ETA-Danmark A/S
Göteborg Plads 1
DK-2150 Nordhavn
Tel. +45 72 24 59 00
Internet www.etadanmark.dk

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-25/0538 of 2025/05/30

I General Part

Technical Assessment Body issuing the ETA and designated according to Article 66 of the Regulation (EU) No 305/2011: ETA-Danmark A/S

Trade name of the construction product:	FireFree 330 Flexbøsning
Product family to which the above construction product belongs:	Fire stopping product – penetration seals.
Manufacturer:	Scandi Supply A/S Energivej 2, DK-5492 Vissenbjerg Internet www.scandisupply.dk
Manufacturing plant:	Plant E
This European Technical Assessment contains:	52 pages including 5 annexes which form an integral part of the document
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, based on:	European Assessment Document (EAD) No. 350454-00-1104 Fire Stopping and fire sealing products – Penetration seals
This version replaces:	

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 (excepted the confidential Annex(es) referred to above). However, partial reproduction may be made, with the written consent of the issuing Technical Assessment Body. Any partial reproduction must be identified as such.

II SPECIFIC PART OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical description of product

"FireFree 330 Flexbøsning" is a product to be used as pipe penetration seal based on the pipe collar "FireFree 330 Flexbøsning" in combination with gap fillers and insulations(additional components).

Components of pipe collar "FireFree 330 Flexbøsning"	**Characteristics**
FireFree strip	Flexible intumescent strip (provided with a seif- adhesive device) with a nominal thickness of 2,0 mm and a width of 40 mm
FireFree strip EM	Flexible intumescent strip (provided with a seif- adhesive device) with a nominal thickness of 2,0 mm and a width of 40 mm
Metal Strap	Metal strap according to Annex B of the ETA made of sheet steel (alloy 1.4016 according to EN 10088-2) with a width of 42,5 mm for fixing of "ROKU® Strip" and "ROKU®Strip EM"
Metal Hook	Metal hook according to Annex B of the ETA made of sheet steel (alloy 1.4016 according to EN 10088-2) for fixing the Metal Straps to the separating element

Gap fillers (additional components)	**Characteristics**
FLAMRO BSS	lntumescent fire protection foam on the basis of polyurethane (2-component) - filled in cartridges - only to be used as gap filler in rigid floors for plastic pipes "Wavin SiTech+", "Geberit Silent-PP", "POLO-KAL NG" and "RAUPIANO PLUS"
Gap Filler	Non-combustible material with classification A1 or A2-s1,d0 according to EN 13501-1 which is dimensionally stable as e.g. mortar, cement or gypsum joint filler

Insulation (additional components)	**Characteristics**
AF/Armaflex	Closed cell, flexible elastomeric foam (FEF) insulation in form of (slotted) tubes (can be provided with a self-adhesive device) with classification BL-s3,d0 - including "Armaflex 520" - according to EN 13501-1 from manufacturer "Armacell GmbH"
AF/Armaflex Band selbstklebend (AF/Armaflex self-adhesive tape)	Closed cell, flexible elastomeric foam (FEF) insulation in form of tapes with a self-adhesive device with classification B-s3,d0 according to EN 13501-1 from manufacturer "Armacell GmbH"
SH/Armaflex	Closed cell, flexible elastomeric foam (FEF) insulation in form of (slotted) tubes (can be provided with a self-adhesive device) with classification BL-s3,d0 - including "Armaflex 520" - according to EN 13501-1 from manufacturer "Armacell GmbH"
SH/Armaflex Band selbstklebend (SH/Armaflex self-adhesive tape)	Closed cell, flexible elastomeric foam (FEF) insulation in form of tapes with a self-adhesive device with classification B-s3,d0 according to EN 13501-1 from manufacturer "Armacell GmbH"
Armaflex 520	Polychlorene-based adhesive, free from aromatic compounds (special adhesive for processing of all flexible Armaflex insulating material - except "HT/Armaflex") from manufacturer "Armacell GmbH"
Polyethylene sound insulation	Closed cell, flexible polyethylene foam insulation in form of tubes (can be faced with an inside and outside PE-foil) with a thickness of up to 4 mm, a density of 30 kg/m^3 to 40 kg/m3 and classification fa according to EN 13501-1 (e.g. THERMACOMPACT TF™ from manufacturer "thermaflex®")

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

"FireFree 330 Flexbøsning" is intended to be used as a pipe penetration seal to reinstate the fire resistance performance of flexible wall constructions temporarily or permanently, rigid wall constructions and rigid floor constructions where they have been provided with apertures which are penetrated by various metal pipes and plastic pipes.

"FireFree 330 Flexbøsning" can only be installed in the types of separating elements as specified in annex A.0.

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

The provisions made in this European Technical Assessment are based on an assumed intended working life of the "FireFree 330 Flexbøsning" of 10 years, provided the manufacturers conditions for the packaging, transport, storage, installation, use, maintenance and repair are met.

The indications given on the working life cannot be interpreted as a guarantee given by the producer or 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.

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

Characteristic	Assessment of characteristic
3.2 Safety in case of fire (BWR2)	
Reaction to fire	The components are classified in accordance with EN13501-1, and the EC Delegated regulation 2016/364/EU:
Resistance to fire	Classification according to EN 13501-2: See Annex A-D for further information of fire-resistant designs.
3.3 Hygiene, health, and the environment (BWR3)	
Content, emission and/or release of dangerous substances*	No performance assessed
Air permeability (material property)	No performance assessed
Water Permeability (material property)	No performance assessed
3.4 Safety and accessibility in use (BWR4)	
Mechanical resistance and stability	No performance assessed
Resistance to impact/movement	No performance assessed
Adhesion	No performance assessed
Durability	Use category: **Type Y_1**
3.5 Protection against noise (BWR5)	
Airborne sound insulation	No performance assessed
3.6 Energy Economy and heat retention (BWR6)	
Thermal properties	No performance assessed
Water vapour permeability	No performance assessed

Component	Class according to EN 13501-1
FireFree strip	**E**
FireFree strip EM	**E**
Metal Strap	**A1**
Metal Hook	**A1**
FLAMRO BSS	**E**

See additional information in section 3.8 – 3.9.

*) 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.

3.8 Methods of verification

The characteristic values of the joint sealing system are based on the EAD 350454-00-1104 assessed as a collar, according to table 1.1 of the EAD.

3.9 General aspects related to the fitness for use of the product

The verification of durability is part of testing the essential characteristics. FireFree 330 Flexbøsning may be used in end-use applications according to the provisions for use category Y_1 (intended for use at temperatures below 0°C with exposure to UV but no exposure to rain) without expecting significant changes of the characteristics relevant for fire protection. Since the requirements for Type Y1 are met, also the requirements for Type Y2, Z1 and Z2 are fulfilled.

The European Technical Assessment is issued for the product based on agreed data/information, deposited with ETA-Danmark, which identifies the product that has been assessed and judged. Changes to the product or production process, which could result in this deposited data/information being incorrect, should be notified to ETA-Danmark before the changes are introduced. ETA-Danmark will decide if such changes affect the ETA and consequently the validity of the CE marking based on the ETA and if so whether further assessment or alterations to the ETA, shall be necessary.

FireFree 330 Flexbøsning is manufactured in accordance with the provisions of this European Technical Assessment using the manufacturing processes as identified in the inspection of the plant by the notified inspection body and laid down in the technical documentation.

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

4.1 AVCP system

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

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 prior to CE marking.

Issued in Copenhagen on 2025-05-30 by

Thomas Bruun
Managing Director, ETA-Danmark

Annex – A
Intended use and specification of details

Separating element	**Construction**
Flexible walls	• Steel studs or timber studs lined on both faces with minimum 2 layer of boards (minimum thickness 12,5 mm) with classification A2-s1,d0 or A1 according to EN 13501-1 • For timber stud walls there shall be a minimum distance of 100 mm of the penetration seal to any timber stud. The cavity between the penetration seal and the timber stud has to be closed with minimum 100 mm of insulation with classification A1 or A2 according to EN 13501-1 • Minimum thickness 94 mm • Classification according to EN 13501-2… EI 90 • This European Technical Assessment does not cover sandwich panel constructions and flexible walls were the lining does not cover studs on both sides. Penetrations in such constructions shall be tested on a case-by-case basis
Rigid walls	• Aerated concrete, concrete, masonry • Minimum thickness 100 mm • The rigid wall shall be classified in accordance with EN 13501-2 for the required fire resistance period
Rigid floors	• Aerated concrete, concrete • Minimum density 550 kg/m^3 • Minimum thickness 150 mm • The rigid floor shall be classified in accordance with EN 13501-2 for the required fire resistance period

1 General

- "FireFree 330 Flexbøsning" can be used for metal pipes and plastic pipes according to clause 2.1 of the ETA in apertures in walls (vertical separating element) and floors (horizontal separating element) according to clause 2.1 of the ETA.
- Each metal pipe or plastic pipe which is to be sealed off has to be equipped separatelywith "FireFree 330 Flexbøsning"; except for multiple penetrations of maximumthree plastic pipes (clearance between pipes maximum 15 mm; linear arrangement, noclusters) according to clause 2.1 of the ETA made from PVC-U, PE-HD or PP withdiameters and wall thicknesses as defined in Annex D-9 and Annex E-9 of the ETA - these pipes can be equipped with one concerted pipe collar "FireFree 330 Flexbøsning".For details see Annex C-5 and Annex C-15 of the ETA.
- In some cases it is allowed to install "FireFree 330 Flexbøsning" on plastic pipes with bows on the bottom side of the floor and a connection sleeve within the floor. For details see Annex C-14, Annex D-5 and Annex E-7 to E-9 of the ETA.
- In some cases it is allowed for floor penetrations to install "FireFree 330 Flexbøsning" on vertical plastic pipes which are positioned directly in the corner of the wall (clearance between pipe and wall maximum 10 mm). The pipe collar "FireFree 330 Flexbøsning" covers the pipe only from wall to wall. For details see Annex C-11, Annex C-12, Annex E-2, Annex E-5, Annex E-7 to Annex E-9 of the ETA.

1.1 Pipe end configuration

- For plastic pipes classified with pipe end configuration U/U the pipe end configuration canbe U/U, C/U, U/C and C/C.
- For plastic pipes classified with pipe end configuration U/C the pipe end configuration can be U/C and C/C.
- For metal pipes classified with pipe end configuration C/U the pipe end configuration canbe C/U and C/C.

1.2 Orientation of the penetrating elements

- Metal pipes and plastic pipes (except for some plastic pipes according to Annex D-1, Annex D-2, Annex D-3, Annex E-1, Annex E-2 of the ETA) have to be installed perpendicular to the surface of the separating element.
- Some plastic pipes according to Annex D-1, Annex D-2, Annex D-3, Annex E-1, Annex E-2 of the ETA can be installed in all angles between 90° and 45°.
- In case of multiple penetrations of maximum three plastic pipes (linear arrangement, no clusters) according to clause 2.1 of the ETA made from PVC-U, PE-HD or PP with diameters and wall thickness as defined in Annex D-9 of the ETA equipped with one concerted pipe collar “FireFree 330 Flexbøsning” which are installed in vertical separating elements the plastic pipes shall only be positioned in horizontal direction. For details see Annex C-5 and Annex C-15 of the ETA

1.3 Service support constructions

- All metal pipes and plastic pipes - in flexible walls and rigid walls - have to be supported on both sides of the separating element by service support constructions (e.g. pipe hangers) made of metal with a melting or decomposition point greater or equal than 945 °Cfor EI 60, 1006 °C for EI 90 or 1049 °C for EI 120 (e.g. stainless steel or galvanized steel) according to the ETA-holder's installation instructions.
- All metal pipes and plastic pipes - in rigid floors - have to be supported at least on the top side of the separating element by service support constructions (e.g. pipe hangers) made of metal with a melting or decomposition point greater or equal than 945 °C for EI 60, 1006 °C for EI 90, 1049 °C for EI 120, 1110 °C for EI 180 or 1153 °C for EI 240 (e.g. stainless steel or galvanized steel) according to the ETA-holder's installation instructions.
- The first support (service support construction) for metal pipes and plastic pipes in flexible walls and rigid walls has to be at maximum 650 mm (measured from the surface of the separating element).
- The first support (service support construction) for metal pipes in rigid floors has to be at maximum 550 mm (measured from the surface of the separating element).
- The first support (service support construction) for plastic pipes in rigid floors has to be atmaximum 400 mm (measured from the surface of the separating element).
- All metal pipes and plastic pipes have to be fixed according to the ETA-holder's installation instructions to the service support construction.

2 Details for installation of "FireFree 330 Flexbøsning" (see Annex B to E-10 of theETA)

- "FireFree 330 Flexbøsning" has to be installed according to the ETA-holder'sinstallation instructions.

2.1 Plastic pipes and metal pipes in vertical separating elements

- For plastic pipes in vertical separating elements the pipe collar "FireFree 330 Flexbøsning" has to be installed on both sides of the separating element (see Annex C-1 to Annex C-5 ofthe ETA).
- For metal pipes in vertical separating elements “FireFree strip” or “FireFree strip EM”has to be installed on both sides flushed within the separating element (without “Metal strap”) (see Annex C-6, Annex C-7 and Annex D-9 of the ETA)

2.2 Plastic pipes and metal pipes in horizontal separating elements

- For plastic pipes in horizontal separating elements the pipe collar "FireFree 330 Flexbøsning" has to be installed at the bottom side of the separating element (see Annex C-8 to Annex C-15 of the ETA).
- For metal pipes in horizontal separating elements two "FireFree strip" or "FireFree strip EM"which have to be arranged one behind the other have to be installed at the bottom side flushed within the separating element (without "Metal Strap") (see Annex C-16, Annex E-9 and Annex E-10 of the ETA).
- For steel pipes and stainless steel pipes a pipe collar "FireFree 330 Flexbøsning" can alternatively be installed at the bottom side of the separating element (see Annex C-17 and Annex E-10 of the ETA).

2.3 Installation of "FireFree strip" and "FireFree strip EM"

- The metal pipes and plastic pipes to be sealed off have to be wrapped with "FireFree strip"or "FireFree strip EM" with the corresponding number of layers as specified in Annex D-1 to Annex D-9 and Annex E-1 to Annex E-10 of the ETA.
- It is not allowed to combine "FireFree strip" and "FireFree strip EM" in one penetration seal.
- If metal pipes or plastic pipes are insulated with "AF/Armaflex", "SH/Armaflex" or Polyethylene sound insulation (e.g. "THERMACOMPACT TF™") according to clause 1 of the ETA "FireFree strip" or "FireFree strip EM" has to be wrapped around the insulation.

