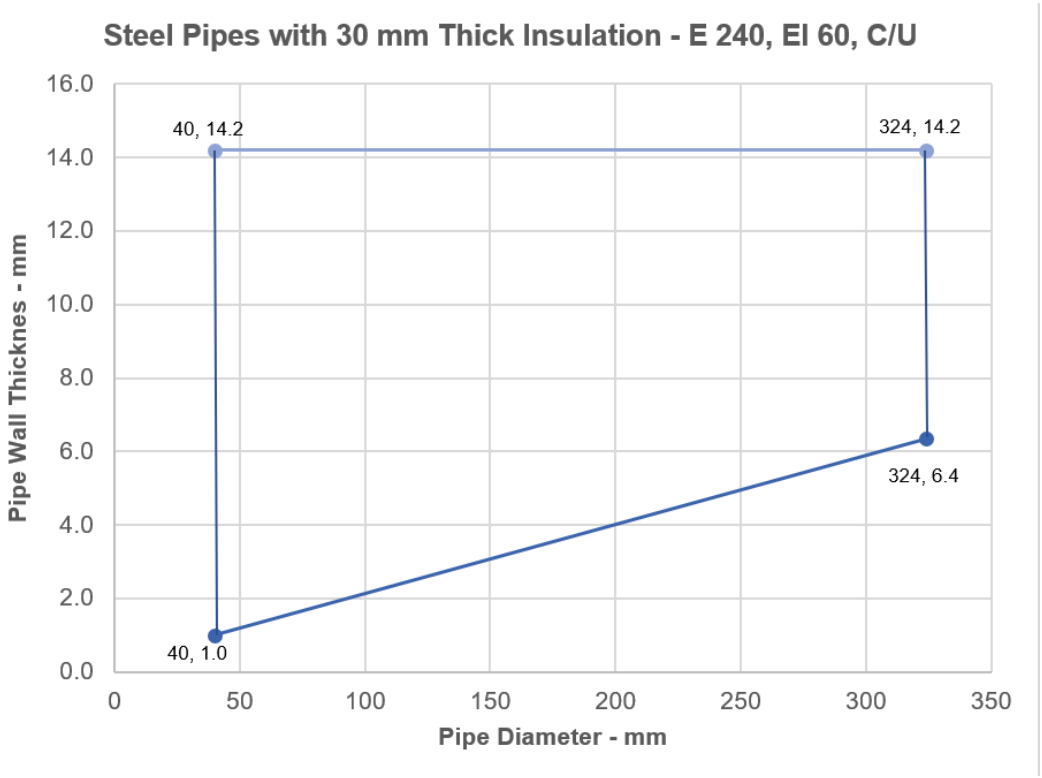
Construction details:

