



UL INTERNATIONAL (UK) LTD
 Womersh House, Building C,
 The Guildway,
 Old Portsmouth Road,
 Guildford. GU3 1LR.
 United Kingdom.



designated according to Article 29 of the Regulation (EU) No 305/2011 and member of EOTA (European Organisation for Technical Assessment, www.eota.eu)

European Technical Assessment

**ETA 18/0927
 of 12/12/2018**

Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011: UL International (UK) Ltd

Trade name of the construction product Knauf Firewrap

Product family to which the construction product belongs Fire Stopping and Sealing Product:
 • Penetration Seals

Manufacturer Knauf Sp. Z o.o.
 ul. Światowa 25
 02-229 Warsaw
 Poland

Manufacturing plant(s) A/003

This European Technical Assessment contains 45 pages including 1 Annex which forms an integral part of this assessment.

This European Technical Assessment is issued in accordance with regulation (EU) No 305/2011, on the basis of EAD 350454-00-1104, September 2017.

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full. However, partial reproduction may be made, with the written consent of the issuing Technical Assessment Body. Any partial reproduction has to be identified as such.

Table of Contents

| | | |
|-----------|---|----------|
| I. | SPECIFIC PARTS OF THE EUROPEAN TECHNICAL ASSESSMENT | 3 |
| 1 | Technical description of the product | 3 |
| 2 | Specification of the intended uses of the product in accordance with the applicable European Assessment Document (Hereinafter EAD): EAD 350454-00-1104 | 3 |
| 3 | Performance of the product and references to the methods used for its assessment | 5 |
| 4 | ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE (HEREINAFTER AVCP) SYSTEM APPLIED, WITH REFERENCE TO ITS LEGAL BASE | 6 |
| 5 | Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD | 6 |
| 6 | Issued on: | 7 |
| A.1 | Rigid wall constructions with wall thickness of minimum 150 mm | 8 |
| A.1.1 | Knauf Firewrap penetration seals, in 100 mm thick Knauf FPM - fire protection mortar seals in rigid walls with insulated metal pipes | 8 |
| A.1.2 | Knauf Firewrap penetration seals, in 100 mm thick Knauf FPM - fire protection mortar seals in rigid walls with plastic pipes | 11 |
| A.2 | Rigid floor constructions with a minimum thickness 150 mm | 12 |
| A.2.1 | Knauf Firewrap penetration seals, in 100 mm thick Knauf FPM - fire protection mortar seals in rigid floors, with insulated metal pipes | 12 |
| A.2.2 | Knauf Firewrap penetration seals, in 100 mm thick Knauf FPM - fire protection mortar seals in rigid floors, with insulated metal pipes | 14 |
| A.2.3 | Knauf Firewrap penetration seals, in 100 mm thick Knauf FPM - fire protection mortar seals in rigid floors, with insulated metal pipes | 16 |
| A.2.4 | Knauf Firewrap penetration seal for insulated metal pipes, in Knauf FPM - fire protection mortar Seal, in rigid floors | 18 |
| A.2.5 | Knauf Firewrap penetration seals, in 100 mm thick Knauf FPM - fire protection mortar seals in rigid floors, with plastic pipes | 21 |
| A.2.6 | Knauf Firewrap penetration seals, in 50 mm thick Knauf FPM - fire protection mortar seals, backed with 50 mm stone wool, in rigid floors, with plastic pipes | 23 |
| A.3 | Flexible and rigid wall constructions with a minimum thickness 100 mm | 24 |
| A.3.1 | Knauf Firewrap penetration seal for insulated metal pipes, in seals comprising 25 mm deep Knauf FPM - fire protection mortar to both faces backed with 50 mm mineral fibre board, installed within flexible or rigid wall | 24 |
| A.3.2 | Knauf Firewrap penetration seal for composite pipes, in seals comprising 25 mm deep Knauf FPM - fire protection mortar to both faces backed with 50 mm mineral fibre board, installed within flexible or rigid wall | 26 |
| A.3.3 | Knauf Firewrap penetration seal for insulated metal & composite pipes, in seals comprising 25 mm deep Knauf FPM - fire protection mortar to both faces backed with 50 mm mineral fibre board, installed within flexible or rigid wall | 27 |
| A.3.4 | Knauf Firewrap penetration seal for insulated metal pipes, in seals comprising 50 mm deep Knauf FPM - fire protection mortar to both faces, installed within flexible or rigid wall | 28 |
| A.4 | Rigid wall constructions with floor thickness of minimum 150 mm | 30 |
| A.4.1 | Knauf Firewrap penetration seal for insulated metal pipes, in 1x Knauf FPC panel 2-S seals, in rigid walls | 30 |
| A.5 | Rigid floor constructions with floor thickness of minimum 150 mm | 31 |
| A.5.1 | Knauf Firewrap penetration seal for plastic pipes, in 1x Knauf FPC panel 2-S, in rigid floors | 31 |
| A.5.2 | Knauf Firewrap penetration seal for insulated metal pipes, in 1x Knauf FPC panel 2-S, in rigid floors | 32 |
| A.5.3 | Knauf Firewrap penetration seal for insulated metal pipes in 2x Knauf FPC panel 2-S (separated), in rigid floors | 33 |
| A.5.4 | Knauf Firewrap penetration seal for insulated metal pipes, in 2x Knauf FPC panel 2-S (back to back), in rigid floors | 34 |
| A.6 | Flexible or rigid wall constructions with wall thickness of minimum 100 mm | 36 |
| A.6.1 | Knauf Firewrap penetration seal for insulated metal pipes, in 2x Knauf FPC panel 1-S, in flexible or rigid walls | 36 |
| A.6.2 | Knauf Firewrap penetration seal for insulated metal pipes, in 2x Knauf FPC panel 1-S, in flexible or rigid walls | 38 |
| A.6.3 | Knauf Firewrap penetration seal for insulated metal pipes, in 2x Knauf FPC panel 1-S, in flexible or rigid walls | 39 |
| A.6.4 | Knauf Firewrap penetration seal for plastic pipes, in 2x Knauf FPC panel 1-S, in flexible or rigid walls | 40 |
| A.6.5 | Knauf Firewrap penetration seal for insulated metal pipes, in 2x Knauf FPC panel 1-S, in flexible or rigid walls | 42 |
| A.6.6 | Penetration seal in Knauf FPM - fire protection mortar seals, in flexible* and rigid walls minimum 100 mm thick | 44 |

I. SPECIFIC PARTS OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical description of the product

- 1) Knauf Firewrap is a pipe closure device used to form penetration seals where combustible pipes and insulated metal pipes penetrate walls and floors.
- 2) The Knauf Firewrap 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/Knauf FPC panel or cast in with Knauf FPM - fire protection 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 Knauf Firewrap 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 Knauf Firewrap 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 Knauf Firewrap 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 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) The system Knauf Firewrap may be used to provide a penetration seal with specific supporting constructions and substrates (for details see Annex A).

- 3) The provisions made in this European Technical Assessment are based on an assumed working life of the Knauf Firewrap of 10 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, 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.

Specimen
conform cu originalul
Nu poate fi folosit ca document oficial

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

| Product-type: Pipe Wrap | | Intended use: Penetration Seal |
|---|---|--|
| Assessment method | Essential characteristic | Product performance |
| BWR 2 Safety in case of fire | | |
| EN 13501-1 | Reaction to fire | Class F (not tested) |
| EN 13501-2 | Resistance to fire | Annex A |
| BWR 3 Hygiene, health and environment | | |
| EN 1026 | Air permeability | No performance determined |
| EAD 350454-00-1104, Annex C | Water permeability | No performance determined |
| Declaration of manufacturer & EN 16516 | Content, emission and/or release of dangerous substances | Use categories: IA1, S/W3 Declaration of manufacturer |
| BWR 4 Safety in use | | |
| EOTA TR 001:2003 | Mechanical resistance and stability | No performance determined |
| EOTA TR 001:2003 | Resistance to impact/movement | No performance determined |
| EOTA TR 001:2003 | Adhesion | No performance determined |
| EAD 350454-00-1104, Clause 2.2.9 | Durability | X |
| BWR 5 Protection against noise | | |
| EN 10140-1,2,4,5/ EN ISO 717-1 | Airborne sound insulation | No performance determined |
| BWR 6 Energy economy and heat retention | | |
| EN 12664, EN 12667, EN 12939, EN ISO 8990, EN ISO 6946, EN ISO 14683, EN ISO 10211, EN ISO 10456 | Thermal properties | No performance determined |
| EN ISO 12572, EN 12086, EN ISO 10456 | Water vapour permeability | No performance determined |

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 Commission¹, 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

Tasks of the manufacturer:

Factory production control

The manufacturer shall exercise permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of results performed. This production control system shall ensure that the product is in conformity with this European Technical Assessment.

The manufacturer may only use initial / raw / constituent materials stated in the technical documentation of this European Technical Assessment.

The factory production control shall be in accordance with the Control Plan of 27th June 2014 relating to the European Technical Assessment ETA 18/0927 issued on 12/12/2018 which is part of the technical documentation of this European Technical Assessment. The "Control Plan" is laid down in the context of the factory production control system operated by the manufacturer and deposited at UL International (UK) Ltd.

The results of factory production control shall be recorded and evaluated in accordance with the provisions of the Control Plan.

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

Other tasks of the manufacturer

Additional information

The manufacturer shall provide a technical data sheet and an installation instruction with the following minimum information:

(a) Technical data sheet:

- Field of application:
- Building elements for which the penetration seal is suitable, type and properties of the building elements like minimum thickness, density, and - in case of lightweight constructions – the construction requirements.
- Limits in size, minimum thickness etc. of the penetration seal
- Construction of the penetration seal including the necessary components and additional products (e.g. backfilling material) with clear indication whether they are generic or specific.

(b) Installation instruction:

- Steps to be followed
- Procedure in case of retrofitting
- Stipulations on maintenance, repair and replacement

6 Issued on:

12th December 2018

Report by:



D. Yates
Project Engineer
Building and Life Safety Technologies

Reviewed by:



C. Johnson
Staff Engineer
Building and Life Safety Technologies

For and on behalf of UL International (UK) Ltd.

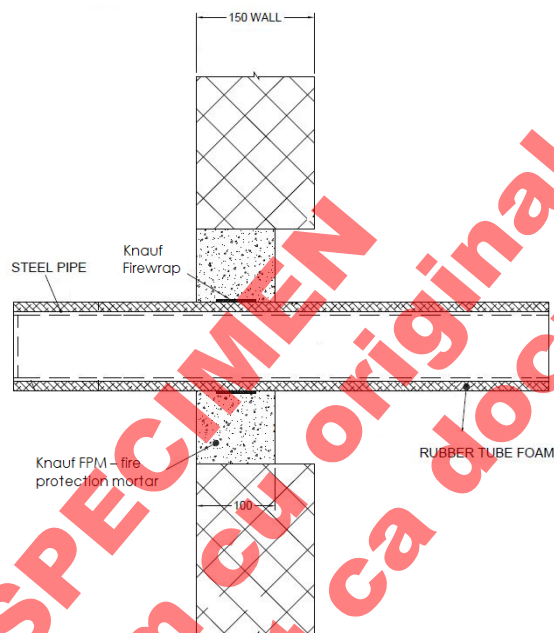
ANNEX A – Resistance to Fire Classification – Knauf Firewrap

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

A.1.1 Knauf Firewrap penetration seals, in 100 mm thick Knauf FPM - fire protection 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 Knauf FPM - fire protection mortar to either side of the wall. Knauf Firewraps are required to be centrally within the seal for pipes with combustible insulation. Maximum seal size 2400 mm wide x 1200 mm high

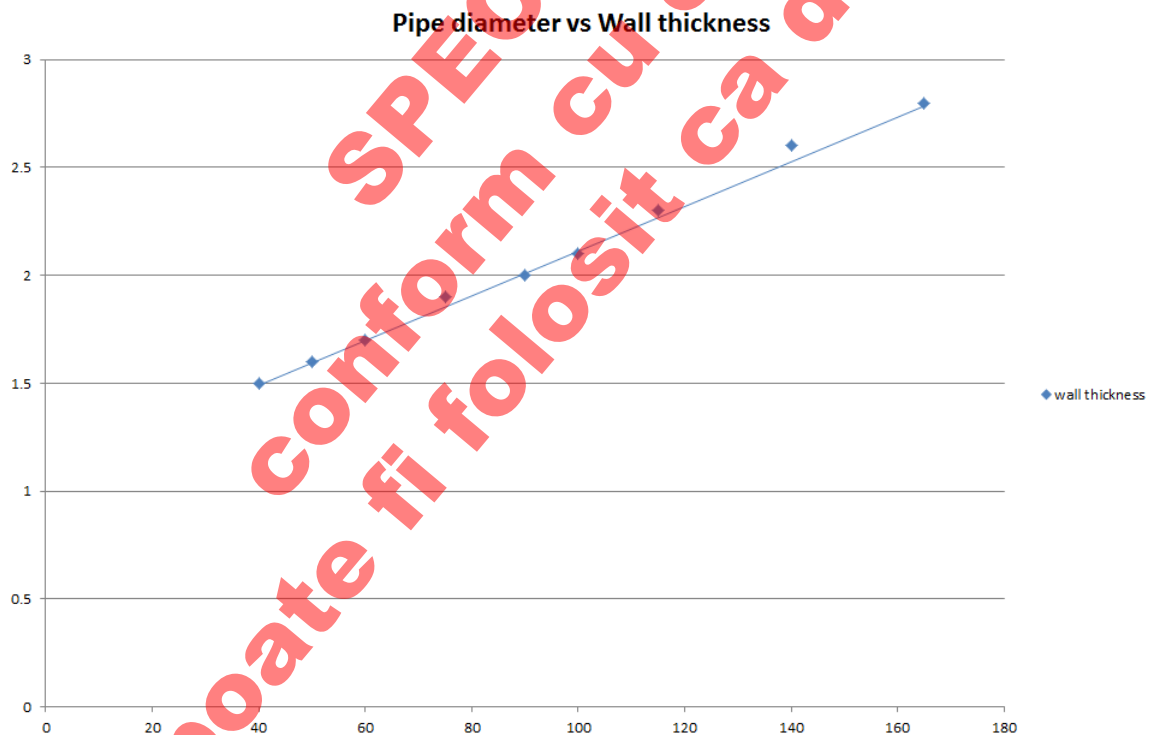
Construction details:



