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European Technical Assessment

**ETA-18/0171
of 29/06/2018**

General Part

Technical Assessment Body issuing the European Technical Assessment

Instytut Techniki Budowlanej

Trade name of the construction product

Polylack F
Polylack K
Polylack KG
PS Bandage

Product family to which the construction product belongs

Fire Stopping and Fire Sealing Products.
Penetration Seals

Manufacturer

DUNAMENTI TUZVEDELEM ZRT
Nemeskeri Kiss Miklos u. 39
2131 God
Hungary

Manufacturing plant

DUNAMENTI TUZVEDELEM ZRT
Nemeskeri Kiss Miklos u. 39
2131 God
Hungary

This European Technical Assessment contains

47 pages including 3 Annexes which form an integral part of this Assessment

This European Technical Assessment is issued in accordance with regulation (EU) No 305/2011, on the basis of

European Assessment Document EAD 350454-00-1104 "Fire Stopping and Fire Sealing Products. Penetration Seals"

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Specific Part

1 Technical description of the product

Polylack F is a white, one component, water based, intumescent paint, in a form of a viscous liquid. It is used as a coating and supplied in buckets.

Polylack K is a light grey, one component, water based, intumescent mastic. It is used as a filler (for adhesion or filling gaps) and supplied in liquid form in buckets.

Polylack KG is a light grey one component, water based, intumescent mastic. It is used as a filler (for adhesion or filling gaps) and supplied in liquid form in buckets.

PS Bandage is a grey, graphite-based, intumescent wrap (pipe closure device), supplied in roll form in 125 mm width and 2,0 mm thick. Length of rolls is up to 15 m.

These products are used to form mixed penetration seals where combustible pipes, single cables or cable bundles and insulated metal pipes penetrate walls and floors.

Auxiliary products, used with Polylack F, Polylack K, Polylack KG and PS Bandage to form mixed penetration seals, are:

- PS Collar (pipe closure device) – covered by ETA-17/0676,
- two types of synthetic flexible elastomeric foam (FEF) insulation in accordance with EN 14304:
 - K-Flex ST produced by L'Isolante K-Flex S.p.A.: insulation with reaction to fire class B-s3,d0, according to EN 13501-1 and with a nominal density of 49 kg/m³,
 - NH/Armaflex produced by Armacell UK Ltd: insulation with reaction to fire class D_L-s3,d0, according to EN 13501-1 and with a nominal density of 60 kg/m³,
- stone mineral wool insulation with aluminium foil facing, in accordance with EN 14303, with reaction to fire class A1, according to EN 13501-1 and with minimum density of 80 kg/m³,
- stone mineral wool boards, used as a backing material (with minimum thickness of 60 mm and minimum density of 150 kg/m³) in accordance with EN 14303 or EN 13162, with reaction to fire class A1, according to EN 13501-1.

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

2.1 Intended use

The intended use of the Polylack F, Polylack K, Polylack KG and PS Bandage is to reinstate the fire resistance performance of flexible wall, rigid wall or rigid floor constructions where they are penetrated by combustible pipes, insulated metal pipes, single cables or cable bundles.

The specific elements of construction that the Polylack F, Polylack K, Polylack KG and PS Bandage may be used to provide a penetration seal in, are as follows:

Rigid walls: The wall must have a minimum thickness of 100 mm and comprise concrete, reinforced concrete, aerated concrete, ceramic brick, cavity brick or checker brick, with a minimum density of 450 kg/m³.

Flexible walls: The wall must have a minimum thickness of 100 mm and comprise timber or steel studs lined on both faces with minimum two layers (with overall board layer thickness on one side equal to or greater than 25 mm) of 'Type F' or 'Type DF' gypsum plasterboards according to EN 520. In timber stud walls, no part of the penetration shall be closer than 100 mm to a stud, the cavity must be closed between the penetration seal and the stud and minimum 100 mm of insulation of reaction to fire class A1 or A2, according to EN 13501-1, is provided within the cavity between the penetration seal and the stud.

Rigid floors: The floor must have a minimum thickness of 150 mm and comprise concrete, reinforced concrete, aerated concrete, ceramic brick, cavity brick or checker brick with a minimum density of 620 kg/m³.

The supporting construction shall be classified in accordance with EN 13501-2 for the required fire resistance period (equal to or greater than specified in Annex C).

Polylack F, Polylack K, Polylack KG and PS Bandage may be used to provide a penetration seal with specific combustible or metallic pipes, single cables and cable bundles (according to Annexes B and C).

Details of mixed penetration seals are provided in Annexes B and C. Additional provisions are provided in Annex A.

Pipes or cables shall be supported at maximum 200 mm away from both faces of the wall constructions and from the upper face of floor constructions.

The performances given in this European Technical Assessment are based on an assumed working life of products of 10 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer or the Technical 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.

2.2 Use category

Type Z₂: intended for use in internal conditions with humidity lower than 85% RH, excluding temperatures below 0°C, without exposure to rain or UV.

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

3.1 Performance of the product

3.1.1 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class E
Resistance to fire	Annex C

3.1.2 Hygiene, health and the environment (BWR 3)

Essential characteristic	Performance
Content, emission and/or release of dangerous substances	<p>The applicant has submitted a written declaration that the products and/or constituents of the products contain no substances which have been classified as dangerous according to EOTA TR 034.</p> <p>Regarding the dangerous substances, there may be 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.</p>

3.1.3 Safety and accessibility in use (BWR 4)

Essential characteristic	Performance
Durability	Use category: Type Z ₂

3.1.4 Protection against noise (BWR 5)

No performance assessed.

3.1.5 Energy economy and heat retention (BWR 6)

No performance assessed.

