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Designated according to Article 29 of Regulation (EU) No 305/2011

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European Technical Assessment

ETA 16/0896
of 22/12/16

Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011:	
Trade name of the construction product	**FOAMGLAS®**
Product family to which the construction product belongs	Fire Stopping and Sealing Product Penetration Seals
Manufacturer	Pittsburgh Corning Europe NV Albertkade 1 3980 TESSENDERLO Belgium
Manufacturing plant(s)	IP Verne Prumyslova 3 Cz 431 51 Klasterec nad Ohri Czech Republic
This European Technical Assessment contains	25 pages including 2 Annex(es) which form an integral part of this assessment.
	Annex(es) A - C Contain(s) confidential information and is/are not included in the European Technical Assessment when that assessment is publicly available.
This European Technical Assessment is issued in accordance with regulation (EU) No 305/2011, on the basis of	ETAG 026, edition 2011, used as European Assessment Document (EAD)

General Comments

1. This European Technical Assessment is issued by Warrington Certification Limited on the basis of ETAG 026 Fire Protective Products Part 1: General June 2013, and Part 2: Fire Stopping and Fire Sealing Products Aug 2011, Used as European Assessment Document.

2. This European Technical Assessment is not to be transferred to manufacturers or agents of manufacturers other than those indicated on page 1, or manufacturing plants other than those indicated on page 1.

Contents

1 SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical Description of the Product

(Detailed information and data are given in Annexes)

1) FOAMGLAS® is a closed cell, glass based, prefabricated insulation material used to reinstate the fire resistance performance of wall and floor constructions where they have been provided with apertures for the penetration of single metallic or single aluminum composite pipes.

2) FOAMGLAS® is manufactured as prefabricated half shells (PSH), prefabricated quarter shells (PSQ) and prefabricated curved segments (PSG) in various thickness to suit the applications detailed in Annex B.

3) Density of FOAMGLAS® insulation is nominally 115 kg/m^3.

4) FOAMGLAS® is supplied in lengths of 600mm.

5) FOAMGLAS® is installed around the pipe and fixed in place with metallic straps. For floor applications adhesive must be used, in wall applications adhesive is optional. The following types of adhesive may be used:-

   - Bitumen Cold Joint Sealer PC®18
   - Two-Component Adhesive PC®56
   - Two-Component Adhesive PC®62

   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.

   The use category of FOAMGLAS® in relation to BWR 3 (Hygiene, health and environment) is IA1, S/W3.

ETAG 026-2 (used as European Assessment Document EAD) Type Y_1.

2 Specification Of The Intended Use In Accordance With The Relevant EAD

2.1 Intended Use

The intended use of FOAMGLAS® is to reinstate the fire resistance performance of rigid and flexible walls and rigid floor constructions where they are penetrated by various specifications of metallic pipes

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

Rigid walls: The wall must have a minimum thickness of 100 mm and comprise concrete, aerated concrete or masonry, with a minimum density of 550 kg/m^3.

Rigid floors: The floor must have a minimum thickness of 150 mm and comprise concrete, aerated concrete or masonry, with a minimum density of 550 kg/m^3.

Flexible walls The wall must have a minimum thickness of 100 mm and comprise timber or steel studs lined on both faces with minimum 2 layers of 12.5 mm thick, 'Type F' Gypsum boards according to EN 520. In timber stud walls, no part of the penetration shall be closer than 100 mm to a stud, the cavity must be closed between the penetration seal and the stud and minimum 100 mm of insulation of class A1 or A2 according to EN 13501-1, is provided within the cavity between the penetration seal and the stud.

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

2) The FOAMGLAS® may be used to provide a penetration seal with single metallic or single aluminum composite pipes. (for details see Annex C).

3) The total amount of cross sections of services (including insulation) should not exceed 60% of the penetration area.

4) Pipes must be installed singular with a minimum separation of 200mm.

5) Services in walls shall be supported at maximum 450mm from both faces of the separating element. Services in floors shall be supported at maximum 450mm from the upper face of the separating element.

6) The provisions made in this European Technical Assessment are based on an assumed working life of the FOAMGLAS® of 10 years, provided that the conditions laid down in the product data sheet for the packaging/transport/ storage/installation/use/repair are met. The indications given on the 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.

2.2 Use Category

Type Y_1: Intended for conditions exposed to weathering.