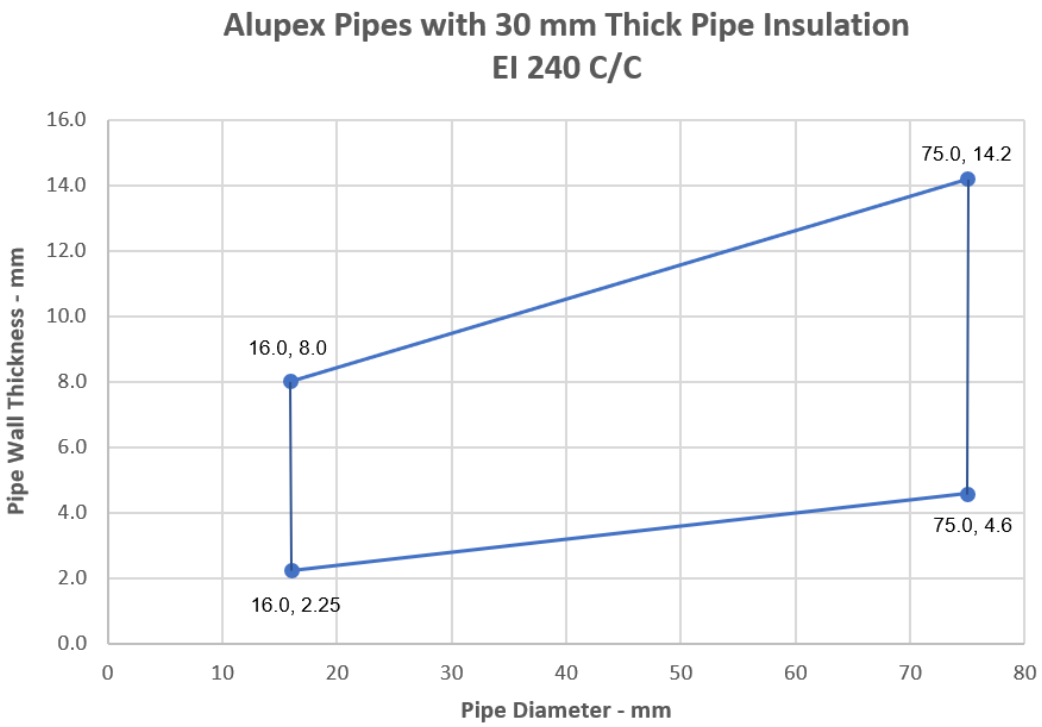


A.4.7.1 Single sided penetration seal with partially insulated metallic pipes

Services	Insulation	Classification
Mild or stainless steel pipe, with minimum 80 kg/m^3 density mineral wool insulation		
Maximum 40 mm diameter*	Minimum 20 mm thick insulation, 500 mm long butted up to each face of the floor	**EI 240 C/U**
41-324 mm diameter*	Minimum 30 mm thick insulation, 500 mm long butted up to each face of the floor	**E 240, EI 60 C/U**
ALUPEX pipe with minimum 80 kg/m^3 density mineral wool insulation		
Maximum 16 mm diameter/2.25-8.0 mm wall*	Minimum 20 mm thick insulation, 500 mm long butted up to each face of the floor	**EI 240 C/C**
Maximum 75 mm diameter/4.6-14.2 mm wall*	Minimum 30 mm thick insulation, 500 mm long butted up to each face of the floor	**EI 240 C/C**