3.2 Methods used for the assessment

The assessment of fitness of products for the declared intended use has been made in accordance with the European Assessment Document EAD 350454-00-1104 "Fire Stopping and Fire Sealing Products. Penetration Seals".

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

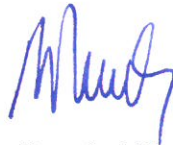
According to Decision 99/454/EC of the European Commission, as amended by Decision 2001/596/EC of the European Commission the system 1 of assessment and verification of constancy of performance applies (see Annex V to Regulation (EU) No 305/2011).

5 Technical details necessary for the implementation of the AVCP system, as provided in the applicable European Assessment Document (EAD)

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited in Instytut Techniki Budowlanej.

For type testing the results of the tests performed as part of the assessment for the European Technical Assessment shall be used unless there are changes in the production line or plant. In such cases the necessary type testing has to be agreed between Instytut Techniki Budowlanej and the notified body.

Issued in Warsaw on 29/06/2018 by Instytut Techniki Budowlanej



Anna Panek, MSc
Deputy Director of ITB

Additional provisions

- The opening in separating element shall be filled with two stone mineral wool boards with minimum thickness of 60 mm and minimum density of 150 kg/m³. The external surface of each board shall be covered by a layer of Polylack F coating with a minimum thickness of 0,5 mm.
- The gap between mineral wool boards used in penetration seals in floors shall be equal to or greater than 30 mm. There shall be no gap between mineral wool boards used in penetration seals in walls.
- Supporting construction shall be covered on the both sides on the perimeter of the penetration seal with a layer of Polylack F coating with a minimum thickness of 0,5 mm and minimum width of 50 mm.
- Cables and cable bundles shall be placed in steel perforated trays with wall thickness of 0,7 mm and width of tray: 200, 300 or 500 mm.
- The surface of the cables and perforated cable trays shall be covered on both sides of the separating element with a layer Polylack F coating with thickness of 0,5 mm, on the length of 150 mm from each surface of separating element.
- The surface of PS Bandage, which isn't covered by mineral wool boards, shall be covered with a layer of Polylack F coating with a minimum thickness of 0,3 mm (for details see Annex B and C).
- The gap between external edges of mineral wool boards and pipes (around the combustible pipes or insulation of the non-combustible pipes) or PS Bandage shall be filled with Polylack K to at least 10 mm in width and depth (for details see Annex B and C).
- The gap between external edges of mineral wool boards and cable trays (around the cable trays) shall be filled with Polylack KG to at least 10 mm in width and depth (for details see Annex B and C).
- Space between cables or cable bundles inside cable trays shall be filled with mineral wool boards, which fill the opening in the separating element. The width of the gap between mineral wool boards and cables or cable bundles inside the cable tray shall be equal to 10 mm and filled with Polylack KG to at least 25 mm in depth (for details see Annex B and C).
- The PS Collar shall be either fixed on both sides of the wall or fixed at the bottom of the floor (for details see Annex B and C).
- The PS Collar shall be fixed to the wall or the floor acc. to ETA-17/0676, by steel fasteners (M6x90 mm in case of walls and M6x60 mm in case of floors). Minimal number of fixing brackets and type of fastener is given in Table A.1.

Table A.1

Separating Element / Type of fastener	PS Collar type acc. to ETA-17/0676	Minimal number of fixing brackets
Wall / M6x90	DN50	3
	DN125	6
Floor / M6x60	DN50	3
	DN125	6

^{*)} the number in collar type indicates maximum outer diameter of pipe in millimeters

Polylack F, Polylack K, Polylack KG, PS Bandage	Annex A
Additional provisions	of European Technical Assessment ETA-18/0171

- Classifications given in Annex C are valid for specific pipes made of:
 - PVC-U according to EN 1329-1, EN 1453-1 or EN 1452-1,
 - PVC-C according to EN 1566-1,
 - PE-HD according to EN 1519-1 or EN 12666-1,
 - PE according to EN 12201-2, EN 1519-1 and EN 12666-1,
 - ABS according to EN 1455-1,
 - SAN + PVC according to EN 1565-1,
 - PP-R according to EN ISO 15874,
 according to tables in Annex C.
- Services are placed in angle 90° to the supporting construction.
- Classifications given in Annex C for insulated metal pipes are valid for pipes with sustained and continued insulation made of stone mineral wool with aluminium foil facing or flexible elastomeric foam (FEF): K-Flex ST or NH/Armaflex (for details see point 1 of ETA), and does not cover non-insulated pipes. In case of metal pipes insulated with mineral wool, the thickness and density of insulation may be increased but may not be reduced.
- Classifications given in Annex C for cables or cable bundles are valid only when cable supports pass through the seal and are not valid for lidded cable trays.
- Maximum dimensions of penetration seals are (width x length) 1200 x 1800 mm, provided the total amount of cross sections of the services does not exceed 60% of the penetration area and the minimum distance between services or between service and penetration seal edge is not smaller than presented in fig. B1 and B2 and provisions listed below:
 - a) in case of penetration seals in walls:

Type of distance ¹⁾	Description	Minimum distance, mm
a ₁	distance between cable trays and insulation of metal pipes or pipe closure devices (if present) of metal pipes	80
a ₂	distance between cable trays and pipe closure devices of plastic pipes	50
a ₃	distance between insulation or pipe closure devices (if present) of metal pipes and pipe closure devices of plastic pipes	59
a ₄	distance between pipe closure devices of plastic pipes	88
a ₅	distance between insulation or pipe closure devices (if present) of metal pipes	50
a ₆	distance between cable trays	90
b ₁	distance between cables and seal edge	50
b ₂	distance between side of cable tray and seal edge	100
b ₄	distance between insulation or pipe closure devices (if present) of metal pipes and seal edge	65
b ₅	distance between pipe closure devices of plastic pipes and seal edge	64