3 Performance Of The Product And References To The Methods Used For Its Assessment

The assessment of fitness for use has been made in accordance with EOTA ETAG 026 Part 2: 2011-08-08 (used as European Assessment Document, EAD)

ETAG Clause No.	ETA Clause No.	Characteristic	Assessment of characteristic
		Mechanical resistance and stability	Not relevant
		Safety in case of fire	**See Clause 3.1**
2.4.1	3.1	Reaction to fire	**Class A1 according to EN 13501-1**
2.4.2	3.2	Resistance to fire	**See clause 3.2 & Annex C**
		Hygiene, Health and the Environment	
2.4.3	3.3	Air permeability	**See clause 3.3**
2.4.4	3.4	Water permeability	No performance determined
2.4.5	3.5	Dangerous substances	**See clause 3.5**
		Safety in use	
2.4.6	3.6	Mechanical resistance and stability	No performance determined
2.4.7	3.7	Resistance to impact/movement	No performance determined
2.4.8	3.8	Adhesion	No performance determined
		Protection against noise	No performance determined
2.4.9	3.9	Airborne sound insulation	No performance determined
		Energy, Economy and Heat Retention	
2.4.10	3.10	Thermal properties	**See clause 3.10**
2.4.11	3.11	Water vapour permeability	**See clause 3.11**
		General aspects relating to fitness for use	
2.4.12	3.12	Durability and serviceability	**Y_1**

3.1 Reaction to fire

System FOAMGLAS® is classified '**A1'** in accordance with EN 13501-1.

3.2 Resistance to fire

System FOAMGLAS® has been tested in accordance with BS EN 1366-3: 2009 based upon the test results and the field of direct application specified within EN 1366-3: 2009, the system FOAMGLAS® has been classified in accordance with EN 13501-2, as given in Annex C:

The seals may only be penetrated by the services described in Annex C; other parts or support constructions must not penetrate the seal.

The service support construction must be fixed to the building element containing the penetration seal or a suitable adjacent building element, in such a manner that in the case of fire, no additional load is imposed on the seal. Furthermore it is assumed that the unexposed face support is maintained for the required period of fire resistance.

Pipes must be perpendicular to the seal surface.

It is assumed that compressed air systems are switched off by other means in the case of fire.

The function of the pipe seal in case of pneumatic dispatch systems, pressurised air systems etc. is guaranteed only when the systems are shut off in case of fire.

The assessment does not cover the avoidance of destruction of the seal or of the abutting building element(s) by forces caused by temperature changes in case of fire. This has to be considered when designing the piping system.

The approval does not address any risks associated with leakage of dangerous liquids or gases caused by failure of the pipe(s) in case of fire.

The durability assessment does not take account of the possible effect of substances permeating through the pipe on the penetration seal.

3.3 Air permeability

No performance determined

3.4 Water permeability

No performance determined

3.5 Dangerous substances

The applicant is required to submit a written declaration stating whether or not the fire stopping and fire sealing product contains dangerous substances according to European and national regulations, when and where relevant in the Member States of destination, and shall list these substances.

Pittsburgh Corning Europe NV declare that FOAMGLAS® is in compliance with Council Directive 76/769/EEC of 27th July 1976 on the approximation of the laws, regulations and administrative provisions of the Member States relating to restrictions on the marketing and use of certain dangerous substances and preparations (incl. all amendments and adaptations).

Confirmation has further been declared that all dangerous chemical substances ≥ 1.0 % w/w as well as all toxic, carcinogenic, toxic for reproduction and mutagenic chemical substances ≥ 0.1 % w/w (Status: 29. adaption – 2004/73/EG – of the EU directive 67/548/EEC - classification, packaging and labelling of dangerous substances) are stated in the FOAMGLAS® material safety data sheets (according to 91/155/EEC including amendments) and have been considered for the classification of the products according to the directive 1999/45/EG (classification of preparations, including amendments).amendments).

All dangerous chemical substances are below the classification limits of 67/548/EEC

3.6 Mechanical resistance and stability

No performance determined.

3.7 Resistance to impact/movement

No performance determined.

3.8 Adhesion

Not relevant.

3.9 Airborne sound insulation

No performance determined.

3.10 Thermal Properties

FOAMGLAS® Pipe sections									
Temperature mean °C	-160°C	-120°C	-80°C	-40°C	+10°C	+40°C	+100°C	+160°C	+220°C
λ_D Thermal conductivity W/(m.K)	0.023	0.027	0.031	0.037	0.044	0.050	0.062	0.075	0.091

3.11 Water vapour permeability

Material	Density (kg/m^3)	Water Vapour Resistance Factor μ	
		Dry	Wet
Cellular Glass	100-150	∞	∞

3.12 Durability and serviceability

FOAMGLAS® is currently certified in accordance with EN 14305 +A1 2013 which is deemed to be a comparable product standard to EN 13162 or EN 14303 which is detailed specifically within ETAG 26-03 as a durability standard for mineral fiber based product. EN14305 +A1 2013 Thermal insulation products for building equipment and industrial installations. Factory made cellular glass (CG) products is pseific to the product type FOAMGLAS® and has therefore been deemed to be a suitable method of analysis for this European Technical Assessment.