A.1.1.1

| Services | Wrap | Insulation | Classification |
|-----------------------------------|---|------------------------------------|----------------------|
| Mild or stainless steel pipe | | | |
| 40 mm diameter/1.5-14.2 mm wall | 1 off 50 x 3.6mm Knauf Firewrap, fitted central | 13 mm Kaiflex ST insulation | EI 240 C/U |
| 165 mm diameter/4.5-14.2 mm wall | | 9 mm Kaiflex ST insulation | E 240 C/U, EI 30 C/U |
| 40 mm diameter/1.5-14.2 mm wall* | 1 off 50 x 1.8mm Knauf Firewrap, fitted central | 13 -19 mm Kaiflex ST insulation | E 240 C/U, EI 60 C/U |
| 50 mm diameter/1.6-14.2 mm wall* | | | |
| 60 mm diameter/1.7-14.2 mm wall* | | | |
| 75 mm diameter/1.9-14.2 mm wall* | | | |
| 90 mm diameter/2-14.2 mm wall* | | | |
| 100 mm diameter/2.1-14.2 mm wall* | | | |
| 115 mm diameter/2.3-14.2 mm wall* | | | |
| 140 mm diameter/2.6-14.2 mm wall* | | | |
| 165 mm diameter/2.8-14.2 mm wall* | | | |

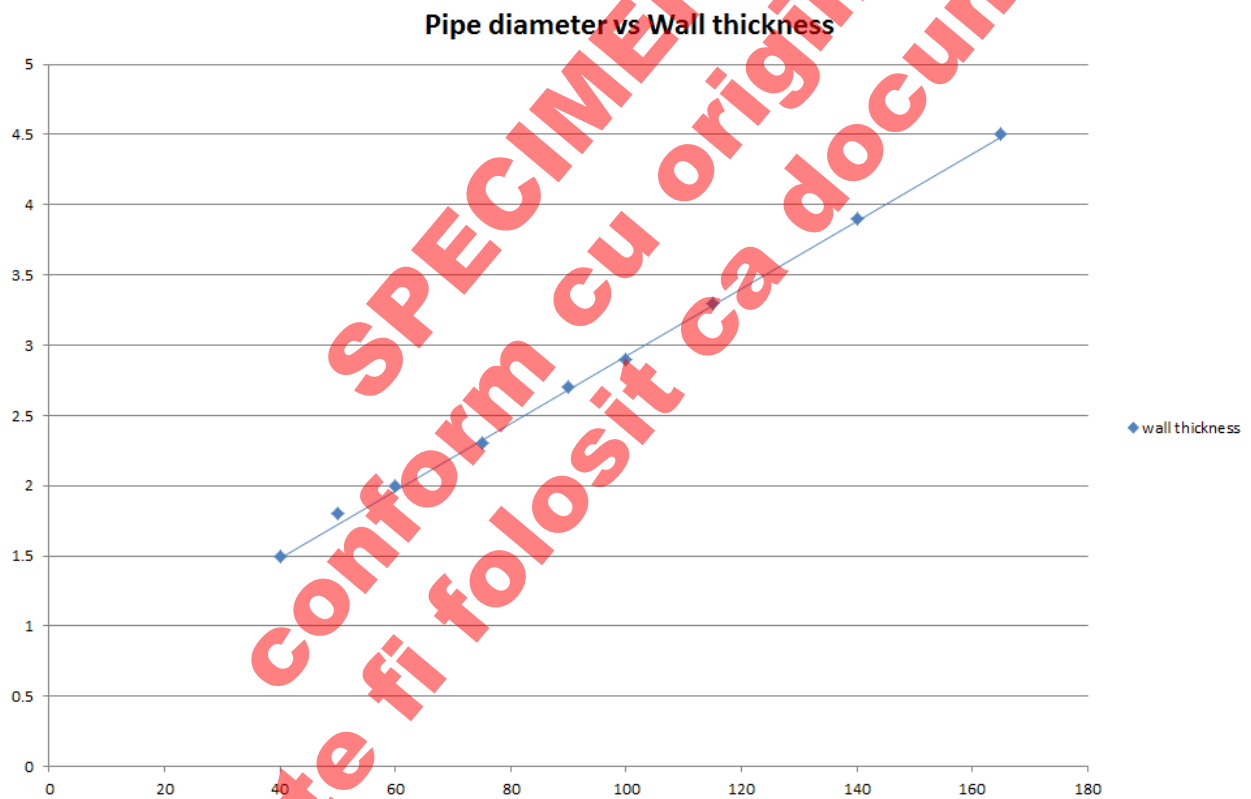
* Typical pipe diameters shown, see below graph for intermediate sizes



A.1.1.2

| Services | Wrap | Insulation | Classification |
|-----------------------------------|---|-----------------------------------|-----------------------------|
| Mild or stainless steel pipe | 1 off 50 x 3.6mm Knauf Firewrap, fitted central | 13-25 mm Kaiflex ST insulation | E 180 C/U, EI 60 C/U |
| 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* | | | |
| 75 mm diameter/2.3-14.2 mm wall* | | | |
| 90 mm diameter/2.7-14.2 mm wall* | | | |
| 100 mm diameter/2.9-14.2 mm wall* | | | |
| 115 mm diameter/3.3-14.2 mm wall* | | | |
| 140 mm diameter/3.9-14.2 mm wall* | | | |
| 165 mm diameter/4.5-14.2 mm wall* | | | |

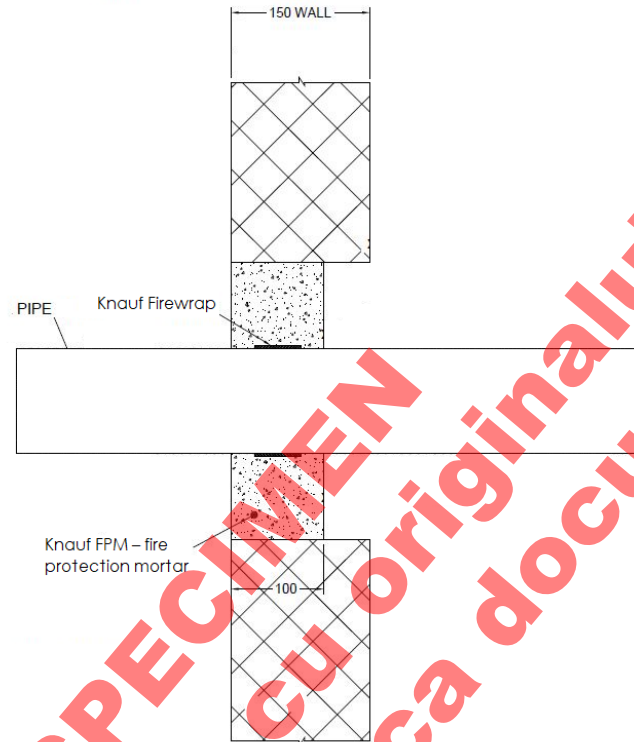
* Typical pipe diameters shown, see below graph for intermediate sizes



A.1.2 Knauf Firewrap penetration seals, in 100 mm thick Knauf FPM - fire protection 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 Knauf FPM - fire protection mortar to either side of the wall. Knauf Firewraps are required to be centrally within the seal. Maximum seal size 2400 mm wide x 1200 mm high

Construction details:



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 Knauf Firewrap, fitted central | None | EI 120 C/C |

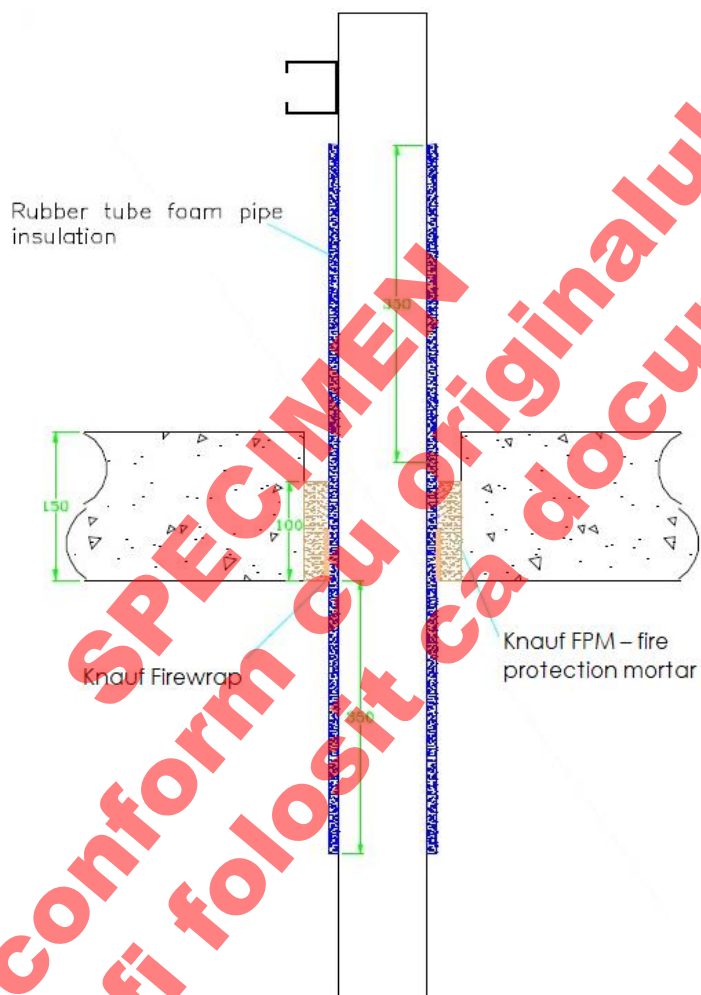
* In Germany the pipes have additionally to comply with DIN 19531-10

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

A.2.1 Knauf Firewrap penetration seals, in 100 mm thick Knauf FPM - fire protection 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 100 mm from other services), with 100 mm Knauf FPM - fire protection mortar at any position within the floor. Knauf Firewraps are required to be fitted around combustible pipe insulation. Maximum seal size 400 mm wide x 400 mm long.

Construction details:



A.2.1.1

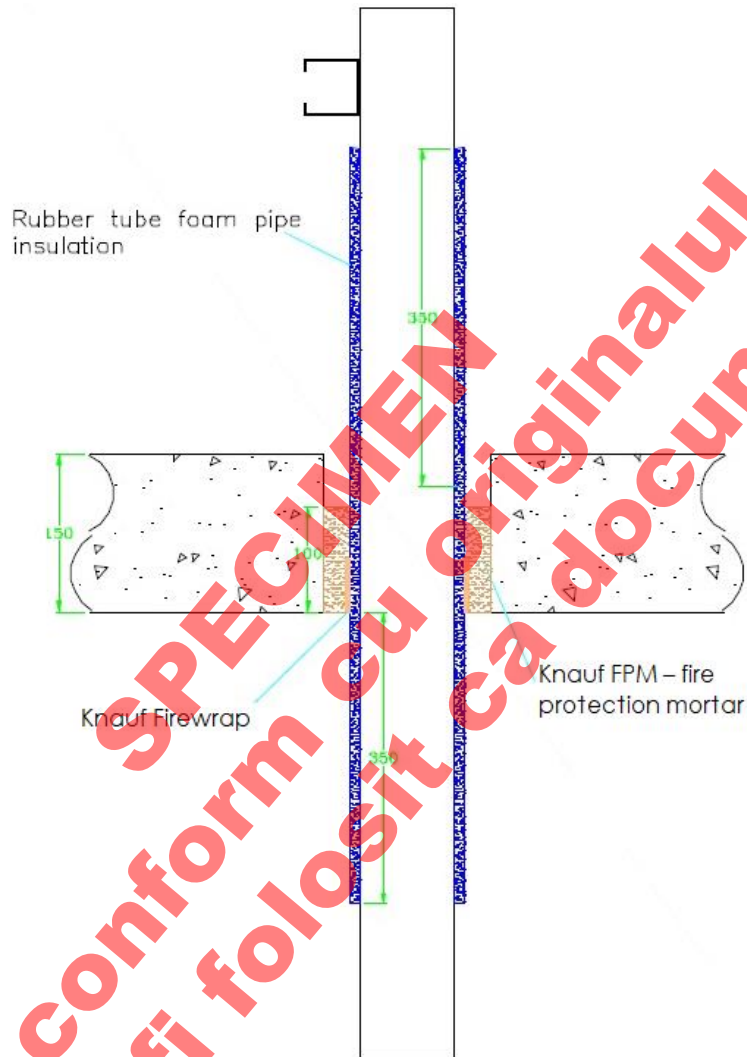
| Services | Wrap | Insulation | Classification |
|--|---|--------------------------------|----------------------|
| Copper pipe | | | |
| 12 mm diameter/1 mm wall | 50 x 3.6 mm Knauf Firewrap fitted to the soffit | 9 mm Kaiflex ST insulation | EI 240 C/C |
| 12-54 mm diameter/1-1.2 mm wall | | 13-25 mm Kaiflex ST insulation | E 240 C/C, EI 60 C/C |
| Geberit Mepla MLC (PE-Xb/Aluminium/PE-HD pipe) | | | |
| 16 mm diameter/2.25 mm wall | 50 x 3.6 mm Knauf Firewrap fitted to the soffit | 9 mm Kaiflex ST insulation | EI 240 C/C |
| 16 mm diameter/2.25 mm wall | | 9-13 mm Kaiflex ST insulation | E 240 C/C, EI 90 C/C |
| 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 | | 13-25 mm Kaiflex ST insulation | E 180 C/C, EI 90 C/C |
| 75 mm diameter/4.7 mm wall | | | |
| 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 | | | |

