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# European Technical Assessment ETA-14/0107 of 05/11/2014

General part

<b>Technical Assessment Body issuing the ETA</b>	Austrian Institute of Construction Engineering (OIB)
<b>Trade name of the construction product</b>	PROMASEAL®-A
<b>Product family to which the construction product belongs</b>	Fire Stopping and Sealing Product: Penetration Seals
<b>Manufacturer</b>	Promat GmbH St.-Peter-Strasse 25 4021 Linz Austria
<b>Manufacturing plant</b>	Production Plant 17
<b>This European Technical Assessment contains</b>	20 pages including Annexes 1 to 3 which form an integral part of this assessment
<b>This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of</b>	Guideline for European technical approval (ETAG) No. 026-2 Fire Stopping and Fire Sealing Products – Part 2: Penetration Seals, edition August 2011, used as European Assessment Document (EAD)

## Specific parts

### 1. Technical description of the product

#### 1.1 Definition of the construction product

The firestop sealant PROMASEAL®-A (on market also sold as Intumex®-AN) is a 1-component product. It is composed on an acrylic based with filling substances and supplied in cartridges (310 ml), foil bags or can be supplied in buckets on customers demand. A detailed specification of the product is a non-public part of this European technical assessment and deposited at Österreichisches Institut für Bautechnik.

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

PROMASEAL®-A is a firestop sealant installed around pipe insulation, cables and cable bundles to form a penetration seal to reinstate the fire resistance performance of floor and wall constructions, where they have been provided with apertures for the penetration of different installations.

#### 2.1 Intended use

The intended use of PROMASEAL®-A is to reinstate the fire resistance performance of flexible wall constructions, rigid wall constructions and rigid floor constructions where they are penetrated by installations.

In the following specified constructions PROMASEAL®-A is also used in conjunction with mineral wool penetration seals coated with the firestop coating PROMASTOP®-I.

- A) Flexible walls: The wall must have a minimum thickness of 100 mm and comprise timber or steel studs lined on both faces with minimum 2 layers of minimum 12,5 mm thick boards. For timber stud walls there must be a minimum distance of 100 mm of the seal to any stud and the cavity between stud and seal must be closed and minimum 100 mm insulation of class A1 or A2 (in accordance with EN 13501-1) in the cavity between stud and seal. An aperture framing must be installed, made of metal studs or boards that have been used for lining of the wall (1 layer minimum 12,5 mm thickness).
- B) Rigid walls: The wall must have a minimum thickness of 100 mm or 150 mm and consist of concrete, aerated concrete or masonry, with a minimum density of 450 kg/m<sup>3</sup>.
- C) Rigid floors: The floor must have a minimum thickness of 150 mm and consist of aerated concrete or concrete with a minimum density of 450 kg/m<sup>3</sup>.

The supporting construction must be classified in accordance to EN 13501-2 for the required fire resistance period. This ETA does not cover the use of this product as a penetration seal in sandwich panel constructions.

PROMASEAL®-A may be used as a penetration seal with the following specific installations:

- Cables: For further details see Annex 3 of the ETA.
- Cable bundles: For further details see Annex 3 of the ETA.
- Metal pipes: For further details see Annex 3 of the ETA.

Distances: Between the PROMASEAL®-A penetration seals:  $\geq 100$  mm

- Supporting distance on both faces of wall constructions:  $\leq 250$  mm
- Supporting distance on the upper face of floor constructions:  $\leq 250$  mm

## 2.2 Use category

The use category of PROMASEAL®-A is Type Y<sub>1</sub>. Since the requirements for Y<sub>1</sub> are met, also the requirements for type Z<sub>1</sub>, Z<sub>2</sub> and Y<sub>2</sub> are fulfilled.

- Type Y<sub>1</sub>: Products intended for use at temperatures between -20°C and + 70°C, with exposure to UV but no exposure to rain.
- Type Y<sub>2</sub>: Products intended for use at temperatures between -20°C and + 70°C, with no exposure to UV nor rain.
- Type Z<sub>1</sub>: Products intended for use at internal conditions with high humidity, excluding temperatures below 0°C<sup>1</sup>, without exposure to rain or UV.
- Type Z<sub>2</sub>: Products intended for use at internal conditions with humidity classes other than Z<sub>1</sub>, excluding temperatures below 0°C, without exposure to rain or UV.

## 2.3 General assumptions

It is assumed that

- a) damages to the penetration seal are repaired accordingly,
- b) the installation of the penetration seal does not effect the stability of the adjacent building element – even in case of fire,
- c) the lintel or floor above the penetration seal is designed structurally and in terms of fire protection such that no additional mechanical load (other than its own weight) is imposed on the penetration seal,
- d) the aperture lining within a flexible wall is supported by the studs (transoms and mullions) in such a way that the mechanical load imposed to the aperture lining by the penetration seal does not affect the stability of the aperture lining and the flexible wall,
- e) the thermal movement in the pipe work will be accommodated in such way that it does not impose a load on the penetration seal,
- f) the installations are fixed to the adjacent building element in accordance with the relevant regulations in such a way that, in case of fire, no additional mechanical load is imposed to the penetration seal,
- g) the support of the installations is maintained for the required period of fire resistance.

This European Technical Assessment does not address any risks associated with the emission of dangerous liquids or gases caused by failure of the pipe(s) in case of fire nor does it prove the prevention of the transmission of fire through heat transfer via the medium in the pipes.

This European Technical Assessment does not verify the prevention of destruction of adjacent building elements with fire separating function or of the pipes themselves due to distortion forces caused by extreme temperatures. These risks shall be accounted for by taking appropriate measures when designing or installing the pipe work.

The mounting or hanging of the pipes or the layout of the pipe work shall be implemented in such a way that the pipes and the fire resistant building elements shall remain functional within a period of time which corresponds to the fire resistance period required.

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

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

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<sup>1</sup> These uses apply for internal humidity class 5 in acc. with EN ISO 13788

## 2.4 Manufacturing

The European Technical Assessment 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 European Technical Assessment and consequently the validity of the CE marking on the basis of the European Technical Assessment and if so whether further assessment or alterations to the European Technical Assessment, shall be necessary.

## 2.5 Installation

The product shall be installed and used as described in this European Technical Assessment. Additional marking of the penetration seal shall be done in case of national requirements. For further details see the technical documentation of the manufacturer.

The installation of PROMASEAL<sup>®</sup>-A should be conducted as follows:

- Application temperatures should be between +5°C to +40°C.
- Cleaning the opening, surface to which PROMASEAL<sup>®</sup>-A will be applied, should be cleaned of oil, wax, dirt, loose debris, grease and dust.
- For very porous substrates the surface should be prewetted with water. PROMASEAL<sup>®</sup>-A adheres to the most substrates (plaster, drywall, concrete, wood...) without using a special primer.
- For some openings insert backfilling material and leave a defined gap depth for application of PROMASEAL<sup>®</sup>-A.
- Apply PROMASEAL<sup>®</sup>-A using a dispenser.
- For smoothing the sealant a spatula or the finger may be used and it is also possible to use a bit of water to support smoothing.
- It is recommended to insert PROMASEAL<sup>®</sup>-A between the cable gussets.
- The used tools may be cleaned with water.