*See below graphs for interpolation pipe sizes

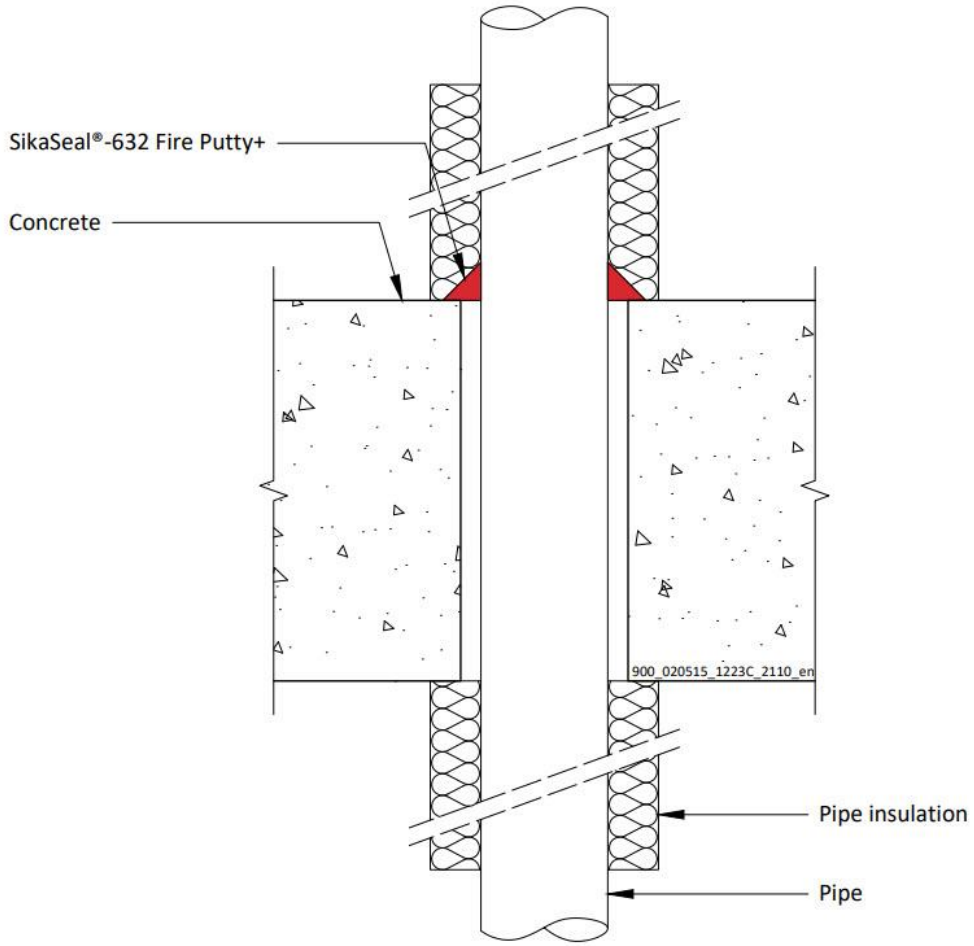

Steel Pipes with 30 mm Thick Insulation - E 240, EI 60, C/U
Pipe Wall Thicknes - mm
Pipe Diameter - mm
40, 14.2
324, 14.2
324, 6.4
40, 1.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
0
50
100
150
200
250
300
350


Alupex Pipes with 30 mm Thick Pipe Insulation
EI 240 C/C
Pipe Wall Thickness - mm
Pipe Diameter - mm
75.0, 14.2
16.0, 8.0
75.0, 4.6
16.0, 2.25
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
0
10
20
30
40
50
60
70
80

A.4.8 Single sided penetration seal with insulated metallic pipes, Local Interrupted (LI)

Penetration Seal: Metallic pipes insulated with minimum 75 kg/m^3 density glass or mineral wool insulation, Local Interrupted (LI), penetrating through a rigid floor construction, fitted at any position within the aperture, sealed with a 15 mm diameter cord of SikaSeal-632 Fire Putty+ on the top face of the floor. Maximum annular space 10 mm (A1) and minimum separation between penetration seals 30 mm (A2).

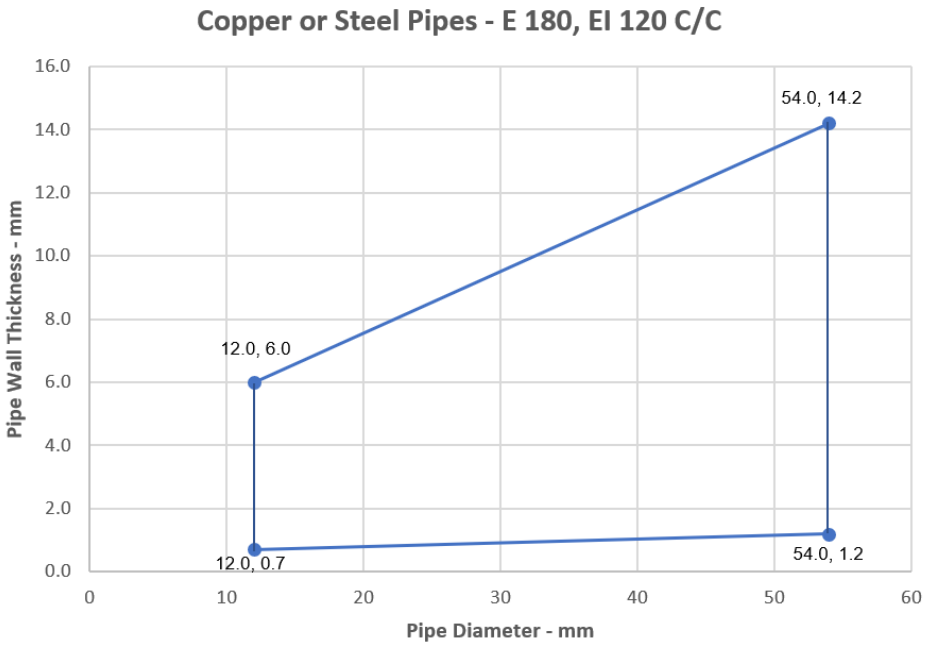
Construction details:



A.4.8.1

Services	Insulation	Classification
Copper or steel pipe with minimum 75 kg/m^3 density glass or mineral wool insulation		
Maximum 12 mm diameter/0.7-14.2 mm wall*	Minimum 20 mm thick insulation, 500 mm long butted up to each face of the floor	**EI 240 C/C**
Maximum 54 mm diameter/1.2-14.2 mm wall*		**E 180, EI 120 C/C**