FOAMGLAS® has been tested in accordance with the requirements of EN14305 +A1 2013 Thermal insulation products for building equipment and industrial installations. Factory made cellular glass (CG) products, for the type Y_1 use category specified in ETAG 026-3 (used as European Assessment Document, EAD), and the results of the tests have demonstrated suitability for penetration seals intended for use at temperatures below 0^{oC} with exposure to UV but no exposure to rain.

4 Assessment And Verification Of Constancy Of Performance (Hereinafter AVCP) System Applied, With References To Its Legal base

According to the decision 1999/454/EC of the European Commission the system of assessment and verification of constancy of performance (see Annex V to the Regulation (EU) No 305/2011) given in the following table apply:

Products	Intended uses	Level or Class	System
Fire stopping and fire sealing products	For fire compartmentation and / or fire protection or fire performance	Any	System 1

5. Technical Details Necessary For The Implementation Of The AVCP System, As Provided For In The Applicable EAD.

Tasks for 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 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 18/2/16 relating to the European technical assessment ETA 16/0896 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 Warrington Certification Limited.

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

Other tasks of 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.
- Services for which the penetration seal is suitable, type and properties of the services like material, diameter, thickness etc. in case of pipes including insulation materials; necessary/allowed supports/fixings (e.g. cable trays)
- 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.

Tasks of approved bodies

The approved body shall perform the

— initial type-testing of the product,

— initial inspection of factory and of factory production control,

— continuous surveillance, assessment and approval of factory production control,

In accordance with the provisions laid down in the "Control Plan" of 18/2/16 relating to the European Technical Assessment 16/0896.

The approved body shall retain the essential points of its actions referred to above and state the results obtained and conclusions drawn in a written report.

The approved certification body involved by the manufacturer shall issue an EC certificate of conformity of the product stating the conformity with the provisions of this European technical assessment.

In cases where the provisions of the European technical assessment and its "Control Plan" are no longer fulfilled the certification body shall withdraw the certificate of conformity and inform the Warrington Certification Limited without delay.

Signatories

Responsible Officer

C. Abbott* - Principal Certification Engineer

Approved

A. Kearns* - Technical Manager

* For and on behalf of Warrington Certification Limited.

Annex A

Reference Documents and LIST OF ABBREVIATIONS

References to standards mentioned in the ETA:

EN 13501-1	Fire classification of construction products and building elements – Part 1: Classification using test data from reaction to fire tests
EN 13501-2	Fire classification of construction products and building elements – Part 2: Classification using test data from fire resistance tests

Other reference documents:

EOTA TR 024	Characterisation, Aspects of Durability and Factory Production Control for Reactive Materials, Components and Products
ETAG No. 026: Part 2	Guideline For European Technical Approval of Fire Stopping and Fire Sealing Products, Part 3: Penetration Seals (used as European Assessment Document, EAD)

Annex B

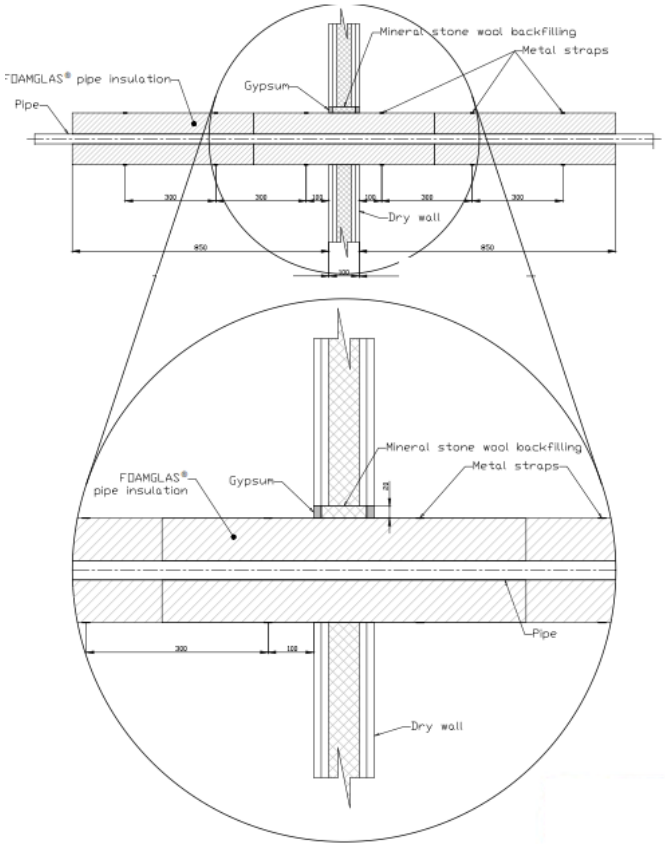
Resistance to Fire Classification of FOAMGLAS®

B.1.1 Flexible and Rigid wall constructions according to 1.2.1 with wall thickness of minimum 100 mm