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

Basic requirements for construction works	Essential characteristics	Method of verification	Performance
<b>BWR 1</b>	None	Not relevant	
<b>BWR 2</b>	Reaction to fire	EN 13501-1	See clause 3.2.1
	Resistance to fire	EN 13501-2	See Annex 3
<b>BWR 3</b>	Air permeability (material property)	No Performance Determined (NPD)	
	Water permeability (material property)	No Performance Determined (NPD)	
	Content and/or release of dangerous substances	European Council Directive 67/548/EEC-Dangerous Substances Directive and Regulation (EC) No 1272/2008	Declaration of conformity by the manufacturer
<b>BWR 4</b>	Mechanical resistance and stability	No Performance Determined (NPD)	
	Resistance to impact / movement	No Performance Determined (NPD)	
	Adhesion	No Performance Determined (NPD)	
<b>BWR 5</b>	Airborne sound insulation	No Performance Determined (NPD)	
<b>BWR 6</b>	Thermal properties	No Performance Determined (NPD)	
	Water vapour permeability	No Performance Determined (NPD)	
<b>BWR 7</b>	No Performance Determined (NPD)		

#### 3.1 Mechanical resistance and stability (BWR 1)

Not relevant.

#### 3.2 Safety in case of fire (BWR 2)

##### 3.2.1 Reaction to fire

The components of construction product PROMASEAL®-A were assessed according to ETAG 026-Part 2 used as EAD clause 2.4.1 and classified according to EN 13501-1:2007+A1:2009.

Component	Class according to EN 13501-1
PROMASEAL®-A	<b>E</b>
PROMASTOP®-I	<b>C-s2, d0</b>

##### 3.2.2 Resistance to fire

The firestop sealant PROMASEAL®-A has been tested in accordance to EN 1366-3:2009, installed within aperture in flexible walls, rigid walls, rigid floors and mineral wool board penetration seal coated with PROMASTOP®-I.

The apertures were penetrated by steel pipes (with mineral wool insulation), cables and cable bundles partly in the mineral wool board penetration seal coated with PROMASTOP®-I. As shown in the Annex 3, the test results and the field of application had been classified in accordance with EN 13501-2:2007+A1:2009.

Appropriate wall and floor constructions for penetration seals see clause 2.1 of this ETA. The seals may only be penetrated by the installations described in Annex 3 of this ETA. Other parts or support constructions must not penetrate the seal.

### **3.3 Hygiene, health and environment (BWR 3)**

#### 3.3.1 Air permeability

No Performance Determined.

#### 3.3.2 Water permeability

No Performance Determined.

#### 3.3.3 Release of dangerous substances

According to the manufacturer's declaration "PROMASEAL®-A" does not contain dangerous substances detailed in Council Directive 67/548/EEC and Regulation (EC) no 1272/2008.

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 Product Directive, these requirements need also to be complied with, when and where they apply.

### **3.4 Safety and accessibility in use (BWR 4)**

#### 3.4.1 Mechanical resistance and stability

Due to the small size of penetrations seals, made from PROMASEAL®-A, impact tests and a classification according to EOTA TR 001 are not required.

#### 3.4.2 Resistance to impact / movement

See part 3.4.1 of the ETA.

#### 3.4.2 Adhesion

See part 3.4.1 of the ETA.

### **3.5 Protection against noise (BWR 5)**

#### 3.5.1 Airborne sound insulation

No Performance Determined.

### **3.6 Energy economy and heat retention (BWR 6)**

#### 3.6.1 Thermal properties

No Performance Determined.

#### 3.6.2 Water vapour permeability

No Performance Determined.

### **3.7 Sustainable use of natural resources (BWR 7)**

No Performance Determined.

### **3.8 General aspects relating to fitness for use**

PROMASEAL®-A has been tested in accordance to EOTA TR 024, Table 4.2.4 for the Y<sub>1</sub> use category specified in EOTA ETAG 026-2 and the results of the test have demonstrated suitability for penetration seals intended for use at temperatures between -20°C und +70°C with exposure to UV but without exposure to rain.

#### **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<sup>2</sup>, amended by Decision 2001/596/EC<sup>3</sup> of the European Commission, as amended, the system(s) of assessment and verification of constancy of performance (see Annex V of Regulation (EU) No 305/2011) is 1.

#### **5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD**

##### **5.1 Tasks of the manufacturer**

###### **5.1.1 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 Assessment.

The manufacturer may only use initial/raw/constituent materials stated in the Technical documentation<sup>4</sup> of this European Technical Assessment

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 guarantee of the components compliance with the European Technical Assessment.

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 plan<sup>5</sup> relating to this European Technical Assessment, which is a confidential part of the Technical documentation of this European Technical Assessment.

The results and details of the extent, nature and frequency of controls be performed within the factory production control shall be recorded and evaluated in accordance with the provisions of the control plan.

###### **5.1.2 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

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<sup>2</sup> Official Journal of the European Communities no. L 178, 14.7.1999, p. 52

<sup>3</sup> Official Journal of the European Communities no. L 209, 2.8.2001, p. 33

<sup>4</sup> The technical documentation of this European Technical Assessment has been deposited at the Österreichisches Institut für Bautechnik and, as far as relevant for the tasks of the notified product certification body involved in the assessment and verification of constancy of performance, is handed over to the notified product certification body.

<sup>5</sup> The control plan has been deposited at Österreichisches Institut für Bautechnik and is handed over only to the notified product certification body involved in the assessment and verification of constancy of performance.



- 2) Services which may pass through the penetration seal, 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
  - 4) Environmental conditions covered by this European Technical Assessment
- 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
- b) Stipulations on maintenance, repair and replacement

The manufacturer shall, based on a contract, involve a notified product certification body, which is notified for the tasks referred to in clause 4.1 of the ETA in the field of Assessment product. For this purpose, the control plan referred to in clause 5.1 and 5.2 of the ETA shall be handed over by the manufacturer to the notified product certification body involved.

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

5.1.3 Further testing of samples taken at the factory

Testing of samples taken at the factory by the manufacturer is not required.

**5.2 Tasks of notified product certification body**

The notified product certification body shall retain the essential points of its actions referred to clause 5.2.1 to 5.2.3, state the results obtained and conclusions drawn in written report.

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

5.2.1 Determination of the product type

Notified product certification bodies undertaking tasks under Systems 1 shall consider the European Technical Assessment issued for the construction product in question as the assessment of the performance of that product. Notified bodies shall therefore not undertake the tasks referred to in point 1.2 (b)(i), in Annex V of Regulation (EU) No 305/2011, unless there are changes in the manufacture or manufacturing plant. In such cases, the necessary initial type testing has to be agreed between the Österreichisches Institut für Bautechnik and notified product certification body involved.

5.2.2 Initial inspection of the manufacturing plant and of factory production control

The notified product certification body shall ascertain that, in accordance with the control plan, the manufacturing plant, in particular personnel and equipment, and the factory production control are suitable to ensure a continuous and orderly manufacturing of the kit according to the specifications given in clause 2 and in the Annexes of the European Technical Assessment.

5.2.3 Continuous surveillance, assessment and evaluation of factory production control

The notified product certification body shall visit the factory at least twice a year for surveillance of the manufacturer.

It has to be verified that the system of factory production control and the specified manufacturing process are maintained taking into account the control plan.



Continuous surveillance and assessment of factory production control have to be performed according to the control plan.

The results of continuous surveillance shall be made available on demand by the notified product certification body or the Österreichisches Institut für Bautechnik. In cases where the provisions of the European Technical Assessment and the control plan are no longer fulfilled, the certificate of constancy of performance shall be withdrawn.

