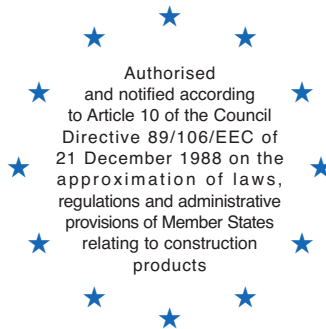


ÖSTERREICHISCHES INSTITUT FÜR BAUTECHNIK

A-1010 Vienna, Schenkenstrasse 4
Tel.: + 4 3 (0) 1 - 5 3 3 6 5 5 0
Fax: + 4 3 (0) 1 - 5 3 3 6 4 2 3
E-mail: mail@oib.or.at



Member of EOTA

European technical approval

ETA-11/0454

(English language translation, the original version is in German language)

Handelsbezeichnung
Trade name

Rohrabschottung
„System Armaflex Protect“
Pipe penetration seal
„System Armaflex Protect“

Zulassungsinhaber
Holder of approval

Armacell GmbH
Robert-Bosch-Straße 10
48153 Münster
GERMANY

Zulassungsgegenstand
und Verwendungszweck

Rohrabschottung

*Generic type and use of
construction product*

Pipe penetration seal

Geltungsdauer vom
Validity from
bis
to

21.12.2011

20.12.2016

Herstellwerk
Manufacturing plant

Armacell GmbH
Robert-Bosch-Straße 10
48153 Münster
GERMANY

Diese Europäische technische
Zulassung umfasst
*This European technical approval
contains*

23 Seiten inklusive 6 Anhänge

23 pages including 6 Annexes



European Organisation for Technical Approvals
Europäische Organisation für Technische Zulassungen
Organisation Européenne pour l'Agrément technique

I LEGAL BASES AND GENERAL CONDITIONS

- 1 This European technical approval is issued by the Österreichisches Institut für Bautechnik in accordance with:
 - Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products¹, modified by the Council Directive 93/68/EEC² and Regulation (EC) no. 1882/2003 of the European Parliament and of the Council³;
 - Wiener Bauprodukte- und Akkreditierungsgesetz – WBAG. LGBl. Nr. 30/1996, zuletzt geändert durch das Gesetz LGBl. für Wien Nr. 24/2008;
 - Common Procedural Rules for Requesting, Preparing and the Granting of European technical approvals set out in the Annex to Commission Decision 94/23/EC⁴;
 - Guideline for European technical approval for “Fire Stopping and Fire Sealing Products” ETAG no. 026, edition January 2008;
 - EOTA Technical Report “Characterisation, Aspects of Durability and Factory Production Control for Reactive Materials, Components and Products” TR 024, edition November 2006, amended July 2009.
- 2 The Österreichisches Institut für Bautechnik is authorised to check whether the provisions of this European technical approval are met. Checking may take place in the manufacturing plant. Nevertheless, the responsibility for the conformity of the products to the European technical approval and for their fitness for the intended use remains with the holder of the European technical approval.
- 3 This European technical approval is not to be transferred to manufacturers or agents of manufacturer other than those indicated on page 1; or manufacturing plants other than those laid down in the context of this European technical approval.
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- 6 The European technical approval is issued by the approval body in its official language. This version corresponds fully to the version circulated within EOTA. Translations into other languages have to be designated as such.

¹ Official Journal of the European Communities no. L 40, 11.2.1989, p. 12

² Official Journal of the European Communities no. L 220, 30.8.1993, p. 1

³ Official Journal of the European Union no. L 284, 31.10.2003, p. 1

⁴ Official Journal of the European Communities no. L 17, 20.1.1994, p. 34

II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

1 Definition of Pipe penetration seal „System Armaflex Protect” and intended use

The Pipe penetration seal „System Armaflex Protect” is designed and installed in accordance with the ETA-holder’s design and installation instructions, deposited at the Österreichisches Institut für Bautechnik. The Pipe penetration seal „System Armaflex Protect” comprises the following components, which are factory-produced by the ETA-holder or a supplier. The ETA-holder is ultimately responsible for the conformity of the components of Pipe penetration seal „System Armaflex Protect” with the ETA.

1.1 Definition of the construction product

„System Armaflex Protect” is a pipe penetration seal based on intumescent fire protection tubes and sheets.

Components of Pipe penetration seal “System Armaflex Protect”	Characteristics
Armaflex Protect	closed cell elastomeric foam insulation with intumescent fire protection additives in form of tubes and sheets
AF/Armaflex	closed cell, flexible elastomeric foam (FEF) insulation in form of (slotted) tubes and sheets (can be provided with a self-adhesive device)
Armaflex Band selbstklebend (Armaflex self-adhesive tape)	closed cell, flexible elastomeric foam (FEF) insulation in form of tapes with a self-adhesive device
Armaflex Kleber 520 (Armaflex Adhesive 520)	polychlorene-based adhesive, free from aromatic compounds (special adhesive for processing of all flexible Armaflex insulating material – except HT/Armaflex)

1.2 Intended use, use category and working life

1.2.1 Intended use

The Pipe penetration seal „System Armaflex Protect” is intended to be used to permanently reinstate the fire resistance performance of flexible wall constructions, rigid wall constructions and rigid floor constructions where they have been provided with apertures which are penetrated by various pipes, auxiliary cables and auxiliary heaters.

The Pipe penetration seal „System Armaflex Protect” can be installed only in the types of separating elements as specified in the following table.

Separating element	Construction
Flexible walls	<ul style="list-style-type: none"> ➤ Timber or steel studs lined on both faces ➤ Minimum thickness 100 mm ➤ Classification according to EN 13501-2:2007: \geq EI 90 ➤ This ETA does not cover sandwich panel construction – penetrations in such constructions shall be tested on a case by case basis
Rigid walls	<ul style="list-style-type: none"> ➤ Aerated concrete, concrete, reinforced concrete, masonry ➤ Minimum density 450 kg/m³ ➤ Minimum thickness 100 mm ➤ Classification according to EN 13501-2:2007: \geq EI 90
Rigid floors	<ul style="list-style-type: none"> ➤ Aerated concrete, concrete, reinforced concrete ➤ Minimum density 550 kg/m³ ➤ Minimum thickness 150 mm ➤ Classification according to EN 13501-2:2007: \geq REI 90

The Pipe penetration seal „System Armaflex Protect” can only be configured as specified in the following table.