SPECIMEN
conform cu originalul
Nu poate fi folosit ca document oficial

A.2.2 Knauf Firewrap penetration seals, in 100 mm thick Knauf FPM - fire protection 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 100 mm from other services), with 100 mm Knauf FPM - fire protection mortar at any position within the floor. Knauf Firewraps are required to be fitted around combustible pipe insulation. Maximum seal size 2400 mm wide x 1200 mm long

Construction details:



A.2.2.1

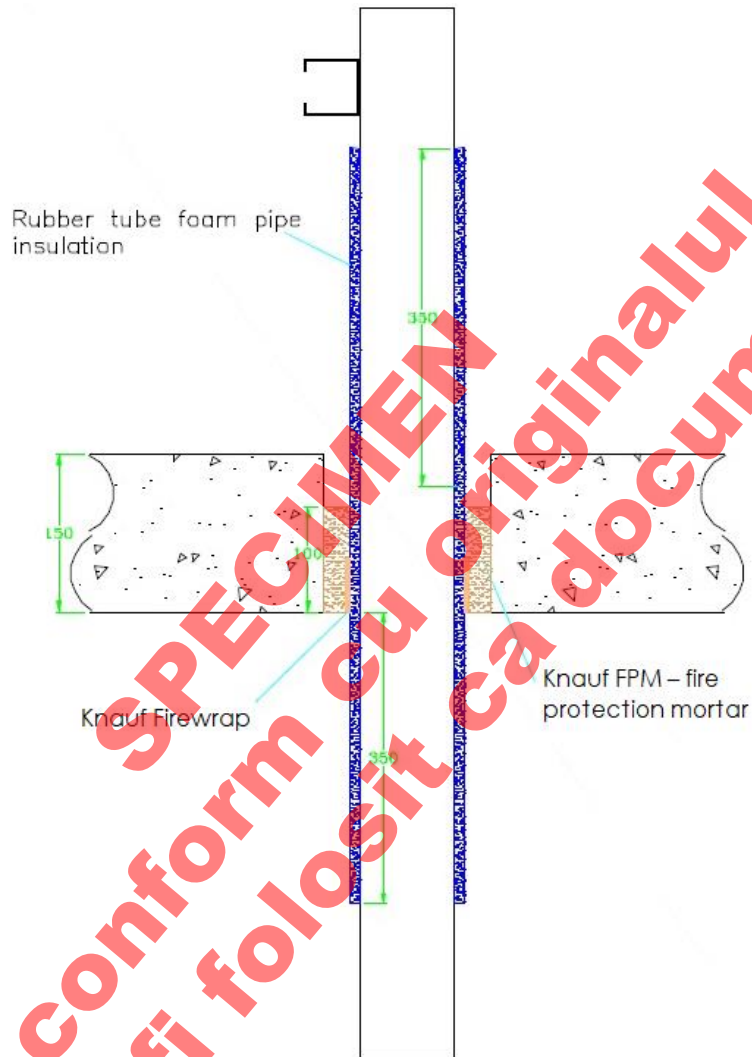
| Services | Wrap | Insulation | Classification |
|--|---|--------------------------------|----------------------|
| Copper pipe | | | |
| 12 mm diameter/1 mm wall | 50 x 3.6 mm Knauf Firewrap fitted to the soffit | 9 mm Kaiflex ST insulation | EI 180 C/C |
| 12-54 mm diameter/1-1.2 mm wall | | 13-25 mm Kaiflex ST insulation | E 180 C/C, EI 60 C/C |
| Geberit Mepla MLC (PE-Xb/Aluminium/PE-HD pipe) | | | |
| 16 mm diameter/2.25 mm wall | 50 x 3.6 mm Knauf Firewrap fitted to the soffit | 9 mm Kaiflex ST insulation | EI 180 C/C |
| 16 mm diameter/2.25 mm wall | | 13-25 mm Kaiflex ST insulation | E 180 C/C, EI 90 C/C |
| 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 | | | |

SPECIMEN
 conform cu originalul
 Nu poate fi folosit ca document oficial

A.2.3 Knauf Firewrap penetration seals, in 100 mm thick Knauf FPM - fire protection 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 100 mm from other services), with 100 mm Knauf FPM - fire protection mortar at any position within the floor. Knauf Firewraps are required to be fitted around combustible pipe insulation. Maximum seal size 2400 mm wide x 1200 mm long

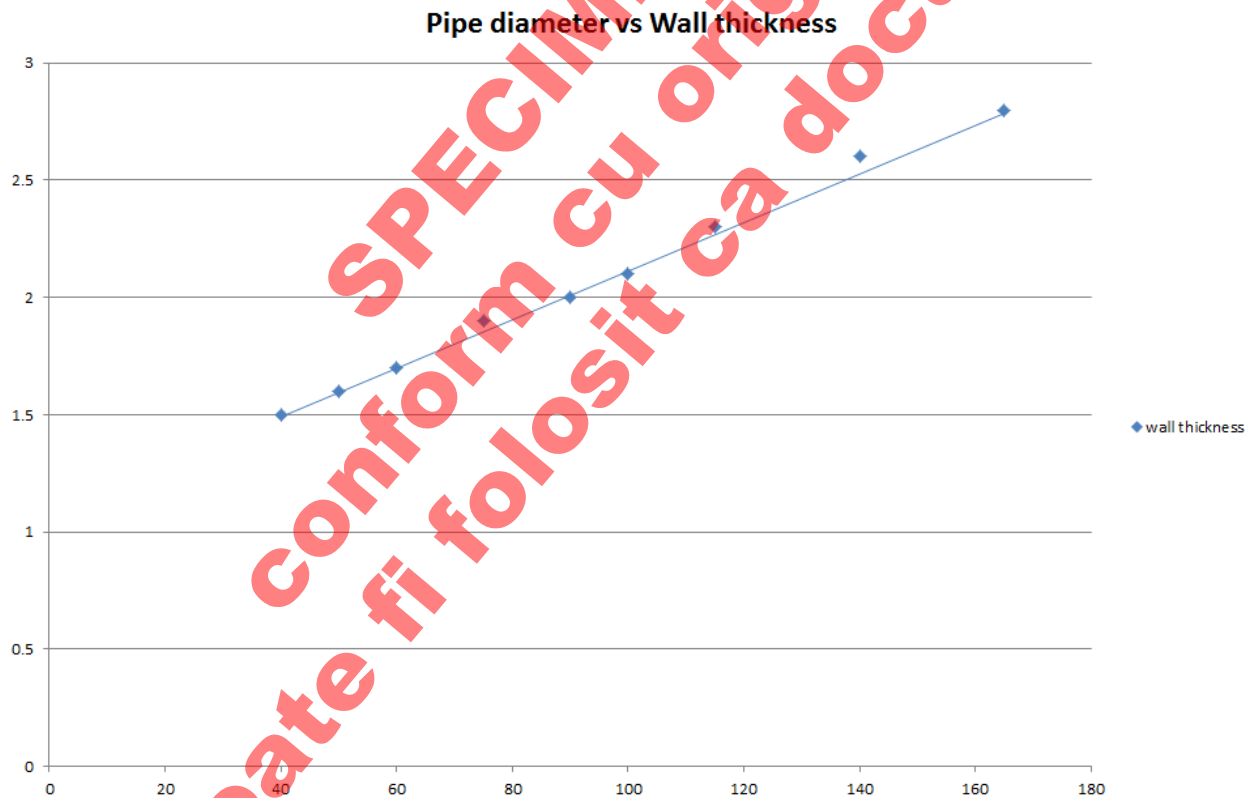
Construction details:



A.2.3.1

| Services | Wrap | Insulation | Classification |
|-----------------------------------|--|---------------------------------|-----------------------|
| Mild or stainless steel pipe | | | |
| 40 mm diameter/-14.2 mm wall | 1 off 50 x 1.8 mm Knauf Firewrap, fitted at soffit | 13 mm Kaiflex ST insulation | EI 180 C/U |
| 40 mm diameter/1.5-14.2 mm wall* | | 13 -19 mm Kaiflex ST insulation | E 180 C/U, EI 120 C/U |
| 50 mm diameter/1.6-14.2 mm wall* | | | |
| 60 mm diameter/1.7-14.2 mm wall* | | | |
| 75 mm diameter/1.9-14.2 mm wall* | | | |
| 90 mm diameter/2-14.2 mm wall* | | | |
| 100 mm diameter/2.1-14.2 mm wall* | | | |
| 115 mm diameter/2.3-14.2 mm wall* | | | |
| 140 mm diameter/2.6-14.2 mm wall* | | | |
| 165 mm diameter/2.8-14.2 mm wall* | | | |

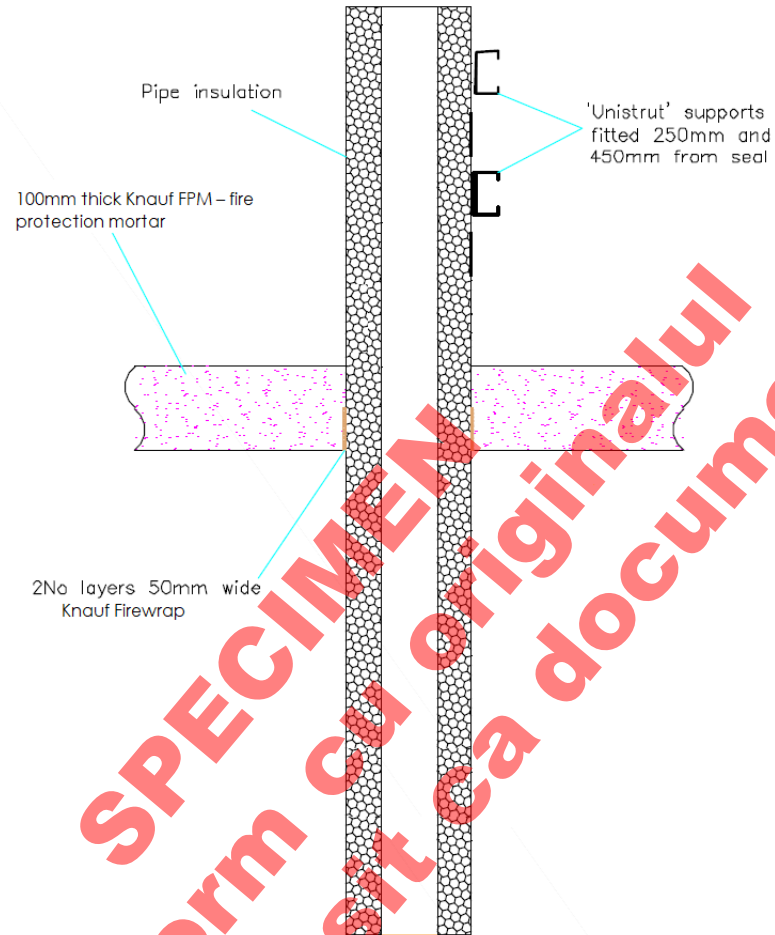
* Typical pipe diameters shown, see below graph for intermediate sizes



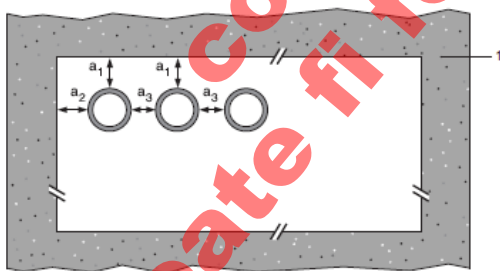
A.2.4 Knauf Firewrap penetration seal for insulated metal pipes, in Knauf FPM - fire protection mortar Seal, in rigid floors

Penetration Seal: CS (Continuous Sustained) insulated metallic pipes sealed with Knauf Firewrap, fitted at any position within the aperture, with 100 mm Knauf FPM - fire protection mortar Seal. Minimum separation between penetration seals and seal edges of 30 mm (Configuration 1 & 2).