Issued in Vienna on 05.05.2014  
by Österreichisches Institut für Bautechnik

Rainer Mikulits  
Managing Director

## ANNEX 1

### Reference documents

ETAG 026-2 (2011)	Fire stopping and fire sealing products – Part 2: Penetration Seals
EOTA TR 024 (2009)	Characterisation, Aspects of Durability and Factory Production Control for Reactive Materials, Components and Products
EN 13501-1	Fire classification of construction products and building elements – Part 1: Classification using test data from reaction to fire tests
EN 13501-2	Fire classification of construction products and building elements – Part 2: Classification using data from fire resistance tests, excluding ventilation
EN 1366-3	Fire resistance tests for service installations - Part 3: Penetration seals

## ANNEX 2

### Description of product(s) and product literature

#### Description of products:

Product name	Description
PROMASEAL®-A	Firestop acrylic sealant
PROMASTOP®-I (additional component)	Firestop coating

Suitable mineral wool products used for mineral wool board penetration seal	
Manufacturer	Product designation
Rockwool	RP-XV, Hardrock II
Knauf Insulations	Heralan DP-15
Paroc OY AB	Pyrotech board 140 - 180
Isover	Orsil T-N

Suitable insulation products – reaction to fire	
Non-combustible insulation (mineral wool)	Minimum class A2-s1, d0 / A2 <sub>L</sub> -s1, d0 (in acc. to EN 13501-1), melting point $\geq 1000$ °C

For backfilling mineral wool with a melting point  $\geq 1000$  °C and a classification to A1 in accordance to EN 13501-1.

#### Technical product literature:

- Technical Datasheet for PROMASEAL®-A
- Technical Datasheet for PROMASTOP®-I
- Installation guideline for Technical Datasheet for PROMASEAL®-A
- Installation guideline for Technical Datasheet for PROMASTOP®-I

The control plan is a non-public part of this European technical assessment, and deposited at the Österreichisches Institut für Bautechnik.

**Shortcuts used in drawings:**

<b>Shortcut</b>	<b>Description</b>
A	Building element (floor, wall)
B	Firestop product
C	Backfilling material
D	Penetrating installations
E	Pipe insulation
F	Soft penetration seal
$t_B$	Thickness of firestop product (penetration seal)
$t_E$	Thickness of Insulation
$w_B$	Width of penetration seal (annular gap)
$t_A$	Thickness of the building element (floor, wall)
$t_C$	Thickness of the backfilling material
$d_D$	Diameter of the installation (e.g. Pipe, Cable, Cable bundle,...)
$t_D$	Thickness of the pipe wall

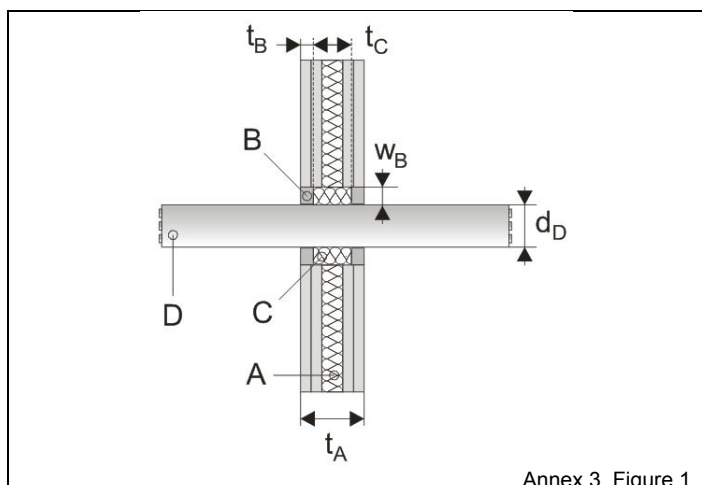
### ANNEX 3

#### Resistance to fire classification of penetration seals made from PROMASEAL®-A

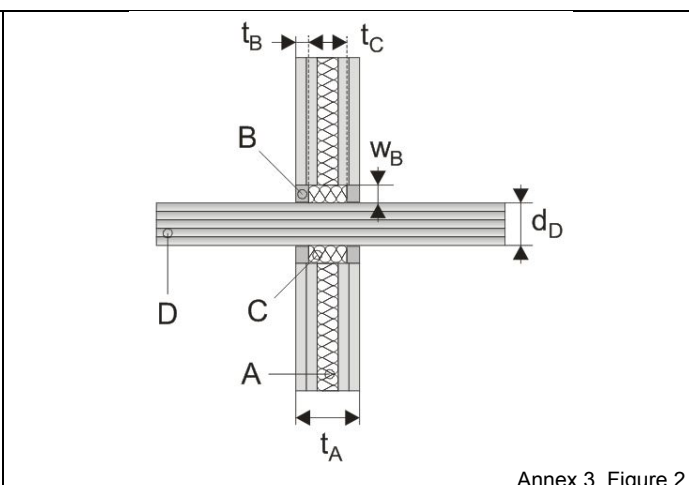
##### Classification annular gap - cable penetration seal in flexible wall

The firestop sealant PROMASEAL®-A has to be applied in wall and floor application on both sides.

Apertures in flexible walls	
Thickness flexible wall, $t_A$ :	$\geq 100$ mm
Annular gap width, $w_B$ :	$\leq 20$ mm
Annular gap depth $t_B$ :	$\geq 15$ mm
Backfilling for annular gap, C:	Class A1 in acc. to EN 13501-1 (Mineral wool, ceramic wool...), melting point $\geq 1000$ °C
Density backfilling:	$\geq 40$ kg/m <sup>3</sup>



Annex 3, Figure 1



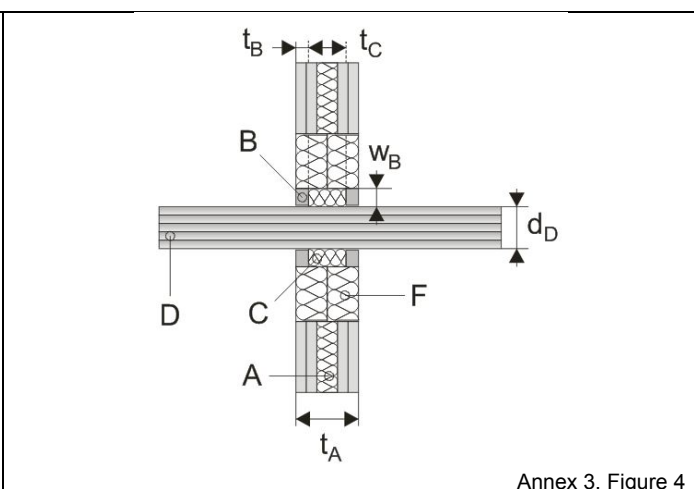
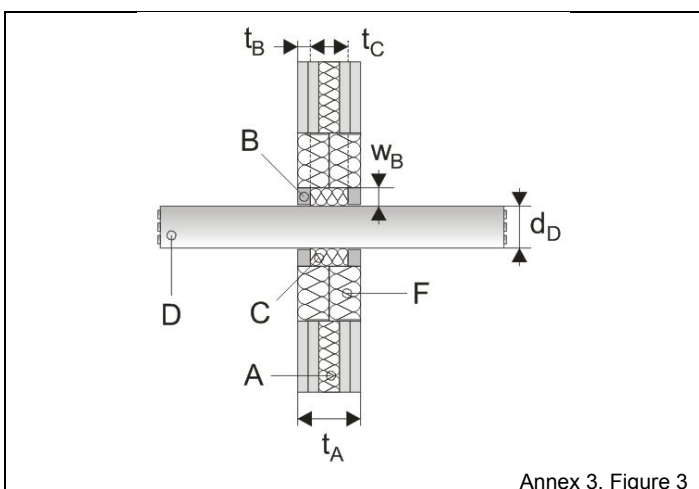
Annex 3, Figure 2