Penetrating element	Construction characteristics
Plastic pipes	<ul style="list-style-type: none"> ➤ Multi-layer composite pipes (“alpex F50 PROFI”, “alpex L” from “Fränkische Rohrwerke Gebr. Kirchner GmbH & Co. KG” or equal product; for further details see technical literature of the ETA-holder) with a diameter of 16 mm to 75 mm, a wall thickness of 2,0 mm to 5,0 mm (U/C), (C/C) and an in-between aluminium layer with a thickness of 0,2 mm to 1,5 mm. For details about pipe diameters, corresponding wall thicknesses and corresponding thicknesses of in-between aluminium layers and interpolation between pipe diameters and wall thicknesses see Annex B, D and E of the ETA.
Metal pipes	<ul style="list-style-type: none"> ➤ Metal pipes of reaction to fire class A1 according to EN 13501-1:2007 with decomposition point greater or equal than copper (1000 °C) and a thermal conductivity smaller or equal than copper with a maximum diameter of up to 108 mm and a wall thickness of 1,0 mm to 14,2 mm (C/U), (C/C). For details about pipe diameters, corresponding wall thicknesses and interpolation between pipe diameter and wall thickness see Annex A, C and E of the ETA. ➤ Metal pipes of reaction to fire class A1 according to EN 13501-1:2007 with decomposition point greater or equal than steel (1000 °C) and a thermal conductivity smaller or equal than steel with a maximum diameter of up to 326 mm and a wall thickness of 1,0 mm to 14,2 mm (C/U), (C/C). For details about pipe diameters, corresponding wall thicknesses and interpolation between pipe diameters and wall thicknesses see Annex A, C and E of the ETA. ➤ Included in this group are the above pipes with a coating provided the overall reaction to fire class is minimum A2-s1,d0 according to EN 13501-1:2007.

Penetrating element	Construction characteristics
Auxiliary cables	➤ Sheathed electrical cables – only for use outside of “System Armaflex Protect” – with a total conductor cross-section (total copper cross-section) of up to 4,5 mm ² (maximum 3 conductors with a maximum single conductor cross-section of 1,5 mm ² ; e.g. NYM 3x1,5 mm ² ; for further details see technical literature of the ETA-holder). For details see clause 2.3.2 of the ETA.
Auxiliary heaters	➤ Self-regulating heating cables (“Raychem HWAT-R” from “Tyco Thermal Controls LLC” or equal product; for further details see technical literature of the ETA-holder) with a maximum dimension of 16,1 mm x 6,7 mm. For details see clause 2.3.2 of the ETA.

1.2.2 Use category

The Pipe penetration seal „System Armaflex Protect” is intended for use at temperatures below 0 °C, but with no exposure to rain nor UV and can therefore – according to ETAG 026-Part 2 clause 2.4.12.1.3.3 – be categorized as Type Y₂. Since the requirements for Type Y₂ are met, also the requirements for Type Z₁ and Z₂ are fulfilled.

1.2.3 Working life

The provisions made in this ETA are based on an assumed intended working life of the product for the intended use of 10 years, provided that it is subject to appropriate use and maintenance.

The indications given on the intended working life cannot be interpreted as a guarantee given by the producer or the approval body, but are to be used as a means for selecting the appropriate product in relation to the expected economically reasonable working life of the works.

The real working life might be, in normal use conditions, considerably longer without major degradation affecting the Essential Requirements.

2 Characteristics of the product and methods of verification

2.1 General

The identification tests and the assessment of the fitness for use according to the Essential Requirements were carried out in compliance with the “ETA Guideline no. 026-Part 2” concerning “Penetration Seals” –edition January 2008 (called ETAG 026-Part 2 in this ETA) and with the “EOTA Technical Report 024” concerning “Characterisation, Aspects of Durability and Factory Production Control for Reactive Materials, Components and Products” –edition November 2006, amended July 2009 (called TR 024 in this ETA).

Clause No.	ETA Clause No.	Characteristic	Test procedure / Evaluation
Mechanical resistance and stability			
	2.2	None	Not relevant
Safety in case of fire			
ETAG 2.4.1	2.3.1	Reaction to fire	Classification according to EN 13501-1:2007
ETAG 2.4.2	2.3.2	Resistance to fire	Classification according to EN 13501-2:2007
Hygiene, health and environment			
ETAG 2.4.3	2.4.1	Air permeability (material property)	No Performance Determined
ETAG 2.4.4	2.4.2	Water permeability (material property)	No Performance Determined
ETAG 2.4.5	2.4.3	Release of dangerous substances	Declaration of manufacturer
Safety in use			
ETAG 2.4.6	2.5.1	Mechanical resistance and stability	No Performance Determined
ETAG 2.4.7	2.5.2	Resistance to impact / movement	No Performance Determined
ETAG 2.4.8	2.5.3	Adhesion	No Performance Determined
Protection against noise			
ETAG 2.4.9	2.6.1	Airborne sound insulation	No Performance Determined
Energy economy and heat retention			
ETAG 2.4.10	2.7.1	Thermal properties	Test results according to EN 12667:2001 and EN ISO 8497:1996
ETAG 2.4.11	2.7.2	Water vapour permeability	Test results according to EN 12086:1997 and EN 13469:2001
General aspects relating to fitness for use			
ETAG 2.4.12	2.8.1	Durability and serviceability	Durability characteristics according to EN 14304:2009
TR 024 4.2.5	2.8.2	Exposure conditions	Test results of unexposed and exposed specimens

2.2 Mechanical resistance and stability

Not relevant.

2.3 Safety in case of fire

2.3.1 Reaction to fire

The components of Pipe penetration seal “System Armaflex Protect” were tested according to ETAG 026-Part 2 clause 2.4.1, EN ISO 11925-2:2002 and EN 13823:2002 and classified according to EN 13501-1:2007.

Component	Class according to EN 13501-1:2007
<p>Armaflex Protect including Armaflex Band selbstklebend (Armaflex self-adhesive tape) and Armaflex Kleber 520 (Armaflex Adhesive 520)</p>	<p>E</p>
<p>AF/Armaflex and Armaflex Kleber 520 (Armaflex Adhesive 520)</p>	<p>B-s3,d0 (sheet) / B_L-s3,d0 (tube) on metal pipes</p> <p>E_L (tube) on multi-layer composite pipes</p>

2.3.2 Resistance to fire

The Pipe penetration seal “System Armaflex Protect” was tested according to ETAG 026-Part 2 clause 2.4.2 and prEN 1366-3.2:N185:2007-07 in conjunction with EN 1363-1:1999. The tests were conducted under the following conditions:

- Standard flexible walls and standard rigid floors
- Standard configuration for pipe penetration seals
- Standard service support construction

Based upon the gained test results and the field of application specified within prEN 1366-3.2:N185:2007-07 the Pipe penetration seal „System Armaflex Protect” has been classified according to EN 13501-2:2007. The fire resistance classes are listed in Annex F of the ETA.

General

The Pipe penetration seal „System Armaflex Protect” can be used in apertures in walls and floors according to clause 1.2.1 of the ETA.

The penetration of pipes in accordance with clause 1.2.1 of the ETA is allowed.

The penetration of one auxiliary cable according to clause 1.2.1 of the ETA which is installed parallel outside of “System Armaflex Protect” is allowed.