Penetration seal with FOAMGLAS® – Aluminium Composite Pipes

Construction details:

- PE-Xb/Al/PE-Xb-pipes (Fränkische Rohrwerke Alpex F50 Profi)
- FOAMGLAS® prefabricated insulation for straight pipes, minimum insulation length = 850 mm (LS) Local Sustained on both sides of the wall
- FOAMGLAS® insulation mechanically secured utlising Stainless Steel straps 12.7mm width, 0.5mm thickness, slip fitted around the installed insulation. First strap at a distance of 100mm from the wall, next strap at 300mm from the wall, secured by means of a metal strap clamp or rivet. Adhesive is optional for wall installations
- Annular sealing with adhesive gypsum, min 12.5mm thickness with an annular space range of 0-20mm. Mineral wool (min 21.5 kg/m^3) backfilling is utlised.



B.1.2

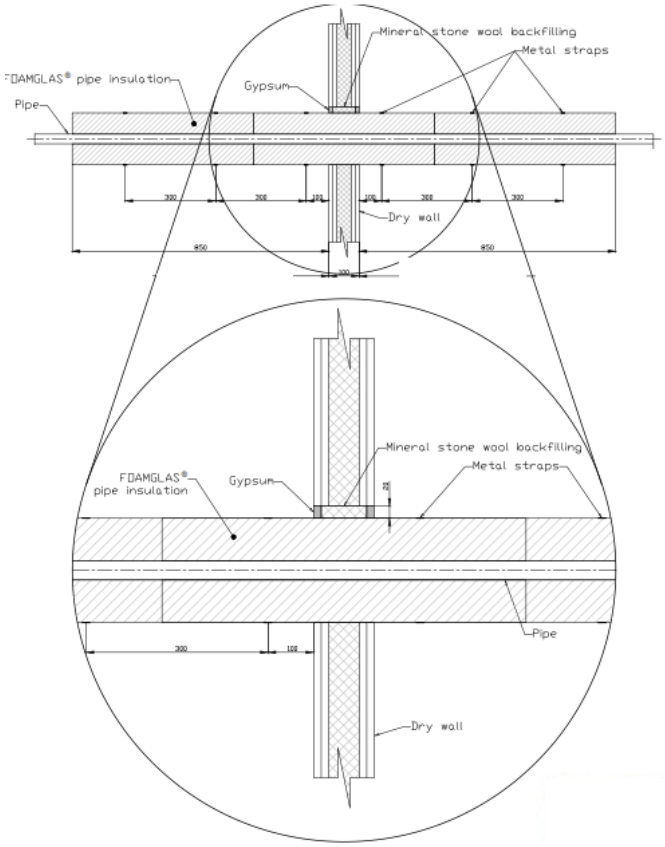
PE-Xb/Al/PE-Xb-pipes (Fränkische Rohrwerke Alpex F50 Profi)				
Pipe Ø [mm]	Wall thickness [mm]	Aluminium layer thickness [mm]	Pipe insulation thickness [mm]	Classification
16	2.0 ± 0.5	0.2 ± 0.1	25 to 70	E 120 U/C EI 90 U/C
20	2.0 ± 0.5	0.3 ± 0.1		
26	3.0 ± 0.5	0.5 ± 0.2		
32	3.0 ± 0.5	0.6 ± 0.2		
40	3.5 ± 0.5	0.85 ± 0.2		
50	4.0 ± 0.5	1.0 ± 0.2		
63	4.5 ± 0.5	1.2 ± 0.2		EI 90 U/C
75	5.0 ± 0.5	1.5 ± 0.2		E 120 U/C EI 90 U/C

PE-Xb/Al/PE-Xb-pipes (Fränkische Rohrwerke Alpex F50 Profi)				
Pipe Ø [mm]	Wall thickness [mm]	Aluminium layer thickness [mm]	Pipe insulation thickness [mm]	Classification
16	2.0 ± 0.5	0.2 ± 0.1	25 to 70	EI 120 U/C
20	2.0 ± 0.5	0.3 ± 0.1		
26	3.0 ± 0.5	0.5 ± 0.2		

B2.1 Flexible and Rigid wall constructions according to 1.2.1 with wall thickness of minimum 100 mm

Penetration seal with FOAMGLAS® – Copper and Steel Pipes

- Copper and Steel Pipes
- FOAMGLAS® prefabricated insulation for straight pipes, minimum insulation length = 850 mm (LS) Local Sustained on both sides of the wall
- FOAMGLAS® insulation mechanically secured utlising Stainless Steel straps 12.7mm width, 0.5mm thickness, slip fitted around the installed insulation. First strap at a distance of 100mm from the wall, next strap at 300mm from the wall, secured by means of a metal strap clamp or rivet. Adhesive is optional for wall installations
- Annular sealing with adhesive gypsum, min 12.5mm thickness with an annular space range of 0-20mm. Mineral wool (min 21.5 kg/m^3) backfilling is utlised.