2.4 Installation of "Metal Strap"

- If metal pipes or plastic pipes have to be equipped with pipe collar "FireFree 330 Flexbøsning", the intumescent inlay "FireFree strip" or "FireFree strip EM" has to be fixed by one layer of "Metal Strap" (see Annex C-1 to Annex C-5, Annex C-8 to Annex C-15, Annex C-17 and Annex E-10 of the ETA). The "Metal Strap" has to be fixed with at least the corresponding number of "Metal Hooks" and the corresponding means of fixation (e.g. threaded steel bolts) to the separating element as specified below.

3 Separating element	Orientation	Pipe outer diameter (mm)	Minimum number of Metal Hooks
Flexible wall	perpendicular	≤ 50	2
	perpendicular	> 50 to ≤ 110	3
	perpendicular	> 110 to ≤ 160	4
	angle between 90° and 45°	≤ 50	3
	angle between 90° and 45°	> 50 to ≤ 110	4
	angle between 90° and 45°	> 110 to ≤ 160	6
Rigid wall or Rigid floor	perpendicular	≤ 50	2
	perpendicular	> 50 to ≤ 110	3
	perpendicular	> 110	4
	angle between 90° and 45°	≤ 50	3
	angle between 90° and 45°	> 50 to ≤ 110	4
	angle between 90° and 45°	> 110 to ≤ 160	6

2.4.1 Installation of "Metal Strap" in case of flexible walls acc. to cl. 2.1 of the ETA

- The "Metal Straps" have to be installed on both sides of the flexible wall.
- The minimum number of "Metal Hooks" has to be taken from the table above.
- The "Metal Hooks" shall be distributed equally around the pipe to be sealed off.
- In case of multiple penetrations of maximum three plastic pipes (clearance between pipes maximum 15 mm; linear arrangement, no clusters) according to clause 2.1 of the ETA made from PVC-U, PE-HD or PP through one concerted pipe collar "FireFree 330 Flexbøsning" between each pipe one "Metal Hook" on the top side and the bottom side of the "Metal Strap" has to be installed.
- The "Metal Straps" have to be fixed by threaded steel bolts (outer diameter 6 mm to 8 mm - for pipes with outer diameter 50 mm or 8 mm - for pipes with outer diameter > 50 mm; length thickness of the separating element) and on both sides of the separating element with washers and nuts (corresponding to the outer diameter of the threaded steel bolts).

2.4.2 Installation of „Metal Strap" in case of rigid walls and rigid floors acc. to cl. 2.1 of the ETA

- The "Metal Straps" have to be installed on both sides of the rigid wall.
- The "Metal Strap" has to be installed on the bottom side of the rigid floor.
- The minimum number of "Metal Hooks" has to be taken from the table above.
- The "Metal Hooks" shall be distributed equally around the pipe to be sealed off.
- In case the "Metal Strap" is installed on a vertical plastic pipe which is positioned directly in the corner of the wall (clearance between pipe and wall maximum 10 mm) three "Metal Hooks" have to be used (one "Metal Hook" in each corner and one in the middle of the "Metal Strap").
- In case of multiple penetrations of maximum three plastic pipes (clearance between pipes maximum 15 mm; linear arrangement, no clusters) according to clause 2.1 of the ETA made from PVC-U, PE-HD or PP through one concerted pipe collar "FireFree 330 Flexbøsning" between each pipe one "Metal Hook" on the top side and the bottom side of the "Metal Strap" has to be installed.
- The "Metal Strap" has to be fixed by appropriate steel dowels resp. steel screw anchors (outer diameter 6 mm) and washers (corresponding to the outer diameter of the steel dowels resp. steel screw anchors). In case of aerated concrete the "Metal Strap" can alternatively be fixed by steel dry-wall screws (outer diameter 5 mm; length 50 mm) and washers (corresponding to the outer diameter of the steel dry-wall screws).

2.5 Insulation

- Metal pipes according to Annex E-8 and Annex E-10 of the ETA have to be insulated with "AF/Armaflex".
- Plastic pipes can be insulated with "AF/Armaflex", "SH/Armaflex" or Polyethylene sound insulation (e.g. "THERMACOMPACT TF™") according to clause 1 of the ETA. In some cases it is mandatory to insulate the plastic pipes. For details see Annex D-1 to Annex D-9 and Annex E-1 to Annex E-10 of the ETA.

2.5.1 Installation of "AF/Armaflex" or "SH/Armaflex"

- The thickness of the tube has to correspond with the provisions given in Annex D-1 to Annex D-9 and Annex E-1 to Annex E-10 of the ETA.
- The length of the tube of has to be 500 mm (local-sustained LS or continued-sustained CS) on both sides of the separating element (measured from the surface of the separating element).
- The tube has to be continuous along the required minimum insulation length.
- When installing the tubes all butt joints and longitudinal joints (except for tubes with self- adhesive device) have to be glued with "Armaflex 520" and can be covered with "AF/Armaflex Band selbstklebend" (AF/Armaflex self-adhesive tape) or "SH/Armaflex Bandselbstklebend" (SH/Armaflex self-adhesive tape).
- The amount of "Armaflex 520" shall not be more than given in the technical literature of themanufacturer.
- The strip of "AF/Armaflex Band selbstklebend" (AF/Armaflex self-adhesive tape) or "SH/Armaflex Band selbstklebend" (SH/Armaflex self-adhesive tape) have to be 50 mm x 3 mm (width x thickness).
- Branches or elbows also have to be equipped with tubes along the required minimum insulation length (500 mm -measured from the surface of the separating element) on both sides of the separating element.
- For further details see technical literature of the manufacturer.

2.5.2 Installation of Polyethylene sound insulation (e.g. THERMACOMPACT TF™) acc. to cl. 1 of theETA

- The tubes can either be pushed onto the pipe or slotted and wrapped around the pipe.
- The pipes can be insulated in the penetration area exclusively (flushed within the penetration seal) as weil as at their complete length.
- As the dimensions of the tubes are given, the excess insulation material can be partially (on width between 20 mm to 40 mm) folded over the other at one point so that the thickness becomes 12 mm.

For further details see technical literature of the manufacturer.

2.6 Annular gap

- The annular gap (maximum width 30 mm) between the penetrating elements (meta! pipes and plastic pipes - including insulation) and the vertical separating element has to be completely filled with "Gap Filler" according to clause 1 of the ETA on both sides of the separating element.
- The annular gap (maximum width 50 mm) between the penetrating elements (meta! pipes and plastic pipes - including insulation) and the horizontal separating element has to be completely filled with "Gap Filler" according to clause 1 of the ETA on both sides of the separating element.
- The annular gap (maximum width 50 mm) between plastic pipes (including insulation) "Wavin SiTech+", "Geberit Silent-PP", "POLO-KAL NG" or "RAUPIANO PLUS" and the horizontal separating element can alternatively be completely filled with "FLAMRO BSS" according to clause 1 of the ETA on both sides of the separating element.

3 Minimum working clearances

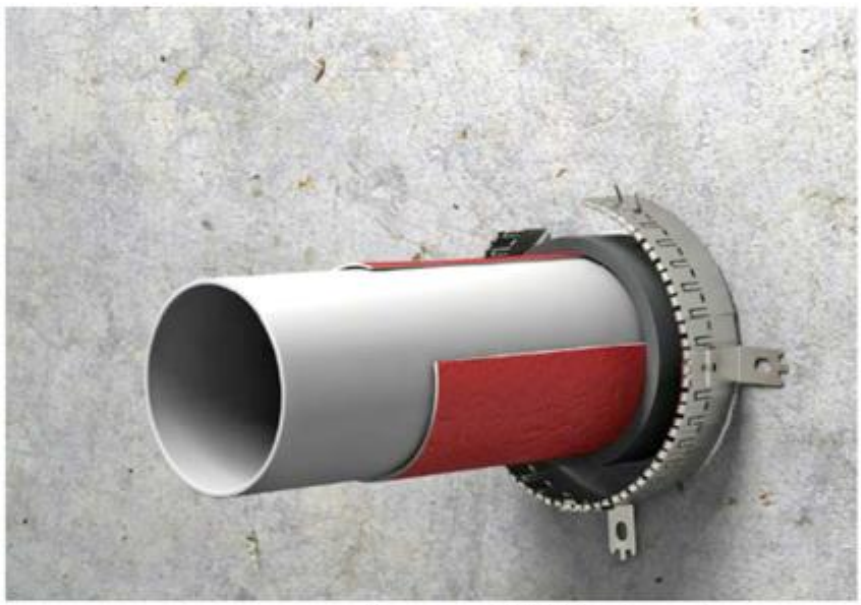
- The minimum clearance between two non-insulated pipes (linear arrangement, no clusters) is 100 mm (measured from the surface of the pipe).
- The minimum clearance between two pipes (linear arrangement, no clusters) insulated with "AF/Armaflex", "SH/Armaflex" or Polyethylene sound insulation (e.g. "THERMACOMPACT TF™") according to clause 1 of the ETA is 100 mm (measured from the surface of the insulation).
- For multiple penetrations the minimum clearance between maximum three plastic pipes (linear arrangement, no clusters) according to clause 2.1 of the ETA made from PVC-U, PE-HD or PP with diameters and wall thicknesses as defined in Annex D-9 and Annex E-9 of the ETA equipped with one concerted pipe collar "FireFree 330 Flexbøsning" is 0 mm (measured from the surface of the pipe).

4 Transport and storage

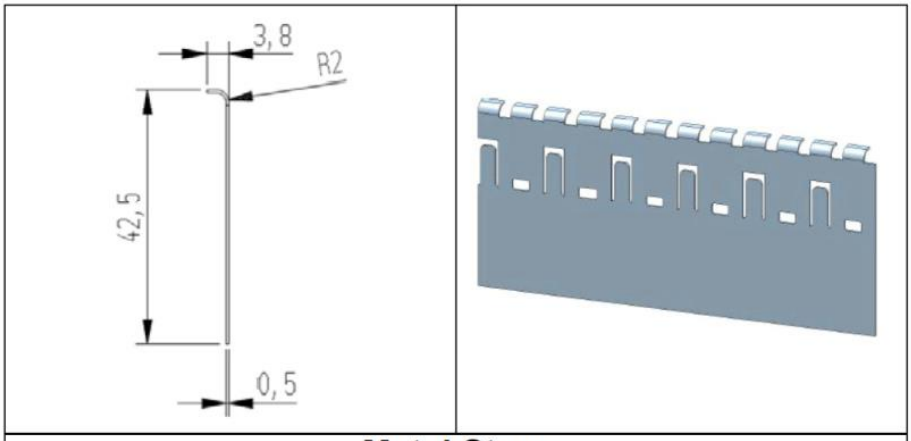
- The indications of the manufacturer regarding transport and storage (minimum and maximum storing temperature, maximum duration of storage) have to be followed.

5 Use, maintenance and repair

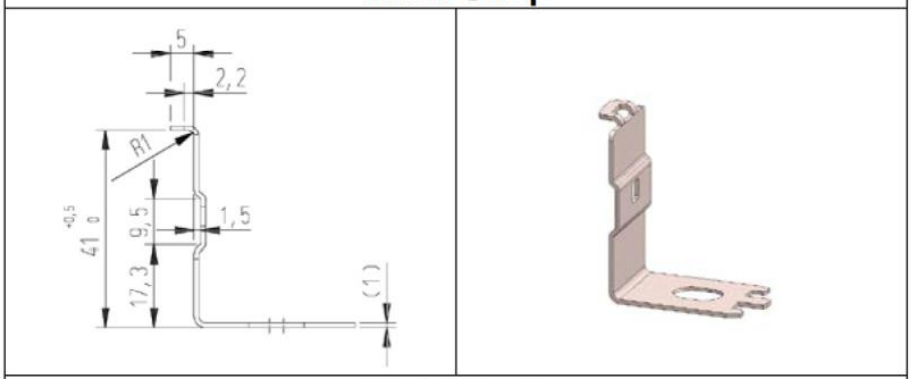
- The fire resistance of the penetration seal shall not be negatively affected by future changes to buildings or building elements.
- The assessment of the fitness for use is based on the assumption that necessary maintenance and repair if required is carried out in accordance with the manufacturer's instructions during the assumed intended working life.