The penetration of one auxiliary heater according to clause 1.2.1 of the ETA which is installed parallel to the pipe inside of “System Armaflex Protect” with insulation thickness ≥ 25 mm and insulation length ≥ 1000 mm is allowed.

Only single pipe penetration seals are allowed and therefore each pipe which is to be sealed off has to be equipped with “Armaflex Protect”.

For metal pipes the pipe end configuration can be C/U, C/C.

For multi-layer composite pipes the pipe end configuration can be U/C, C/C.

All pipes have to be installed perpendicular to the surface of the separating element.

All pipes and additional installed auxiliary cables and auxiliary heaters – in flexible walls, rigid walls and rigid floors – have to be supported on both sides of the separating element by service support constructions (e.g. pipe hangers) according to the ETA-holder’s installation instructions.

The first support (service support construction) for installations in flexible walls, rigid walls and rigid floors has to be at maximum 650 mm (measured from the surface of the separating element).

The service support constructions have to be fixed according to the ETA-holder’s installation instructions to the separating element or a suitable adjacent building element on both sides of the penetration seal in such a manner that in the case of fire no additional load is imposed on the seal. Furthermore it is assumed that this support is maintained for the required period of fire resistance.

Other parts or service support constructions must not penetrate the seal.

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

The function of the seal if used on e.g. pneumatic dispatch systems and pressurised air systems is guaranteed only when the systems are shut off in case of fire.

This ETA 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.

Details for installation of Pipe penetration seal „System Armaflex Protect” (see Annex A to D of the ETA)

The Pipe penetration seal “System Armaflex Protect” will be formed by installing “Armaflex Protect” – in form of a tube or a sheet – on the pipe in the opening of the separating element according to the ETA-holder’s installation instructions.

The Pipe penetration seal “System Armaflex Protect” has to be installed centered in the opening of the separating element.

The residual gap (maximum 50 mm gap width) – in flexible walls – has to be filled with plaster filler in at least the thickness of the planking after the gap is filled previously with shredded mineral wool (classification A1 or A2-s1,d0 according to EN 13501-1:2007), or completely with plaster filler.

The residual gap (maximum 50 mm gap width) – in rigid walls and rigid floors – has to be filled completely with a casting compound made of mineral building material (classification A1 or A2-s1,d0 according to EN 13501-1:2007) such as e.g. cement mortar or plaster.

The tube or sheet of “Armaflex Protect” used on the pipe in the opening of the separating element has to be continuous along the required insulation length according to Annex A to D of the ETA.

For pipes with diameter ≤ 89 mm “Armaflex Protect” in form of a tube has to be used. The tube of “Armaflex Protect” can be either pushed onto the pipe or slotted and glued at the longitudinal joint.

For pipes with diameter > 89 mm “Armaflex Protect” in form of a sheet has to be used. The sheet of “Armaflex Protect” has to be wrapped around the pipe, bonded at the longitudinal joint and additionally fixed by a winding wire (6 windings per meter) in place.

Branches or elbows also have to be equipped with “Armaflex Protect” along the required insulation length according to Annex A to D of the ETA.

For details about the required insulation length and insulation thickness of “Armaflex Protect” corresponding the diameter of the pipe to be sealed off see Annex A to D of the ETA.

In some cases (see Annex A and C of the ETA) it is required to adhere a continuing insulation of “AF/Armaflex” (sheets) on both sides of Pipe penetration seal “System Armaflex Protect” according to the ETA-holder’s installation instructions. If no continuing insulation is required, it is also allowed to connect any other insulation at “Armaflex Protect”.

When installing “Armaflex Protect” all butt joints and longitudinal joints have to be glued with “Armaflex Kleber 520” (Armaflex Adhesive 520) and covered with “Armaflex Band selbstklebend” (Armaflex self-adhesive tape) according to the ETA holder’s installation instructions.

When installing “AF/Armaflex” all butt joints and longitudinal (except for “AF/Armaflex” with self-adhesive device) joints have to be glued with “Armaflex Kleber 520” (Armaflex Adhesive 520) according to the ETA holder’s installation instructions. “Armaflex Band selbstklebend” (Armaflex self-adhesive tape) may be additionally used for “AF/Armaflex” or any other connected insulation.

Butt joints between “Armaflex Protect” and “AF/Armaflex” have to be glued with “Armaflex Kleber 520” (Armaflex Adhesive 520) according to the ETA holder’s installation instructions.

Butt joints between “Armaflex Protect” and any other connected insulation can be glued according to the ETA holder’s installation instructions.

The amount of “Armaflex Kleber 520” (Armaflex Adhesive 520) shall not be more than 300 g/m² according to the ETA holder’s installation instructions.

For details about the required insulation length and insulation thickness of “AF/Armaflex” corresponding the diameter of the pipe to be sealed off see Annex A to D of the ETA.

The minimum clearance (linear arrangement) between pipe penetration seals on pipes with diameter ≤ 89 mm is 0 mm. The minimum clearance (linear arrangement) between pipe penetration seals on pipes with diameter > 89 mm is 50 mm.

If Pipe penetration seal “System Armaflex Protect” is installed in timber stud walls there must be a minimum distance of 100 mm of the seal to any timber stud. The cavity between timber stud and seal must be closed completely with insulation with classification A1 or A2-s1,d0 according to EN 13501-1:2007. The dimensions of the timber studs shall be ≥ 50 mm x 75 mm (breadth / depth).

2.4 Hygiene, health and environment

2.4.1 Air permeability

No Performance Determined.

2.4.2 Water permeability

No Performance Determined.

2.4.3 Release of dangerous substances

According to the manufacturer's declaration, the product specification has been compared with the list of dangerous substances of the European Commission to verify that it does not contain such substances above the acceptable limits.

A written declaration in this respect was submitted by the ETA-holder.

In addition to the specific clauses relating to dangerous substances contained in this ETA, 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 Directive, these requirements need also to be complied with, when and where they apply.

2.5 Safety in use

2.5.1 Mechanical resistance and stability

No Performance Determined.

2.5.2 Resistance to impact/movement

No Performance Determined.

2.5.3 Adhesion

No Performance Determined.

2.6 Protection against noise

2.6.1 Airborne sound insulation

No Performance Determined.

2.7 Energy economy and heat retention

2.7.1 Thermal properties

The components of Pipe penetration seal „System Armaflex Protect” were tested according to ETAG 026-Part 2 clause 2.4.10, EN 12667:2001 for sheets and EN ISO 8497:1996 for tubes.

Component	Thermal conductivity at 0 °C (W/m·K)
Armaflex Protect	0,056
AF/Armaflex tubes AF-1 to AF-4	0,033
AF/Armaflex tubes AF-5 to AF-6	0,036
AF/Armaflex sheets ≤ 32 mm	0,033
AF/Armaflex sheets > 32 mm	0,036

2.7.2 Water vapour permeability

The components of Pipe penetration seal „System Armaflex Protect” were tested according to ETAG 026-Part 2 clause 2.4.11, EN 12086:1997 for sheets and EN 13469:2001 for tubes.