B.2.2

Copper and Steel Pipes			
Pipe Ø [mm]	Wall thickness [mm] (1)	Pipe insulation thickness [mm]	Classification
≤ 28	≥ 1.0	25 to 60	E 120 C/U EI 90 C/U
≤ 42	≥ 1.2		
≤ 54	≥ 1.5	25 to 70	
≤ 89	≥ 2.0	30 to 80	
≤ 108	≥ 2.5		

Copper and Steel Pipes			
Pipe Ø [mm]	Wall thickness [mm] (1)	Pipe insulation thickness [mm]	Classification
≤ 28	≥ 1.0	25 to 60	EI 120 C/U
≤ 42	≥ 1.2		
≤ 54	≥ 1.5	25 to 70	
≤ 89	≥ 2.0	30 to 80	

Steel Pipes			
Pipe Ø [mm]	Wall thickness [mm] (1)	Pipe insulation thickness [mm]	Classification
≤ 33.7	≥ 1.8	25 to 60	E 120 C/U EI 90 C/U
≤ 60.3	≥ 2.9	25 to 70	
≤ 114.3	≥ 3.6		

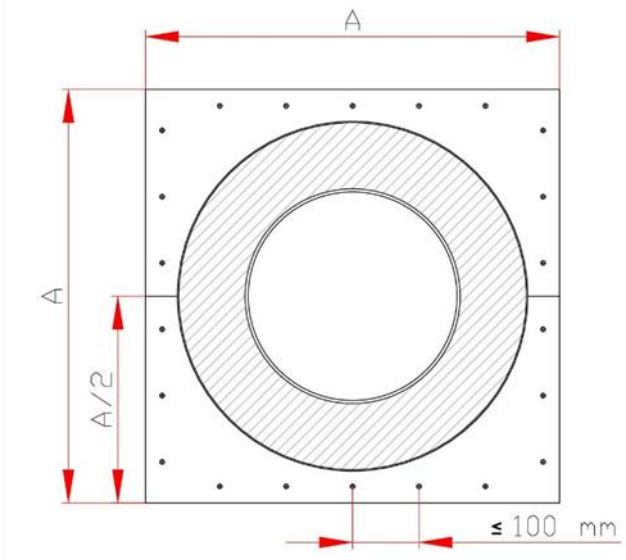
Steel Pipes			
Pipe Ø [mm]	Wall thickness [mm] (1)	Pipe insulation thickness [mm]	Classification
≤ 33.7	≥ 1.8	60	EI 120 C/U
≤ 60.3	≥ 2.9	70	
≤ 114.3	≥ 3.6		

[1] Maximum pipe wall thickness is limited to 14.2mm

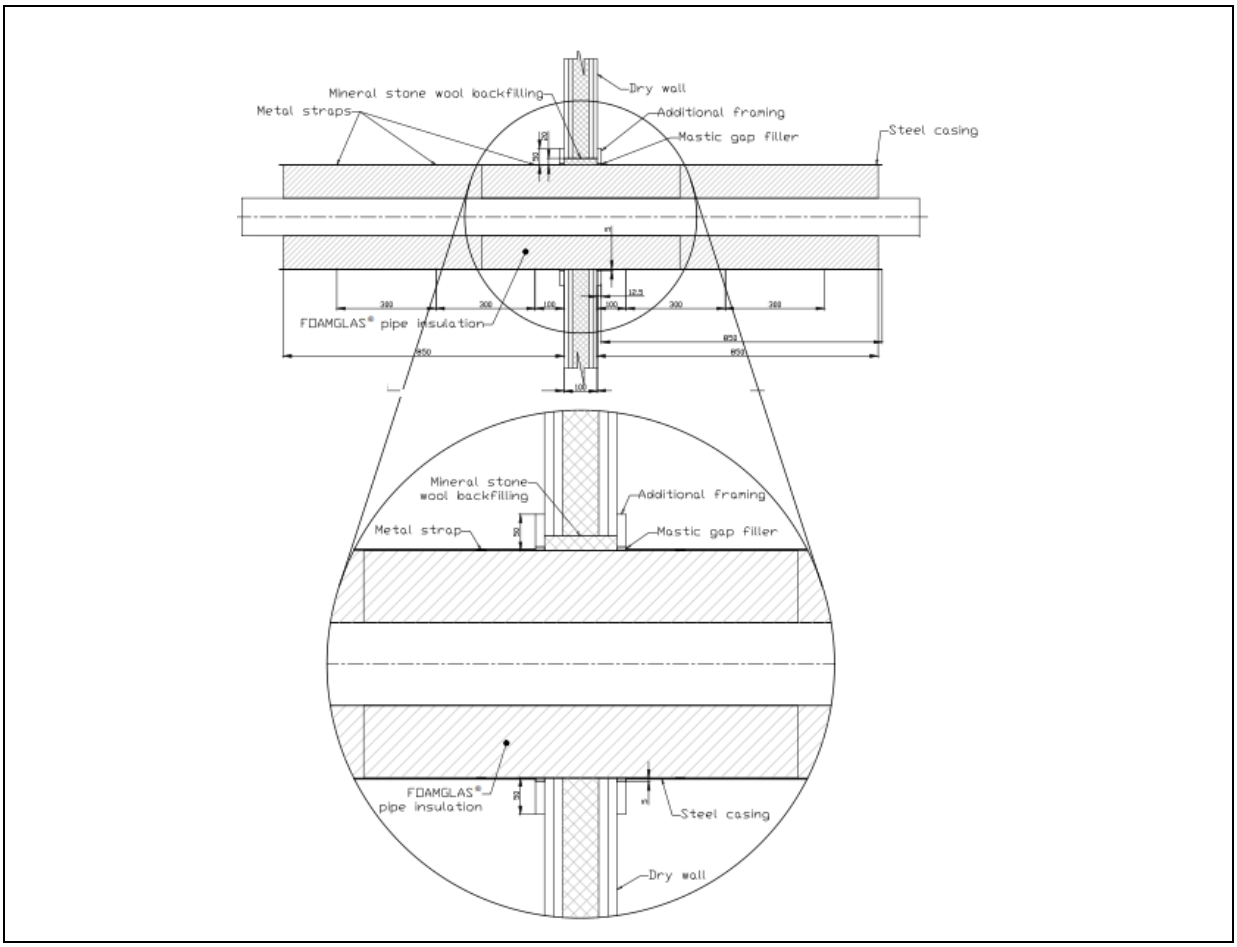
B3.1 Flexible and Rigid wall constructions according to 1.2.1 with wall thickness of minimum 100 mm