Classification – Annex 3, Figure 1 and 2	Wall
Sheathed single cable $\leq 4 \times 10$ mm <sup>2</sup> (H07RN-F 4 G 10 SW or equal products)	EI 120
Sheathed single cable $\leq 3 \times 150$ mm <sup>2</sup> (N2XSEY or equal products)	EI 120
Cable bundle with 26 pieces of sheathed single cables $\leq 5 \times 1,5$ mm <sup>2</sup> (H07RN-F or equal products)	EI 120
Cable bundle with 20 pieces of sheathed single cables $\leq 2 \times 0,6$ mm <sup>2</sup> (control, power, data, signal, telecommunication, optical fibre cables or equal products)	E 120 EI 90
All sheathed cable types: $\varnothing \leq 21$ mm (control, power, data, signal, telecommunication, optical fibre cables or equal products)	E 120 EI 90
Tied cable bundle: $\varnothing \leq 100$ mm, made of sheathed cables with a single maximum diameter of $\varnothing \leq 21$ mm	E 120 EI 90
Blank penetration seal: $\varnothing \leq 200$ mm (maximum seal size 0,03 m <sup>2</sup> )	EI 120

**Apertures in mineral wool board penetration seal PROMASTOP®-I in flexible walls**

Coated mineral wool board penetration seal, made of minimum 2 x 50 mm thick mineral wool boards (melting point  $\geq 1000^{\circ}\text{C}$ , class A1 in acc. to EN 13501-1, density  $\geq 120 \text{ kg/m}^3$ ). The firestop coating PROMASTOP®-I has to be applied on the outer surface of the boards, cutting edges and the opening frame. Minimum thickness of the firestop coating 1 mm. The firestop sealant PROMASEAL®-A has to be applied on both sides, backfilling with mineral wool (melting point  $\geq 1000^{\circ}\text{C}$ , class A1 in acc. to EN 13501-1).

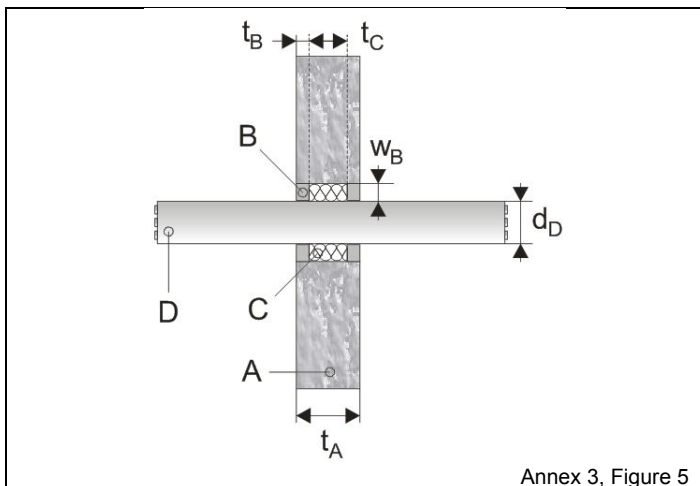
Thickness flexible wall, $t_A$ :	$\geq 100 \text{ mm}$
Annular gap width, $w_B$ :	$\leq 20 \text{ mm}$
Annular gap depth $t_B$ :	$\geq 15 \text{ mm}$
Backfilling for annular gap, C:	Class A1 in acc. to EN 13501-1 (Mineral wool, ceramic wool...), melting point $\geq 1000^{\circ}\text{C}$
Density backfilling:	$\geq 40 \text{ kg/m}^3$



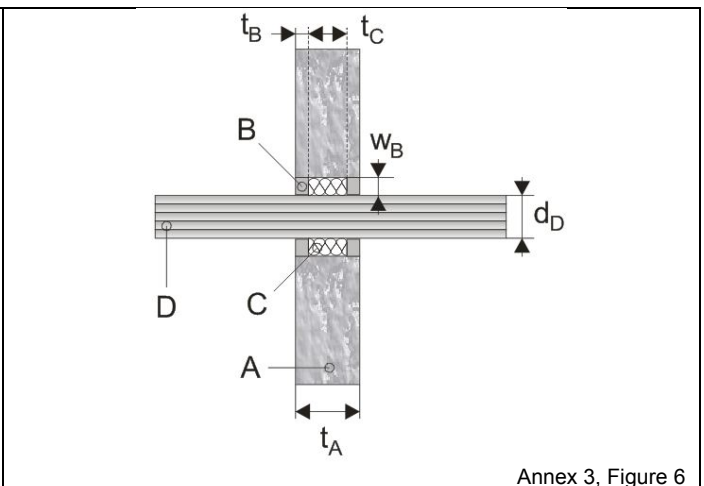
**Classification – Annex 3, Figure 3 and 4**

	<b>Wall</b>
Sheathed single cable $\leq 4 \times 10 \text{ mm}^2$ (H07RN-F 4 G 10 SW or equal products)	EI 120
Sheathed single cable $\leq 3 \times 150 \text{ mm}^2$ (N2XSEY or equal products)	E 120 EI 90
Cable bundle with 26 pieces of sheathed single cables $\leq 5 \times 1,5 \text{ mm}^2$ (H07RN-F or equal products)	EI 120
Cable bundle with 20 pieces of sheathed single cables $\leq 2 \times 0,6 \text{ mm}^2$ (control, power, data, signal, telecommunication, optical fibre cables or equal products)	E 120 EI 90

<b>Apertures in rigid walls</b>	
Thickness rigid wall, $t_A$ :	$\geq 100$ mm
Annular gap width, $w_B$ :	$\leq 20$ mm
Annular gap depth $t_B$ :	$\geq 15$ mm
Backfilling for annular gap, C:	Class A1 in acc. to EN 13501-1 (Mineral wool, ceramic wool...), melting point $\geq 1000$ °C
Density backfilling:	$\geq 40$ kg/m <sup>3</sup>



Annex 3, Figure 5



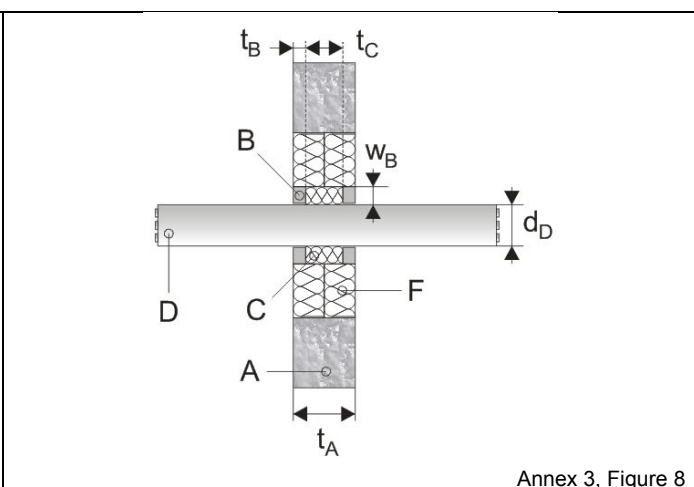
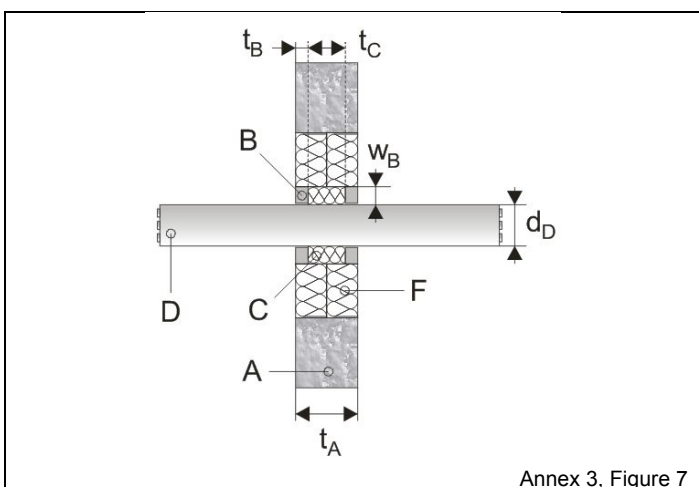
Annex 3, Figure 6