Component	Water vapour diffusion resistance (μ)
Armaflex Protect	7000
AF/Armaflex tubes AF-1 to AF-4	10000
AF/Armaflex tubes AF-5 to AF-6	7000
AF/Armaflex sheets ≤ 32 mm	10000
AF/Armaflex sheets > 32 mm	7000

2.8 General aspects relating to fitness for use

2.8.1 Durability and serviceability

Durability of reaction to fire against ageing/degradation and high temperature: According to EN 14304:2009 clause 4.2.5.2 the reaction to fire performance of FEF products does not change with time or when subjected to the declared maximum service temperature.

Durability of thermal resistance against ageing/degradation: According to EN 14304:2009 clause 4.2.5.3 the thermal conductivity of FEF products does not change with time. In this context the properties thermal conductivity, dimensions and tolerances and maximum service temperature (dimensional stability) were tested.

Durability of thermal resistance against high temperature: According to EN 14304:2009 clause 4.2.5.4 the thermal conductivity of FEF products does not change with time or when subjected to the declared maximum service temperature.

The thermal conductivity of “Armaflex Protect” and “AF/Armaflex” was determined according to EN 14304:2009 clause 4.2.1 (see clause 2.7.1 of the ETA).

The linear dimensions of “Armaflex Protect” were tested according to EN 14304:2009 clause 4.2.2.1, EN 822:1994, EN 823:1994 for sheets and EN 13467:2001 for tubes.

The linear dimensions of “AF/Armaflex” were tested according to EN 14304:2009 clause 4.2.2.1, EN 822:1994, EN 823:1994 for sheets and EN 13467:2001 for tubes.

The linear dimensions of “Armaflex Band selbstklebend” (Armaflex self-adhesive tape) were tested according to EN 14304:2009 clause 4.2.2.1, EN 822:1994 and EN 823:1994.

The squareness of “Armaflex Protect” was tested according to EN 14304:2009 clause 4.2.2.2, EN 824:1994 for sheets and EN 13467:2001 for tubes.

The squareness of “AF/Armaflex” was tested according to EN 14304:2009 clause 4.2.2.2, EN 824:1994 for sheets and EN 13467:2001 for tubes.

The components “Armaflex Protect” and “AF/Armaflex” fulfil the requirements given in EN 14304:2009 clause 4.2.2.1 and 4.2.2.2.

The maximum service temperature was tested according to EN 14304:2009 clause 4.3.2, EN 14706:2005 for sheets and EN 14707:2005 for tubes.

Component	Maximum service temperature (°C)
Armaflex Protect	+85
AF/Armaflex tubes AF-1 to AF-4	+110
AF/Armaflex tubes AF-5 to AF-6	+110
AF/Armaflex sheets ≤ 32 mm	+110
AF/Armaflex sheets > 32 mm	+110

The water vapour permeability (water vapour diffusion resistance) of “Armaflex Protect” and “AF/Armaflex” was determined according to EN 14304:2009 clause 4.3.5 (see clause 2.7.2 of the ETA).

2.8.2 Exposure conditions

All components of Pipe penetration seal „System Armaflex Protect” were tested according to ETAG 026-Part 2 clause 2.4.12.

All components of Pipe penetration seal „System Armaflex Protect” fulfil the requirements for the intended use category.

The Pipe penetration seal „System Armaflex Protect” is therefore appropriate for use at temperatures below 0 °C, but with no exposure to rain nor UV and can – according to ETAG 026-Part 2 clause 2.4.12.1.3.3 – be categorized as Type Y₂. Since the requirements for Type Y₂ are met, also the requirements for Type Z₁ and Z₂ are fulfilled.

3 Evaluation of Conformity and CE Marking

3.1 Attestation of Conformity system

According to the Decision 1999/454/EC of the European Commission⁵ system 1 of the attestation of conformity applies for fire-resistance-performance. This system of attestation of conformity is to be described in the following:

System 1: Certification of the conformity of the product by a Notified Certification Body on the basis of:

- a) Tasks of the manufacturer:
 - 1) Factory Production Control
 - 2) Further testing of samples taken at the factory in accordance with a prescribed control plan
- b) Tasks of the Notified Body:
 - 3) Initial type-testing of the product
 - 4) Initial inspection of factory and of factory production control
 - 5) Continuous surveillance, assessment and approval of factory production control

Additionally according to the Decision 2001/596/EC of the European Commission⁶ system 3 of the attestation of conformity is to be used in relation to the reaction-to-fire performance. This system of attestation of conformity is to be described in the following:

System 3: Declaration of conformity of the product by the manufacturer:

- a) Tasks of the manufacturer:
 - 1) Factory Production Control
- b) Tasks of the Notified Body:
 - 2) Initial type-testing of the product

⁵ Official Journal of the European Communities no. L 178, 14.7.1999, p. 52

⁶ Official Journal of the European Communities no. L 209, 2.8.2001, p. 33

3.2 Responsibilities

3.2.1 Tasks of the manufacturer

3.2.1.1 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 insure that the product is in conformity with this European technical approval.

The manufacturer shall draw up and keep up-to-date documents defining the factory production control that applies. The documentation to be carried out by the manufacturer and the applicable procedures shall be appropriate to the product and manufacturing process. The factory production control shall ensure the conformity of the product to an appropriate level. This involves:

- a) the preparation of documented procedures and instructions relating to factory production control operations;
- b) the effective implementation of these procedures and instructions;
- c) the recording of these procedures and their results;
- d) the use of these results to correct any deviations, repair the effects of such deviations, treat any resulting instances of non-conformity and, if necessary, revise the factory production control to rectify the cause of non-conformity;
- e) a procedure to ensure that both the Approval Body and the Notified (Certification) Bodies are advised before any significant change to the product, its components or manufacturing process, is made;
- f) a procedure to ensure that personnel involved in the production processes and the quality control procedures are qualified and adequately trained to carry out their required tasks;
- g) that all testing and measuring equipment is maintained and up to date calibration records are documented;
- h) maintenance of records to ensure every batch produced is clearly labelled with the batch number, which allows traceability to its production to be identified.

The manufacturer may only use components stated in the technical documentation of this European technical approval.

For the components which the ETA-holder does not manufacture by himself, he shall make sure that factory production control carried out by the other manufacturers gives the guaranty of the components compliance with the European technical approval.

The factory production control and the provisions taken by the ETA-holder for components not produced by himself shall be in accordance with the control plan⁷ relating to this European technical approval which is part of the technical documentation of this European technical approval. The control plan is laid down in the context of the factory production control system operated by the manufacturer and deposited at the Österreichisches Institut für Bautechnik.

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

⁷

The control plan is a confidential part of the European technical approval and only handed over to the Notified Body or Bodies involved in the procedure of conformity.