FireFree 330 Flexbøsning



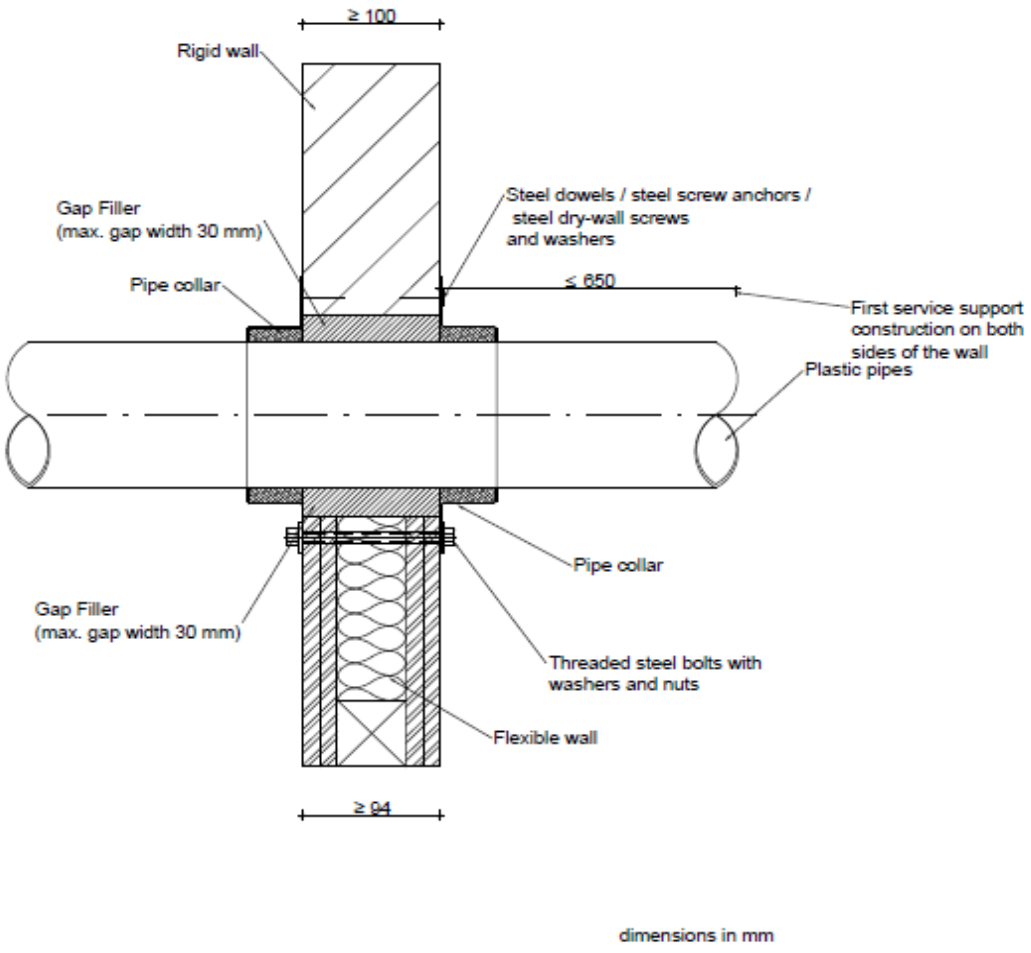
Metal Strap

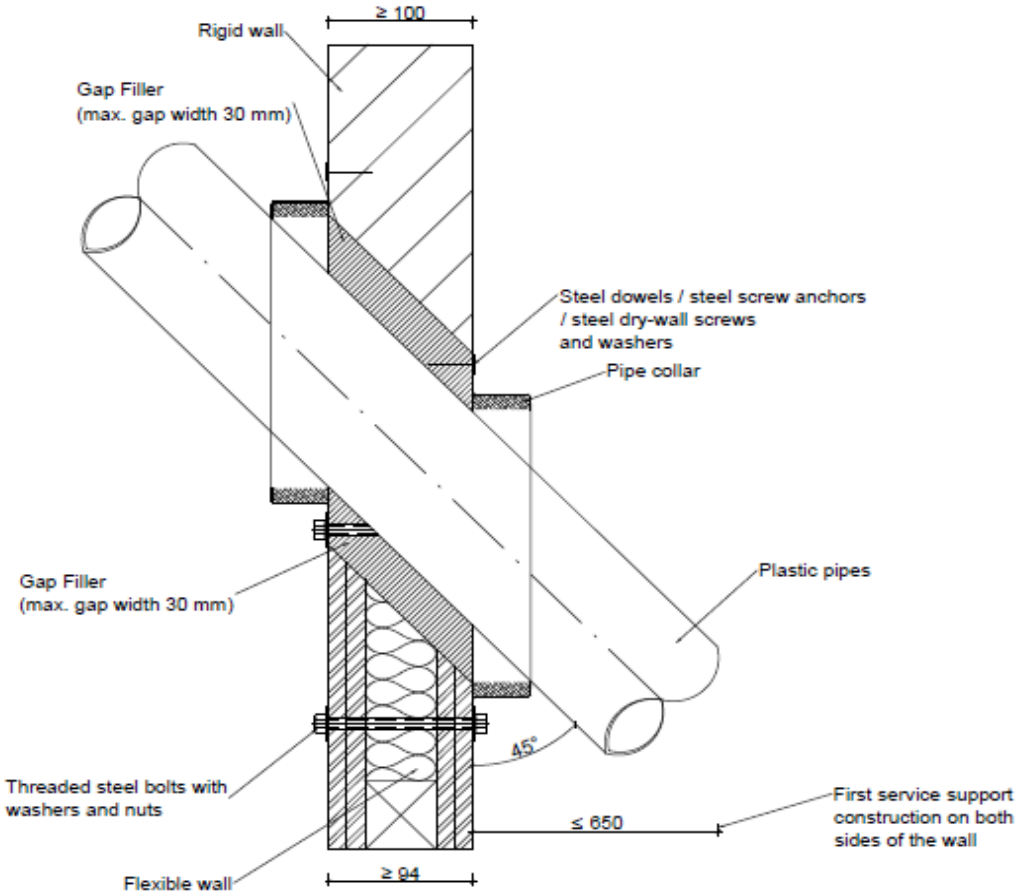


Metal Hook

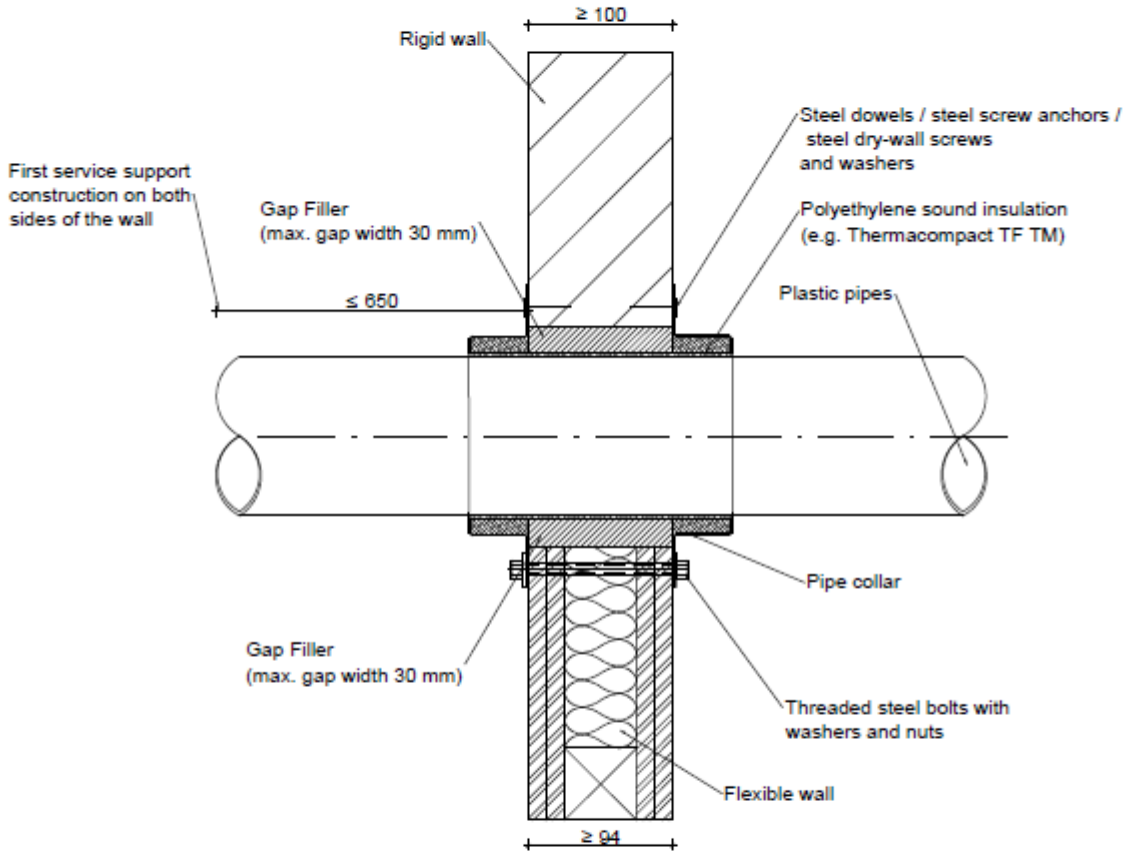
Annex – C

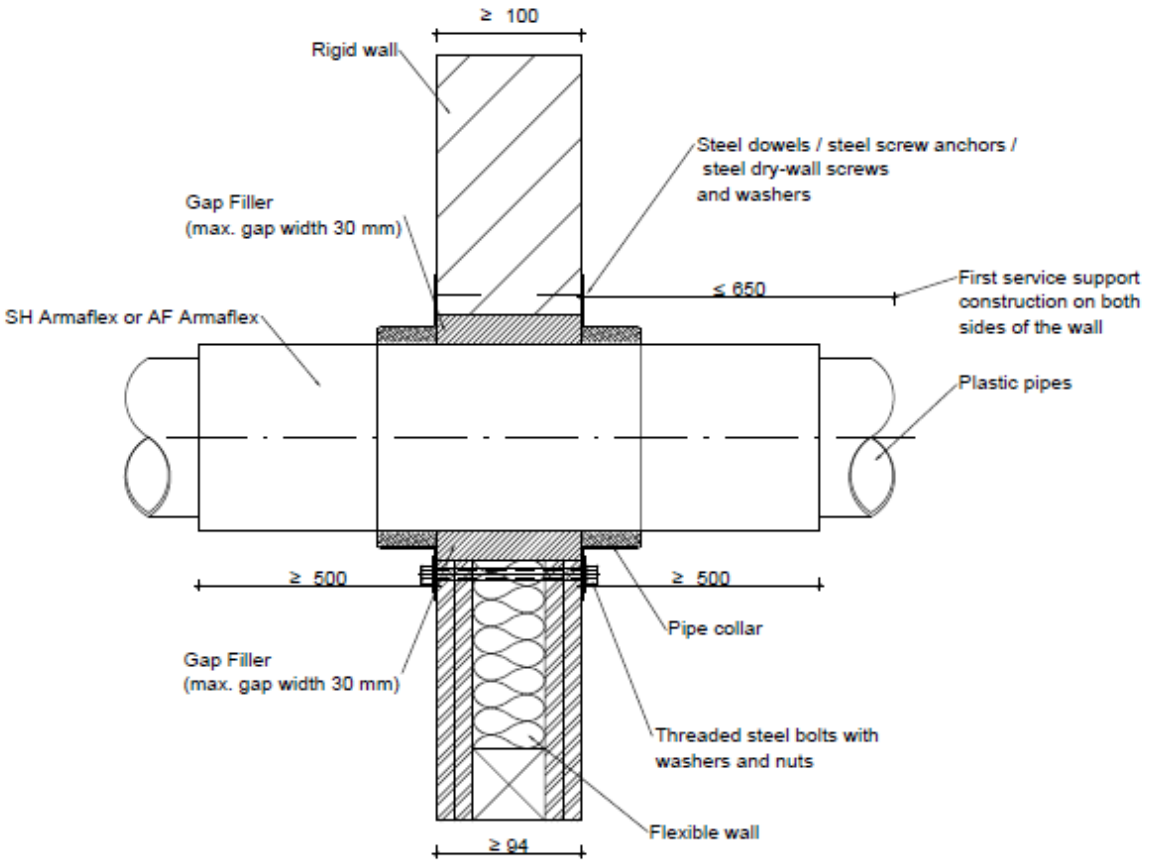
Drawings of the installations



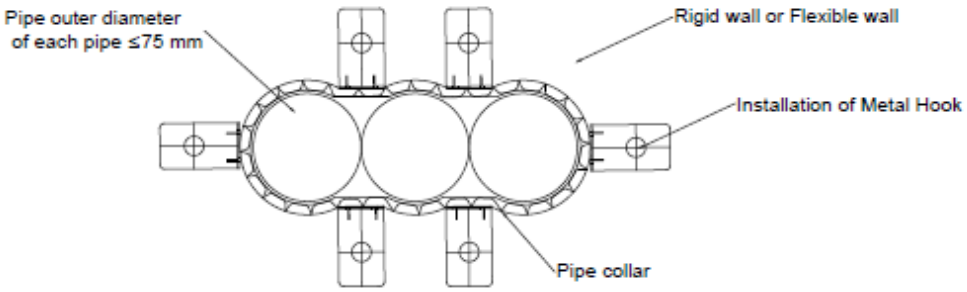


dimensions in mm

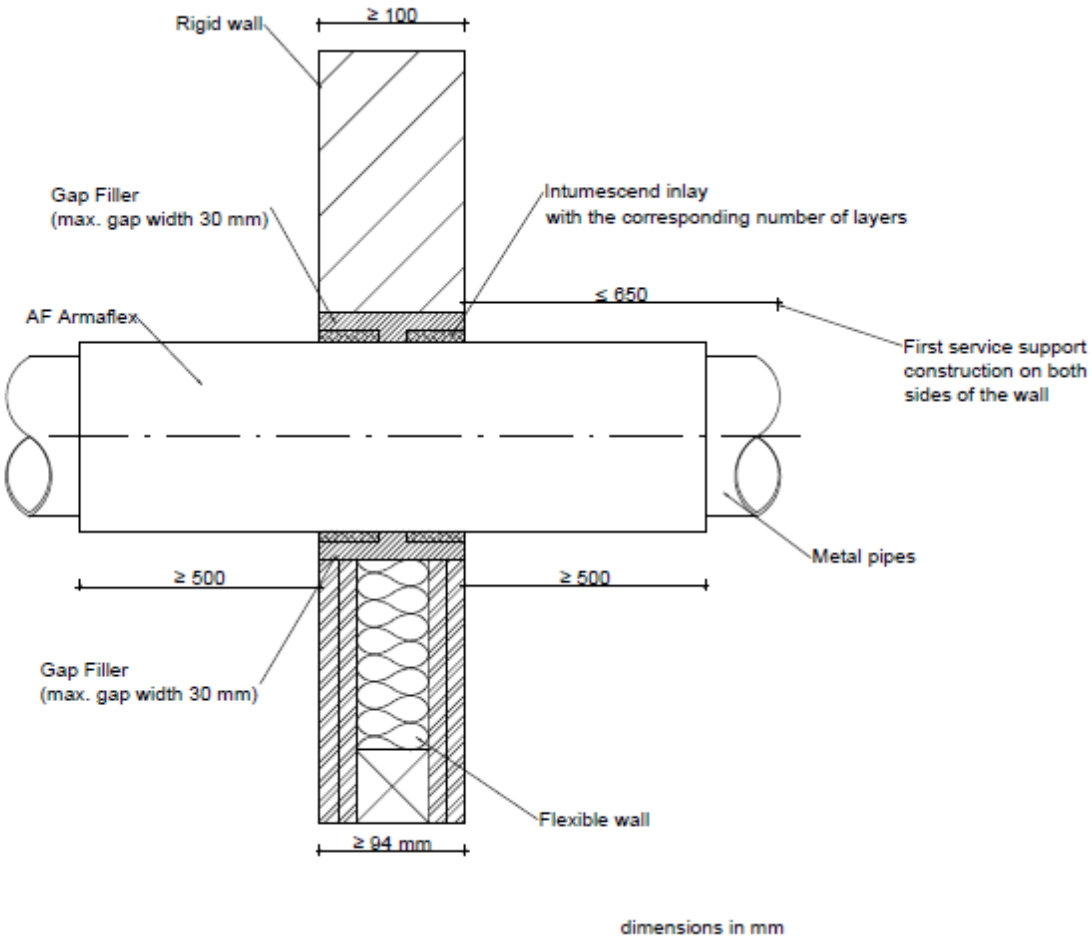

≥ 100
Rigid wall
Steel dowels / steel screw anchors / steel dry-wall screws and washers
First service support construction on both sides of the wall
Gap Filler (max. gap width 30 mm)
Polyethylene sound insulation (e.g. Thermacompact TF TM)
≤ 650
Plastic pipes
Pipe collar
Gap Filler (max. gap width 30 mm)
Threaded steel bolts with washers and nuts
Flexible wall
≥ 94
dimensions in mm