<b>Classification – Annex 3, Figure 5 and 6</b>	<b>Wall</b>
Sheathed single cable $\leq 4 \times 10$ mm <sup>2</sup> (H07RN-F 4 G 10 SW or equal products)	EI 120
Sheathed single cable $\leq 3 \times 150$ mm <sup>2</sup> (N2XSEY or equal products)	EI 120
Cable bundle with 26 pieces of sheathed single cables $\leq 5 \times 1,5$ mm <sup>2</sup> (H07RN-F or equal products)	EI 120
Cable bundle with 20 pieces of sheathed single cables $\leq 2 \times 0,6$ mm <sup>2</sup> (control, power, data, signal, telecommunication, optical fibre cables or equal products)	E 120 EI 90
All sheathed cable types: $\varnothing \leq 21$ mm (control, power, data, signal, telecommunication, optical fibre cables or equal products)	E 120 EI 90
Tied cable bundle: $\varnothing \leq 100$ mm, made of sheathed cables with a single maximum diameter of $\varnothing \leq 21$ mm	E 120 EI 90
Blank penetration seal: $\varnothing \leq 200$ mm (maximum seal size 0,03 m <sup>2</sup> )	EI 120

**Apertures in mineral wool board penetration seal PROMASTOP®-I in rigid walls**

Coated mineral wool board penetration seal, made of minimum 2 x 50 mm thick mineral wool boards (melting point  $\geq 1000^{\circ}\text{C}$ , class A1 in acc. to EN 13501-1, density  $\geq 120 \text{ kg/m}^3$ ). The firestop coating PROMASTOP®-I has to be applied on the outer surface of the boards, cutting edges and the opening frame. Minimum thickness of the firestop coating 1 mm. The firestop sealant PROMASEAL®-A has to be applied on both sides, backfilling with mineral wool (melting point  $\geq 1000^{\circ}\text{C}$ , class A1 in acc. to EN 13501-1).

Thickness rigid wall, $t_A$ :	$\geq 100 \text{ mm}$
Annular gap width, $w_B$ :	$\leq 20 \text{ mm}$
Annular gap depth $t_B$ :	$\geq 15 \text{ mm}$
Backfilling for annular gap, C:	Class A1 in acc. to EN 13501-1 (Mineral wool, ceramic wool...), melting point $\geq 1000^{\circ}\text{C}$
Density backfilling:	$\geq 40 \text{ kg/m}^3$

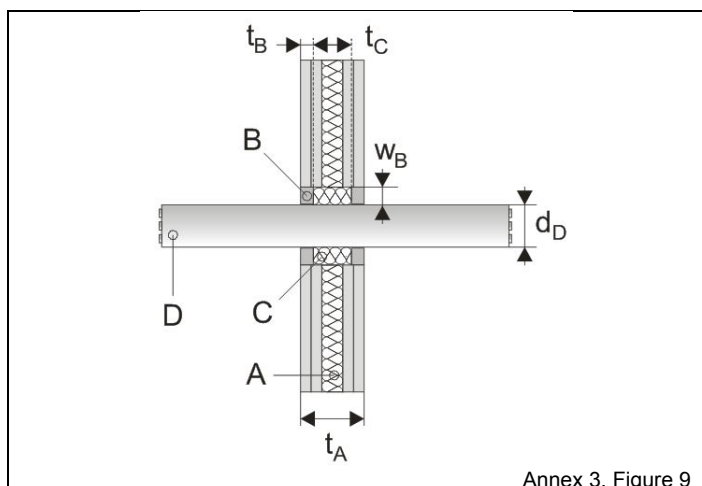


**Classification – Annex 3, Figure 7 and 8**

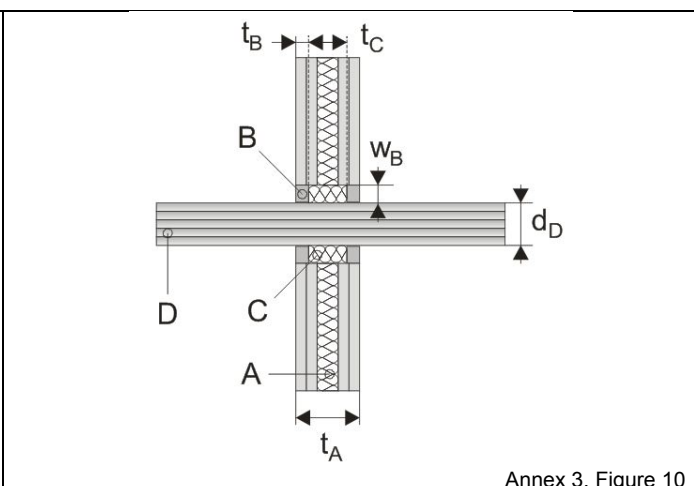
	<b>Wall</b>
Sheathed single cable $\leq 4 \times 10 \text{ mm}^2$ (H07RN-F 4 G 10 SW or equal products)	EI 120
Sheathed single cable $\leq 3 \times 150 \text{ mm}^2$ (N2XSEY or equal products)	E 120 EI 90
Cable bundle with 26 pieces of sheathed single cables $\leq 5 \times 1,5 \text{ mm}^2$ (H07RN-F or equal products)	EI 120
Cable bundle with 20 pieces of sheathed single cables $\leq 2 \times 0,6 \text{ mm}^2$ (control, power, data, signal, telecommunication, optical fibre cables or equal products)	E 120 EI 90



<b>Apertures in flexible walls</b>	
Thickness flexible wall, $t_A$ :	$\geq 150$ mm
Annular gap width, $w_B$ :	$\leq 20$ mm
Annular gap depth, $t_B$ :	$\geq 15$ mm
Backfilling for annular gap, C:	Class A1 in acc. to EN 13501-1 (Mineral wool, ceramic wool...), melting point $\geq 1000$ °C
Density backfilling:	$\geq 40$ kg/m <sup>3</sup>