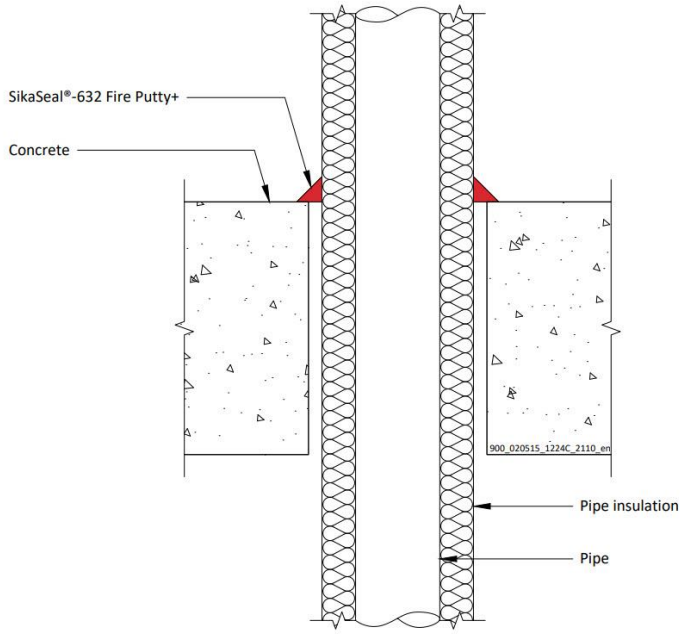
*See below graphs for interpolation pipe sizes


Copper or Steel Pipes - E 180, EI 120 C/C
Pipe Wall Thickness - mm
Pipe Diameter - mm
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
0
10
20
30
40
50
60
54.0, 14.2
12.0, 6.0
12.0, 0.7
54.0, 1.2

A.4.9 Single sided penetration seal with insulated metallic pipes, Continuous Sustained (CS)

Penetration Seal: Metallic pipes insulated with minimum 80 kg/m^3 density mineral wool insulation, Continuous Sustained (CS), penetrating through a rigid floor construction, fitted at any position within the aperture, sealed with a 15mm diameter cord of SikaSeal-632 Fire Putty+ on the top face of the floor. Maximum annular space 10 mm (A1) and minimum separation between penetration seals 30 mm (A2).

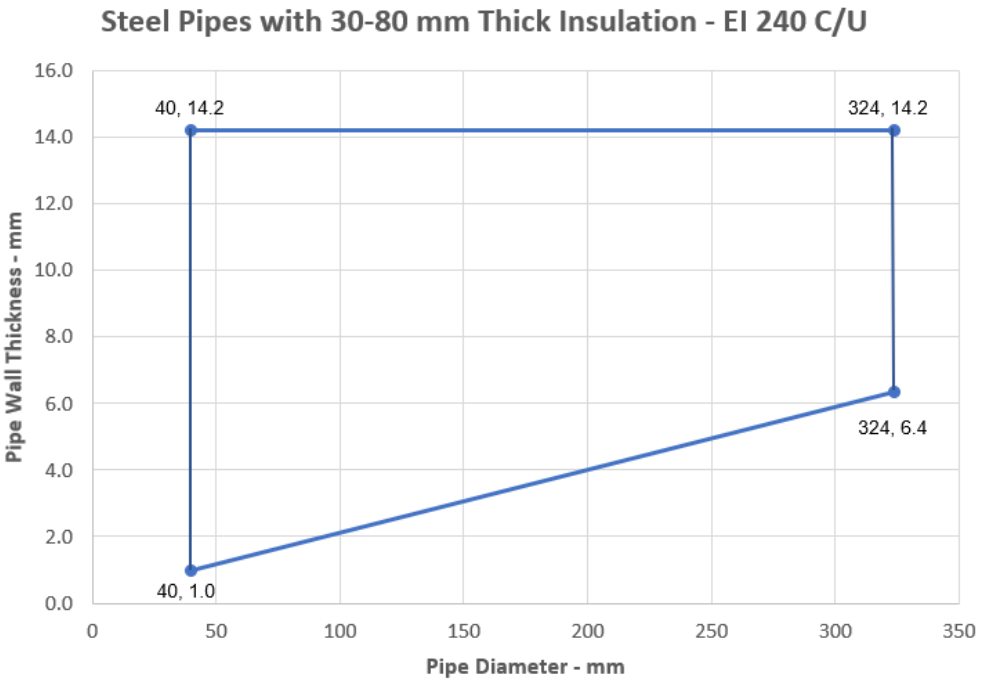
Construction details:

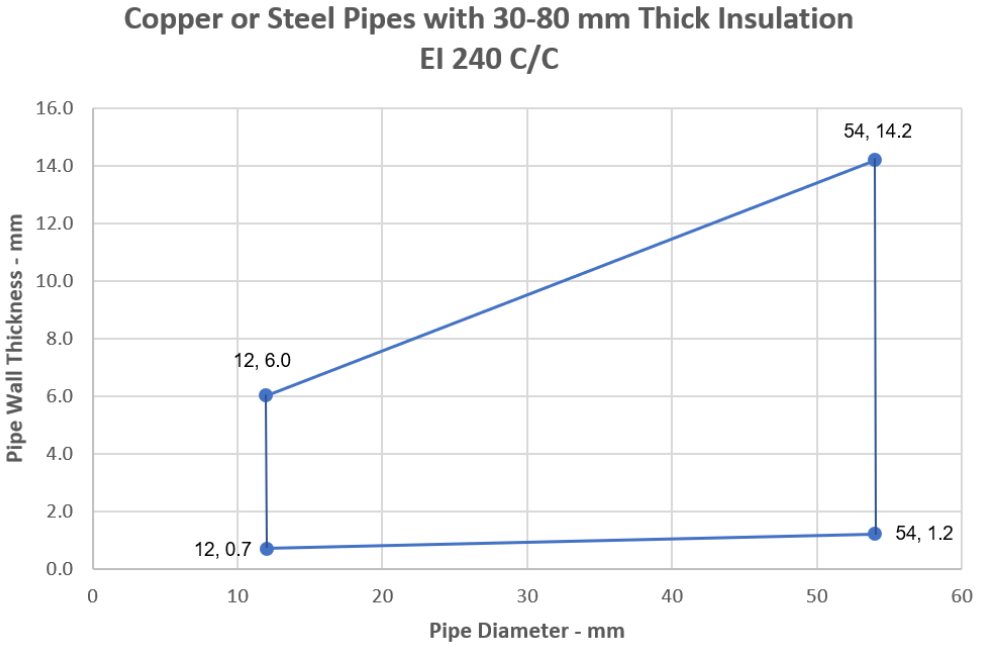


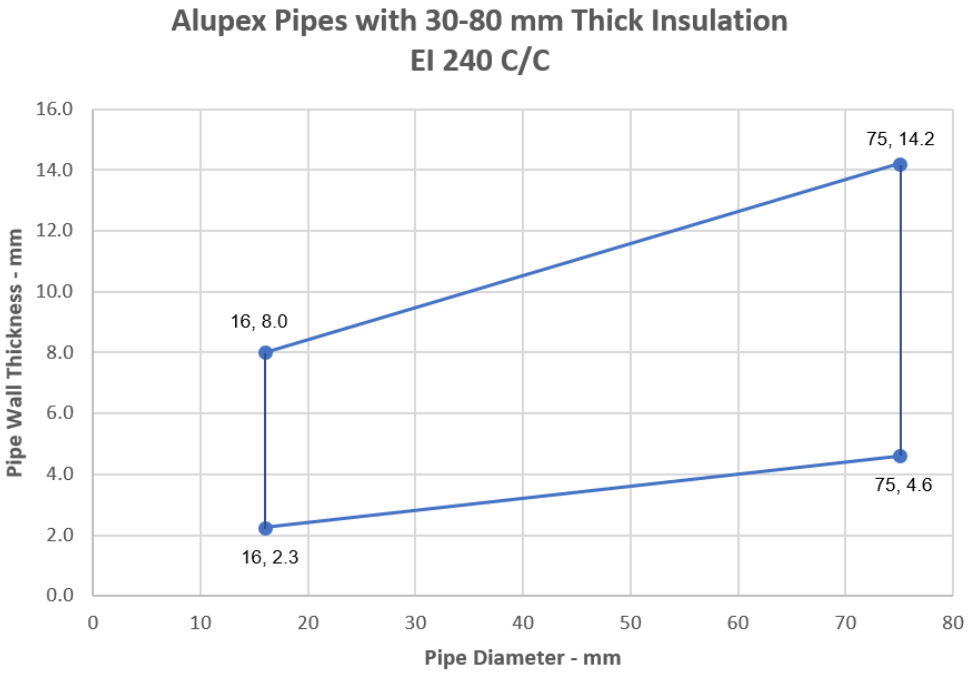
A.4.9.1

Services	Insulation	Classification
Mild or stainless steel pipe, with minimum 80 kg/m^3 density mineral wool insulation		
Maximum 40 mm diameter/1.0-14.2 mm wall	20 mm thick	**EI 240 C/U**
Maximum 324 mm diameter*	30-80mm thick	**EI 240 C/U**
Copper or steel pipe with minimum 80 kg/m^3 density mineral wool insulation		
Maximum 12 mm diameter/0.7-6.0 mm wall*	20 mm thick	**EI 240 C/C**
Maximum 54 mm diameter/1.2-14.2 mm wall*	30-80mm thick	**EI 240 C/C**
ALUPEX pipe with minimum 80 kg/m^3 density mineral wool insulation		