3.2.1.2 Other tasks of the manufacturer

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

- Technical data sheet:
 - a) Field of application:
 - 1) 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.
 - 2) 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.
 - 3) Limits in size, minimum thickness etc. of the penetration seal.
 - b) 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.
- Installation instruction:
 - a) Steps to be followed.

The manufacturer shall, on the basis of a contract, involve a body (bodies) which is (are) notified for the tasks referred to in section 3.1 in the field of approval product in order to undertake the actions laid down in section 3.3. For this purpose, the control plan referred to in sections 3.2.1.1 and 3.2.2 shall be handed over by the manufacturer to the Notified Body or Bodies involved.

The manufacturer shall make a declaration of conformity, stating that the construction product is in conformity with the provisions of this European technical approval.

3.2.2 Tasks of the Notified Bodies

The Notified Body (Bodies) shall perform the:

- initial type-testing of the product
The results of the tests performed as part of the assessment for the European technical approval can be used unless there are changes in the production line or plant. In such cases, the necessary initial type testing has to be agreed between the Österreichisches Institut für Bautechnik and the Notified Bodies involved.
- initial inspection of factory and of factory production control
The Notified Body (Bodies) shall ascertain that, in accordance with the control plan, the factory (in particular the employees and the equipment) and the factory production control are suitable to ensure continuous and orderly manufacturing of the components according to the specifications mentioned in clause 2 of this ETA.
- continuous surveillance, assessment and approval of factory production control
The Notified Body (Bodies) shall visit the factory at least once a year for surveillance of this manufacturer having a FPC system complying with a quality management system covering the manufacturing of the approval product components. It has to be verified that the system of factory production control and the specified automated manufacturing process are maintained taking into account the control plan

These tasks shall be performed in accordance with the provisions laid down in the control plan of this European technical approval.

The Notified Body (Bodies) shall retain the essential points of its (their) actions referred to above and state the results obtained and conclusions drawn in written report.

- In the case of Attestation of Conformity system 1:
The Notified 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 approval.

In cases where the provisions of the European technical approval and its control plan are no longer fulfilled, the Certification Body shall withdraw the certificate of conformity and inform the Österreichisches Institut für Bautechnik without delay.

3.3 CE marking

The CE marking shall be affixed either on the product itself, on a label attached to it, on its packaging or on the commercial documents accompanying the components of the product. The letters « CE » shall be followed by the identification number of the Notified Body involved and be accompanied by the following additional information:

- the name or identifying mark and address of the ETA-holder
- the last two digits of the year in which the CE marking was affixed
- the number of the EC certificate of conformity for the product
- the number of the European technical approval
- the number of the ETAG (ETAG N° 026 part 2)
- the designation of the product (trade name)
- the use category in accordance with the ETA section 1 and 2
- for other relevant characteristics (e.g. resistance to fire) see ETA-11/0454

4 Assumptions under which the fitness of the product for the intended use was favourably assessed

4.1 Manufacturing

The European technical approval is issued for the product on the basis of agreed data/information, deposited with the Österreichisches Institut für Bautechnik, 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 the Österreichisches Institut für Bautechnik before the changes are introduced. The Österreichisches Institut für Bautechnik will decide whether or not such changes affect the ETA and consequently the validity of the CE marking on the basis of the ETA and if so whether further assessment or alterations to the ETA, shall be necessary.

4.2 Installation

The ETA is issued under the assumption that the installation of the approval product shall be in accordance with the manufacturer's technical literature.

Additional marking of the seal shall be done in case of national requirements.

5 Indications to the manufacturers

5.1 Packaging, transport and storage

In the accompanying document and/or on the packaging the manufacturer shall give information as to transport and storage.

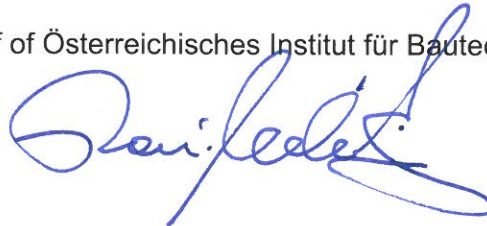
At least the following shall be indicated: storing temperature, maximum duration of storage and required data related to minimum temperature for transport and storage.

5.2 Use, maintenance and repair

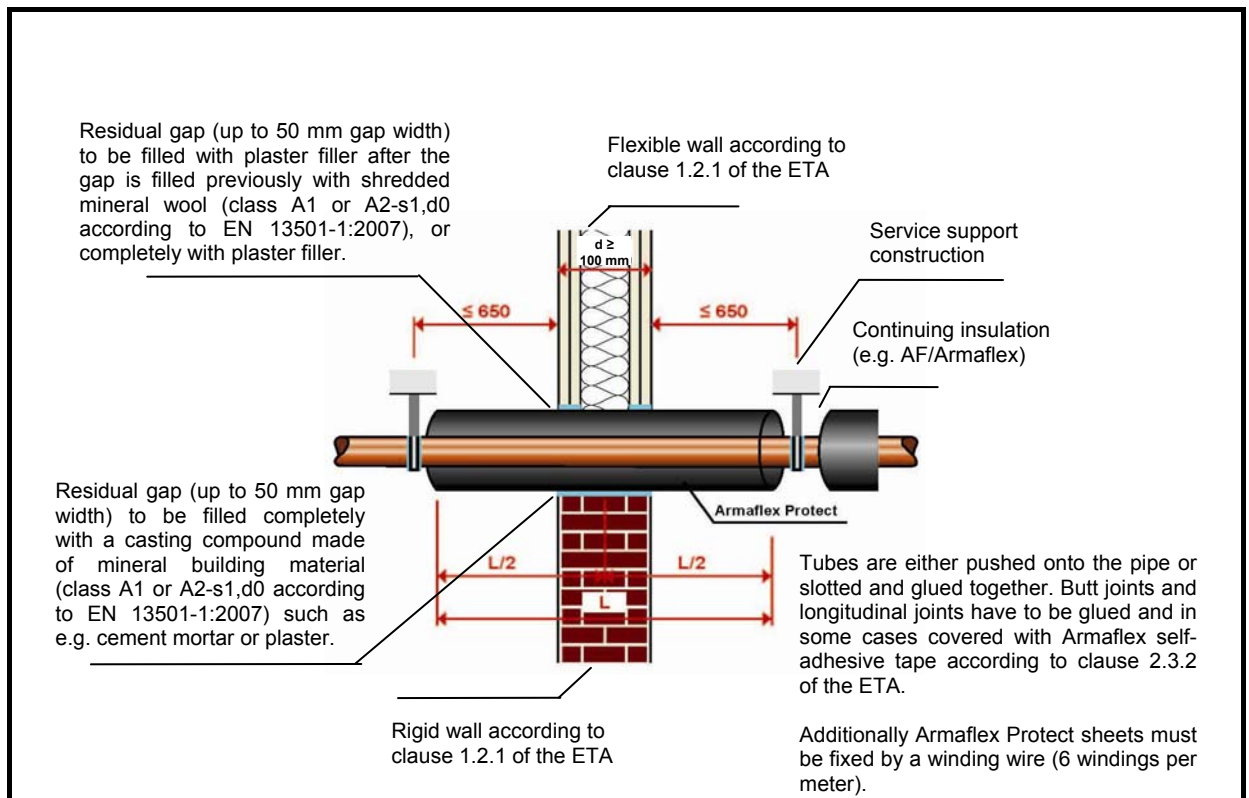
The product shall be installed and used as described in this ETA.