¹⁾ acc. to EN 1366-3, clause F.5.2.3

Polylack F, Polylack K, Polylack KG, PS Bandage	Annex A of European Technical Assessment ETA-18/0171
Additional provisions	

b) in case of penetration seals in floors:

Type of distance ¹⁾	Description	Minimum distance, mm
a ₁	distance between cable trays and insulation of metal pipes or pipe closure devices (if present) of metal pipes	80
a ₂	distance between cable trays and pipe closure devices of plastic pipes	60
a ₃	distance between insulation or pipe closure devices (if present) of metal pipes and pipe closure devices of plastic pipes	70
a ₄	distance between pipe closure devices of plastic pipes	100
a ₅	distance between insulation or pipe closure devices (if present) of metal pipes	50
a ₆	distance between cable trays	90
b ₁	distance between cables and seal edge	50
b ₂	distance between side of cable tray and seal edge	100
b ₄	distance between insulation or pipe closure devices (if present) of metal pipes and seal edge	65
b ₅	distance between pipe closure devices of plastic pipes and seal edge	75
¹⁾ acc. to EN 1366-3, clause F.5.2.3		

Polylack F, Polylack K, Polylack KG, PS Bandage

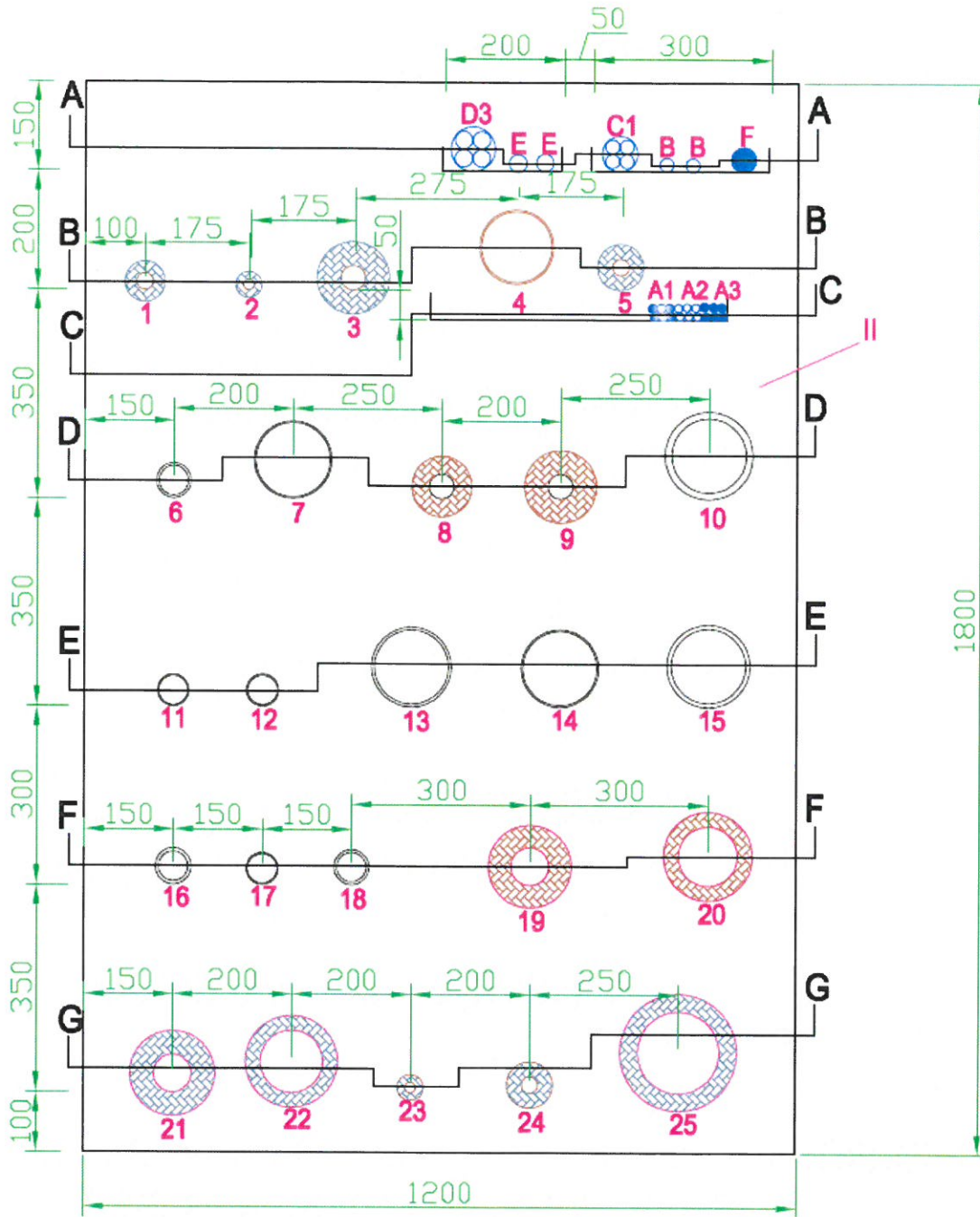
Additional provisions

Annex A

of European
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Fig. B1. Minimal distances in mixed penetration seal in wall, made with use of Polylack F, Polylack K, Polylack KG and PS Bandage

dimensions in mm



<p>Polylack F, Polylack K, Polylack KG, PS Bandage</p>	<p>Annex B1</p>
<p>Minimal distances in mixed penetration seal in wall</p>	<p>of European Technical Assessment ETA-18/0171</p>