Maximum 16 mm diameter/2.25-8.0 mm wall*	20 mm thick	**EI 240 C/C**
Maximum 75 mm diameter/4.6-14.2 mm wall*	30-80mm thick	**EI 240 C/C**

*See below graphs for interpolation pipe sizes


Steel Pipes with 30-80 mm Thick Insulation - EI 240 C/U
Pipe Wall Thickness - mm
Pipe Diameter - mm
40, 14.2
324, 14.2
324, 6.4
40, 1.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
0
50
100
150
200
250
300
350

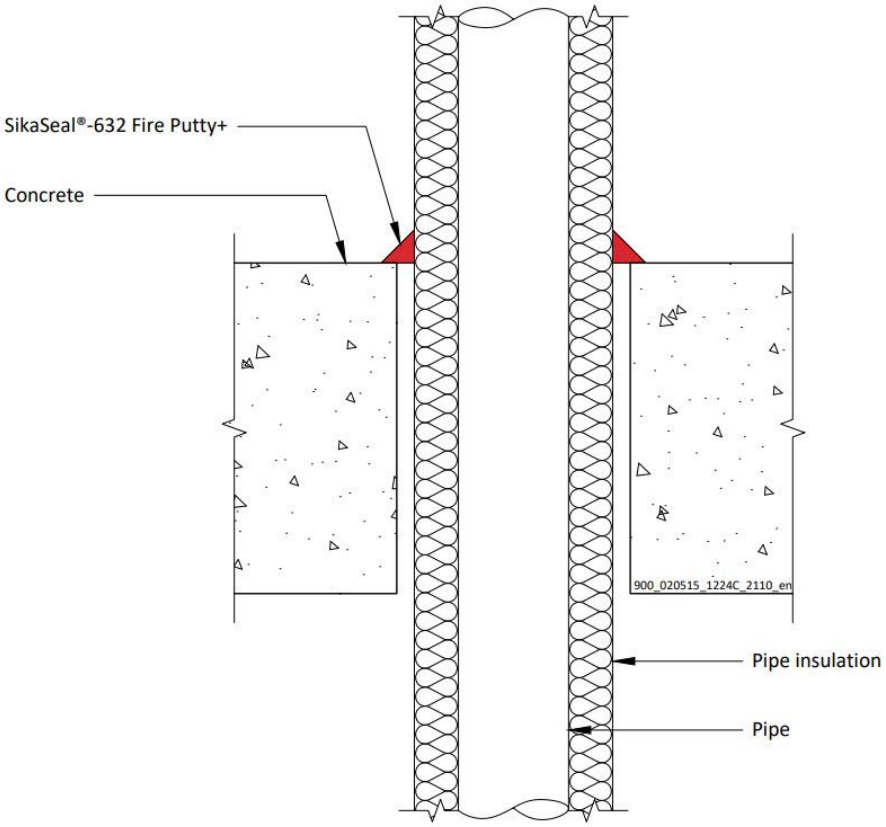

Copper or Steel Pipes with 30-80 mm Thick Insulation
EI 240 C/C
Pipe Wall Thickness - mm
Pipe Diameter - mm
54, 14.2
12, 6.0
12, 0.7
54, 1.2
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
0
10
20
30
40
50
60