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.

On behalf of Österreichisches Institut für Bautechnik



Rainer Mikulits
Managing Director

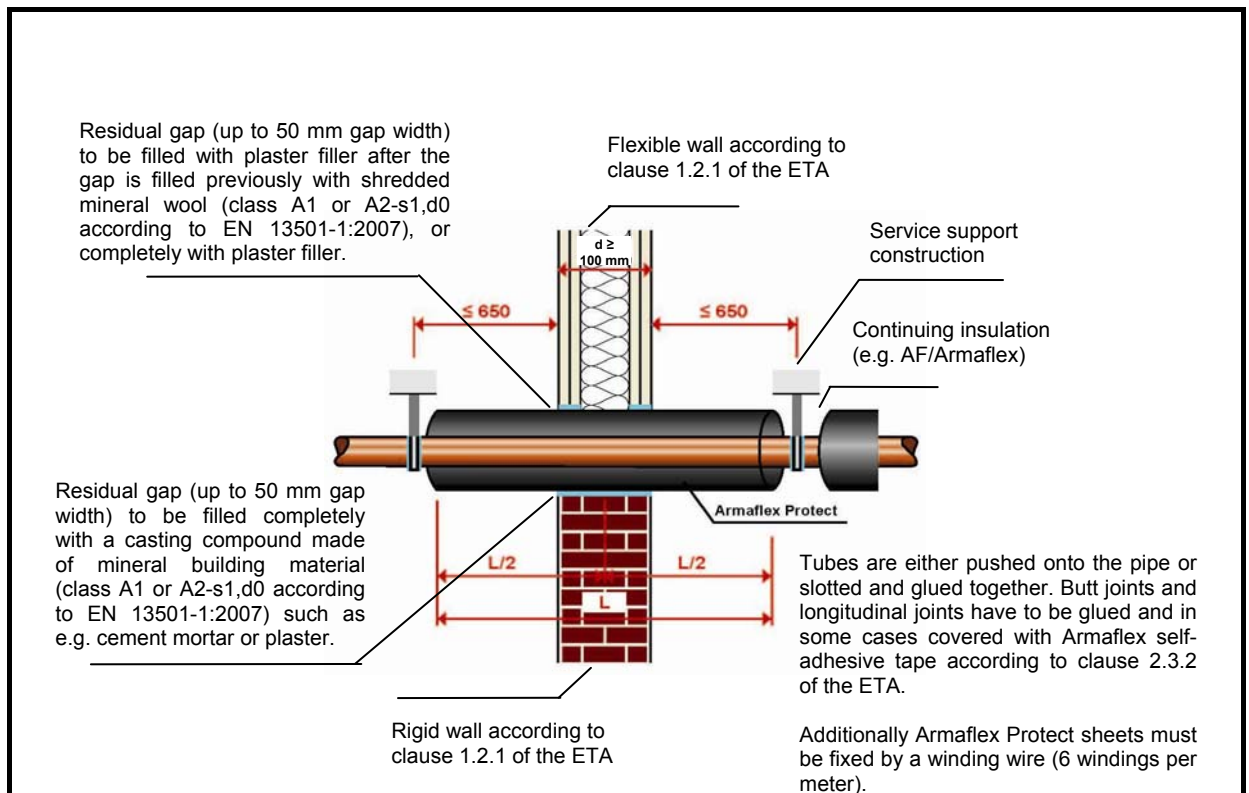


Wall penetration – Flexible and rigid wall – metal pipes according to clause 1.2.1 of the ETA

Pipe diameter [mm]	Wall thickness of the pipe* [mm]	Armaflex Protect		AF/Armaflex - continuing insulation		Fire resistance classification
		Insulation thickness [mm]	Insulation length [L] [mm]	Insulation thickness [mm]	Insulation length [mm]	
≤ 8	≥ 1,0	16	≥ 500	-	-	see Annex F of the ETA
> 8 - ≤ 15	≥ 1,0	19		-	-	
> 15 - ≤ 28	≥ 1,0	20		-	-	
≤ 35	≥ 1,0	25		-	-	
> 35 - ≤ 42	≥ 1,5	25	≥ 1000	-	-	
> 42 - ≤ 89	≥ 2,0	25		-	-	
> 89 - ≤ 108	≥ 2,5	25		-	-	
> 108 - ≤ 168,3	≥ 3,0	26	≥ 500	25	≥ 450	

* The maximum wall thickness of the pipe is limited to 14,2 mm.

<p>Pipe penetration seal “System Armaflex Protect” - Installation in flexible wall or rigid wall d ≥ 100 mm -</p>	<p>ANNEX A</p>
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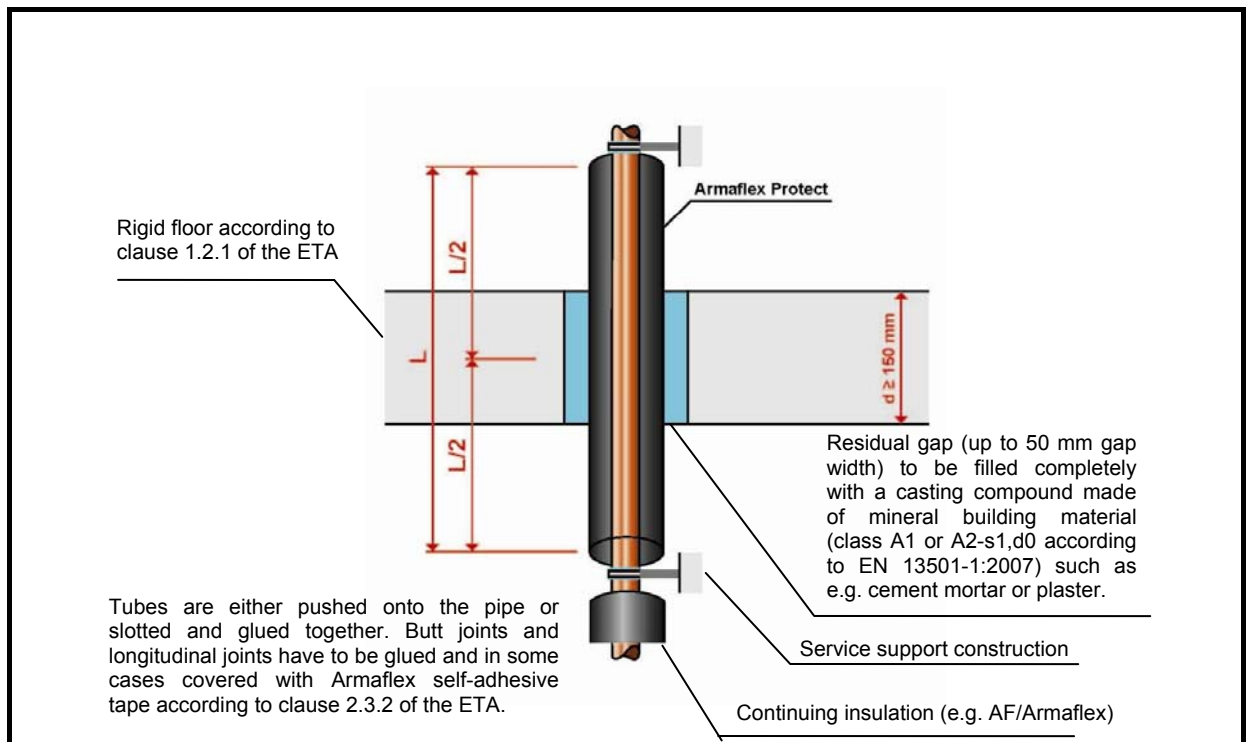
Wall penetration – Flexible and rigid wall – multi-layer composite pipes according to clause 1.2.1 of the ETA