Annex 3, Figure 9

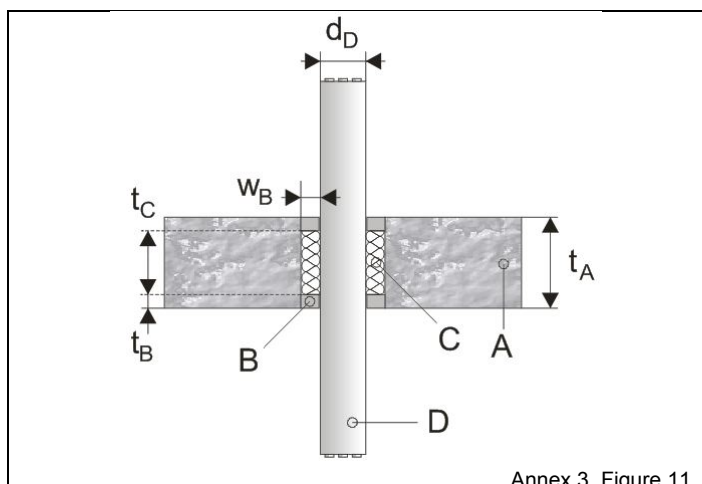


Annex 3, Figure 10

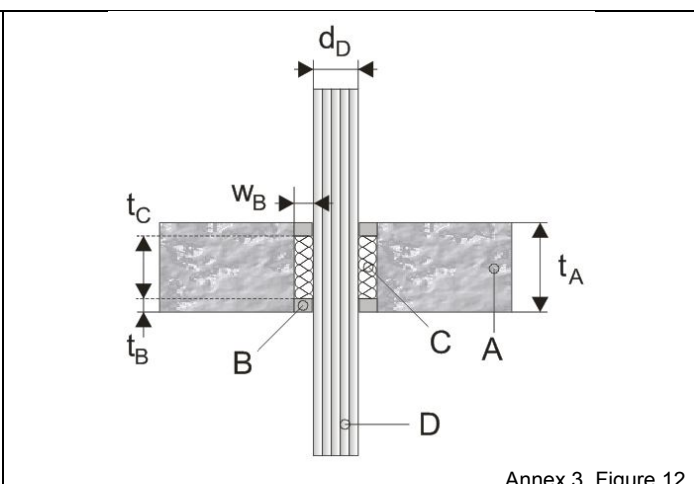
<b>Classification – Annex 3, Figure 9 and 10</b>		<b>Wall</b>
Sheated single cable $\leq 3 \times 150$ mm <sup>2</sup> (H07Z-K or equal products)		EI 120
Cable bundle $\varnothing \leq 90$ mm of sheated single cables $\leq 3 \times 1,5$ mm <sup>2</sup> (NYY-O or equal products)		EI 120

**Classification cable penetration seal in rigid floor**

<b>Apertures in rigid floors</b>	
Thickness rigid floor, $t_A$ :	$\geq 150$ mm
Annular gap width, $w_B$ :	$\leq 20$ mm
Annular gap depth, $t_B$ :	$\geq 15$ mm
Backfilling for annular gap, C:	Class A1 in acc. to EN 13501-1 (Mineral wool, ceramic wool...), melting point $\geq 1000$ °C
Density backfilling:	$\geq 40$ kg/m <sup>3</sup>



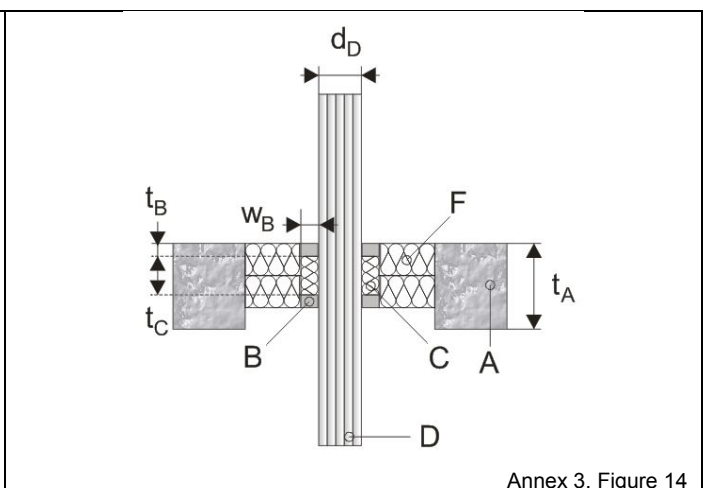
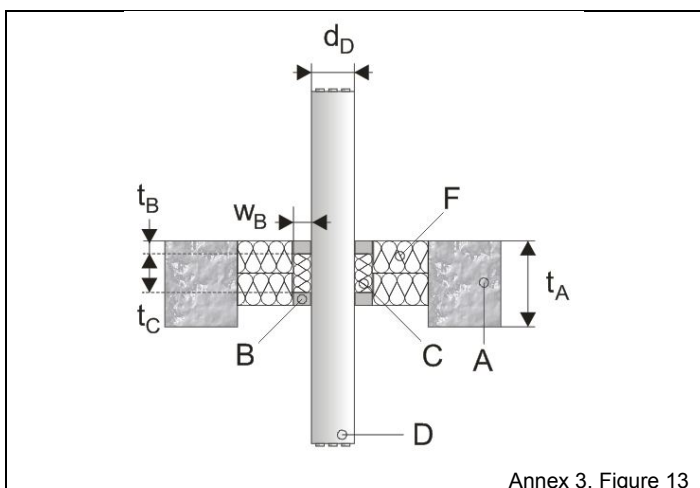
Annex 3, Figure 11



Annex 3, Figure 12

<b>Classification – Annex 3, Figure 11 and 12</b>	<b>Floor</b>
Sheathed single cable $\leq 4 \times 10 \text{ mm}^2$ (H07RN-F 4 G 10 SW or equal products)	EI 120
Sheathed single cable $\leq 3 \times 150 \text{ mm}^2$ (N2XSEY or equal products)	EI 120
Cable bundle with 26 pieces of sheathed single cables $\leq 5 \times 1,5 \text{ mm}^2$ (H07RN-F or equal products)	EI 120
Cable bundle with 20 pieces of sheathed single cables $\leq 2 \times 0,6 \text{ mm}^2$ (control, power, data, signal, telecommunication, optical fibre cables or equal products)	EI 120
Cable bundle $\varnothing \leq 90 \text{ mm}$ of sheathed single cables $\leq 3 \times 1,5 \text{ mm}^2$ (NYY-O or equal products)	EI 120
All sheathed cable types: $\varnothing \leq 21 \text{ mm}$ (control, power, data, signal, telecommunication, optical fibre cables or equal products)	EI 120
Tied cable bundle: $\varnothing \leq 100 \text{ mm}$ , made of sheathed cables with a single maximum diameter of $\varnothing \leq 21 \text{ mm}$	EI 120
Blank penetration seal: $\varnothing \leq 200 \text{ mm}$ (maximum seal size $0,03 \text{ m}^2$ )	EI 120