Penetration seal with FOAMGLAS® – Copper and Steel Pipes (Additional Framing)

- Copper and Steel Pipes with additional framing
- The additional framing consists of an outside framing of one layer (12.5 mm thick type F board in accordance with EN 520) fixed with drywall screws against the flexible wall (100 mm thick) at both sides of the wall. The square shaped gypsum board has a length of the rectangular side of the total service diameter increased with 100 mm and is provided of a hole in the centre. The annular space between the additional framing and the service is maximum 5 mm. The frame is mounted against the flexible wall by cutting the frame in half and placed very tightly around the service, glued to the wall by gypsum or acrylic and to fixed with screws. The maximum spacing between the screws is 100 mm.



- Glazanised steel casing 0.5mm thick, minimum length 850mm (LI) local interupted, is mounted around the pipe insulation adjacent to the wall surface. The casing is fixed to the insulation by screws 35mm from the edge cenbtres 150mm. The steeel casing is installed to overlap.
- FOAMGLAS® prefabricated insulation for straight pipes, minimum insulation length = 850 mm (LS) Local Sustained on both sides of the wall
- FOAMGLAS® insulation mechanically secured utlising Stainless Steel straps 12.7mm width, 0.5mm thickness, slip fitted around the installed insulation. First strap at a distance of 100mm from the wall, next strap at 300mm from the wall, secured by means of a metal strap clamp or rivet. Adhesive is optional for wall installations
- Annular sealing with adhesive gypsum, min 12.5mm thickness with an annular space range of 0-20mm. Mineral wool (min 21.5 kg/m^3) backfilling is utlised. Promaseal ®-A acrylic sealant is utlised to seal between the casing and additional protection



B.3.2

Copper and Steel Pipes			
Pipe Ø [mm]	Wall thickness [mm] (1)	Pipe insulation thickness [mm]	Classification]
≤ 108	≥ 2.5	30 to 80	EI 120 C/U

Steel Pipes			
Pipe Ø [mm]	Wall thickness [mm] (1)	Pipe insulation thickness [mm]	Classification
≤ 114.3	≥ 3.6	40 to 100	E 120 C/U EI 90 C/U
≤ 168.3	≥ 4.5		
≤ 323.9	≥ 5.6		

Steel Pipes			
Pipe Ø [mm]	Wall thickness [mm] (1)	Pipe insulation thickness [mm]	Classification
≤ 114.3	≥ 3.6	40 - 100	EI 120 C/U
≤ 168.3	≥ 3.6		
≤ 323.9	≥ 4.5	100	