Pipe diameter	Wall thickness of the pipe \pm tolerance	Thickness of the aluminium layer \pm tolerance	Armaflex Protect		AF/Armaflex - continuing insulation	
			Insulation thickness	Insulation length [L]	Insulation thickness	Insulation length
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
16	2,0 \pm 0,5	0,2 \pm 0,1	20	≥ 500	-	-
20	2,0 \pm 0,5	0,3 \pm 0,1	20		-	-
26	3,0 \pm 0,5	0,5 \pm 0,2	20		-	-
32	3,0 \pm 0,5	0,6 \pm 0,2	25		-	-
40	3,5 \pm 0,5	0,85 \pm 0,2	25		-	-
50	4,0 \pm 0,5	1,0 \pm 0,2	25		-	-
63	4,5 \pm 0,5	1,2 \pm 0,2	25		-	-
75	5,0 \pm 0,5	1,5 \pm 0,2	25		-	-

The interpolation between pipe diameters and wall thicknesses is allowed. For details see Annex E of the ETA.

Fire resistance classification: see Annex F of the ETA

<p>Pipe penetration seal</p> <p>“System Armaflex Protect”</p> <p>- Installation in flexible wall or rigid wall $d \geq 100$ mm -</p>	<p>ANNEX B</p>
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Tubes are either pushed onto the pipe or slotted and glued together. Butt joints and longitudinal joints have to be glued and in some cases covered with Armaflex self-adhesive tape according to clause 2.3.2 of the ETA.

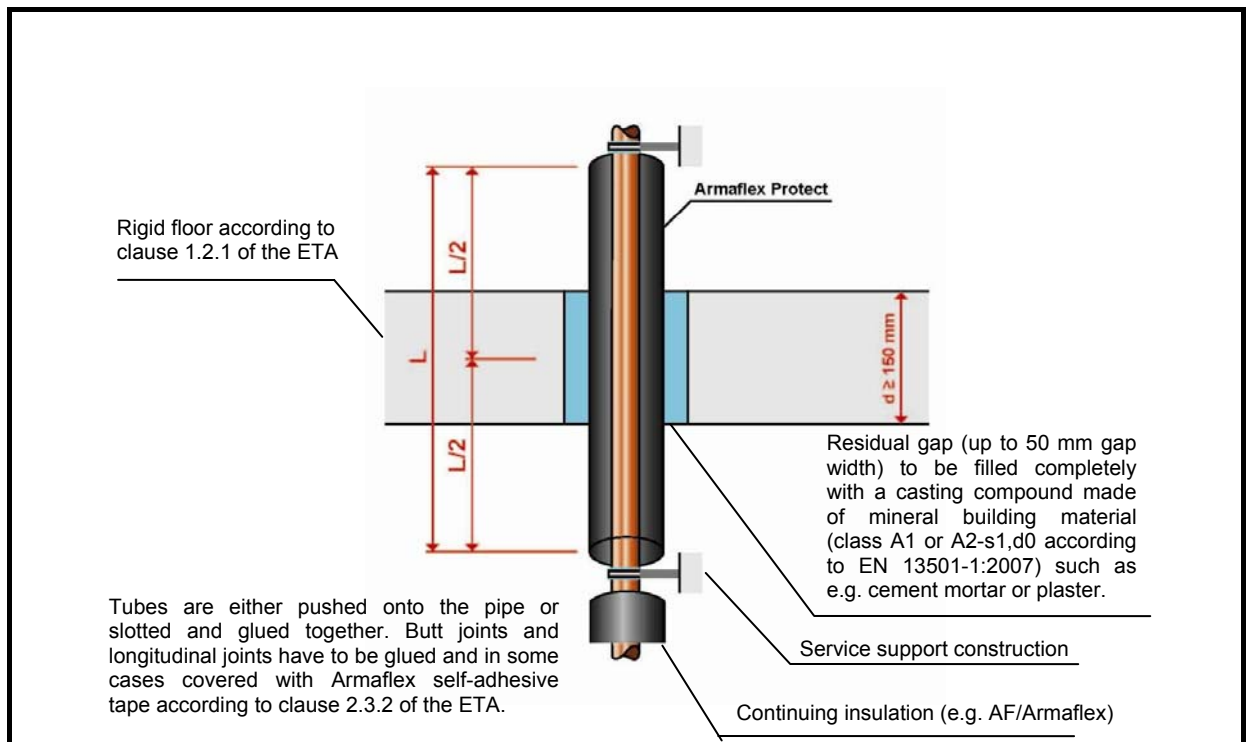
Additionally Armaflex Protect sheets must be fixed by a winding wire (6 windings per meter).

Floor penetration – rigid floor – metal pipes according to clause 1.2.1 of the ETA

Pipe diameter [mm]	Wall thickness of the pipe* [mm]	Armaflex Protect		AF/Armaflex - continuing insulation		Fire resistance classification
		Insulation thickness [mm]	Insulation length [L] [mm]	Insulation thickness [mm]	Insulation length [mm]	
≤ 8	≥ 1,0	16	≥ 500	-	-	see Annex F of the ETA
> 8 - ≤ 15	≥ 1,0	19		-	-	
> 15 - ≤ 28	≥ 1,0	20		-	-	
≤ 35	≥ 1,0	25		-	-	
> 35 - ≤ 42	≥ 1,5	25	≥ 1000	-	-	
> 42 - ≤ 89	≥ 2,0	25		25	≥ 150	
> 89 - ≤ 108	≥ 2,5	25		25	≥ 450	
> 108 - ≤ 168,3	≥ 3,0	26	≥ 500	25	≥ 750	
> 168,3 - ≤ 326	≥ 5,6	26		25	≥ 750	
> 89 - ≤ 108	≥ 2,5	25	≥ 1000	-	-	≤ E 120
> 108 - ≤ 168,3	≥ 3,0	26	≥ 500	-	-	

* The maximum wall thickness of the pipe is limited to 14,2 mm.