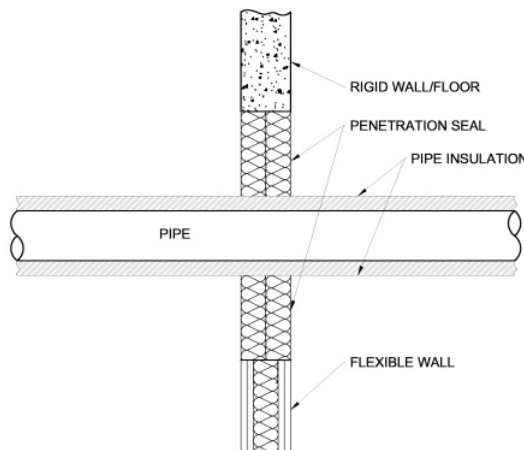
<b>Apertures in mineral wool board penetration seal PROMASTOP®-I in rigid floors</b>	
Coated mineral wool board penetration seal, made of minimum 2 x 50 mm thick mineral wool boards (melting point $\geq 1000^\circ\text{C}$ , class A1 in acc. to EN 13501-1, density $\geq 120 \text{ kg/m}^3$ ). The firestop coating PROMASTOP®-I has to be applied on the outer surface of the boards, cutting edges and the opening frame. Minimum thickness of the firestop coating 1 mm. The firestop sealant PROMASEAL®-A has to be applied on both sides, backfilling with mineral wool (melting point $\geq 1000^\circ\text{C}$ , class A1 in acc. to EN 13501-1).	
Thickness rigid floor, $t_A$ :	$\geq 150 \text{ mm}$
Annular gap width, $w_B$ :	$\leq 20 \text{ mm}$
Annular gap depth, $t_B$ :	$\geq 15 \text{ mm}$
Backfilling for annular gap, C:	Class A1 in acc. to EN 13501-1 (Mineral wool, ceramic wool...), melting point $\geq 1000^\circ\text{C}$
Density backfilling:	$\geq 40 \text{ kg/m}^3$

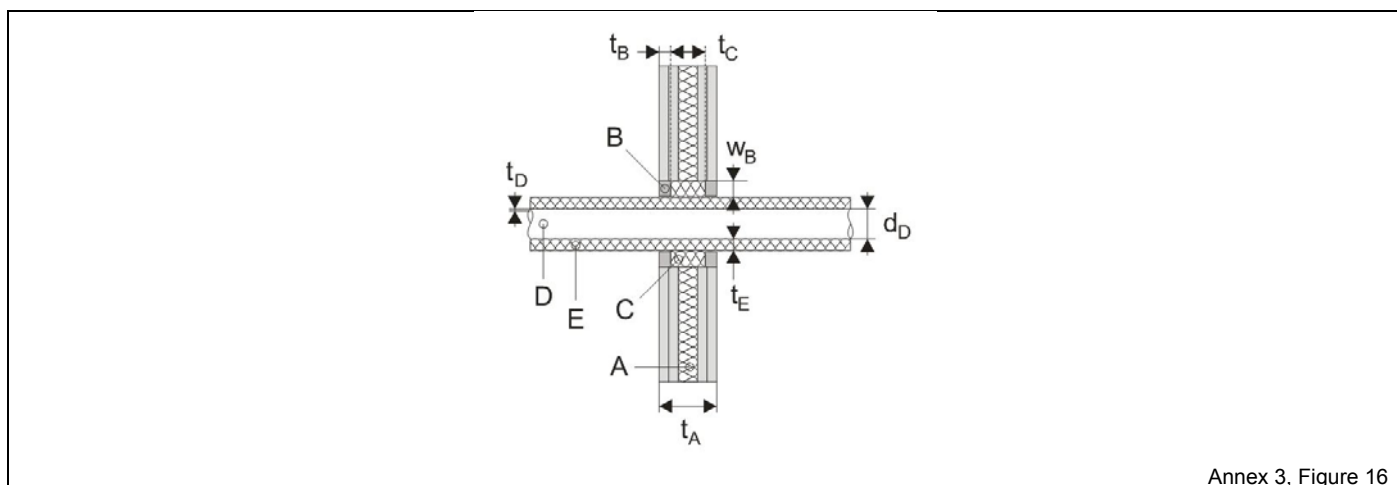


<b>Classification – Annex 3, Figure 13 and 14</b>	<b>Floor</b>
Sheathed single cable $\leq 4 \times 10 \text{ mm}^2$ (H07RN-F 4 G 10 SW or equal products)	EI 120
Sheathed single cable $\leq 3 \times 150 \text{ mm}^2$ (N2XSEY or equal products)	EI 120
Cable bundle with 26 pieces of sheathed single cables $\leq 5 \times 1,5 \text{ mm}^2$ (H07RN-F or equal products)	EI 120
Cable bundle with 20 pieces of sheathed single cables $\leq 2 \times 0,6 \text{ mm}^2$ (control, power, data, signal, telecommunication, optical fibre cables or equal products)	EI 120

**Classification annular gap - insulated metal pipes**

The firestop sealant PROMASEAL®-A has to be applied in wall and floor application on both sides.

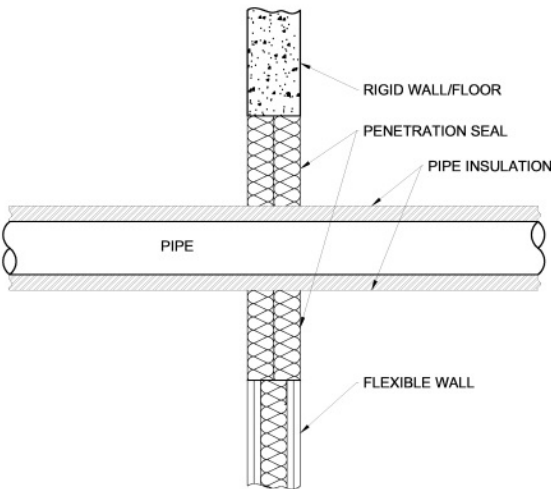
<b>Apertures in flexible wall</b>	
Thickness flexible wall, $t_A$ :	$\geq 150$ mm
Annular gap width, $w_B$ :	$\leq 20$ mm
Annular gap depth, $t_B$ :	$\geq 15$ mm
Backfilling for annular gap, C:	Class A1 in acc. to EN 13501-1 (Mineral wool, ceramic wool...), melting point $\geq 1000$ °C
Density backfilling:	$\geq 40$ kg/m <sup>3</sup>
Steel pipes <sup>6</sup> : (Pipe end configuration U/C)	Pipe diameter $\geq 50$ mm and $\leq 106$ mm Pipe wall thickness $\geq 2$ mm and $\leq 14,2$ mm
Insulation case, E:	CS – Continued sustained insulation
	
Annex 3, Figure 15	
Insulation – reaction to fire, E:	Minimum class A2-s1, d0 / A2 <sub>L</sub> -s1, d0 (in acc. to EN 13501-1), melting point $\geq 1000$ °C
Insulation thickness, $t_E$ :	30 mm
Insulation density:	40 mm

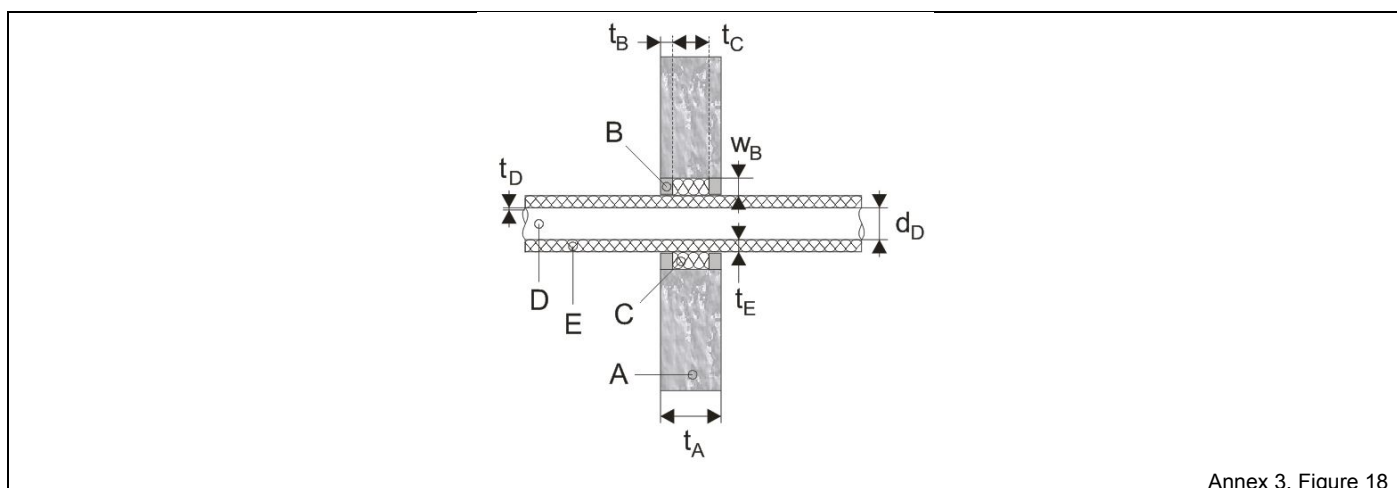


Annex 3, Figure 16

<b>Classification – Annex 3, Figure 16</b>	<b>Wall</b>
Annular gap sealing with PROMASEAL®-A on both sides with the upper general conditions	EI 120-U/C