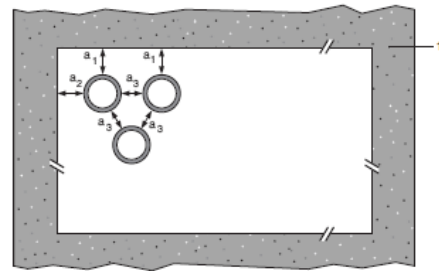
Construction details:



Configuration 1



Configuration 2



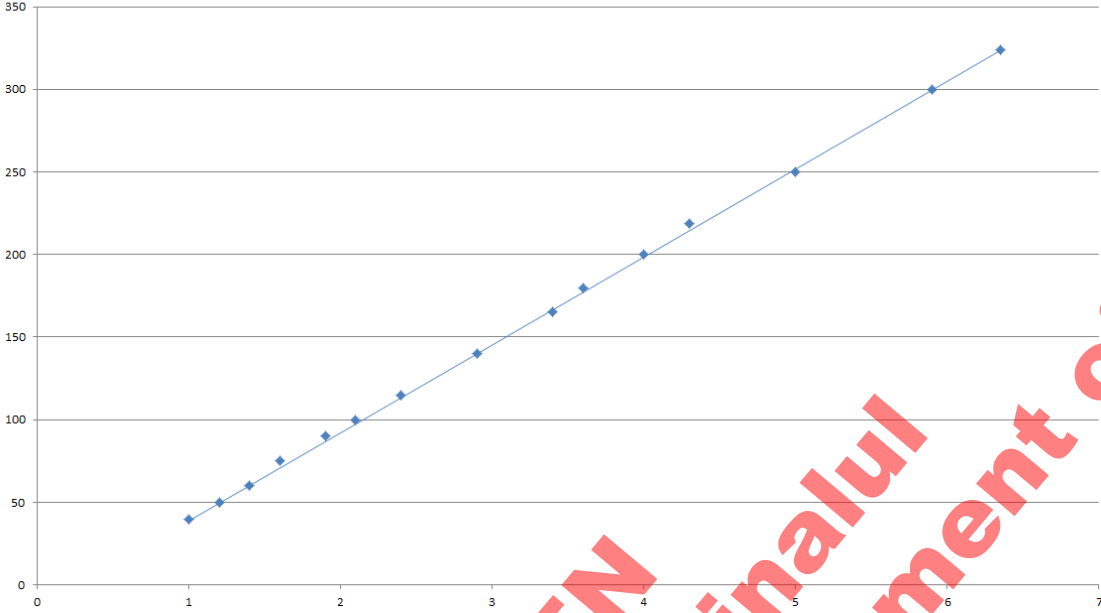
Key

- 1 Supporting construction
- a1 Pipe / top edge of seal separation
- a2 Pipe / side edge of seal separation
- a3 Pipe / pipe separation

A.2.4.1

| Mild or stainless steel pipe | Insulation | Knauf Firewrap | Classification | |
|-------------------------------------|---|--------------------------------|--------------------------------|-------------------------|
| 40 mm diameter/1-14.2 mm wall | 25 mm thick K-flex Elastomeric insulation | 50 x 3.6 mm (2 x 1.8 layer) | EI 240 C/U | |
| 40 mm diameter/1-14.2 mm wall* | 25mm thick K-flex Elastomeric insulation | | 50 x 3.6 mm (2 x 1.8 layer) | E 240 C/U EI 120 C/U |
| 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* | | | | |
| 140 mm diameter/2.9-14.2 mm wall* | | | | |
| 165 mm diameter/ 3.4-14.2 mm wall* | | | | |
| 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* | 25-50mm thick K-flex Elastomeric insulation | 50 x 5.4 mm (3 x 1.8 layer) | EI 120 C/U | |
| 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* | | | | |
| 140 mm diameter/2.9-14.2 mm wall* | | | | |
| 165 mm diameter/ 3.4-14.2 mm wall* | | | | |
| 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



Specimen
conform cu originalul
Nu poate fi folosit ca document oficial

A.2.5 Knauf Firewrap penetration seals, in 100 mm thick Knauf FPM - fire protection mortar seals in rigid floors, with plastic pipes

Penetration Seal: Plastic pipes fitted at any position within the aperture (min. separation 80 mm from seal edges and 100 mm from other services), with 100 mm Knauf FPM - fire protection mortar to the top surface of the floor. Knauf Firewraps are required to be fitted to the bottom of the seal, as indicated below.

Construction details:



A.2.5.1

| Services | Wrap | Maximum aperture | Classification |
|--|--------------|------------------|-----------------------|
| PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1* and PVC-C according to EN 1566-1 | | | |
| 110 mm diameter / 3 mm wall | 50 x 3.6 mm | 200 x 200 mm | EI 240 C/C |
| 110 mm diameter / 3 mm wall | 50 x 3.6 mm | 2400 x 1200 mm | EI 180 C/C |
| 160 mm diameter / 4.0 mm wall | 75 x 6 mm | 2400 x 1200 mm | EI 180 C/C |
| 160 mm diameter / 4.0 mm wall | 75 x 8 mm | 300 x 300 mm | EI 240 C/C |
| 160 mm diameter / 4.0 mm wall | 75 x 8 mm | 2400 x 1200 mm | EI 180 C/C |
| 110 mm diameter / 3.4 mm wall | 75 x 2 mm | 2400 x 1200 mm | EI 180 C/C |
| 110 mm diameter / 3 mm wall | 50 x 5.4 mm | 300 x 300 mm | EI 240 C/C |
| 110 mm diameter / 3 mm wall | 50 x 5.4 mm | 2400 x 1200 mm | EI 180 C/C |
| 125 mm diameter / 3.5 mm wall | 50 x 7.2 mm | 300 x 300 mm | EI 240 C/C |
| 125 mm diameter / 3.5 mm wall | 50 x 7.2 mm | 2400 x 1200 mm | EI 180 C/C |
| 160 mm diameter / 4.5 mm wall | 50 x 10.8 mm | 300 x 300 mm | EI 240 C/C |
| 160 mm diameter / 4.5 mm wall | 50 x 10.8 mm | 2400 x 1200 mm | EI 180 C/C |
| PP pipe according to EN 1451-1 | | | |
| 40 mm diameter / 3 mm wall | None | 2400 x 1200 mm | EI 120 C/C |
| 50 mm diameter / 2.5 mm wall | 50 x 3.6 mm | 300 x 300 mm | EI 240 C/C |
| 50 mm diameter / 2.5 mm wall | 50 x 3.6 mm | 2400 x 1200 mm | EI 180 C/C |
| 75 mm diameter / 3.5 mm wall | 50 x 3.6 mm | 300 x 300 mm | EI 240 C/C |
| 75 mm diameter / 3.5 mm wall | 50 x 3.6 mm | 2400 x 1200 mm | EI 180 C/C |
| 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 | | | |
| 125 mm diameter / 4.9 mm wall | 75 x 4 mm | 300 x 300 mm | EI 180 C/C, E 240 C/C |
| 125 mm diameter / 4.9 mm wall | 75 x 6 mm | 2400 x 1200 mm | EI 180 C/C |
| 250 mm diameter / 7.8 mm wall | 75 x 14 mm | 2400 x 1200 mm | EI 180 C/C |
| 160 mm diameter / 6.2 mm wall | 75 x 8 mm | 2400 x 1200 mm | EI 180 C/C |

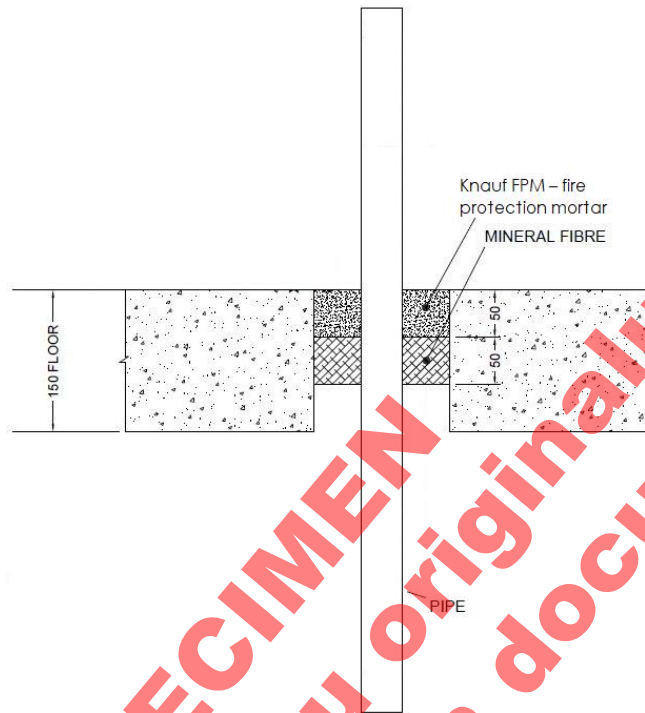
* In Germany the pipes have additionally to comply with DIN 19531-10

^ In Germany the pipes have additionally to comply with DIN 19535-10

A.2.6 Knauf Firewrap penetration seals, in 50 mm thick Knauf FPM - fire protection 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 80 mm from seal edges and 100 mm from other services), with 50 mm Knauf FPM - fire protection mortar flush with the top of floor, backed with 50 mm stone wool 150 kg/m³. Knauf Firewraps are required to be fitted into the mortar seal.

Construction details:



A.2.6.1

| 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 | | | |
| 110 mm diameter / 4.3 mm wall | 50 x 2 mm | 2400 x 1200 mm | EI 60 C/C |

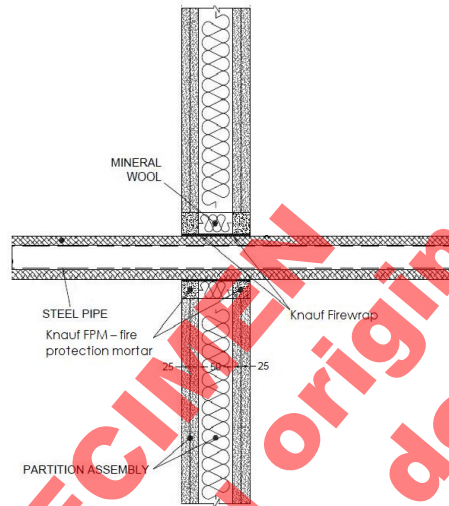
[^] In Germany the pipes have additionally to comply with DIN 19535-10

A.3 Flexible and rigid wall constructions with a minimum thickness 100 mm

A.3.1 Knauf Firewrap penetration seal for insulated metal pipes, in seals comprising 25 mm deep Knauf FPM - fire protection 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 Knauf FPM - fire protection mortar to both sides of the wall, backed with 50 mm stone wool board 150 kg/m³ or 50 mm Knauf FPM - fire protection mortar to both sides of the wall without backing*. Knauf Firewraps are required to be fitted to both faces of the seal.

Construction details:

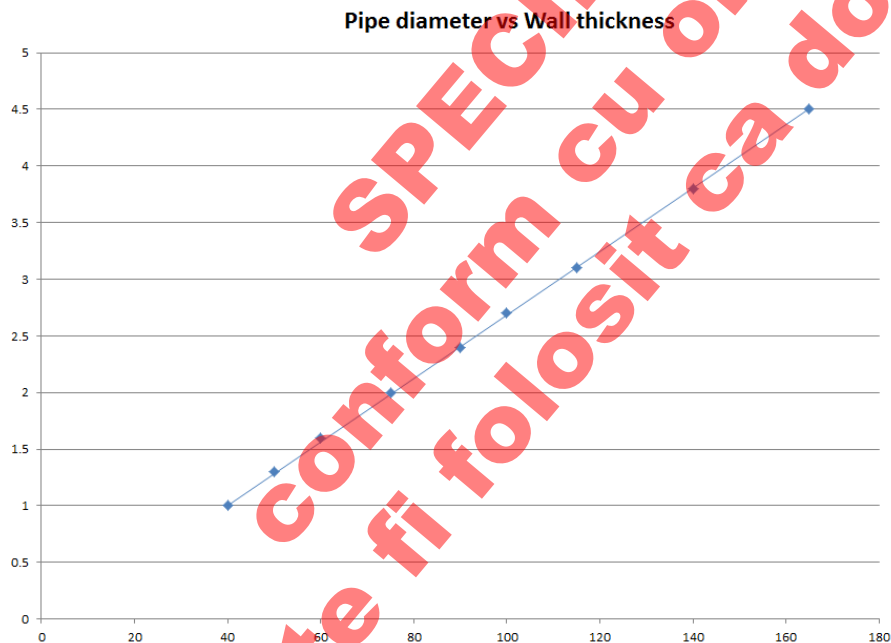


* Maximum seal size of 2400 mm wide x 1200 mm high

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 Knauf Firewrap, one fitted flush to each face of seal | 13 mm Kaiflex ST insulation | EI 120 C/U |
| 40 mm diameter/1-14.2 mm wall* | 2 off 50 x 3.6 mm Knauf Firewrap, one fitted flush to each face of seal | | EI 120 C/U, EI 60 C/U |
| 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* | | | |
| 90 mm diameter/2.4-14.2 mm wall* | | | |
| 100 mm diameter/2.7-14.2 mm wall* | | | |
| 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* | | | |