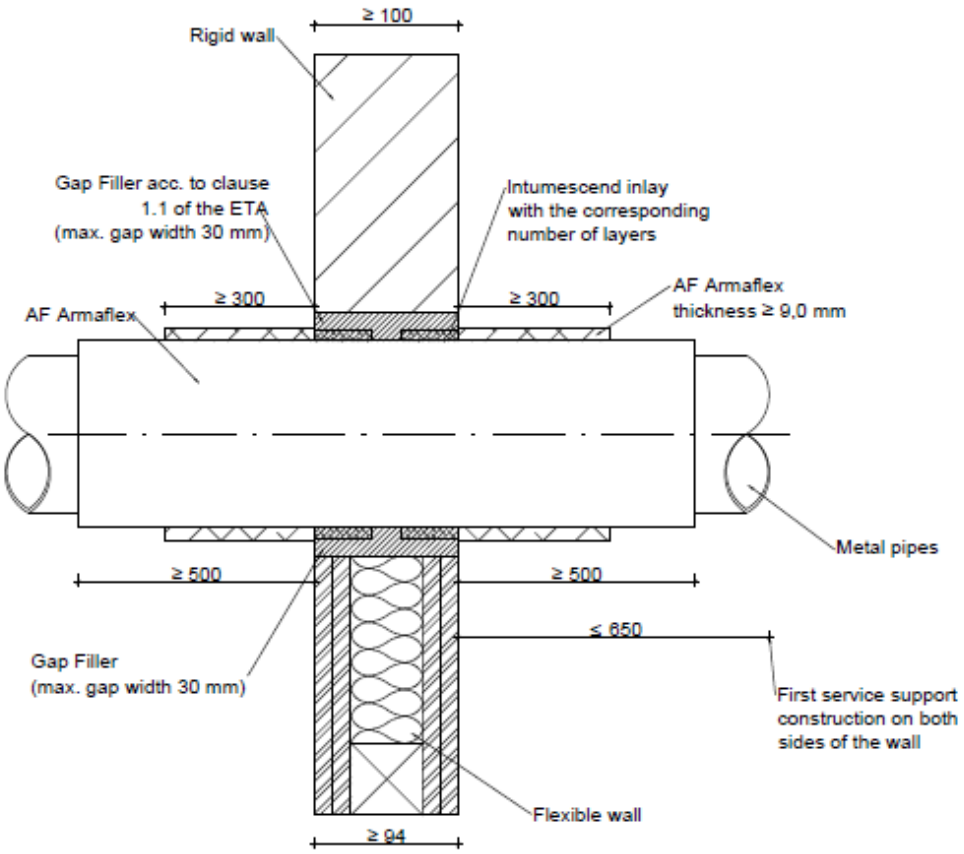


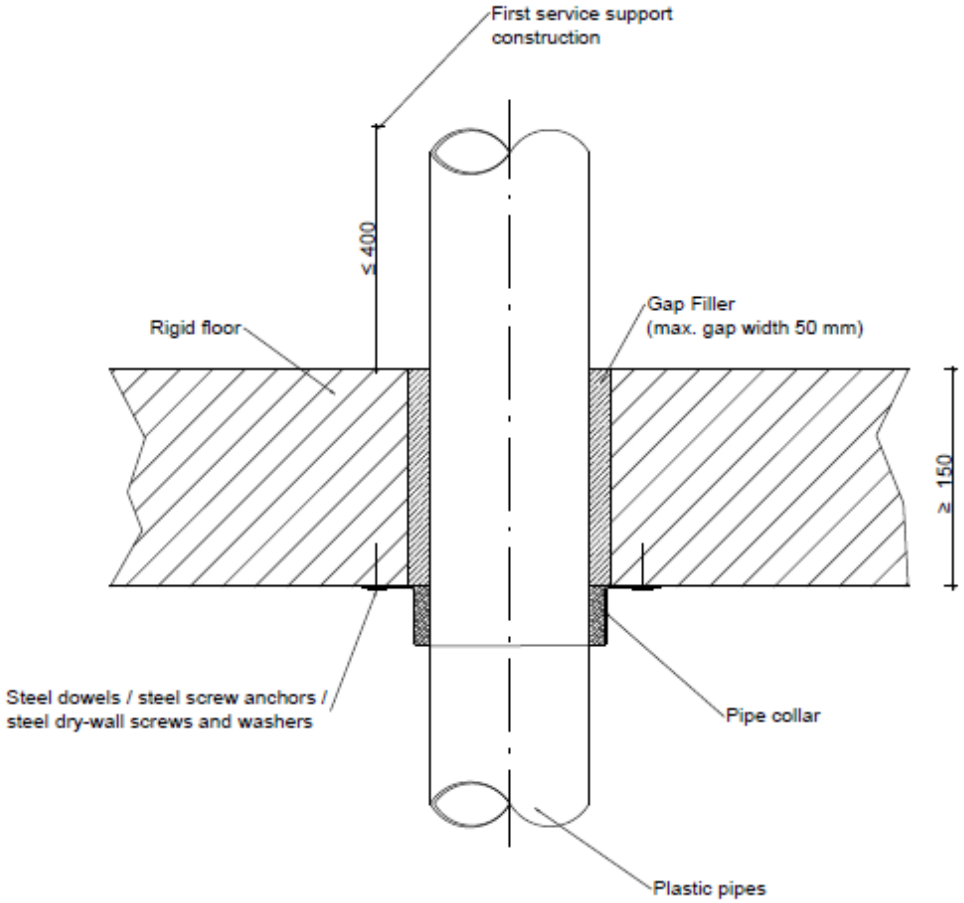
dimensions in mm

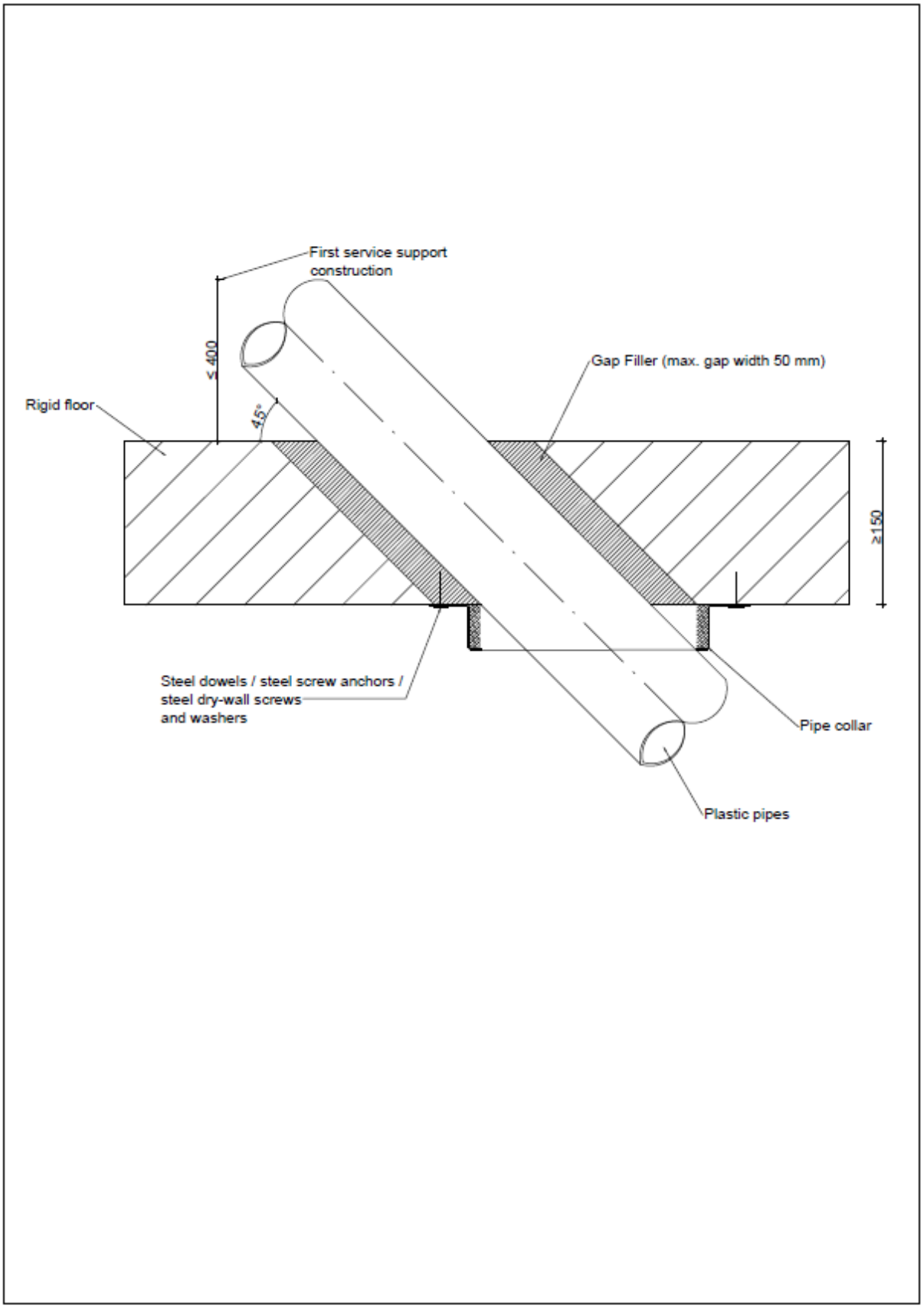


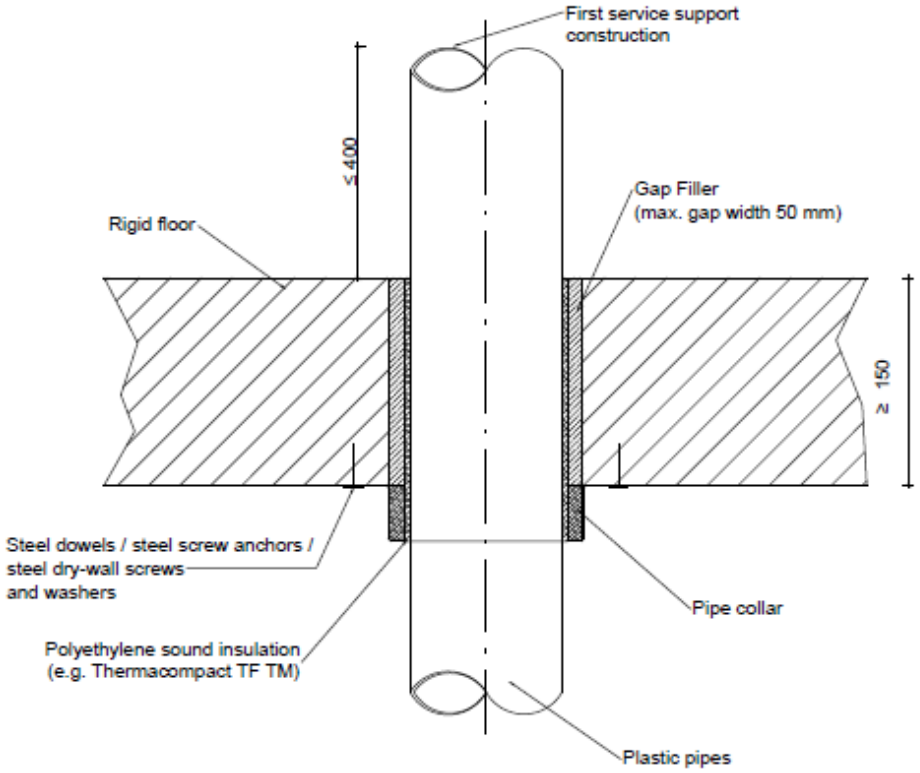
dimensions in mm

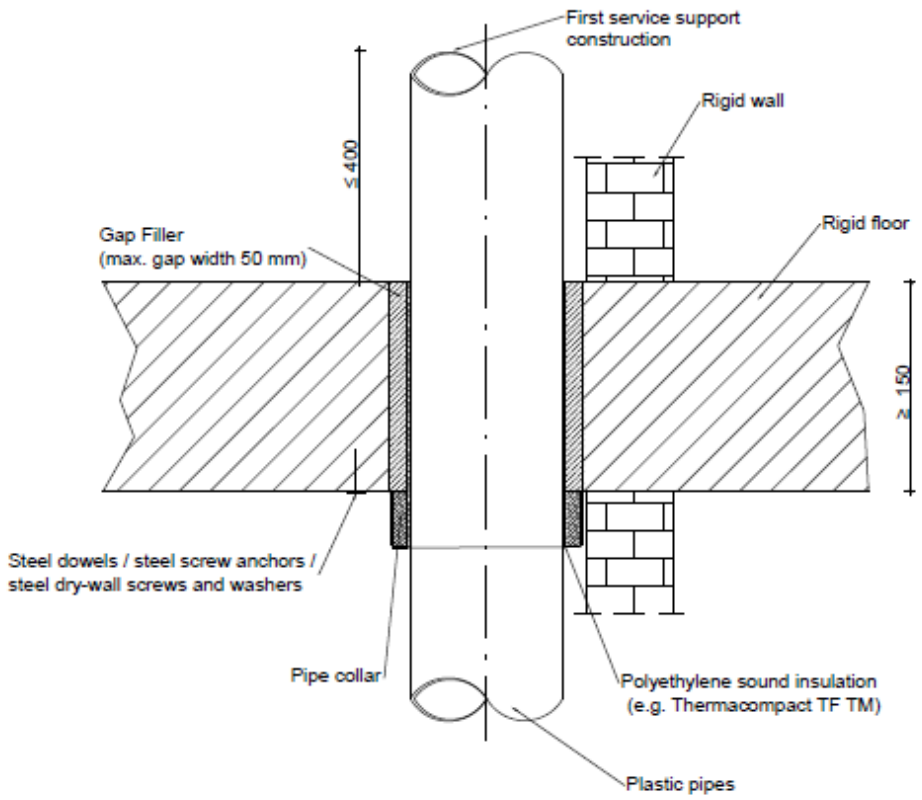

Rigid wall
≥ 100
Gap Filler
(max. gap width 30 mm)
Intumescend inlay
with the corresponding number of layers
≤ 650
AF Armaflex
First service support
construction on both
sides of the wall
Metal pipes
≥ 500
≥ 500
Gap Filler
(max. gap width 30 mm)
Flexible wall
≥ 94 mm
dimensions in mm