Alupex Pipes with 30-80 mm Thick Insulation
EI 240 C/C
Pipe Wall Thickness - mm
Pipe Diameter - mm
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
0
10
20
30
40
50
60
70
80
75, 14.2
16, 8.0
75, 4.6
16, 2.3

A.4.10 Single sided penetration seal with insulated metallic pipes, Continuous Sustained (CS)

Penetration Seal: Metallic pipes insulated with minimum 75 kg/m^3 density glass wool insulation, Continuous Sustained (CS), penetrating through a rigid floor construction, fitted at any position within the aperture, sealed with a 15mm diameter cord of SikaSeal-632 Fire Putty+ on the top face of the floor. Maximum annular space 10 mm (A1) and minimum separation between penetration seals 30 mm (A2).

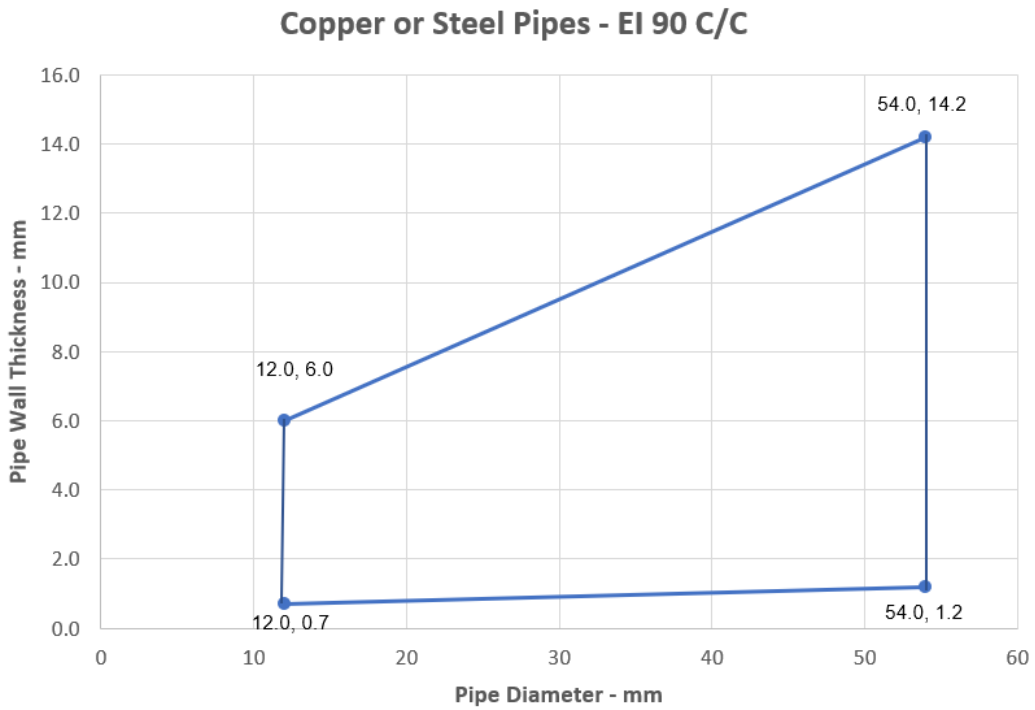
Construction details:

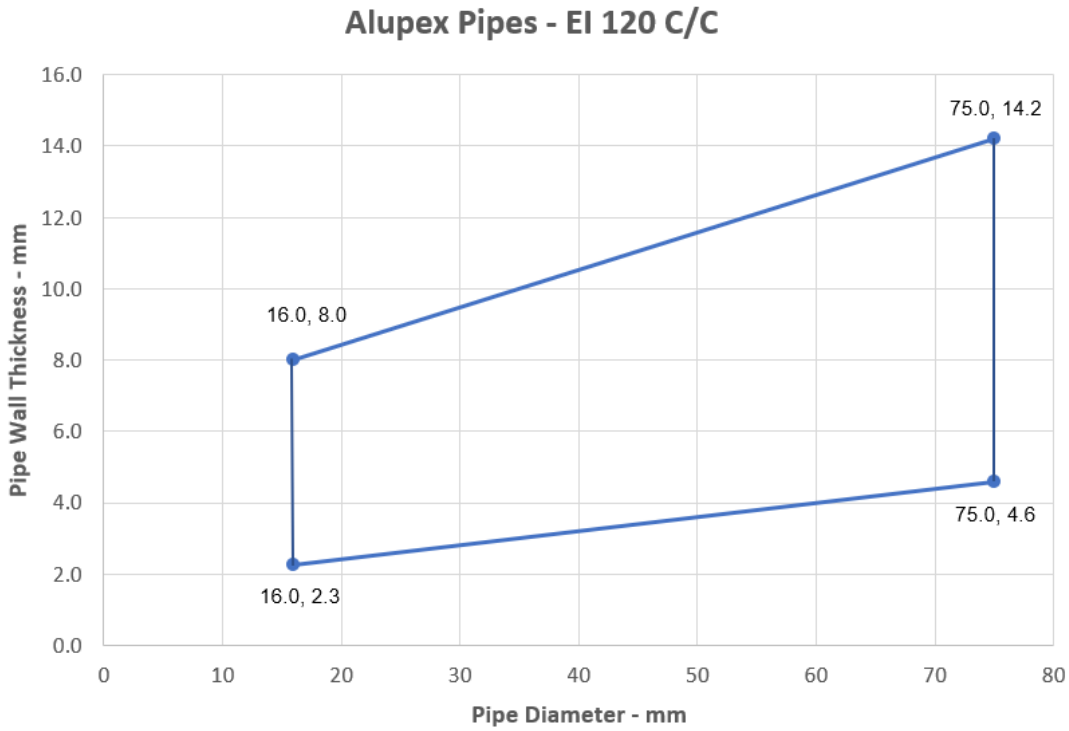


A.4.10.1

Services	Insulation	Classification
Copper or steel pipe with minimum 75 kg/m^3 density glass wool insulation		
Maximum 12 mm diameter/0.7-6.0 mm wall*	20 mm thick	**EI 240, EI 90 C/C**
Maximum 54 mm diameter/1.2-14.2 mm wall*	20-40mm thick	**EI 90 C/C**
ALUPEX pipe with minimum 75 kg/m^3 density glass wool insulation		
Maximum 16 mm diameter/2.25-8.0 mm wall*	20 mm thick	**EI 120 C/C**
Maximum 75 mm diameter/4.6-14.2 mm wall*	20-50mm thick	**EI 120 C/C**

*See below graphs for interpolation pipe sizes


Copper or Steel Pipes - EI 90 C/C
Pipe Wall Thickness - mm
Pipe Diameter - mm
54.0, 14.2
12.0, 6.0
12.0, 0.7
54.0, 1.2
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
0
10
20
30
40
50
60


Alupex Pipes - EI 120 C/C
Pipe Wall Thickness - mm
Pipe Diameter - mm
75.0, 14.2
16.0, 8.0
75.0, 4.6
16.0, 2.3
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
0
10
20
30
40
50
60
70
80

ANNEX B – Air Permeability – SikaSeal-632 Fire Putty+

Product tested	SikaSeal-632 Fire Putty+ Cord around 48mm electrical cable in 58mm hole		
Summary of testing procedure			Result
	Pressure (Pa)	Leakage (m^3/h)	Leakage ($m^3/m^2/h$)
Results under negative chamber pressure	25	0.32	N/A
	50	0.60	N/A
	100	1.00	N/A
	200	1.63	N/A
	300	2.26	N/A
	600	2.64	N/A
	1000	3.25	N/A
Results under positive chamber pressure	25	0.24	N/A
	50	0.26	N/A
	100	0.36	N/A
	200	0.56	N/A
	300	1.11	N/A
	600	1.88	N/A
	1000	2.49	N/A