Table B2. Types of services with details of penetration seal in wall			
No.	Type of service	Diameter of the opening	Details of penetration seal
D3	Cable N2XH-J 4 x 185 SM; Tray 200 mm	-	The surfaces of the cables and perforated cable trays covered from both sides with 0,5 mm thick layer of Polylack F in length of 150 mm; Space inside cable trays filled with mineral wool boards. The gap (with width of 10 mm) between the boards and cables or cable bundles, inside cable tray, filled from both sides with Polylack KG to 25 mm in depth; The gap between external edges of mineral wool boards and cable tray (around cable tray) filled from both sides with Polylack KG
2 x E	2 x cable N-YY-O 1 x 185 RM; Tray 200 mm		
C1	Cable NYCWY 4 x 95 SM/50; Tray 300 mm		
2 x B	2 x cable NYY-O 1 x 95 RM; Tray 300 mm		
F	Bundle of telecommunication cables, J-Y(St)Y 20 x 2 x 0,6 mm, diameter Ø 100 mm; Tray 300 mm		
A1	Bundle of cables NYY-J 5 x 1,5 RE, 10 pieces of cables in the bundle; Tray 500 mm		
A2	Bundle of cables H07RN-F 5G1,5, 10 pieces of cables in the bundle; Tray 500 mm		
A3	Bundle of cables N2XH-O 5 x 1,5 RE, 10 pieces of cables in the bundle; Tray 500 mm		
1	Copper pipe, diameter Ø 28 mm, pipe wall thickness 1,0 mm, with non-combustible stone wool insulation with thickness of 20 mm, continuous pipe insulation	70 mm	The gap between external edges of mineral wool boards and pipe (around the insulation) filled from both sides with Polylack K
2	Copper pipe, diameter Ø 18 mm, pipe wall thickness 1,0 mm, with combustible insulation K-Flex ST with thickness of 13 mm, continuous pipe insulation	49 mm	PS Bandage from both sides, one layer (2,0 x 125 mm); The gap between external edges of mineral wool boards and PS Bandage filled from both sides with Polylack K; The surface of PS Bandage, which isn't covered by mineral wool boards, covered with 0,3 mm thick layer of Polylack F
3	Copper pipe, diameter Ø 42 mm, pipe wall thickness 1,5 mm, with combustible insulation K-Flex ST with thickness of 40 mm, continuous pipe insulation	137 mm	PS Bandage from both sides, two layers (4,0 x 125 mm); The gap between external edges of mineral wool boards and PS Bandage filled from both sides with Polylack K; The surface of PS Bandage, which isn't covered by mineral wool boards, covered with 0,3 mm thick layer of Polylack F
4	Plastic pipe PE-HD, diameter Ø 125 mm, pipe wall thickness 4,6 mm	125 mm	PS collar DN125 from both sides, four layers of 2,5 mm intumescent strips (10,0 x 30 mm); The gap between external edges of mineral wool boards and pipe (around the pipe) filled from both sides with Polylack K
5	Copper pipe, diameter Ø 28 mm, pipe wall thickness 1,0 mm, with combustible insulation K-Flex ST with thickness of 25 mm, continuous pipe insulation	93 mm	PS Bandage from both sides, two layers (4,0 x 125 mm); The gap between external edges of mineral wool boards and PS Bandage filled from both sides with Polylack K; The surface of PS Bandage, which isn't covered by mineral wool boards, covered with 0,3 mm thick layer of Polylack F
Polylack F, Polylack K, Polylack KG, PS Bandage			Annex B2 of European Technical Assessment ETA-18/0171
Types of services with details of penetration seal in wall			

Table B2. cont'd. Types of services with details of penetration seal in wall			
No.	Type of service	Diameter of the opening	Details of penetration seal
6	Plastic pipe PE-HD, diameter Ø 50 mm, pipe wall thickness 3,0 mm	50 mm	PS collar DN50 from both sides, two layers of 2,5 mm intumescent strips (5,0 x 30 mm); The gap between external edges of mineral wool boards and pipe (around the pipe) filled from both sides with Polylack K
7	Plastic pipe PVC-U, diameter Ø 125 mm, pipe wall thickness 2,5 mm	125 mm	PS collar DN125 from both sides, four layers of 2,5 mm intumescent strips (10,0 x 30 mm); The gap between external edges of mineral wool boards and pipe (around the pipe) filled from both sides with Polylack K
8	Copper pipe, diameter Ø 42 mm, pipe wall thickness 1,5 mm, with non-combustible stone wool insulation with thickness of 30 mm, continuous pipe insulation	102 mm	The gap between external edges of mineral wool boards and pipe (around the insulation) filled from both sides with Polylack K
9	Copper pipe, diameter Ø 42 mm, pipe wall thickness 1,5 mm, with combustible insulation NH/Armaflex with thickness of 40 mm, continuous pipe insulation	137 mm	PS Bandage from both sides, two layers (4,0 x 125 mm); The gap between external edges of mineral wool boards and PS Bandage filled from both sides with Polylack K; The surface of PS Bandage, which isn't covered by mineral wool boards, covered with 0,3 mm thick layer of Polylack F
10	Plastic pipe PP-R, diameter Ø 125 mm, pipe wall thickness 12,5 mm	124 mm	PS collar DN125 from both sides, four layers of 2,5 mm intumescent strips (10,0 x 30 mm); The gap between external edges of mineral wool boards and pipe (around the pipe) filled from both sides with Polylack K
11	Plastic pipe PVC-U, diameter Ø 50 mm, pipe wall thickness 1,8 mm	50 mm	PS collar DN50 from both sides, two layers of 2,5 mm intumescent strips (5,0 x 30 mm); The gap between external edges of mineral wool boards and pipe (around the pipe) filled from both sides with Polylack K
12	Plastic pipe PE-HD, diameter Ø 50 mm, pipe wall thickness 4,8 mm	50 mm	PS collar DN50 from both sides, two layers of 2,5 mm intumescent strips (5,0 x 30 mm); The gap between external edges of mineral wool boards and pipe (around the pipe) filled from both sides with Polylack K
13	Plastic pipe PE-HD, diameter Ø 125 mm, pipe wall thickness 11,4 mm	125 mm	PS collar DN125 from both sides, four layers of 2,5 mm intumescent strips (10,0 x 30 mm); The gap between external edges of mineral wool boards and pipe (around the pipe) filled from both sides with Polylack K
14	Plastic pipe PP-R, diameter Ø 125 mm, pipe wall thickness 4,6 mm	125 mm	PS collar DN125 from both sides, four layers of 2,5 mm intumescent strips (10,0 x 30 mm); The gap between external edges of mineral wool boards and pipe (around the pipe) filled from both sides with Polylack K
15	Plastic pipe PVC-U, diameter Ø 125 mm, pipe wall thickness 7,4 mm	125 mm	PS collar DN125 from both sides, four layers of 2,5 mm intumescent strips (10,0 x 30 mm); The gap between external edges of mineral wool boards and pipe (around the pipe) filled from both sides with Polylack K
Polylack F, Polylack K, Polylack KG, PS Bandage			Annex B2 of European Technical Assessment ETA-18/0171
Types of services with details of penetration seal in wall			