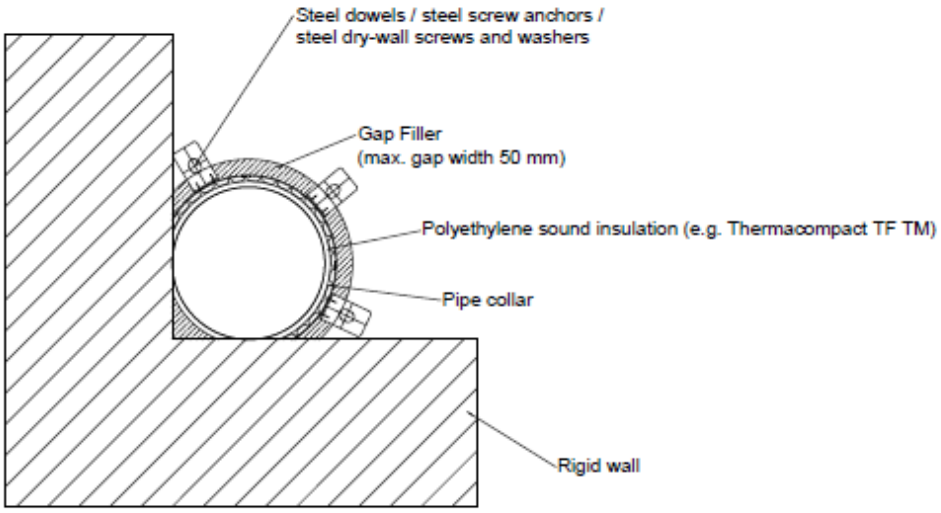

≥ 100
Rigid wall
Gap Filler acc. to clause
1.1 of the ETA
(max. gap width 30 mm)
Intumescend inlay
with the corresponding
number of layers
AF Armaflex
≥ 300
≥ 300
AF Armaflex
thickness ≥ 9,0 mm
Metal pipes
≥ 500
≥ 500
≤ 650
Gap Filler
(max. gap width 30 mm)
First service support
construction on both
sides of the wall
Flexible wall
≥ 94
dimensions in mm

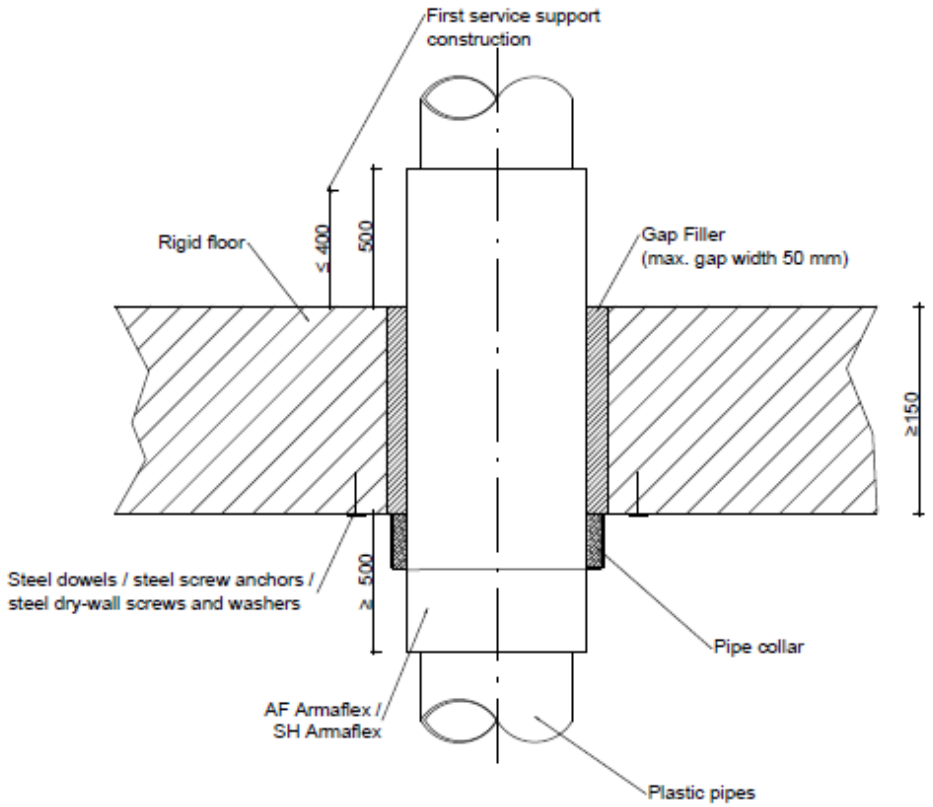

First service support construction
≤ 400
Rigid floor
Gap Filler
(max. gap width 50 mm)
≥ 150
Steel dowels / steel screw anchors / steel dry-wall screws and washers
Pipe collar
Plastic pipes

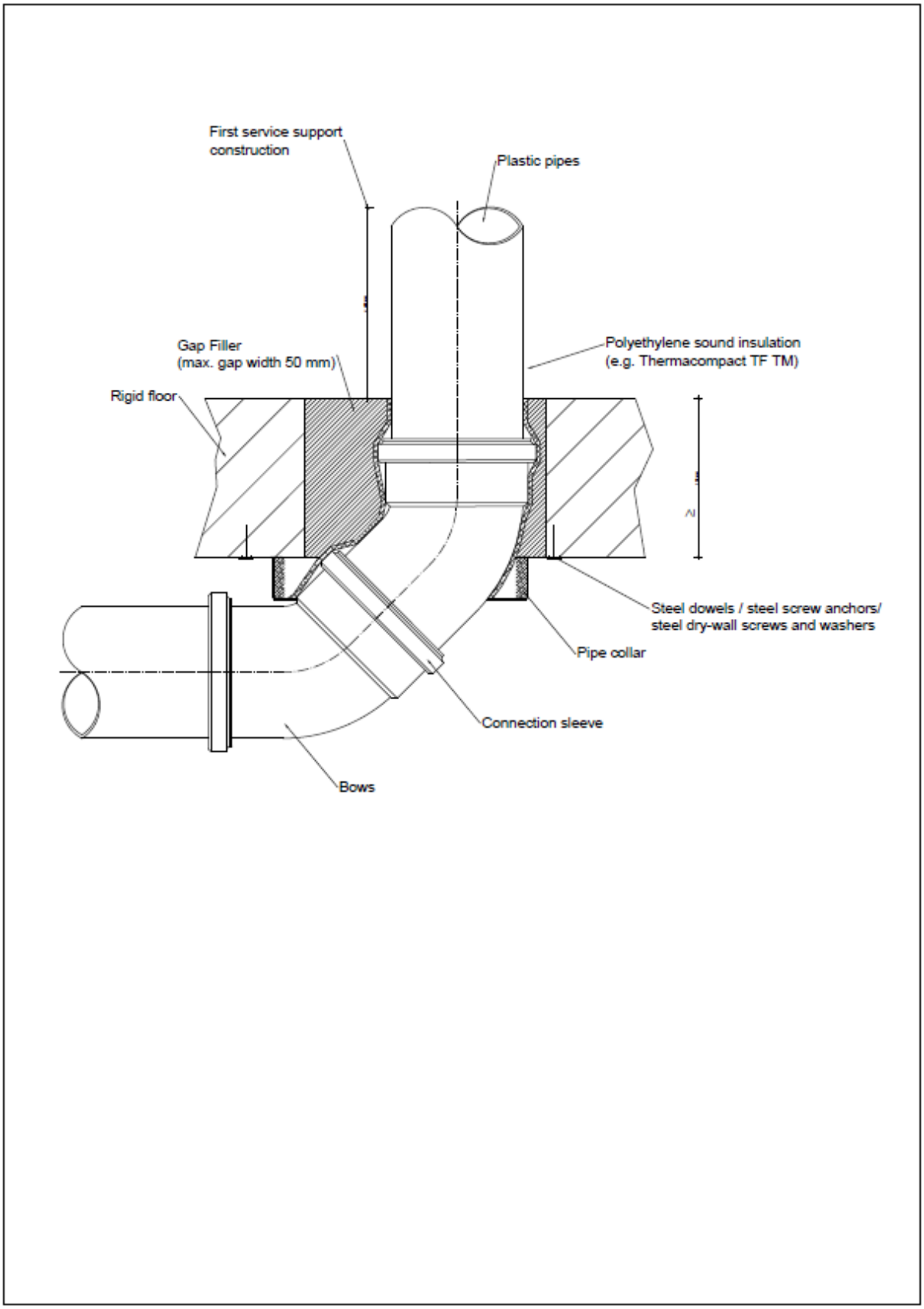

First service support construction
≤ 400
Gap Filler (max. gap width 50 mm)
Rigid floor
45°
≥150
Steel dowels / steel screw anchors / steel dry-wall screws and washers
Pipe collar
Plastic pipes

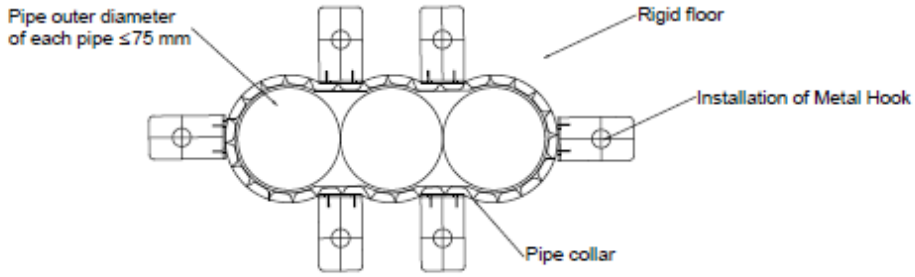

First service support construction
≤ 400
Gap Filler (max. gap width 50 mm)
Rigid floor
≥ 150
Steel dowels / steel screw anchors / steel dry-wall screws and washers
Pipe collar
Polyethylene sound insulation (e.g. Thermacompact TF TM)
Plastic pipes

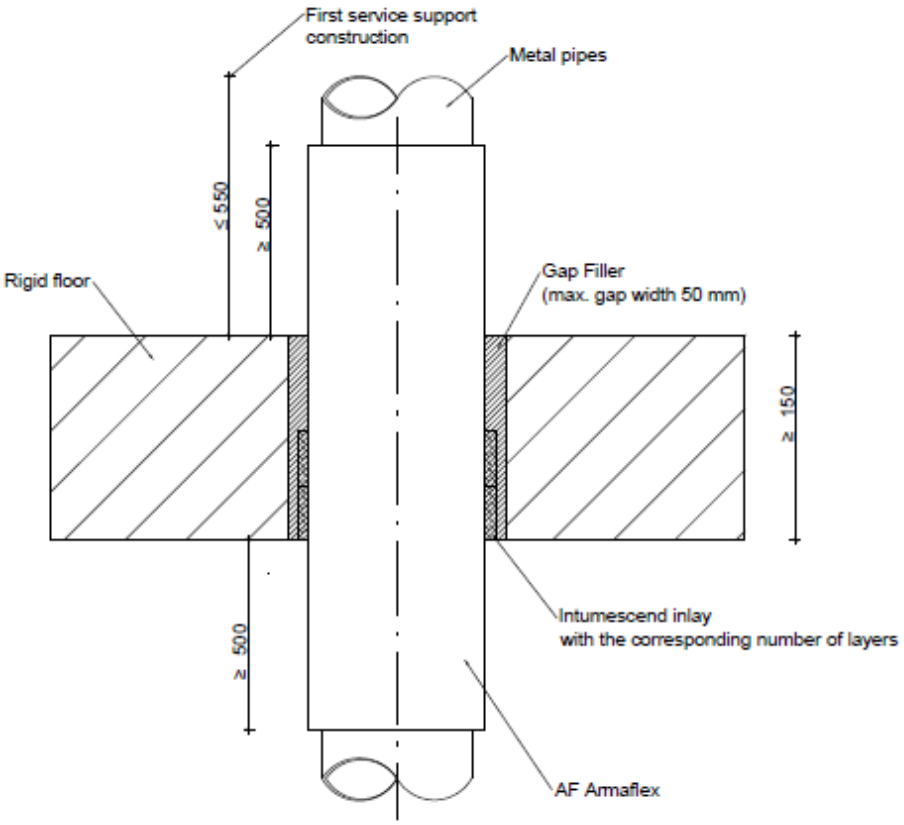

First service support construction
Rigid wall
≤ 400
Gap Filler
(max. gap width 50 mm)
Rigid floor
≥ 150
Steel dowels / steel screw anchors / steel dry-wall screws and washers
Pipe collar
Polyethylene sound insulation
(e.g. Thermacompact TF TM)
Plastic pipes