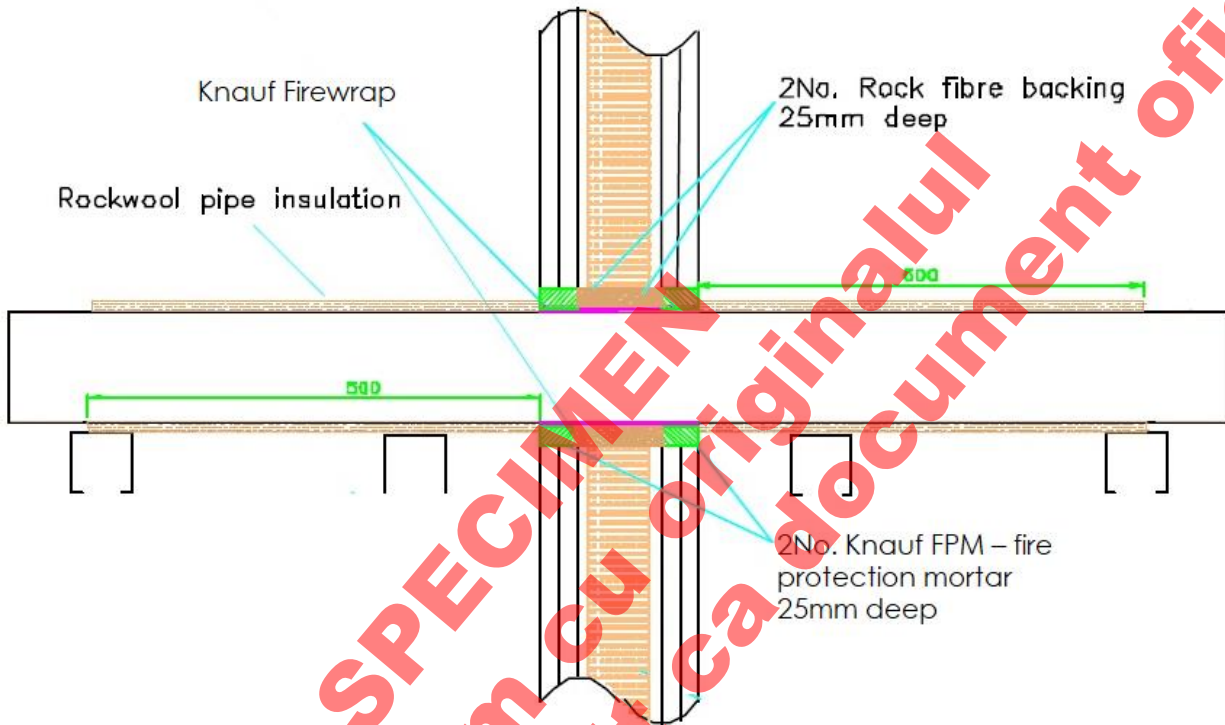
* Typical pipe diameters shown, see below graph for intermediate sizes



A.3.2 Knauf Firewrap penetration seal for composite pipes, in seals comprising 25 mm deep Knauf FPM - fire protection 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 40 mm from seal edges and 100 mm from other services), with 25 mm Knauf FPM - fire protection 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

Construction details:



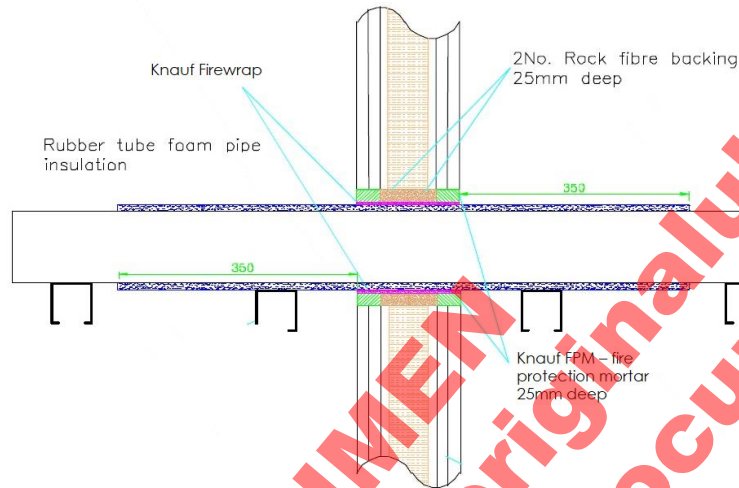
A.3.2.1

| Services | Insulation | Classification |
|--|--|----------------|
| Geberit Mepla MLC (PE-Xb/Aluminium/PE-HD) pipe | Minimum 20 mm stone wool, minimum 80 kg/m ³ | 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 | | |

A.3.3 Knauf Firewrap penetration seal for insulated metal & composite pipes, in seals comprising 25 mm deep Knauf FPM - fire protection 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 Knauf FPM - fire protection mortar to both sides of the wall, backed with 25 mm stone wool 150 kg/m3*. Knauf Firewraps are required to be fitted to both faces of the seal. Maximum seal size 2400 mm wide x 1200 mm long

Construction details:



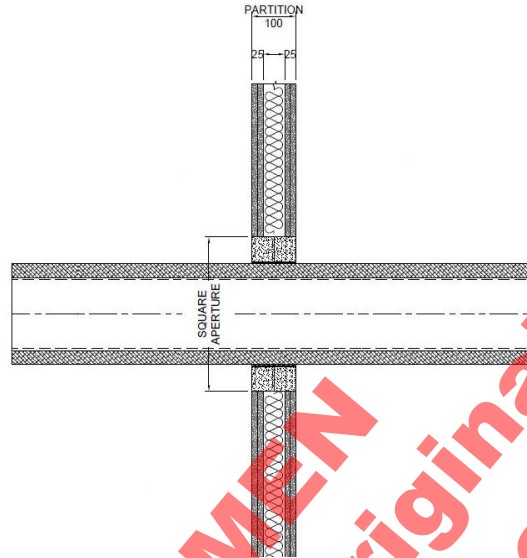
A.3.3.1

| Services | Wrap | Insulation | Classification |
|--|---|-------------------------------|----------------|
| Copper pipe | | | |
| 12-54 mm diameter/1-1.2 mm wall | 50 x 3.6 mm Knauf Firewrap fitted to both sides of the seal | 9-25 mm Kaiflex ST insulation | EI 120 C/C |
| Geberit Mepla MLC (PE-Xb/Aluminium/PE-HD pipe) | | | |
| 16 mm diameter/2.25 mm wall | 50 x 3.6 mm Knauf Firewrap fitted to both sides of the seal | 9-25 mm Kaiflex ST insulation | EI 120 C/C |
| 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 | | | |

A.3.4 Knauf Firewrap penetration seal for insulated metal pipes, in seals comprising 50 mm deep Knauf FPM - fire protection 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 Knauf FPM - fire protection mortar to both sides of the wall without backing*. Knauf Firewraps are required to be fitted to both faces of the seal.

Construction details:



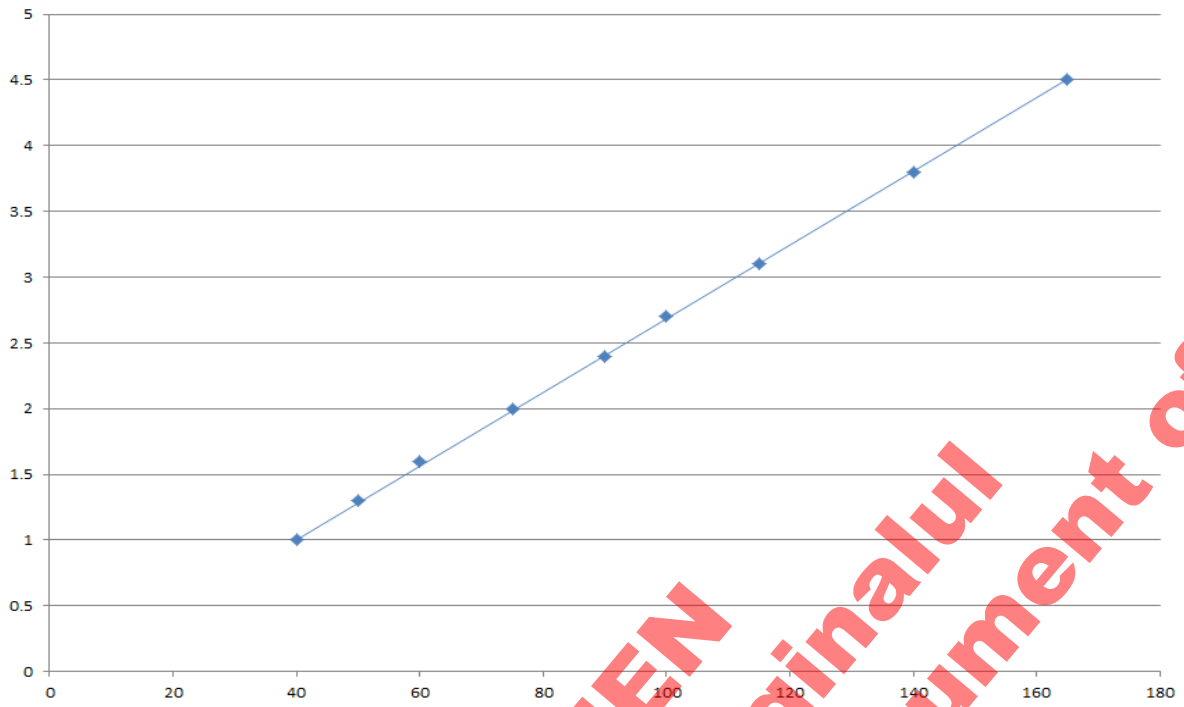
* Maximum seal size of 2400 mm wide x 1200 mm high

A.3.4.1

| Services | Wrap | Insulation | Classification |
|------------------------------------|---|---------------------------------|-----------------------------|
| Mild or stainless steel pipe | | | |
| 40 mm diameter/1-14.2 mm wall* | 2 off 50 x 3.6 mm Knauf Firewrap, one fitted flush to each face of seal | 13 -32 mm Kaiflex ST insulation | E 120 C/U, EI 60 C/U |
| 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* | | | |
| 90 mm diameter/2.4-14.2 mm wall* | | | |
| 100 mm diameter/2.7-14.2 mm wall* | | | |
| 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* | | | |

* Typical pipe diameters shown, see below graph for intermediate sizes

Pipe diameter vs Wall thickness



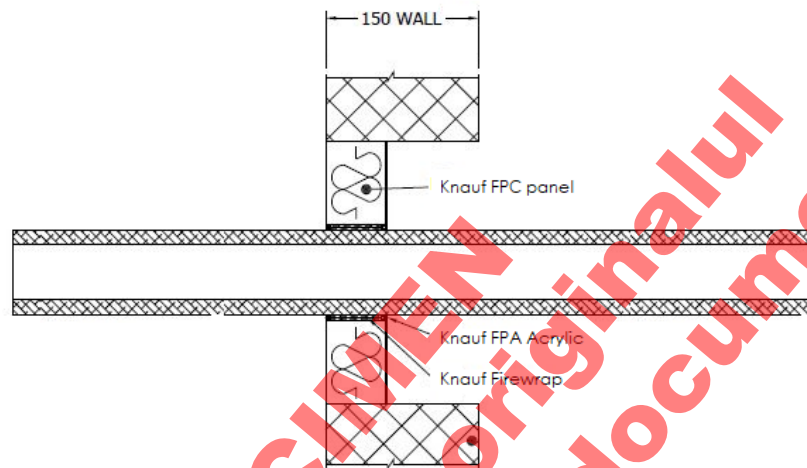
**Specimen conform cu originalul
Nu poate fi folosit ca document oficial**

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

A.4.1 Knauf Firewrap penetration seal for insulated metal pipes, in 1x Knauf FPC panel2-S seals, in rigid walls

Penetration Seal: CS (Continuous Sustained) insulated metallic pipes fitted at any position within the aperture (min. separation 40 mm from seal edges and 100 mm from other services), with 60 mm Knauf FPC panel2-S to either side of the wall (or anywhere in between). Knauf Firewraps are required to be fitted around combustible pipe insulation. Maximum aperture size 2400 mm x 1200 mm

Construction details:



A.4.1.1

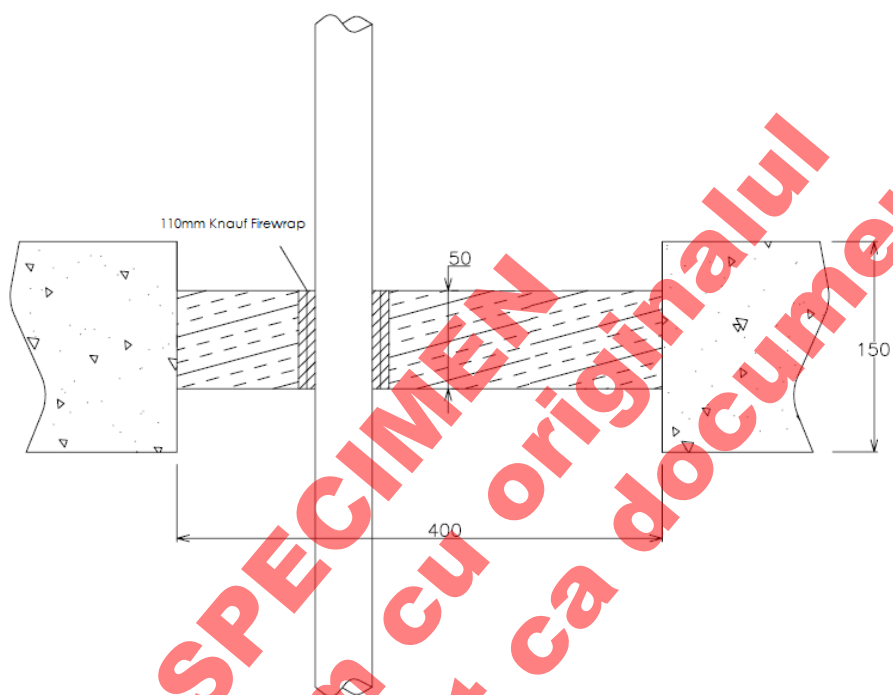
| Services | Wrap | Insulation | Classification |
|-----------------------------------|---|----------------------------------|---|
| Mild or stainless steel pipe | | | |
| 165 mm diameter/ 4.5-14.2 mm wall | 50 x 1.8 mm Knauf Firewrap fitted centrally | 9-25 mm Kaiflex ST/KK insulation | E 120 U/C, E 120 C/U, E 120 C/C, EI 45 U/C, EI 45 C/U, EI 45 C/C |