Table B2. cont'd. Types of services with details of penetration seal in wall			
No.	Type of service	Diameter of the opening	Details of penetration seal
16	Plastic pipe PVC-U, diameter Ø 50 mm, pipe wall thickness 5,6 mm	50 mm	PS collar DN50 from both sides, two layers of 2,5 mm intumescent strips (5,0 x 30 mm); The gap between external edges of mineral wool boards and pipe (around the pipe) filled from both sides with Polylack K
17	Plastic pipe PP-R, diameter Ø 50 mm, pipe wall thickness 1,8 mm	50 mm	PS collar DN50 from both sides, two layers of 2,5 mm intumescent strips (5,0 x 30 mm); The gap between external edges of mineral wool boards and pipe (around the pipe) filled from both sides with Polylack K
18	Plastic pipe PP-R, diameter Ø 50 mm, pipe wall thickness 4,6 mm	50 mm	PS collar DN50 from both sides, two layers of 2,5 mm intumescent strips (5,0 x 30 mm); The gap between external edges of mineral wool boards and pipe (around the pipe) filled from both sides with Polylack K
19	Steel pipe, diameter Ø 60 mm, pipe wall thickness 2,0 mm, with combustible insulation K-Flex ST with thickness of 40 mm, continuous pipe insulation	159 mm	PS Bandage from both sides, two layers (4,0 x 125 mm); The gap between external edges of mineral wool boards and PS Bandage filled from both sides with Polylack K; The surface of PS Bandage, which isn't covered by mineral wool boards, covered with 0,3 mm thick layer of Polylack F
20	Steel pipe, diameter Ø 100 mm, pipe wall thickness 2,5 mm, with combustible insulation K-Flex ST with thickness of 25 mm, continuous pipe insulation	155 mm	PS Bandage from both sides, two layers (4,0 x 125 mm); The gap between external edges of mineral wool boards and PS Bandage filled from both sides with Polylack K; The surface of PS Bandage, which isn't covered by mineral wool boards, covered with 0,3 mm thick layer of Polylack F
21	Steel pipe, diameter Ø 60 mm, pipe wall thickness 2,0 mm, with combustible insulation NH/Armaflex with thickness of 40 mm, continuous pipe insulation	159 mm	PS Bandage from both sides, two layers (4,0 x 125 mm); The gap between external edges of mineral wool boards and PS Bandage filled from both sides with Polylack K; The surface of PS Bandage, which isn't covered by mineral wool boards, covered with 0,3 mm thick layer of Polylack F
22	Steel pipe, diameter Ø 100 mm, pipe wall thickness 2,5 mm, with combustible insulation NH/Armaflex with thickness of 25 mm, continuous pipe insulation	165 mm	PS Bandage from both sides, two layers (4,0 x 125 mm); The gap between external edges of mineral wool boards and PS Bandage filled from both sides with Polylack K; The surface of PS Bandage, which isn't covered by mineral wool boards, covered with 0,3 mm thick layer of Polylack F
Polylack F, Polylack K, Polylack KG, PS Bandage			Annex B2 of European Technical Assessment ETA-18/0171
Types of services with details of penetration seal in wall			

Table B2. cont'd. Types of services with details of penetration seal in wall			
No.	Type of service	Diameter of the opening	Details of penetration seal
23	Copper pipe, diameter Ø 18 mm, pipe wall thickness 1,0 mm, with combustible insulation NH/Armaflex with thickness of 13 mm, continuous pipe insulation	49 mm	PS Bandage from both sides, one layer (2,0 x 125 mm); The gap between external edges of mineral wool boards and PS Bandage filled from both sides with Polylack K; The surface of PS Bandage, which isn't covered by mineral wool boards, covered with 0,3 mm thick layer of Polylack F
24	Copper pipe, diameter Ø 28 mm, pipe wall thickness 1,0 mm, with combustible insulation NH/Armaflex with thickness of 25 mm, continuous pipe insulation	88 mm	PS Bandage from both sides, two layers (4,0 x 125 mm); The gap between external edges of mineral wool boards and PS Bandage filled from both sides with Polylack K; The surface of PS Bandage, which isn't covered by mineral wool boards, covered with 0,3 mm thick layer of Polylack F
25	Steel pipe, diameter Ø 130 mm, pipe wall thickness 4,0 mm, with non-combustible stone wool insulation with thickness of 30 mm, continuous pipe insulation	198 mm	The gap between external edges of mineral wool boards and pipe (around the insulation) filled from both sides with Polylack K
Polylack F, Polylack K, Polylack KG, PS Bandage			Annex B2 of European Technical Assessment ETA-18/0171
Types of services with details of penetration seal in wall			