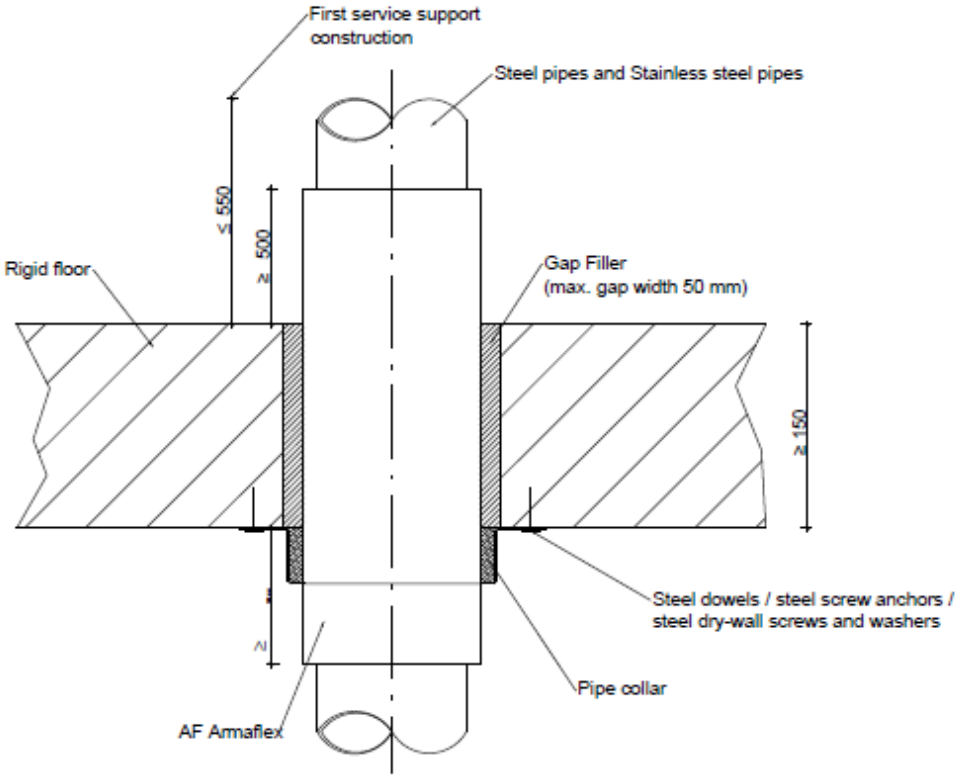

Steel dowels / steel screw anchors /
steel dry-wall screws and washers
Gap Filler
(max. gap width 50 mm)
Polyethylene sound insulation (e.g. Thermacompact TF TM)
Pipe collar
Rigid wall


First service support construction
Rigid floor
≤ 400
500
Gap Filler
(max. gap width 50 mm)
≥150
Steel dowels / steel screw anchors / steel dry-wall screws and washers
500
≤
Pipe collar
AF Armaflex / SH Armaflex
Plastic pipes


First service support construction
Plastic pipes
Gap Filler (max. gap width 50 mm)
Polyethylene sound insulation (e.g. Thermacompact TF TM)
Rigid floor
Steel dowels / steel screw anchors/ steel dry-wall screws and washers
Pipe collar
Connection sleeve
Bows


Pipe outer diameter
of each pipe ≤75 mm
Rigid floor
Installation of Metal Hook
Pipe collar


First service support construction
Metal pipes
≤ 550
≥ 500
Rigid floor
Gap Filler
(max. gap width 50 mm)
≥ 150
Intumescend inlay
with the corresponding number of layers
≥ 500
AF Armaflex


First service support construction
Steel pipes and Stainless steel pipes
≤ 550
≥ 500
Rigid floor
Gap Filler
(max. gap width 50 mm)
≥ 150
Steel dowels / steel screw anchors / steel dry-wall screws and washers
Pipe collar
AF Armaflex

Annex – D
Resistance to fire classifications in walls

In the following tables below applies for the insulation thickness and applicable inlay
X = valid intumescent inlay --- = no insulation allowed

PVC-U pipes acc. to cl. 2.1 of the ETA, non-insulated - in flexible walls and rigid walls acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 50	1,8 to 5,6	---	X	X	2	EI 120-U/C E 120-U/C
> 50 to ≤ 75	1,8 to 8,4	---	X	X	3	EI 120-U/C E 120-U/C
>75 to ≤110	1,8 to 12,3	---	X	X	4	EI 120-U/C E 120-U/C
> 110 to ≤ 125	2,2 to12,2	---	X	X	5	EI 120-U/C E 120-U/C
> 125 to ≤ 160	3,2 to 11,9	---	X	X	6	EI 120-U/C E 120-U/C

PVC-U pipes acc. to cl. 2.1 of the ETA, non-insulated, installed in an angle between 90° and 45° - in flexible walls and rigid walls acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of lavers	
≤ 50	1,8 to 5,6	---	X	X	2	EI 120-U/C E 120-U/C
> 50 to ≤ 75	1,8 to 8,4	---	X	X	3	EI 120-U/C E 120-U/C
>75to ≤ 110	1,8 to12,3	---	X	X	4	EI 120-U/C E 120-U/C
> 110 to ≤ 125	2,2 to 12,2	---	X	X	6	EI 120-U/C E 120-U/C
> 125 to ≤ 160	3,2 to 11,9	---	X	X	8	EI 90-U/C E 90-U/C

PVC-U pipes acc. to cl. 2.1 of the ETA, insulated with Polyethylene sound insulation (e.g. THERMACOMPACT TF™) acc. to cl. 1 of the ETA- in flexible walls and rigid walls acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 50	1,8	≤ 4	X	X	4	EI 90-U/C E 120-U/C
> 50 to ≤ 75	1,8	≤ 4	X	X	5	EI 90-U/C E 120-U/C
> 75 to ≤ 110	1,8	≤ 4	X	X	4	EI 90-U/C E 120-U/C
> 110 to ≤ 125	1,8 to 2,2	≤ 4	X	X	6	EI 90-U/C E 120-U/C
≤ 50	1,8 to 5,6	≤ 4	---	X	2	EI 120-U/U E 120-U/U
> 50 to ≤ 75	1,8 to 8,4	≤ 4	---	X	3	EI 90-U/U E 120-U/U
> 75 to ≤ 110	1,8 to 11,9	≤ 4	---	X	4	EI 90-U/U E 120-U/U
> 110 to ≤ 125	3,2 to 11,9	≤ 4	---	X	5	EI 90-U/U E 120-U/U
> 125 to ≤ 160	3,2 to 11,9	≤ 4	---	X	6	EI 120-U/U E 120-U/U

PE-HD pipes acc. to cl. 2.1 of the ETA, non-insulated - in flexible walls and rigid wallsacc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer Diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 50	1,8 to 4,6	---	X	X	2	EI 120-U/C E 120-U/C
> 50 to ≤ 75	1,8 to 8,4	---	X	X	3	EI 120-U/C E 120-U/C
> 75 to ≤ 110	2,7 to 10,0	---	X	X	4	EI 120-U/C E 120-U/C
> 110 to ≤ 160	4,0	---	X	X	8	EI 120-U/C E 120-U/C
> 110 to ≤ 160	> 4,0 to 14,6	---	X	X	8	EI 60-U/C E 60-U/C

PE-HD pipes acc. to cl. 2.1 of the ETA, non-insulated, installed in an angle between 90° and 45° - in flexible walls and rigid walls acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer Diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 50	1,8	---	X	X	2	EI 120-U/C E 120-U/C
> 50 to ≤ 75	1,8	---	X	X	4	EI 90-U/C E 90-U/C
> 75 to ≤ 110	2,7	---	X	X	5	EI 90-U/C E 90-U/C
> 110 to ≤ 125	3,2	---	X	X	7	EI 90-U/C E 90-U/C
> 125 to ≤ 160	4,0	---	X	X	8	EI 90-U/C E 90-U/C

PE-HD pipes acc. to cl. 2.1 of the ETA, insulated with Polyethylene sound insulation (e.g. THERMACOMPACT TF™) acc. to cl. 1 of the ETA- in flexible walls and rigid walls acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of lavers	
≤ 50	1,8 to 4,6	≤ 4	X	X	2	EI 120-U/C E 120-U/C
> 50 to ≤ 75	1,8 to 6,8	≤ 4	X	X	3	EI 120-U/C E 120-U/C
> 75 to ≤ 110	1,8 to 10,0	≤ 4	X	X	4	EI 120-U/C E 120-U/C
> 11O to ≤160	4,0	≤ 4	X	X	6	EI 120-U/C E 120-U/C
> 110 to ≤ 160	> 4,0 to 14,6	≤ 4	X	X	6	EI 90-U/C E 120-U/C
≤ 50	1,8 to 4,6	≤ 4	---	X	2	EI 120-U/U E 120-U/U
> 50 to ≤75	2,7	≤ 4	---	X	3	EI 120-U/U E 120-U/U
> 75 to ≤ 110	2,7	≤ 4	---	X	4	EI 120-U/U E 120-U/U

PP pipes acc. to cl. 2.1 of the ETA, non-insulated - in flexible walls and rigid walls acc. to cl. 2.1 of the ETA						
Pipe dimensions(mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 50	1,8 to 4,6	---	X	X	2	EI 120-U/C E 120-U/C
> 50 to ≤ 75	1,8 to 8,4	---	X	X	3	EI 120-U/C E 120-U/C
> 75 to ≤ 110	2,7 to 10,0	---	X	X	4	EI 120-U/C E 120-U/C
> 110 to ≤ 160	4,0	---	X	X	8	EI 90-U/C E 120-U/C
> 110 to ≤ 160	> 4,0 to 14,6	---	X	X	6	EI 90-U/C E 90-U/C

PP pipes acc. to cl. 2.1 of the ETA, non-insulated, installed in an angle between 90° and 45° -in flexible walls and rigid walls acc. to cl. 2.1 of the ETA						
Pipe dimensions(mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 50	1,8	---	X	X	2	EI 120-U/C E 120-U/C
> 50 to ≤ 75	1,8	---	X	X	3	EI 120-U/C E 120-U/C
>75 to ≤ 110	2,7	---	X	X	4	EI 120-U/C E 120-U/C

PP pipes acc. to cl. 2.1 of the ETA, insulated with Polyethylene sound insulation (e.g. THERMACOMPACT TF™) acc. to cl. 1 of the ETA- in flexible walls and rigid walls acc. to cl. 2.1 of the ETA						
Pipe dimension (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 50	1,8 to 4,6	:5 4	---	X	2	EI 120-U/U E 120-U/U
> 50 to ≤ 75	1,8 to2,7	:5 4	---	X	3	EI 120-U/U E 120-U/U
>75 to ≤ 110	2,7	:5 4	---	X	4	EI 120-U/U E 120-U/U

Plastic pipes alpex F50 PROFI acc. to cl. 2.1 of the ETA, non-insulated -in flexible walls and rigid walls acc. to cl. 2.1 of the ETA						
Pipe dimensions(mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of lavers	
≤ 16	2,0	---	X	X	2	EI 120-U/C E 120-U/C

Plastic pipes alpex F50 PROFI and alpex L acc. to cl. 2.1 of the ETA, insulated with SH/Armaflex (length ≥ 500 mm - on both sides of the separating element, local-sustained LS or continued-sustained CS\ - in flexible walls and rigid walls acc. to cl. 2.1 of the ETA						
Pipe dimensions(mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤16	2,0	9,0	X	X	2	EI 120-U/C E 120-U/C
≤50	4,0	10,0	X	X	3	EI 60-U/C E 120-U/C
≤75	5,0	9,0	X	X	4	EI 90-U/C E 120-U/C
≤75	5,0	> 9,0 to 20,0	X	X	5	EI 90-U/C E 90-U/C
≤75	5,0	> 20,0 to 30,0	X	X	6	EI 90-U/C E 90-U/C
≤75	5,0	> 30,0 to 44,0	X	X	6	EI 90-U/C E 120-U/C

Plastic pipes alpex F50 PROFI and alpex L acc. to cl. 2.1 ofthe ETA, insulated with AF/Armaflex (length ≥ 500 mm - on both sides of the separating element, local-sustained LS or continued-sustained CS) - in flexible walls and rigid walls acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤75	5,0	9,5	X	X	4	EI 120-U/C E 120-U/C
≤75	5,0	> 9,5 to 20,0	X	X	5	EI 120-U/C E 120-U/C
≤75	5,0	> 20,0 to 30,0	X	X	6	EI 120-U/C E 120-U/C

Plastic pipes BluePower® acc. to cl. 2.1 of the ETA, insulated with Polyethylene sound insulation (e.g. THERMACOMPACT TF™) acc. to cl. 1 of the ETA- in flexible walls and rigid walls acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 50	1,8	≤ 4	X	X	2	EI 120-U/C E 120-U/C
≤ 75	2,5	≤ 4	X	X	3	EI 120-U/C E 120-U/C
≤ 110	3,4	≤ 4	X	X	4	EI 120-U/C E 120-U/C

Plastic pipes Uponor Unipipe Mehrschichtverbundrohr MLC acc. to cl. 2.1 of the ETA, non-insulated - in flexible walls and rigid walls acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 16	2,0	---	X	X	2	EI 120-U/C E 120-U/C

Plastic pipes Uponor Unipipe Mehrschichtverbundrohr MLC acc. to cl. 2.1 of the ETA, insulated with SH/Armaflex (length ≥ 500 mm - on both sides of the separating element, local-sustained LS or continued-sustained CS)- in flexible walls and rigid walls acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 16	2,0	9,0	X	X	2	EI 120-U/C E 120-U/C
≤ 50	4,5	10,0	X	X	3	EI 60-U/C E 120-U/C
≤ 110	10,0	9,0	X	X	6	EI 120-U/C E 120-U/C
≤ 110	10,0	≤ 9,0 to 20,0	X	X	6	EI 90-U/C E 120-U/C

Plastic pipes Uponor Unipipe Mehrschichtverbundrohr MLC acc. to cl. 2.1 of the ETA, insulated with AF/Armaflex (length ≥ 500 mm - on both sides of the separating element, local-sustained LS or continued-sustained CS) - in flexible walls and rigid walls acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 50	4,5	27,5	X	X	4	EI 120-U/C E 120-U/C
≤ 110	10,0	9,5	X	X	6	EI 120-U/C E 120-U/C
≤ 110	10,0	19,0	X	X	6	EI 90-U/C E 120-U/C
≤ 110	10,0	30,0	X	X	6	EI 120-U/C E 120-U/C