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

A.5.1 Knauf Firewrap penetration seal for plastic pipes, in 1x Knauf FPC panel 2-S, in rigid floors

Penetration Seal: Combustible pipes fitted at any position within the aperture (min. separation 40 mm from seal edges and 100 mm from other services), with 50 mm Knauf FPC panel 2-S at mid-depth of the floor. Knauf Firewraps are required to be fitted around combustible pipe insulation. Maximum aperture size 400 mm x 400 mm

Construction details:



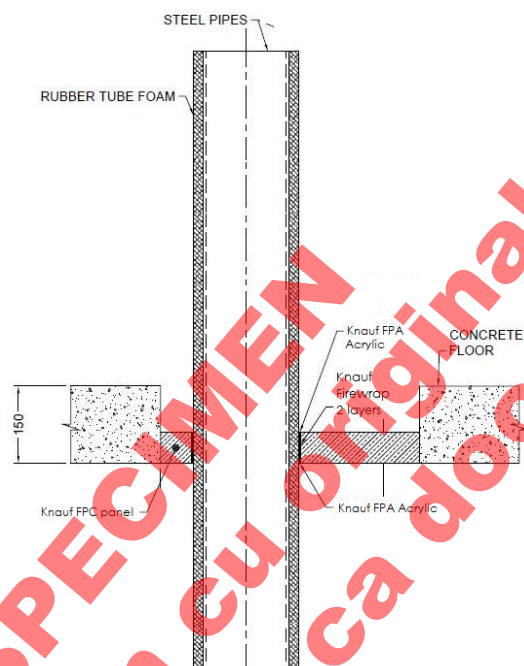
A.5.1.1

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

A.5.2 Knauf Firewrap penetration seal for insulated metal pipes, in 1x Knauf FPC panel 2-S, in rigid floors

Penetration Seal: CS (Continuous Sustained) insulated metallic pipes fitted at any position within the aperture (min. separation 40 mm from seal edges and 100 mm from other services), with 60 mm Knauf FPC panel 2-S to either side of the floor (or anywhere in between). Knauf Firewraps are required to be fitted around combustible pipe insulation. Maximum aperture size 2400 mm x 1200 mm

Construction details:



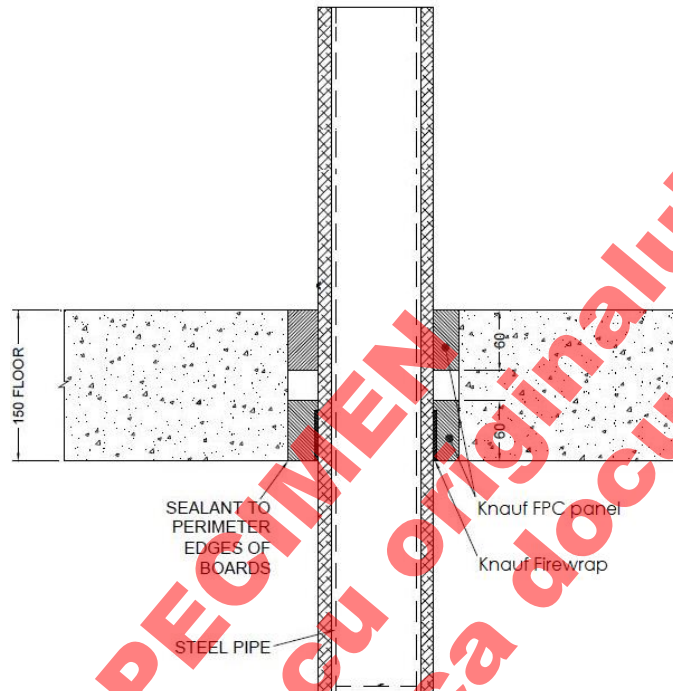
A.5.2.1

| Services | Wrap | Insulation | Classification |
|-----------------------------------|---|-----------------------------|---------------------|
| Mild or stainless steel pipe | | | |
| 165 mm diameter/ 4.5-14.2 mm wall | 50 x 3.6 mm Knauf Firewrap fitted at bottom of seal | 13 mm Kaiflex ST insulation | E 90 C/U, EI 45 C/U |
| | | 19 mm Kaiflex ST insulation | EI 90 C/U |

A.5.3 Knauf Firewrap penetration seal for insulated metal pipes in 2x Knauf FPC panel 2-S (separated), in rigid floors

Penetration Seal: CS (Continuous Sustained) insulated metallic pipes fitted at any position within the aperture (min. separation 40 mm from seal edges and 100 mm from other services), with 60 mm Knauf FPC panel 2-S to both sides of the floor. Knauf Firewraps are required to be fitted around combustible pipe insulation at the soffit. Maximum aperture size 2400 mm x 1200 mm

Construction details:



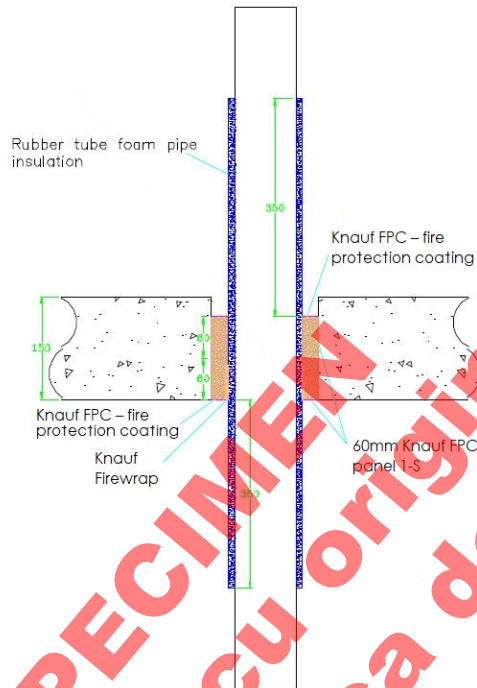
A.5.3.1

| Services | Wrap | Insulation | Classification |
|--------------------------------|----------------------------|-----------------------------|-----------------------|
| Mild or stainless steel pipe | | | |
| 40 mm diameter/ 1-14.2 mm wall | 50 x 1.8 mm Knauf Firewrap | 13 mm Kaiflex ST insulation | E 180 C/U, EI 120 C/U |

A.5.4 Knauf Firewrap penetration seal for insulated metal pipes, in 2x Knauf FPC panel 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 (min. separation 40 mm from seal edges and 100 mm from other services), with two layers of 60 mm Knauf FPC panel 1-S installed together to either side of the floor (or anywhere in between). Knauf Firewraps are required to be fitted around combustible pipe insulation at the bottom of the seal. Maximum aperture size 2400 mm x 1200 mm

Construction details:



A.5.4.1

| Services | Wrap | Insulation | Classification |
|--|---|--------------------------------|-----------------------------|
| Copper pipe | | | |
| 12-54 mm diameter/1-1.2 mm wall | 50 x 3.6 mm Knauf Firewrap fitted to both sides of the seal | 9-13 mm Kaiflex ST insulation | E240 C/C, EI 60 C/C |
| 12-54 mm diameter/1-1.2 mm wall | | 13-25 mm Kaiflex ST 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 | 50 x 3.6 mm Knauf Firewrap fitted to both sides of the seal | 9 mm Kaiflex ST insulation | EI 120 C/C |
| 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 | | | |
| 16 mm diameter/2.25 mm wall | | 13-25 mm Kaiflex ST insulation | E 60 C/C, EI 45 C/C |
| 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 | | | |

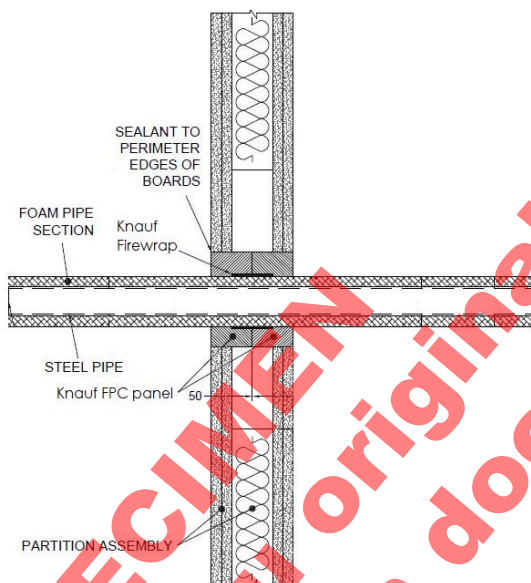
SPECIMEN
 conform cu originalul
 Nu poate fi folosit ca document oficial

A.6 Flexible or rigid wall constructions with wall thickness of minimum 100 mm

A.6.1 Knauf Firewrap penetration seal for insulated metal pipes, in 2x Knauf FPC panel 1-S, in flexible or rigid walls

Penetration Seal: CS (Continuous Sustained) insulated metallic pipes fitted at any position within the aperture (min. separation 40 mm from seal edges and 100 mm from other services), with 50 mm Knauf FPC panel 1-S to both sides of the wall. Knauf Firewraps are required to be fitted around the pipe insulation. Maximum aperture size 2400 mm x 1200 mm.

Construction details:

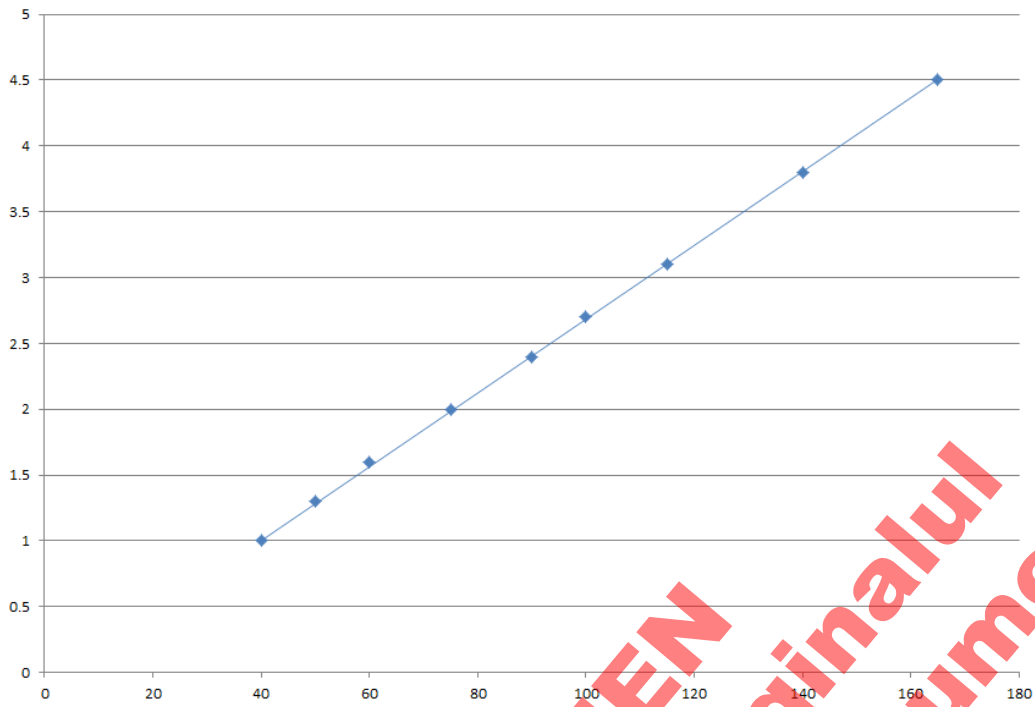


A.6.1.1

| Services | Wrap | Insulation | Classification |
|------------------------------------|---|---------------------------------|--|
| Mild or stainless steel pipe | | | |
| 40 mm diameter/1-14.2 mm wall | 50 x 1.8 mm Knauf Firewrap fitted centrally | 13 mm Kaiflex ST 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* | 2 off 50 x 3.6 mm Knauf Firewrap, one fitted flush to each face of seal | 13 - 32mm Kaiflex ST insulation | E 120 U/C, E 120 U/U, E 120 C/U, E 120 C/C, EI 60 U/C, EI 60 U/U, EI 60 C/U, EI 60 C/C |
| 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* | | | |
| 90 mm diameter/2.4-14.2 mm wall* | | | |
| 100 mm diameter/2.7-14.2 mm wall* | | | |
| 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* | | | |