<sup>6</sup> These results are also valid for other pipes with lower heat conductivity  $\lambda \leq 58$  W/mK and melting point  $\geq 1100$ °C (e.g. stainless steel, cast iron, Ni-alloys (NiCr, NiMo, NiCu)).

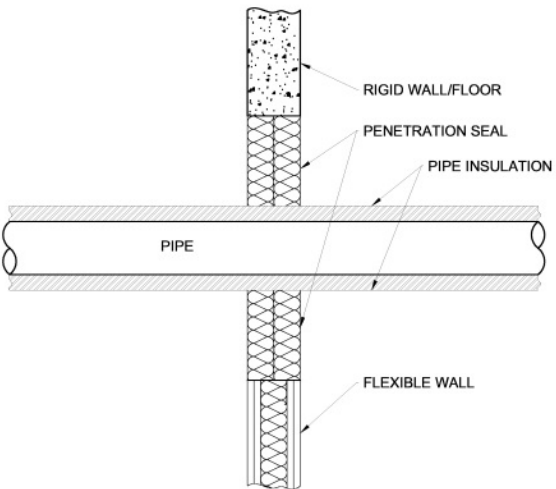
<b>Apertures in rigid wall</b>	
Thickness rigid wall, $t_A$ :	$\geq 150$ mm
Annular gap width, $w_B$ :	$\leq 20$ mm
Annular gap depth, $t_B$ :	$\geq 15$ mm
Backfilling for annular gap, C:	Class A1 in acc. to EN 13501-1 (Mineral wool, ceramic wool...), melting point $\geq 1000$ °C
Density backfilling:	$\geq 40$ kg/m <sup>3</sup>
Steel pipes <sup>7</sup> : (Pipe end configuration U/C)	Pipe diameter $\geq 50$ mm and $\leq 106$ mm Pipe wall thickness $\geq 2$ mm and $\leq 14,2$ mm
Insulation case, E:	CS – Continued sustained insulation
	
Annex 3, Figure 17	
Insulation – reaction to fire, E:	Minimum class A2-s1, d0 / A2 <sub>L</sub> -s1, d0 (in acc. to EN 13501-1), melting point $\geq 1000$ °C
Insulation thickness, $t_E$ :	30 mm
Insulation density:	40 mm

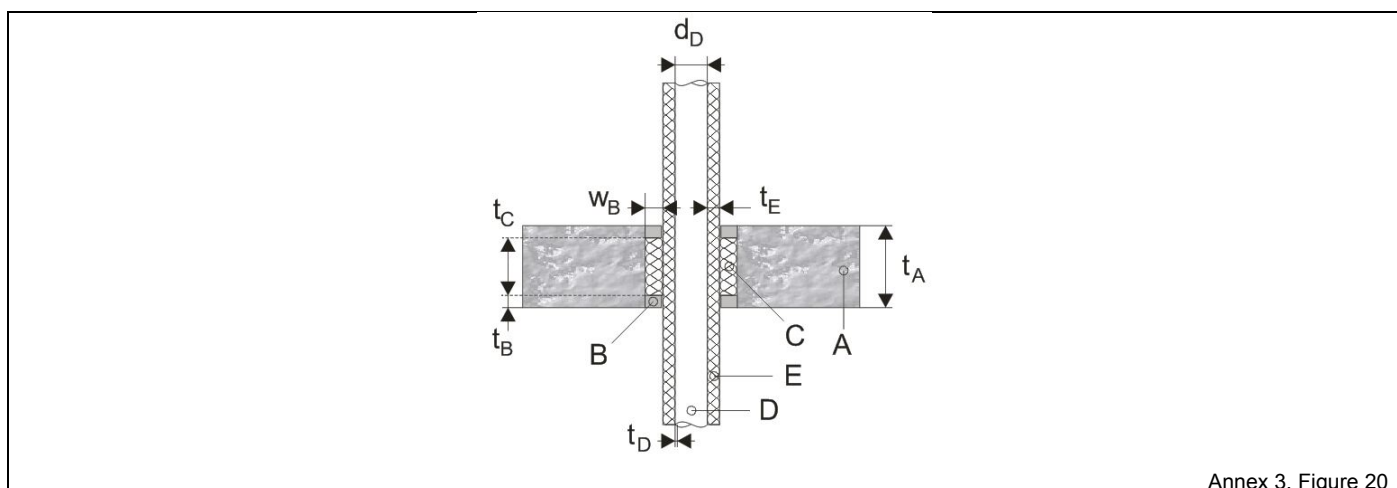


Annex 3, Figure 18

<b>Classification – Annex 3, Figure 18</b>	<b>Wall</b>
Annular gap sealing with PROMASEAL®-A on both sides with the upper general conditions	EI 120-U/C

<sup>7</sup> These results are also valid for other pipes with lower heat conductivity  $\lambda \leq 58$  W/mK and melting point  $\geq 1100$ °C (e.g. stainless steel, cast iron, Ni-alloys (NiCr, NiMo, NiCu)).

<b>Apertures in rigid floor</b>	
Thickness rigid floor:	$\geq 150$ mm
Annular gap width:	$\leq 20$ mm
Annular gap depth:	$\geq 15$ mm
Backfilling for annular gap:	Class A1 in acc. to EN 13501-1 (Mineral wool, ceramic wool...), melting point $\geq 1000$ °C
Density backfilling:	$\geq 40$ kg/m <sup>3</sup>
Steel pipes <sup>8</sup> : (Pipe end configuration U/C)	Pipe diameter $\geq 50$ mm and $\leq 106$ mm Pipe wall thickness $\geq 2$ mm and $\leq 14,2$ mm
Insulation case:	CS – Continued sustained insulation  
	Annex 3, Figure 19
Insulation – reaction to fire:	Minimum class A2-s1, d0 / A2 <sub>L</sub> -s1, d0 (in acc. to EN 13501-1), melting point $\geq 1000$ °C
Insulation thickness:	30 mm
Insulation density:	40 mm



<b>Classification – Annex 3, Figure 20</b>	<b>Floor</b>
Annular gap sealing with PROMASEAL®-A on both sides with the upper general conditions	EI 120-U/C

<sup>8</sup> These results are also valid for other pipes with lower heat conductivity  $\lambda \leq 58$  W/mK and melting point  $\geq 1100$ °C (e.g. stainless steel, cast iron, Ni-alloys (NiCr, NiMo, NiCu)).