Plastic pipes Wavin SiTech+ acc. to cl. 2.1 ofthe ETA, insulated with Polyethylene sound insulation (e.g. THERMACOMPACT TF™) acc. to cl. 1 of the ETA- in flexible walls and rigid walls acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 50	2,0	≤ 4	X	X	2	EI 120-U/C E 120-U/C
≤ 110	3,6	≤ 4	X	X	4	EI 90-U/C E 120-U/C
≤ 110	3,6	≤ 4	X	X	5	EI 120-U/C E 120-U/C
≤ 160	5,3	≤ 4	X	X	8	EI 120-U/C E 120-U/C
≤ 50	2,0	≤ 4	---	X	2	EI 120-U/U E 120-U/U
≤ 75	2,6	≤ 4	---	X	3	EI 120-U/U E 120-U/U
≤110	3,6	≤ 4	---	X	4	EI 120-U/U E 120-U/U

Plastic pipes Fusiotherm®Stabiverbundrohr acc. to cl. 2.1 of the ETA, non-insulated - in flexible walls and rigid walls acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 16	2,2	---	X	X	2	EI 120-U/C E 120-U/C
≤ 50	6,9	---	X	X	2	EI 120-U/C E 120-U/C
≤ 75	6,9	---	X	X	3	EI 120-U/C E 120-U/C
≤ 110	15,2	---	X	X	4	EI 120-U/C E 120-U/C

Plastic pipes Fusiotherm®Stabiverbundrohr acc. to cl. 2.1 of the ETA, insulated with SH/Armaflex (length ≥ 500 mm - on both sides of the separating element, local-sustained LS or continued- sustained CS) - in flexible walls and rigid walls acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 16	2.2	9,0	X	X	3	EI 120-U/C E 120-U/C
≤ 50	6,9	10,0	X	X	3	EI 120-U/C E 120-U/C

Plastic pipes Fusiotherm® Stabiverbundrohr acc. to cl. 2.1 of the ETA, insulated with AF/Armaflex (length ≥ 500 mm - on both sides of the separating element, local-sustained LS or continued-sunstained CS) in flexible walls and rigid walls acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 110	15,2	31,0	X	X	6	EI 120-U/C E 120-U/C

Plastic pipes Geberit Silent-PP acc. to cl. 2.1 of the ETA, insulated with Polyethylene sound insulation (e.g. THERMACOMPACT TF™) acc. to cl. 1 of the ETA - in flexible walls and rigid walls acc. to cl.2.1 oftheETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 50	2,0	≤ 4	X	X	2	EI 120-U/C E 120-U/C
≤ 75	2,6	≤ 4	X	X	3	EI 90-U/C E 120-U/C
≤ 75	2,6	≤ 4	X	X	4	EI 120-U/C E 120-U/C
≤ 110	3,6	≤ 4	X	X	4	EI 90-U/C E 120-U/C
≤ 110	3,6	≤ 4	X	X	5	EI 120-U/C E 120-U/C
≤ 125	4,2	≤ 4	X	X	6	EI 120-U/C E 120-U/C
≤ 160	5,2	≤ 4	X	X	8	EI 120-U/C E 120-U/C
≤ 50	2,0	≤ 4	---	X	2	EI 120-U/U E 120-U/U
≤ 75	2,6	≤ 4	---	X	3	EI 120-U/U E 120-U/U
≤ 110	3,6	≤ 4	---	X	4	EI 120-U/U E 120-U/U
≤ 125	4,2	≤ 4	---	X	5	EI 120-U/U E 120-U/U
≤ 160	5,2	≤ 4	---	X	6	EI 120-U/U E 120-U/U

Plastic pipes POLO-KAL NG acc. to cl. 2.1 of the ETA, insulated with Polyethylene sound insulation (e.g. THERMACOMPACT TF™) acc. to cl. 1 of the ETA - in flexible walls and rigid walls acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 50	2,0	≤ 4	X	X	2	EI 120-U/C E 120-U/C
≤ 75	2,6	≤ 4	X	X	3	EI 90-U/C E 120-U/C
≤ 110	3,4	≤ 4	X	X	4	EI 90-U/C E 120-U/C
≤ 110	3,4	≤ 4	X	X	5	EI 120-U/C E 120-U/C
≤125	3,9	≤ 4	X	X	5	EI 120-U/C E 120-U/C
≤160	4,9	≤ 4	X	X	6	EI 120-U/C E 120-U/C
≤ 50	2,0	≤ 4	---	X	2	EI 120-U/U E 120-U/U
≤ 75	2,6	≤ 4	---	X	3	EI 120-U/U E 120-U/U
≤ 110	3,4	≤ 4	---	X	4	EI 120-U/U E 120-U/U
≤125	3,9	≤ 4	---	X	5	EI 120-U/U E 120-U/U
≤160	4,9	≤ 4	---	X	6	EI 120-U/U E 120-U/U

Plastic pipes RAUPIANO PLUS acc. to cl. 2.1 of the ETA, insulated with Polyethylene sound insulation (e.g. THERMACOMPACT TF™) acc. to cl. 1 of the ETA- in flexible walls and rigid walls acc. to cl.2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 50	1,8	≤ 4	X	X	2	EI 120-U/C E 120-U/C
≤ 75	1,9	≤ 4	X	X	3	EI 120-U/C E 120-U/C
≤ 110	2,7	≤ 4	X	X	4	EI 120-U/C E 120-U/C
≤ 125	3,1	≤ 4	X	X	5	EI 120-U/C E 120-U/C
≤ 160	3,6	≤ 4	X	X	6	EI 120-U/C E 120-U/C
≤ 50	1,8	≤ 4	---	X	2	EI 120-U/U E 120-U/U
≤ 75	1,9	≤ 4	---	X	3	EI 120-U/U E 120-U/U
≤ 110	2,7	≤ 4	---	X	4	EI 120-U/U E 120-U/U

Plastic pipes Triplus® acc. to cl. 2.1 of the ETA, insulated with Polyethylene sound insulation (e.g. THERMACOMPACT TF™) acc. to cl. 1 of the ETA- inflexible walls and rigid walls acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 40	1,8	≤ 4	X	X	2	EI 120-U/C E 120-U/C
≤ 75	2,5	≤ 4	X	X	3	EI 120-U/C E 120-U/C
≤ 90	3,1	≤ 4	X	X	4	EI 120-U/C E 120-U/C
≤ 110	3,4	≤ 4	X	X	5	EI 120-U/C E 120-U/C
≤ 125	3,9	≤ 4	X	X	6	EI 120-U/C E 120-U/C
≤ 160	4,9	≤ 4	X	X	8	EI 120-U/C E 120-U/C

Multiple penetration of maximum three plastic pipes acc. to cl. 2.1 of the ETA made from PVC-U, PE-HD or PP through one concerted pipe collar FireFree 330 Flexbøsning (clearance between pipes maximum 15 mm; linear arrangement, no clusters), non-insulated - in flexible walls and rigid walls acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter of each pipe	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 75	1,8 to 8,4	---	X	X	4	EI 120-U/C E 120-U/C

Metal pipes (copper pipes, steel pipes, stainless steel pipes) acc. to cl. 2.1 of the ETA, insulated with AF/Armaflex (length 500 mm - on both sides of the separating element, local-sustained LS or continued-sustained CS) - in flexible walls and rigid walls acc. to cl. 2.1 of the ETA - the intumescent inlay has tobe installed on both sides flushed within the separating element (without Metal Strapl						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 28	1,0 to14,2	6,0 to 35,0	X	X	2	EI 120-C/U E 120-C/U
≤ 54	1,5 to14,2	9,0 to < 35,0	X	X	2	EI 60-C/U E 120-C/U
≤ 54	1,5 to 14,2	35,0	X	X	2	EI 120-C/U E 120-C/U

Metal pipes (copper pipes, steel pipes, stainless steel pipes) acc. to cl. 2.1 ofthe ETA, insulated with AF/Armaflex (length ≥ 500 mm - on both sides of the separating element, local-sustained LS or continued-sustained CS) and an additional layer of AF/Armaflex (length 300 mm, thickness ≥ 9,0 mm -on both sides of the separating element, local-interrupted LI) - in flexible walls and rigid walls acc. tocl. 2.1 of the ETA - the intumescent inlay has to be installed on both sides flushed within the separating element (without Metal strap)						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of lavers	
5. 54	1,5 to 14,2	9,0 to < 35,0	X	X	2	EI 90-C/U E 120-C/U

Annex – E
Resistance to fire classification in floors

PVC-U pipes acc. to cl. 2.1 of the ETA, non-insulated - in rigid floors acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 50	1,8 to 5,6	---	X	X	2	EI 240-U/C E 240-U/C
> 50 to ≤ 75	1,8 to 8,4	---	X	X	3	EI 240-U/C E 240-U/C
> 75 to ≤ 110	1,8 to 12,3	---	X	X	4	EI 240-U/C E 240-U/C
>110 to ≤ 125	2,2 to 12,1	---	X	X	5	EI 120-U/C E 120-U/C
> 125 to ≤ 160	3,2 to 11,9	---	X	X	6	EI 120-U/C E 120-U/C

PVC-U pipes acc. to cl. 2.1 of the ETA, non-insulated, installed in an angle between 90° and 45° - in rigid floors acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip	FireFree strip	Nr. of layers	
≤ 50	1,8	---	X	X	2	EI 120-U/C E 120-U/C
> 75 to ≤ 110	12,3	---	X	X	4	EI 120-U/C E 120-U/C
>110 to ≤ 125	12,1	---	X	X	5	EI 120-U/C E 120-U/C
> 125 to ≤ 160	11,9	---	X	X	6	EI 120-U/C E 120-U/C
> 125 to ≤ 160	3,2	---	X	X	8	EI 120-U/C E 120-U/C

PE-HD pipes acc. to cl. 2.1 of the ETA, non-insulated - in rigid floors acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 50	1,8 to 4,6	---	X	X	2	EI 240-U/C E 240-U/C
> 50 to ≤ 75	1,8 to 8,4	---	X	X	3	EI 240-U/C E 240-U/C
> 75 to ≤ 110	> 2,7to10,0	---	X	X	4	EI 180-U/C E 240-U/C
> 110 to ≤ 160	> 4,0 to 14,6	---	X	X	6	EI 120-U/C E 240-U/C

PE-HD pipes acc. to cl. 2.1 of the ETA, non-insulated, installed in an angle between 90° and 45° - in rigid floors acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of lavers	
≤ 50	4,6	---	X	X	2	EI 120-U/C E 120-U/C
> 50 to ≤ 110	2,7 to 10,0	---	X	X	4	EI 120-U/C E 120-U/C

PE-HD pipes acc. to cl. 2.1 of the ETA, insulated with Polyethylene sound insulation (e.g. THERMACOMPACT TF™) acc. to cl. 1 of the ETA - in rigid floors acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 50	1,8	≤ 4	X	X	2	EI 120-U/C E 120-U/C
> 50 to ≤ 75	2,2	≤ 4	X	X	3	EI 120-U/C E 120-U/C
> 75 to ≤ 110	2,7 to 10,0	≤ 4	X	X	4	EI 120-U/C E 120-U/C

PE-HD pipes acc. to cl. 2.1 of the ETA, positioned vertically directly in the corner of the wall (clearance between pipe and wall maximum 10 mm), insulated with Polyethylene sound insulation (e.g. THERMACOMPACT TF™) acc. to cl. 1 of the ETA - in ri id floors acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 110	10,0	≤ 4	X	X	4	EI 120-U/C E 120-U/C

PP pipes acc. to cl. 2.1 of the ETA, non-insulated - in rij:lid floors acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 50	1,8 to 4,6	---	X	X	2	EI 240-U/C E 240-U/C
> 50 to ≤ 75	1,8 to 8,4	---	X	X	3	EI 240-U/C E 240-U/C
> 75 to ≤ 110	> 2,7 to 10,0	---	X	X	4	EI 180-U/C E 180-U/C
> 110 to ≤ 125	> 3,1to11,4	---	X	X	6	EI 120-U/C E 120-U/C
> 125 to ≤ 160	> 4,0 to 14,6	---	X	X	8	EI 120-U/C E 120-U/C

PP pipes acc. to cl. 2.1 ofthe ETA, non-insulated, installed in an angle between 90° and 45° - in rigid floors acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 110	2,7 to 10,0	---	X	X	4	EI 120-U/C E 120-U/C
> 110 to ≤ 125	3,2 to 12,0	---	X	X	6	EI 120-U/C E 120-U/C
> 125 to ≤ 160	4,0 to 14,6	---	X	X	8	EI 120-U/C E 120-U/C

PP pipes acc. to cl. 2.1 of the ETA, positioned vertically directly in the corner of the wall (clearance between pipe and wall maximum 10 mm), insulated with Polyethylene sound insulation (e.g. THERMACOMPACT TF™) acc. to cl. 1 of the ETA - in rigid floors acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 110	2,7	≤ 4	X	X	4	EI 120-U/C E 120-U/C

Plastic pipes alpex F50 PROFI and alpex L acc. to cl. 2.1 of the ETA, non-insulated - in rigid floors acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 16	2,0	---	X	X	2	EI 120-U/C E 120-U/C
≤ 50	4,0	---	X	X	2	EI 120-U/C E 120-U/C
≤ 75	5,0	---	X	X	4	EI 120-U/C E 120-U/C

Plastic pipes alpex F50 PROFI and alpex L acc. to cl. 2.1 of the ETA, insulated with SH/Armaflex (length ≥ 500 mm - on both sides of the separating element, local-sustained LS or continued- sustained CS) - in rigid floors acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 16	2,0	9,0	X	X	2	EI 120-U/C E 120-U/C
≤ 75	5,0	9,0	X	X	4	EI 120-U/C E 120-U/C
≤ 75	5,0	> 9,0 to 20,0	X	X	5	EI 120-U/C E 120-U/C
≤ 75	5,0	> 20,0 to 30,0	X	X	6	EI 120-U/C E 120-U/C

Plastic pipes alpex F50 PROFI and alpex L acc. to cl. 2.1 of the ETA, insulated with AF/Armaflex (length ≥ 500 mm - on both sides of the separating element, local-sustained LS or continued-sustained CS) - in rii id floors acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 75	5,0	9,5	X	X	4	EI 120-U/C E 120-U/C

Plastic pipes BluePower® acc. to cl. 2.1 of the ETA, insulated with Polyethylene sound insulation (e.g. THERMACOMPACT TF™) acc. to cl. 1 of the ETA- in rigid floors acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 50	1,8	≤4	X	X	2	EI 120-U/C E 120-U/C
≤ 75	2,5	≤4	X	X	4	EI 90-U/C E 90-U/C
≤ 110	3,4	≤ 4	X	X	5	EI 90-U/C E 90-U/C