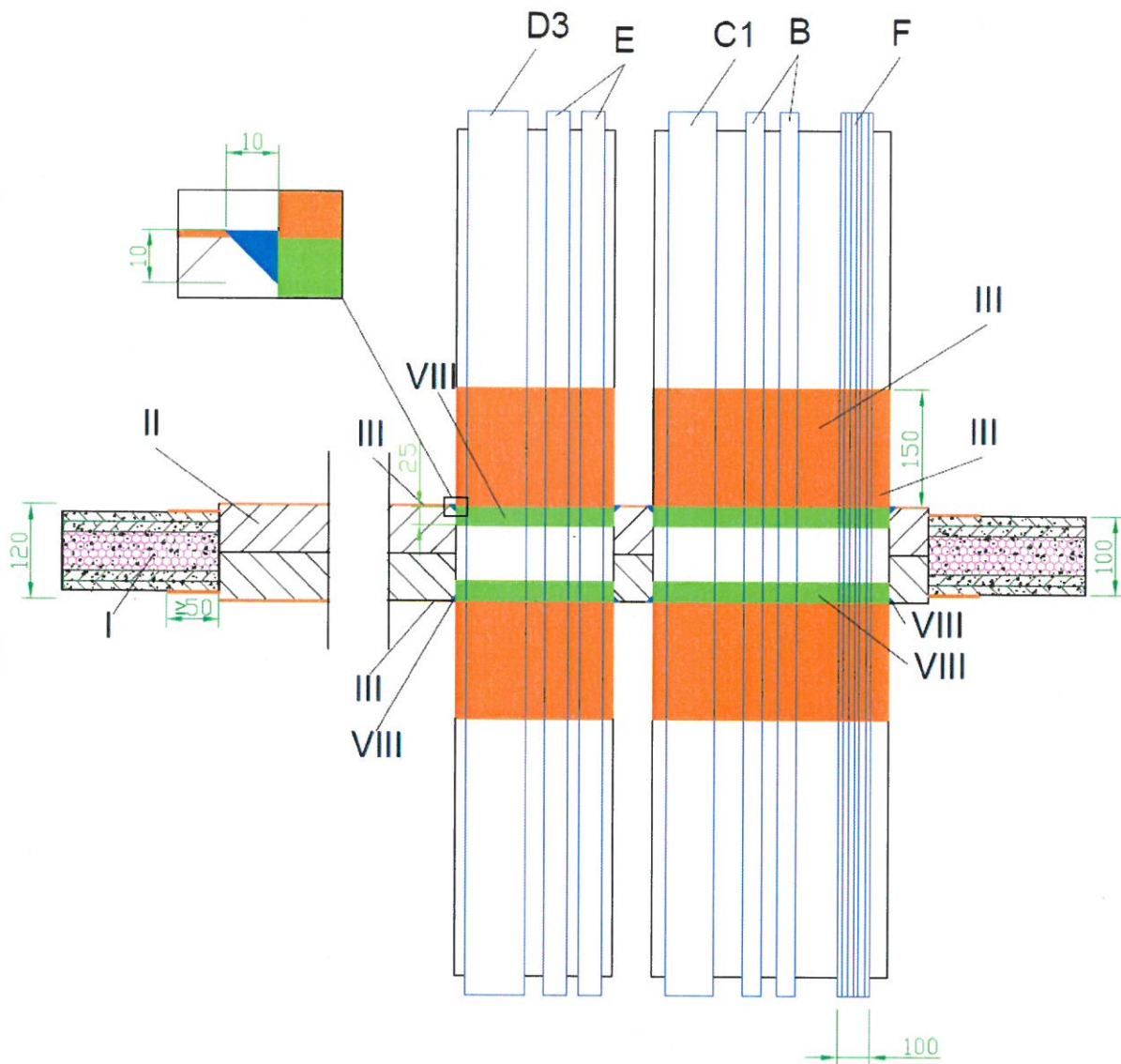
Table B4. Types of services with details of penetration seal in floor			
No.	Type of service	Diameter of the opening	Details of penetration seal
D3	Cable N2XH-J 4 x 185 SM; Tray 200 mm	-	The surfaces of the cables and perforated cable trays covered from both sides with 0,5 mm thick layer of Polylack F in length of 150 mm; Space inside cable trays filled with mineral wool boards. The gap (with width of 10 mm) between the boards and cables or cable bundles, inside cable tray, filled from both sides with Polylack KG to 25 mm in depth; The gap between external edges of mineral wool boards and cable tray (around cable tray) filled from both sides with Polylack KG
2 x E	2 x cable N-YY-O 1 x 185 RM; Tray 200 mm		
C1	Cable NYCWY 4 x 95 SM/50; Tray 300 mm		
2 x B	2 x cable NYY-O 1 x 95 RM; Tray 300 mm		
F	Bundle of telecommunication cables, J-Y(St)Y 20 x 2 x 0,6 mm, diameter Ø 100 mm; Tray 300 mm		
A1	Bundle of cables NYY-J 5 x 1,5 RE, 10 pieces of cables in the bundle; Tray 500 mm		
A2	Bundle of cables H07RN-F 5G1,5, 10 pieces of cables in the bundle; Tray 500 mm		
A3	Bundle of cables N2XH-O 5 x 1,5 RE, 10 pieces of cables in the bundle; Tray 500 mm		
1	Copper pipe, diameter Ø 28 mm, pipe wall thickness 1,0 mm, with non-combustible stone wool insulation 20 mm, continuous pipe insulation	70 mm	The gap between external edges of mineral wool boards and pipe (around the insulation) filled from both sides with Polylack K
2	Copper pipe, diameter Ø 18 mm, pipe wall thickness 1,0 mm, with combustible insulation K-Flex ST with thickness of 13 mm, continuous pipe insulation	49 mm	PS Bandage from both sides, one layer (2,0 x 125 mm); The gap between external edges of mineral wool boards and PS Bandage filled from both sides with Polylack K; The surface of PS Bandage, which isn't covered by mineral wool boards, covered with 0,3 mm thick layer of Polylack F
3	Copper pipe, diameter Ø 42 mm, pipe wall thickness 1,5 mm, with combustible insulation K-Flex ST with thickness of 40 mm, continuous pipe insulation	137 mm	PS Bandage from both sides, two layers (4,0 x 125 mm); The gap between external edges of mineral wool boards and PS Bandage filled from both sides with Polylack K; The surface of PS Bandage, which isn't covered by mineral wool boards, covered with 0,3 mm thick layer of Polylack F
4	Plastic pipe PE-HD, diameter Ø 125 mm, pipe wall thickness 4,6 mm	125 mm	PS collar DN125 at the bottom of the floor, four layers of 2,5 mm intumescent strips (10,0 x 30 mm); The gap between external edges of mineral wool boards and pipe (around the pipe) filled from both sides with Polylack K
5	Copper pipe, diameter Ø 28 mm, pipe wall thickness 1,0 mm, with combustible insulation K-Flex ST with thickness of 25 mm, continuous pipe insulation	93 mm	PS Bandage from both sides, two layers (4,0 x 125 mm); The gap between external edges of mineral wool boards and PS Bandage filled from both sides with Polylack K; The surface of PS Bandage, which isn't covered by mineral wool boards, covered with 0,3 mm thick layer of Polylack F
Polylack F, Polylack K, Polylack KG, PS Bandage			Annex B4 of European Technical Assessment ETA-18/0171
Types of services with details of penetration seal in floor			