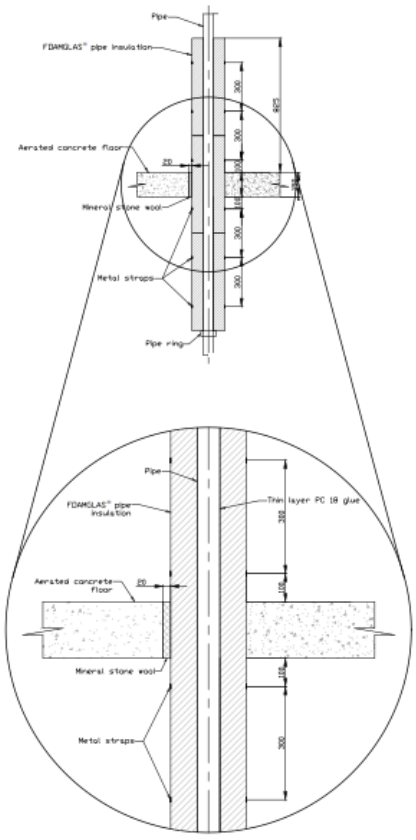
[1] Maximum pipe wall thickness is limited to 14.2mm

B.4.1 Rigid floor constructions according to 1.2.1 with floor thickness of minimum 150 mm

Penetration seal with FOAMGLAS® – Aluminium Composite Pipes

Construction details:

- PE-Xb/Al/PE-Xb-pipes (Fränkische Rohrwerke Alpex F50 Profi)
- FOAMGLAS® prefabricated insulation for straight pipes, minimum insulation length = 825 mm (LS) Local Sustained on both sides of the floor
- FOAMGLAS® insulation mechanically secured utlising Stainless Steel straps 12.7mm width, 0.5mm thickness, slip fitted around the installed insulation. First strap at a distance of 100mm from the wall, next strap at 300mm from the wall, secured by means of a metal strap clamp or rivet. Adhesive is mandatory for floor installations
- Annular sealing with mineral wool (min 21.5 kg/m^3) 150mm deep.



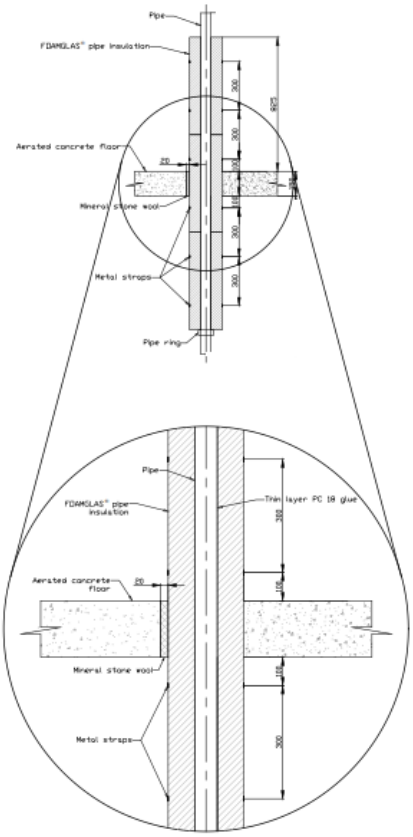
B.4.2

PE-Xb/Al/PE-Xb-pipes (Fränkische Rohrwerke Alpex F50 Profi)				
Pipe Ø [mm]	Wall thickness [mm]	Aluminium layer thickness [mm]	Pipe insulation thickness [mm]	Classifcation
16	2.0 ± 0.5	0.2 ± 0.1	25 to 70	EI120 U/C
20	2.0 ± 0.5	0.3 ± 0.1		
26	3.0 ± 0.5	0.5 ± 0.2		
32	3.0 ± 0.5	0.6 ± 0.2		
40	3.5 ± 0.5	0.85 ± 0.2		
50	4.0 ± 0.5	1.0 ± 0.2		
63	4.5 ± 0.5	1.2 ± 0.2		
75	5.0 ± 0.5	1.5 ± 0.2		

B5.1 Rigid floor constructions according to 1.2.1 with floor thickness of minimum 150 mm

Penetration seal with FOAMGLAS® – Copper and Steel Pipes

- Copper and Steel Pipes
- FOAMGLAS® prefabricated insulation for straight pipes, minimum insulation length = 825 mm (LS) Local Sustained on both sides of the floor
- FOAMGLAS® insulation mechanically secured utlising Stainless Steel straps 12.7mm width, 0.5mm thickness, slip fitted around the installed insulation. First strap at a distance of 100mm from the wall, next strap at 300mm from the wall, secured by means of a metal strap clamp or rivet. Adhesive is mandatory for floor installations
- Annular sealing with mineral wool (min 21.5 kg/m^3) min 150mm deep.