* Typical pipe diameters shown, see below graph for intermediate sizes

Pipe diameter vs Wall thickness

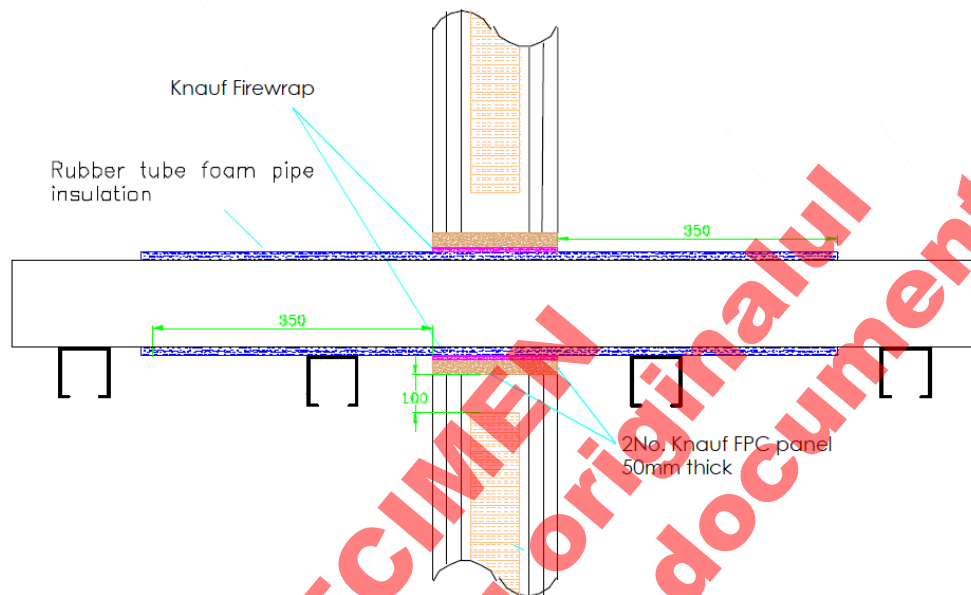


**Specimen conform cu originalul
Nu poate fi folosit ca document oficial**

A.6.2 Knauf Firewrap penetration seal for insulated metal pipes, in 2x Knauf FPC panel 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 (min. separation 40 mm from seal edges and 100 mm from other services), with 50 mm Knauf FPC panel 1-S to both sides of the wall. Knauf Firewraps are required to be fitted around the pipe to both sides of the seal. Maximum aperture size 2400 mm x 1200 mm.

Construction details:



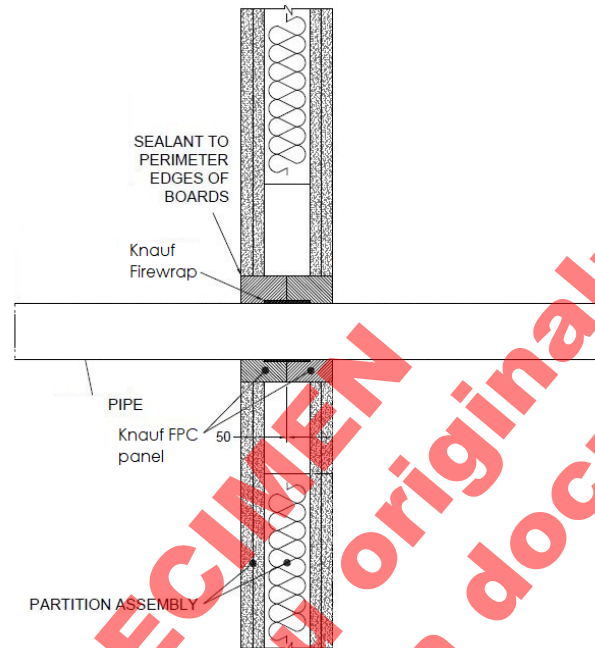
A.6.2.1

| Services | Wrap | Insulation | Classification |
|--|---|--------------------------------|----------------------|
| Copper pipe | 50 x 3.6 mm Knauf Firewrap fitted to both sides of the seal | 9 mm Kaiflex ST insulation | EI 120 C/C |
| 12 mm diameter/1 mm wall | | 9-13 mm Kaiflex ST insulation | E 120 C/C, EI 90 C/C |
| 12-54 mm diameter/1-1.2 mm wall | | 13-25 mm Kaiflex ST insulation | E 120 C/C, EI 60 C/C |
| 12-54 mm diameter/1-1.2 mm wall | | | |
| Geberit Mepla MLC (PE-Xb/Aluminium/PE-HD pipe) | | | |
| 16 mm diameter/2.25 mm wall | 50 x 3.6 mm Knauf Firewrap fitted to both sides of the seal | 9-25 mm Kaiflex ST insulation | EI 120 C/C |
| 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 | | | |

A.6.3 Knauf Firewrap penetration seal for insulated metal pipes, in 2x Knauf FPC panel 1-S, in flexible or rigid walls

Penetration Seal: Combustible pipes (single) fitted central within the aperture, with Knauf FPC panel 1-S to both sides of the wall. Knauf Firewraps are required to be fitted around the pipe. Maximum aperture size 2400 mm x 1200 mm

Construction details:



A.6.3.1

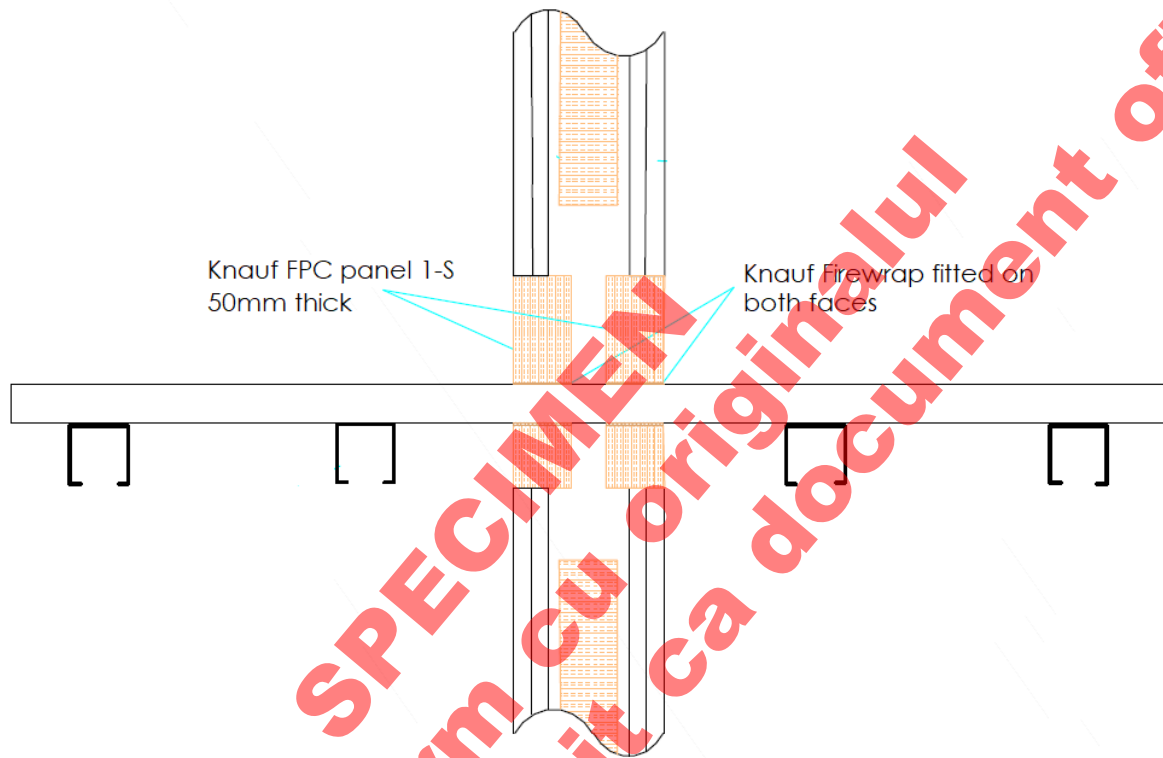
| Services | Pipe Wrap | Classification |
|---|--|----------------|
| PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1* and PVC-C according to EN 1566-1 315 mm \varnothing /9.2 mm wall | Knauf Firewrap 75 x 18 mm fitted centrally around the pipe | EI 45 C/C |

* In Germany the pipes have additionally to comply with DIN 19531-10

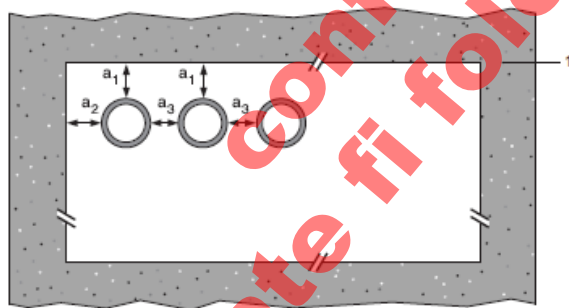
A.6.4 Knauf Firewrap penetration seal for plastic pipes, in 2x Knauf FPC panel 1-S, in flexible or rigid walls

Penetration Seal: Combustible pipes sealed with Knauf Firewrap, to both sides of the wall backed with Stonewool (35kg/m³ density), 25 mm deep. Minimum separation between penetration seals and seal edges of 30 mm.

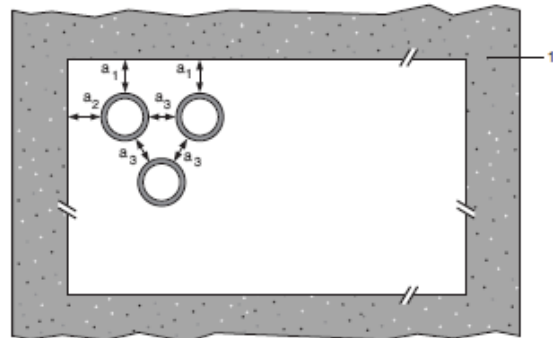
Construction details:



Configuration 1



Configuration 2



Key

- 1 Supporting construction
- a1 Pipe / top edge of seal separation
- a2 Pipe / side edge of seal separation
- a3 Pipe / pipe separation

A.6.4.1

| Services | Wraps (both sides) | Permitted configuration for seal separation | Classification |
|--|-----------------------------|---|--|
| PVC-U pipe according to EN 1329-1, EN 1452-2 and EN 1453-1 [^] and PVC-C according to EN 1566-1 | | | |
| Diameter up to 40 mm, wall thickness 1.9 – 3.0 mm | 50 x 1.8 mm (1 layer) | 1 & 2 between PVC-U/PVC-C, PE/ABS/SAN+PVC and PP pipes in any combination | EI 120 U/U, EI 120 C/U, EI 120 U/C, EI 120 C/C |
| Diameter up to 110 mm, wall thickness 2.7 - 6.6 mm | 50 x 3.6 mm (2 x 1.8 layer) | | E 120 U/C, E 120 C/C EI 90 U/C, EI 90 C/C |
| Diameter up to 125 mm, wall thickness 3.7 – 7.4 mm | 50 x 5.4 mm (3 x 1.8 layer) | | |
| Diameter up to 160 mm, wall thickness 9.5 mm | 50 x 7.2 mm (4 x 1.8 layer) | | |
| PE pipe according to EN 1519-1, EN 12201-2 and EN 12006-1 [§] , ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1 | | | |
| Diameter up to 40 mm, wall thickness 2.4 – 3.7 mm | 50 x 1.8 mm (1 layer) | 1 & 2 between PVC-U/PVC-C, PE/ABS/SAN+PVC and PP pipes in any combination | EI 120 U/U, EI 120 C/U, EI 120 U/C, EI 120 C/C |
| Diameter up to 110 mm, wall thickness 4.2 - 10 mm | 50 x 3.6 mm (2 x 1.8 layer) | | E 120 U/C, E 120 C/C EI 90 U/C, EI 90 C/C |
| Diameter up to 125 mm, wall thickness 4.8 – 12 mm | 50 x 5.4 mm (3 x 1.8 layer) | | |
| Diameter up to 160 mm, wall thickness 14.6 mm | 50 x 7.2 mm (4 x 1.8 layer) | | |
| PP pipe according to EN 1852-1: 2009 | | | |
| Diameter up to 40 mm, wall thickness 1.8 – 5.5 mm | 50 x 1.8 mm (1 layer) | 1 & 2 between PVC-U/PVC-C, PE/ABS/SAN+PVC and PP pipes in any combination | EI 120 U/U, EI 120 C/U, EI 120 U/C, EI 120 C/C |
| Diameter up to 110 mm, wall thickness 2.7 - 15.1 mm | 50 x 3.6 mm (2 x 1.8 layer) | | EI 90 U/U, EI 90 C/U, EI 90 U/C, EI 90 C/C |
| Diameter up to 125 mm, wall thickness 3.1 – 17.1 mm | 50 x 5.4 mm (3 x 1.8 layer) | | |
| Diameter up to 160 mm, wall thickness 21.9 mm | 50 x 7.2 mm (4 x 1.8 layer) | | |