Table B4. cont'd. Types of services with details of penetration seal in floor			
No.	Type of service	Diameter of the opening	Details of penetration seal
6	Plastic pipe PE-HD, diameter Ø 50 mm, pipe wall thickness 3,0 mm	50 mm	PS collar DN50 at the bottom of the floor, two layers of 2,5 mm intumescent strips (5,0 x 30 mm); The gap between external edges of mineral wool boards and pipe (around the pipe) filled from both sides with Polylock K
7	Plastic pipe PVC-U, diameter Ø 125 mm, pipe wall thickness 2,5 mm	125 mm	PS collar DN125 at the bottom of the floor, four layers of 2,5 mm intumescent strips (10,0 x 30 mm); The gap between external edges of mineral wool boards and pipe (around the pipe) filled from both sides with Polylock K
8	Copper pipe, diameter Ø 42 mm, pipe wall thickness 1,5 mm, with non-combustible stone wool insulation with thickness of 30 mm, continuous pipe insulation	102 mm	The gap between external edges of mineral wool boards and pipe (around the insulation) filled from both sides with Polylock K
9	Copper pipe, diameter Ø 42 mm, pipe wall thickness 1,5 mm, with combustible insulation NH/Armaflex with thickness of 40 mm, continuous pipe insulation	137 mm	PS Bandage from both sides, two layers (4,0 x 125 mm); The gap between external edges of mineral wool boards and PS Bandage filled from both sides with Polylock K; The surface of PS Bandage, which isn't covered by mineral wool boards, covered with 0,3 mm thick layer of Polylock F
10	Plastic pipe PP-R, diameter Ø 125 mm, pipe wall thickness 12,5 mm	124 mm	PS collar DN125 at the bottom of the floor, four layers of 2,5 mm intumescent strips (10,0 x 30 mm); The gap between external edges of mineral wool boards and pipe (around the pipe) filled from both sides with Polylock K
11	Plastic pipe PVC-U, diameter Ø 50 mm, pipe wall thickness 1,8 mm	50 mm	PS collar DN50 at the bottom of the floor, two layers of 2,5 mm intumescent strips (5,0 x 30 mm); The gap between external edges of mineral wool boards and pipe (around the pipe) filled from both sides with Polylock K
12	Plastic pipe PE-HD, diameter Ø 50 mm, pipe wall thickness 4,8 mm	50 mm	PS collar DN50 at the bottom of the floor, two layers of 2,5 mm intumescent strips (5,0 x 30 mm); The gap between external edges of mineral wool boards and pipe (around the pipe) filled from both sides with Polylock K
13	Plastic pipe PE-HD, diameter Ø 125 mm, pipe wall thickness 11,4 mm	125 mm	PS collar DN125 at the bottom of the floor, four layers of 2,5 mm intumescent strips (10,0 x 30 mm); The gap between external edges of mineral wool boards and pipe (around the pipe) filled from both sides with Polylock K
14	Plastic pipe PP-R, diameter Ø 125 mm, pipe wall thickness 4,6 mm	125 mm	PS collar DN125 at the bottom of the floor, four layers of 2,5 mm intumescent strips (10,0 x 30 mm); The gap between external edges of mineral wool boards and pipe (around the pipe) filled from both sides with Polylock K
Polylock F, Polylock K, Polylock KG, PS Bandage			Annex B4 of European Technical Assessment ETA-18/0171
Types of services with details of penetration seal in floor			