B5.2

Steel and Copper Pipes			
Pipe Ø [mm]	Wall thickness [mm] (1)	Pipe insulation thickness [mm]	Classification
≤ 28	≥ 1.0	25 to 60	EI 90 C/U
≤ 42	≥ 1.2	25 to 60	
≤ 54	≥ 1.5	25 to 70	
≤ 89	≥ 2.0	30 to 80	
≤ 108	≥ 2.5	30 to 80	

Steel and Copper Pipes			
Pipe Ø [mm]	Wall thickness [mm] (1)	Pipe insulation thickness [mm]	Classification
≤ 28	≥ 1.0	25 to 60	EI 120 C/U
≤ 42	≥ 1.2	25 to 60	
≤ 54	≥ 1.5	25 to 70	
≤ 89	≥ 2.0	80	

Steel Pipe			
Pipe Ø [mm]	Wall thickness [mm] (1)	Pipe insulation thickness [mm]	Separation a_2 [mm]
≤ 33.7	≥ 1.8	25 to 60	E 120 C/U EI 90 C/U
≤ 60.3	≥ 2.9	25 to 70	
≤ 114.3	≥ 3.6	25 to 70	

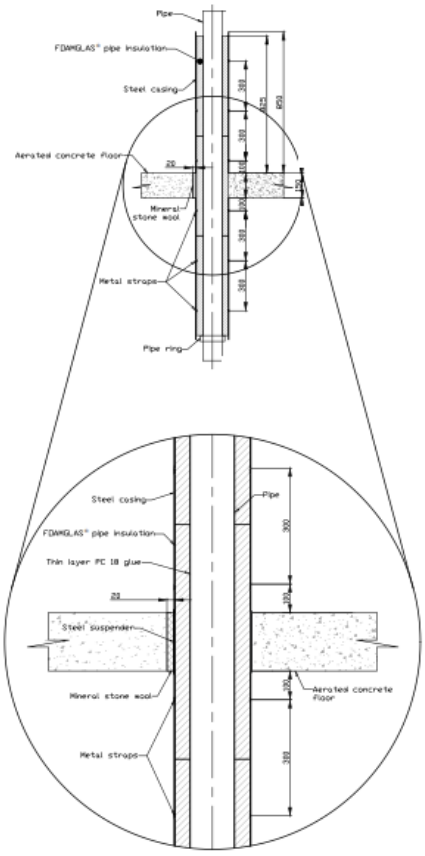
Steel Pipe			
Pipe Ø [mm]	Wall thickness [mm] (1)	Pipe insulation thickness [mm]	Classification
≤ 33.7	≥ 1.8	25 to 60	EI 120 C/U
≤ 60.3	≥ 2.9	70	
≤ 114.3	≥ 3.6	70	

[1] Maximum pipe wall thickness is limited to 14.2mm

B6.1 Rigid floor constructions according to 1.2.1 with floor thickness of minimum 150 mm

Penetration seal with FOAMGLAS® – Copper and Steel Pipes

- Copper and Steel Pipes
- Glazanised steel casing 0.5mm thick, minimum length 850mm (LI) local interupted, is mounted around the pipe insulation adjacent to the floor surface. The casing is fixed to the insulation by screws 35mm from the edge cenbtres 150mm. The steel casing is installed to overlap.
- FOAMGLAS® prefabricated insulation for straight pipes, minimum insulation length = 850 mm (LS) Local Sustained on both sides of the floor
- FOAMGLAS® insulation mechanically secured utlising Stainless Steel straps 12.7mm width, 0.5mm thickness, slip fitted around the installed insulation. First strap at a distance of 100mm from the floor, next strap at 300mm from the floor, secured by means of a metal strap clamp or rivet. Adhesive is mandatory for floor installations
- Annular sealing with mineral wool (min 21.5 kg/m^3) min 150mm deep.



B6.2

Copper and Steel Pipes			
Pipe Ø [mm]	Wall thickness [mm] (1)	Pipe insulation thickness [mm]	Classification
≤ 108	≥ 2.5	40 to 100	EI 90 C/U
≤ 159	≥ 3.0	40 to 100	

Copper and Steel Pipes			
Pipe Ø [mm]	Wall thickness [mm] (1)	Pipe insulation thickness [mm]	Classification
≤ 108	≥ 2.5	30 to 80	EI 120 C/U
≤ 159	≥ 3.0	100	

Steel Pipes			
Pipe Ø [mm]	Wall thickness [mm] (1)	Pipe insulation thickness [mm]	Classification
≤ 114.3	≥ 3.6	40 to 100	E 120 C/U EI 90 C/U
≤ 168.3	≥ 4.5	40 to 120	
≤ 323.9	≥ 5.6	40 to 120	
≤ 610	≥ 12.5	60 to 120	

Steel Pipes			
Pipe Ø [mm]	Wall thickness [mm] (1)	Pipe insulation thickness [mm]	Classification
≤ 114.3	≥ 3.6	40 to 100	EI 120 C/U
≤ 168.3	≥ 4.5	40 to 120	
≤ 323.9	≥ 5.6	40 to 120	
≤ 610	≥ 12.5	60 to 120	

[1] Maximum pipe wall thickness is limited to 14.2mm