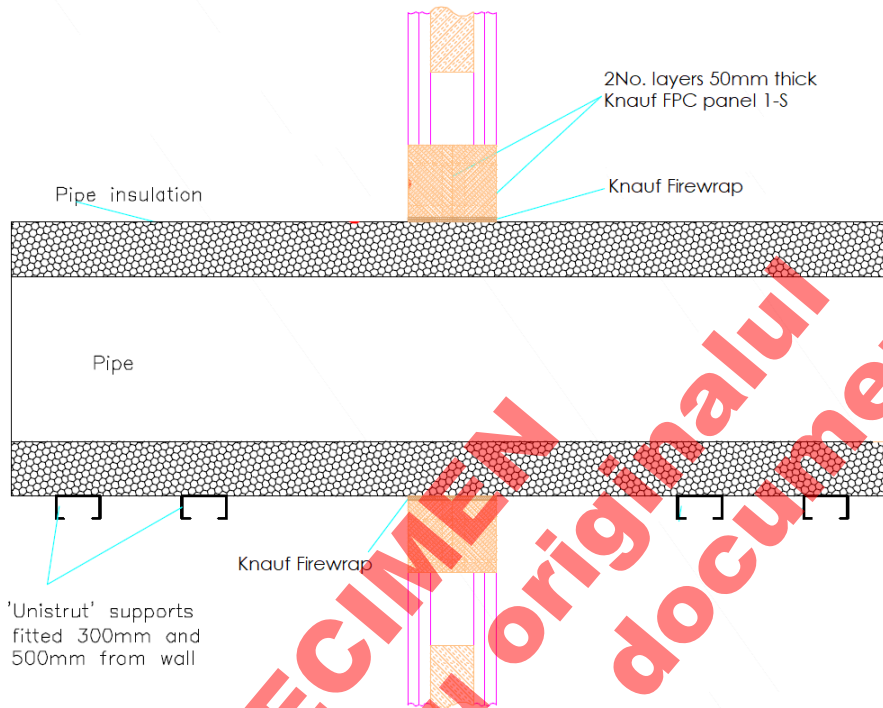
[§] In Germany the pipes have additionally to comply with DIN 19535-10

[^] In Germany the pipes have additionally to comply with DIN 19531-10

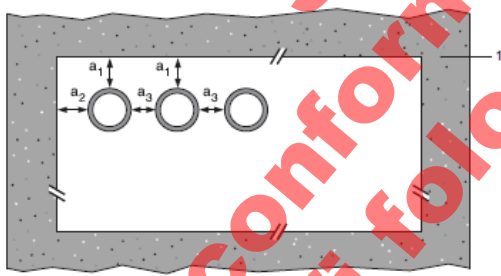
A.6.5 Knauf Firewrap penetration seal for insulated metal pipes, in 2x Knauf FPC panel 1-S, in flexible or rigid walls

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

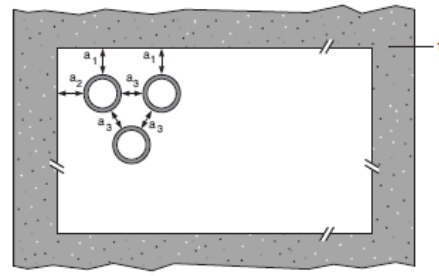
Construction details:



Configuration 1



Configuration 2

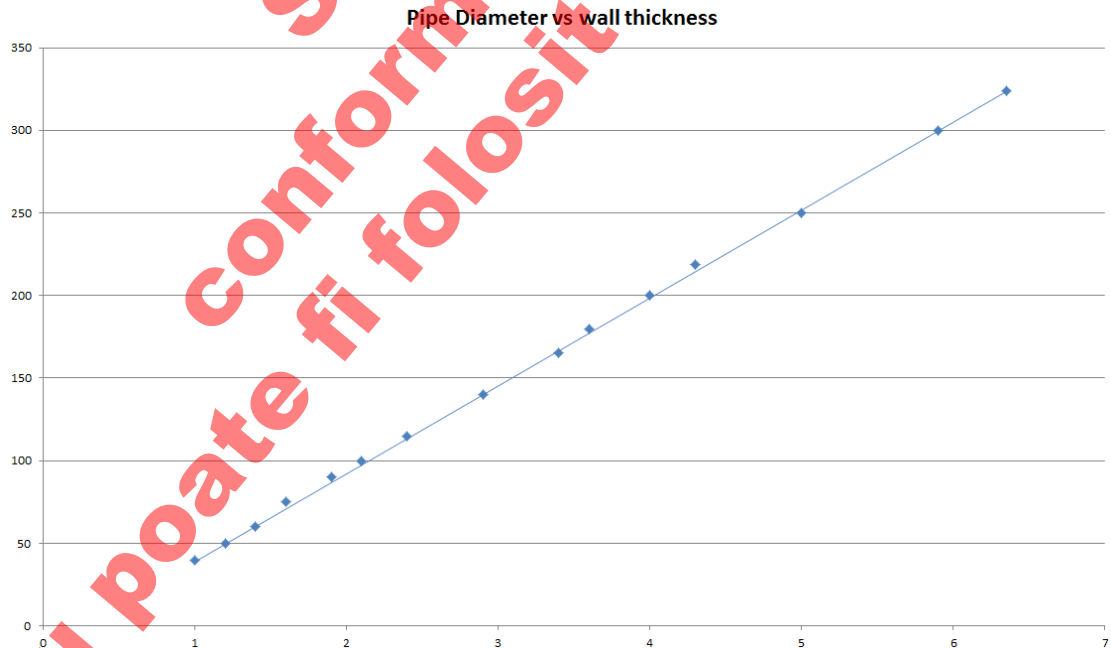


Key

- 1 Supporting construction
- a1 Pipe / top edge of seal separation
- a2 Pipe / side edge of seal separation
- a3 Pipe / pipe separation

A.6.5.1

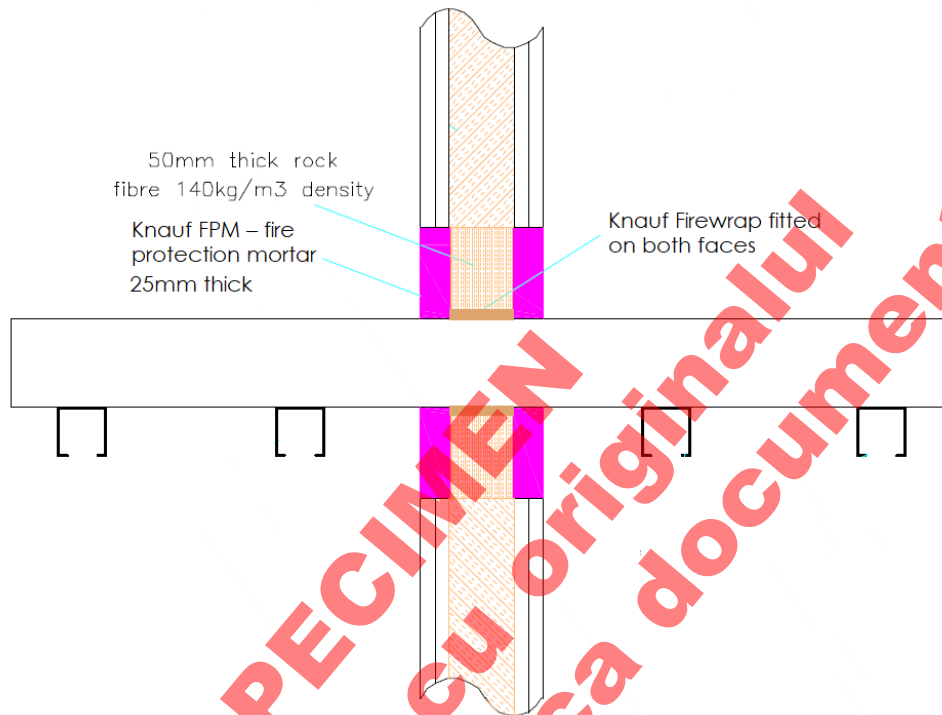
| Mild or stainless steel pipe | Insulation | Knauf Firewrap | Classification |
|-------------------------------------|--|--------------------------------|----------------|
| 40 mm diameter/1-14.2 mm wall | 32 mm thick K-flex Elastomeric insulation | 50 x 5.4 mm (3 x 1.8 layer) | EI 90 C/U |
| 40 mm diameter/1-14.2 mm wall* | 32-50 mm thick K-flex Elastomeric 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* | | | |
| 140 mm diameter/2.9-14.2 mm wall* | | | |
| 165 mm diameter/ 3.4-14.2 mm wall* | | | |
| 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* | | | |



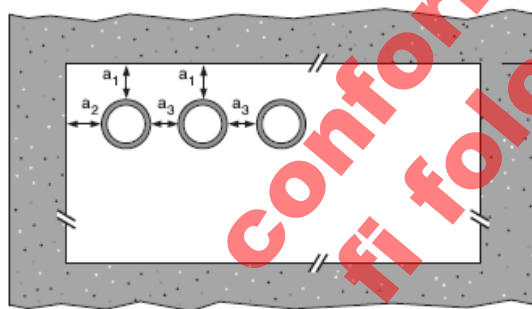
A.6.6 Penetration seal in Knauf FPM - fire protection mortar seals, in flexible* and rigid walls minimum 100 mm thick

Penetration Seal: Combustible pipes sealed with Knauf Firewrap, installed into Knauf FPM - fire protection mortar seals. Minimum separation between penetration seals and seal edges of 30 mm.

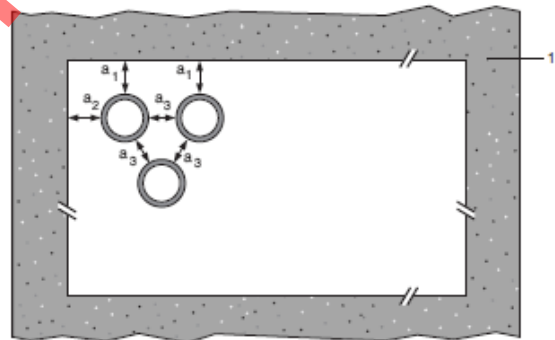
Construction details:



Configuration 1



Configuration 2



Key

- 1 Supporting construction
- a1 Pipe / top edge of seal separation
- a2 Pipe / side edge of seal separation
- a3 Pipe / pipe separation

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

A.6.6.1

| Services | Wraps (both sides) | Permitted configuration for seal separation | Classification |
|--|-----------------------------|---|--|
| PVC-U pipe according to EN 1329-1, EN 1452-2 and EN 1453-1 [^] and PVC-C according to EN 1566-1 | | | |
| Diameter up to 40 mm, wall thickness 3.0 – 4.3 mm | 50 x 1.8 mm (1 layer) | 1 & 2 between PVC-U/PVC-C, PE/ABS/SAN+PVC and PP pipes in any combination | E 120 U/C, E 120 C/U, EI 60 U/C, EI 60 C/C |
| Diameter up to 110 mm, wall thickness 2.7 - 6.6 mm | 50 x 3.6 mm (2 x 1.8 layer) | | E 120 U/C, E 120 C/C, EI 90 U/C, EI 90 C/C |
| Diameter up to 125 mm, wall thickness 3.7 – 7.4 mm | 50 x 5.4 mm (3 x 1.8 layer) | | EI 120 U/C, EI 120 C/C |
| Diameter up to 160 mm, wall thickness 3.2 - 9.5 mm | 50 x 7.2 mm (4 x 1.8 layer) | | EI 60 U/C, EI 60 C/C |
| PE pipe according to EN 1519-1, EN 12201-2 and EN 12006-1 [§] , ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1 | | | |
| Diameter up to 40 mm, wall thickness 3.2 – 3.7 mm | 50 x 1.8 mm (1 layer) | 1 & 2 between PVC-U/PVC-C, PE/ABS/SAN+PVC and PP pipes in any combination | EI 120 U/C, EI 120 C/C |
| Diameter up to 110 mm, wall thickness 4.2 - 10 mm | 50 x 3.6 mm (2 x 1.8 layer) | | EI 60 U/C, EI 60 C/C |
| Diameter up to 125 mm, wall thickness 12 mm | 50 x 5.4 mm (3 x 1.8 layer) | | EI 120 U/C, EI 120 C/C |
| Diameter up to 160 mm, wall thickness 4.9 – 12.0 mm | 50 x 7.2 mm (4 x 1.8 layer) | | E 120 U/C, E 120 C/C |
| Diameter up to 160 mm, wall thickness 12.0 mm | | | EI 90 U/C, EI 90 C/C |
| PP pipe according to EN 1852-1: 2009 | | | |
| Diameter up to 40 mm, wall thickness 4.0 – 5.5 mm | 50 x 1.8 mm (1 layer) | 1 & 2 between PVC-U/PVC-C, PE/ABS/SAN+PVC and PP pipes in any combination | EI 120 U/C, EI 120 C/C |
| Diameter up to 110 mm, wall thickness 6.6 mm | 50 x 3.6 mm (2 x 1.8 layer) | | E 120 U/C, E 120 C/C, EI 90 U/C, EI 90 C/C |
| Diameter up to 125 mm, wall thickness 17.1 mm | 50 x 5.4 mm (3 x 1.8 layer) | | E 120 U/C, E 120 C/C, EI 90 U/C, EI 90 C/C |
| Diameter up to 160 mm, wall thickness 4.0 - 21.9 mm | 50 x 7.2 mm (4 x 1.8 layer) | | E 120 U/C, E 120 C/C |
| Diameter up to 160 mm, wall thickness 21.9 mm | | | EI 60 U/C, EI 60 C/C |

[§] In Germany the pipes have additionally to comply with DIN 19535-10

[^] In Germany the pipes have additionally to comply with DIN 19531-10