<p>Pipe penetration seal “System Armaflex Protect” - Installation in rigid floor d ≥ 150 mm -</p>	<p>ANNEX C</p>
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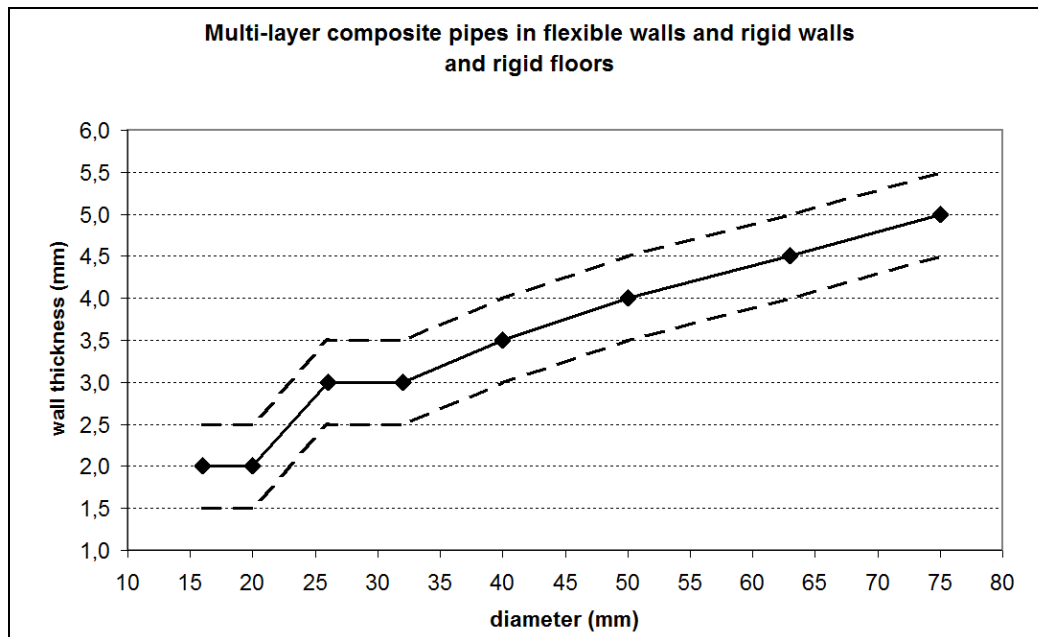
Floor penetration – rigid floor – multi-layer composite pipes according to clause 1.2.1 of the ETA

Pipe diameter	Wall thickness of the pipe ± tolerance	Thickness of the aluminium layer ± tolerance	Armaflex Protect		AF/Armaflex - continuing insulation	
			Insulation thickness	Insulation length [L]	Insulation thickness	Insulation length
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
16	2,0 ±0,5	0,2 ±0,1	20	≥ 500	-	-
20	2,0 ±0,5	0,3 ±0,1	20		-	-
26	3,0 ±0,5	0,5 ±0,2	20		-	-
32	3,0 ±0,5	0,6 ±0,2	25		-	-
40	3,5 ±0,5	0,85 ±0,2	25		-	-
50	4,0 ±0,5	1,0 ±0,2	25		-	-
63	4,5 ±0,5	1,2 ±0,2	25		-	-
75	5,0 ±0,5	1,5 ±0,2	25		-	-

The interpolation between pipe diameters and wall thicknesses is allowed. For details see Annex E of the ETA.

Fire resistance classification: see Annex F of the ETA

<p>Pipe penetration seal</p> <p>“System Armaflex Protect”</p> <p>- Installation in rigid floor d ≥ 150 mm -</p>	<p>ANNEX D</p>
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An interpolation between the pipe diameters and the wall thicknesses to be used is only possible along the dashed lines (upper and lower tolerance) and in the area between the dashed lines drawn in the graph.

Note: The dimensions of the graph are not true to scale.

<p align="center">Interpolation between pipe diameters and wall thicknesses for multi-layer composite pipes according to clause 1.2.1 of the ETA in flexible walls, rigid walls and rigid floors</p>	<p align="center">ANNEX E</p>
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Fire resistance classifications according to EN 13501-2:2007: Installation in flexible or rigid walls of at least 100 mm thickness or rigid floor of at least 150 mm thickness

Penetrating element Metal pipes (C/U); (C/C) diameter in mm	Fire resistance classifications						
	≤ 8	E 15 EI 15	E 20 EI 20	E 30 EI 30	E 45 EI 45	E 60 EI 60	E 90 EI 90
> 8 - ≤ 15	E 15 EI 15	E 20 EI 20	E 30 EI 30	E 45 EI 45	E 60 EI 60	E 90 EI 90	E 120 EI 120*
> 15 - ≤ 28	E 15 EI 15	E 20 EI 20	E 30 EI 30	E 45 EI 45	E 60 EI 60	E 90 EI 90	E 120 EI 120*
≤ 35	E 15 EI 15	E 20 EI 20	E 30 EI 30	E 45 EI 45	E 60 EI 60	E 90 EI 90	E 120 EI 120
> 35 - ≤ 42	E 15 EI 15	E 20 EI 20	E 30 EI 30	E 45 EI 45	E 60 EI 60	E 90 EI 90	E 120 EI 120
> 42 - ≤ 89	E 15 EI 15	E 20 EI 20	E 30 EI 30	E 45 EI 45	E 60 EI 60	E 90 EI 90	E 120 EI 120
> 89 - ≤ 108	E 15 EI 15	E 20 EI 20	E 30 EI 30	E 45 EI 45	E 60 EI 60	E 90 EI 90	E 120
> 108 - ≤ 168,3	E 15 EI 15	E 20 EI 20	E 30 EI 30	E 45 EI 45	E 60 EI 60*	E 90 EI 90*	E 120
> 168,3 - ≤ 326	E 15* EI 15*	E 20* EI 20*	E 30* EI 30*	E 45* EI 45*	E 60*	E 90*	
Multi-layer composite pipes (U/C); (C/C) diameter in mm	Fire resistance classifications						
	≤ 26	E 15 EI 15	E 20 EI 20	E 30 EI 30	E 45 EI 45	E 60 EI 60	E 90 EI 90
> 26 - ≤ 75	E 15 EI 15	E 20 EI 20	E 30 EI 30	E 45 EI 45	E 60 EI 60	E 90 EI 90	E 120 EI 120

* Only for floor penetration

Pipe penetration seal
“System Armaflex Protect”
- Fire resistance classification -

ANNEX F

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