Plastic pipes Uponor Unipipe Mehrschichtverbundrohr MLC acc. to cl. 2.1 of the ETA, non-insulated - in rigid floors acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 50	4,5	---	X	X	2	EI 120-U/C E 120-U/C
≤ 75	7,5	---	X	X	3	EI 90-U/C E 90-U/C
≤ 110	10,0	---	X	X	4	EI 90-U/C E 90-U/C

Plastic pipes Uponor Unipipe Mehrschichtverbundrohr MLC acc. to cl. 2.1 of the ETA, insulated with SH/Armaflex (length ≥ 500 mm - on both sides of the separating element, local-sustained LS or continued-sustained CS) - in rigid floors acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 50	4,5	10,0	X	X	3	EI 120-U/C E 120-U/C
≤ 63	6,0	9,0	X	X	4	EI 120-U/C E 120-U/C
≤ 90	8,5	9,0	X	X	5	EI 120-U/C E 120-U/C
≤ 110	10,0	> 9,0 to 20,0	X	X	6	EI 120-U/C E 120-U/C

Plastic pipes Uponor Unipipe Mehrschichtverbundrohr MLC acc. to cl. 2.1 of the ETA, insulated with AF/Armaflex (length ≥ 500 mm - on both sides of the separating element, local-sustained LS or continued-sustained CS) - in rigid floors acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 50	4,5	27,5	X	X	4	EI 120-U/C E 120-U/C
≤ 75	7,5	30,0	X	X	5	EI 120-U/C E 120-U/C
≤ 110	10,0	9,5 to 31,0	X	X	6	EI 120-U/C E 120-U/C

Plastic pipes Wavin SiTech+ acc. to cl. 2.1 of the ETA, insulated with Polyethylene sound insulation (e.g. THERMACOMPACT TF™) acc. to cl. 1 of the ETA- in rigid floors acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 50	2,0	≤ 4	X	X	2	EI 120-U/C E 120-U/C
≤ 75	2,6	≤ 4	X	X	3	EI 120-U/C E 120-U/C
≤ 110	3,6	≤ 4	X	X	4	EI 120-U/C E 120-U/C
≤ 125	4,2	≤ 4	X	X	5	EI 60-U/C E 60-U/C
≤ 160	5,3	≤ 4	X	X	6	EI 60-U/C E 60-U/C
≤ 50	2,0	≤ 4	---	X	2	EI 120-U/U E 120-U/U
≤ 75	2,6	≤ 4	---	X	3	EI 120-U/U E 120-U/U
≤ 110	3,6	≤ 4	---	X	4	EI 120-U/U E 120-U/U
≤ 125	4,2	≤ 4	---	X	5	EI 120-U/U E 120-U/U
≤ 160	5,3	≤ 4	---	X	6	EI 120-U/U E 120-U/U

Plastic pipes Wavin SiTech+ acc. to cf. 2.1 of the ETA, positioned vertically directly in the corner of the wall (clearance between pipe and wall maximum 10 mm), insulated with Polyethylene sound insulation (e.g. THERMACOMPACT TF™) acc. to cl. 1 of the ETA - in rigid floors acc. to cf. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 110	3,6	≤ 4	-	X	5	EI 120-U/U E 120-U/U

Plastic pipes Wavin SiTech+ acc. to cl. 2.1 of the ETA, with bows on the bottom side of the floor and a connection sleeve within the floor, insulated with Polyethylene sound insulation (e.g. THERMACOMPACT TF™) acc. to cl. 1 of the ETA - in rigid floors acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 50	2,0	≤ 4	---	X	3	EI 120-U/U E 120-U/U
≤ 75	2,6	≤ 4	---	X	4	EI 120-U/U E 120-U/U
≤ 110	3,6	≤ 4	---	X	5	EI 120-U/U E 120-U/U

Plastic pipes Fusiotherm®Stabiverbundrohr acc. to cl. 2.1 of the ETA, non-insulated - in rigid floors acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 16	2,2	---	X	X	2	EI 120-U/C E 120-U/C
≤ 50	7,9	---	X	X	2	EI 120-U/CE 120-U/C
≤ 75	11,8	---	X	X	3	EI 120-U/CE 120-U/C
≤ 110	17,2	---	X	X	4	EI 120-U/CE 120-U/C

Plastic pipes Fusiotherm®Stabiverbundrohr acc. to cl. 2.1 of the ETA, insulated with SH/Armaflex (length ≥ 500 mm - on both sides of the separating element, local-sustained LS or continued-sustained CS)- in rigid floors acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 50	6,9	10,0	X	X	3	EI 120-U/C E 120-U/C

Plastic pipes Fusiotherm®Stabiverbundrohr acc. to cl. 2.1 of the ETA, insulated with AF/Armaflex (length ≥ 500 mm - on both sides of the separating element, local-sustained LS or continued-sustained CS) - in rigid floors acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 110	15,2	31,0	X	X	6	EI 120-U/C E 120-U/C

Plastic pipes Fusiotherm®SDR 11 acc. to cl. 2.1 of the ETA, non-insulated - in rigid floors acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 315	28,6	---	X	X	20	EI 120-U/C E 120-U/C

Plastic pipes Geberit Silent-PP acc. to cl. 2.1 of the ETA, insulated with Polyethylene sound insulation (e.g. THERMACOMPACT TF™) acc. to cl. 1 of the ETA- in rigid floors acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 50	2,0	≤ 4	X	X	2	EI 120-U/C E 120-U/C
≤ 75	2,6	≤ 4	X	X	3	EI 120-U/C E 120-U/C
≤ 110	3,6	≤ 4	X	X	4	EI 120-U/C E 120-U/C
≤ 50	2,0	≤ 4	---	X	2	EI 120-U/U E 120-U/U
≤ 75	2,6	≤ 4	---	X	3	EI 120-U/U E 120-U/U
≤ 110	3,6	≤ 4	---	X	4	EI 120-U/U E 120-U/U
≤ 125	4,2	≤ 4	---	X	5	EI 120-U/U E 120-U/U
≤ 160	5,2	≤ 4	---	X	6	EI 120-U/U E 120-U/U

Plastic pipes Geberit Silent-PP acc. to cl. 2.1 of the ETA, positioned vertically directly in the corner ofthe wall (clearance between pipe and wall maximum 10 mm), insulated with Polyethylene sound insulation (e.g. THERMACOMPACT TF™) acc. to cl. 1 of the ETA - in rigid floors acc. to cl.2.1 oftheETA						
Pipe dimensions(mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of lavers	
≤ 110	3,6	≤ 4	---	X	5	EI 120-U/U E 120-U/U

Plastic pipes Geberit Silent-PP acc. to cl. 2.1 of the ETA, with bows on the bottom side of the floor and a connection sleeve within the floor, insulated with Polyethylene sound insulation (e.g. THERMACOMPACT TF™) acc. to cl. 1 of the ETA - in rigid floors acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of lavers	
≤ 50	2,0	≤ 4	---	X	3	EI 120-U/U E 120-U/U
≤ 75	2,6	≤ 4	---	X	4	EI 120-U/U E 120-U/U
≤ 110	3,6	≤ 4	---	X	5	EI 120-U/U E 120-U/U

Plastic pipes POLO-KAL NG acc. to cl. 2.1 of the ETA, insulated with Polyethylene sound insulation (e.g. THERMACOMPACT TF™) acc. to cl. 1 of the ETA - in rigid floors acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 50	2,0	≤ 4	X	X	2	EI 90-U/C E 120-U/C
≤ 75	2,6	≤ 4	X	X	3	EI 90-U/C E 120-U/C
≤ 110	3,4	≤ 4	X	X	4	EI 120-U/C E 120-U/C
≤ 50	2,0	≤ 4	---	X	2	EI 120-U/U E 120-U/U
≤ 75	2,6	≤ 4	---	X	3	EI 120-U/U E 120-U/U
≤ 110	3,4	≤ 4	---	X	4	EI 120-U/U E 120-U/U
≤ 125	3,9	≤ 4	---	X	5	EI 120-U/U E 120-U/U
≤ 160	4,9	≤ 4	---	X	6	EI 120-U/U E 120-U/U

Plastic pipes POLO-KAL NG acc. to cl. 2.1 of the ETA, positioned vertically directly in the corner of the wall (clearance between pipe and wall maximum 10 mm), insulated with Polyethylene sound insulation(e.g. THERMACOMPACT TF™) acc. to cl. 1 of the ETA- in rigid floors acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 110	3,4	≤ 4	---	X	5	EI 120-U/U E 120-U/U

Plastic pipes POLO-KAL NG acc. to cl. 2.1 of the ETA, with bows on the bottom side of the floor and aconnection sleeve within the floor, insulated with Polyethylene sound insulation (e.g. THERMACOMPACT TF™) acc. to cl. 1 of the ETA- in rigid floors acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 50	2,0	≤ 4	---	X	3	EI 120-U/U E 120-U/U
≤ 75	2,6	≤ 4	---	X	4	EI 120-U/U E 120-U/U
≤ 110	3,4	≤ 4	---	X	5	EI 120-U/U E 120-U/U

Plastic pipes RAUPIANO PLUS acc. to cl. 2.1 of the ETA, insulated with Polyethylene sound insulation (e.g. THERMACOMPACT TF™) acc. to cl. 1 of the ETA- in rigid floors acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 50	1,8	≤ 4	---	X	2	EI 120-U/U E 120-U/U
≤ 75	1,9	≤ 4	---	X	3	EI 120-U/U E 120-U/U
≤ 110	2,7	≤ 4	---	X	4	EI 120-U/U E 120-U/U
≤ 125	3,1	≤ 4	---	X	5	EI 120-U/U E 120-U/U
≤ 160	3,6	≤ 4	---	X	6	EI 120-U/U E 120-U/U

Plastic pipes RAUPIANO PLUS acc. to cl. 2.1 of the ETA, positioned vertically directly in the corner ofthe wall (clearance between pipe and wall maximum 10 mm), insulated with Polyethylene sound insulation (e.g. THERMACOMPACT TF™) acc. to cl. 1 of the ETA- in rigid floors acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 110	2,7	≤ 4	---	X	5	EI 120-U/U E 120-U/U

Plastic pipes RAUPIANO PLUS acc. to cl. 2.1 of the ETA, with bows on the bottom side of the floor and a connection sleeve within the floor, insulated with Polyethylene sound insulation (e.g. THERMACOMPACT TF™) acc. to cl. 1 of the ETA - in rii:iid floors acc. to cl. 2.1 of the ETA						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 50	2,0	≤ 4	---	X	3	EI 120-U/U E 120-U/U
≤ 75	2,6	≤ 4	---	X	4	EI 120-U/U E 120-U/U
≤ 110	2,7	≤ 4	---	X	5	EI 120-U/U E 120-U/U

Multiple penetration of maximum three plastic pipes acc. to cl. 2.1 of the ETA made from PVC-U, PE-HD or PP through one concerted pipe collar FireFree 330 Flexbøsning (clearance between pipes maximum 15 mm; linear arrangement, no clusters), non-insulated - in rigid floors acc. to cl. 2.1 of the ETA						
Pip dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter of each pipe	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤. 75	1,8 to 8,4	---	X	X	4	EI 120-U/C E 120-U/C

Metal pipes (copper pipes, steel pipes, stainless steel pipes) acc. to cl. 2.1 of the ETA, insulated with AF/Armaflex (length ≥ 500 mm - on both sides of the separating element, local-sustained LS or continued-sustained CS) - in rigid floors acc. to cl. 2.1 of the ETA - the intumescent inlays which haveto be arranged one behind the other have to be installed at the bottom side flushed within the Separating element (without Metal Strap)						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 28	1,0 to 14,2	6,0	X	X	2	EI 120-C/U E 120-C/U
≤ 28	1,0 to 14,2	6,0 to < 20,0	X	X	3	EI 120-C/U E 120-C/U
≤ 28	1,0 to 14,2	> 20,0 to 35,0	X	X	4	EI 120-C/U E 120-C/U

Metal pipes (copper pipes, steel pipes, stainless steel pipes) acc. to cl. 2.1 of the ETA, insulated with AF/Armaflex (length 500 mm - on both sides of the separating element, continued-sustained CS) - inrigid floors acc. to cl. 2.1 of the ETA - the intumescent inlays which have to be arranged one behind the other have to be installed at the bottom side flushed within the separating element (without Metal Strap)						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 54	1,5 to 14,2	9,0	X	X	2	EI 120-C/U E 120-C/U
≤ 54	1,5 to 14,2	> 9,0 to 22,0	X	X	3	EI120-C/U E 120-C/U
≤ 54	1,5 to 14,2	> 22,0 to 35,0	X	X	4	EI 120-C/U E 120-C/U
≤ 89	2,0 to 14,2	13,0	X	X	2	EI 120-C/U E 120-C/U
≤ 89	2,5 to 14,2	13,0	X	X	2	EI 120-C/U E 120-C/U

Metal pipes (only steel pipes and stainless steel pipes) acc. to cl. 2.1 of the ETA, insulated with AF/Armaflex (length 500 mm - on both sides of the separating element, local-sustained LS or continued-sustained CS) - in rigid floors acc. to cl. 2.1 of the ETA - the intumescent inlays which have to be arranged one behind the other have to be installed at the bottom side flushed within the separating element (without Metal Strap)						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 108	2,0 to 14,2	13,0 to 30,0	X	X	2	EI 120-C/U E 120-C/U

Metal pipes (only steel pipes and stainless steel pipes) acc. to cl. 2.1 of the ETA, insulated withAF/Armaflex (length ≥500 mm - on both sides of the separating element, local-sustained LS orcontinued-sustained CS) - in rigid floors acc. to cl. 2.1 of the ETA - the pipe collar FireFree 330 Flexbøsning has to be installed at the bottom side of the separating element						
Pipe dimensions (mm)		Insulation thickness (mm)	Intumescent inlay			Fire resistance classification
Outer diameter	Wall thickness		FireFree strip EM	FireFree strip	Nr. of layers	
≤ 108	2,0 to 14,2	13,0 to 30,0	X	X	2	EI 120-C/U E 120-C/U