Table B4. cont'd. Types of services with details of penetration seal in floor			
No.	Type of service	Diameter of the opening	Details of penetration seal
15	Plastic pipe PVC-U, diameter Ø 125 mm, pipe wall thickness 7,4 mm	125 mm	PS collar DN125 at the bottom of the floor, four layers of 2,5 mm intumescent strips (10,0 x 30 mm); The gap between external edges of mineral wool boards and pipe (around the pipe) filled from both sides with Polylock K
16	Plastic pipe PVC-U, diameter Ø 50 mm, pipe wall thickness 5,6 mm	50 mm	PS collar DN50 at the bottom of the floor, two layers of 2,5 mm intumescent strips (5,0 x 30 mm); The gap between external edges of mineral wool boards and pipe (around the pipe) filled from both sides with Polylock K
17	Plastic pipe PP-R, diameter Ø 50 mm, pipe wall thickness 1,8 mm	50 mm	PS collar DN50 at the bottom of the floor, two layers of 2,5 mm intumescent strips (5,0 x 30 mm); The gap between external edges of mineral wool boards and pipe (around the pipe) filled from both sides with Polylock K
18	Plastic pipe PP-R, diameter Ø 50 mm, pipe wall thickness 4,6 mm	50 mm	PS collar DN50 at the bottom of the floor, two layers of 2,5 mm intumescent strips (5,0 x 30 mm); The gap between external edges of mineral wool boards and pipe (around the pipe) filled from both sides with Polylock K
19	Steel pipe, diameter Ø 60 mm, pipe wall thickness 2,0 mm, with combustible insulation K-Flex ST with thickness of 40 mm, continuous pipe insulation	159 mm	PS Bandage from both sides, two layers (4,0 x 125 mm); The gap between external edges of mineral wool boards and PS Bandage filled from both sides with Polylock K; The surface of PS Bandage, which isn't covered by mineral wool boards, covered with 0,3 mm thick layer of Polylock F
20	Steel pipe, diameter Ø 100 mm, pipe wall thickness 2,5 mm, with combustible insulation K-Flex ST with thickness of 25 mm, continuous pipe insulation	155 mm	PS Bandage from both sides, two layers (4,0 x 125 mm); The gap between external edges of mineral wool boards and PS Bandage filled from both sides with Polylock K; The surface of PS Bandage, which isn't covered by mineral wool boards, covered with 0,3 mm thick layer of Polylock F
21	Steel pipe, diameter Ø 60 mm, pipe wall thickness 2,0 mm, with combustible insulation NH/Armaflex with thickness of 40 mm, continuous pipe insulation	159 mm	PS Bandage from both sides, two layers (4,0 x 125 mm); The gap between external edges of mineral wool boards and PS Bandage filled from both sides with Polylock K; The surface of PS Bandage, which isn't covered by mineral wool boards, covered with 0,3 mm thick layer of Polylock F
Polylock F, Polylock K, Polylock KG, PS Bandage			Annex B4 of European Technical Assessment ETA-18/0171
Types of services with details of penetration seal in floor			

Table B4. cont'd. Types of services with details of penetration seal in floor			
No.	Type of service	Diameter of the opening	Details of penetration seal
22	Steel pipe, diameter Ø 100 mm, pipe wall thickness 2,5 mm, with combustible insulation NH/Armaflex with thickness of 25 mm, continuous pipe insulation	165 mm	PS Bandage from both sides, two layers (4,0 x 125 mm); The gap between external edges of mineral wool boards and PS Bandage filled from both sides with Polylock K; The surface of PS Bandage, which isn't covered by mineral wool boards, covered with 0,3 mm thick layer of Polylock F
23	Copper pipe, diameter Ø 18 mm, pipe wall thickness 1,0 mm, with combustible insulation NH/Armaflex with thickness of 13 mm, continuous pipe insulation	49 mm	PS Bandage from both sides, one layer (2,0 x 125 mm); The gap between external edges of mineral wool boards and PS Bandage filled from both sides with Polylock K; The surface of PS Bandage, which isn't covered by mineral wool boards, covered with 0,3 mm thick layer of Polylock F
24	Copper pipe, diameter Ø 28 mm, pipe wall thickness 1,0 mm, with combustible insulation NH/Armaflex with thickness of 25 mm, continuous pipe insulation	88 mm	PS Bandage from both sides, two layers (4,0 x 125 mm); The gap between external edges of mineral wool boards and PS Bandage filled from both sides with Polylock K; The surface of PS Bandage, which isn't covered by mineral wool boards, covered with 0,3 mm thick layer of Polylock F
25	Steel pipe, diameter Ø 130 mm, pipe wall thickness 4,0 mm, with non-combustible stone wool insulation with thickness of 30 mm, continuous pipe insulation	198 mm	The gap between external edges of mineral wool boards and pipe (around the insulation) filled from both sides with Polylock K
Polylock F, Polylock K, Polylock KG, PS Bandage			Annex B4 of European Technical Assessment ETA-18/0171
Types of services with details of penetration seal in floor			

Fig. C1. Single cables and cable bundles in cable trays in penetration seal in flexible or rigid wall



- I flexible or rigid wall with thickness ≥ 100 mm
- II stone mineral wool board with thickness ≥ 60 mm and density ≥ 150 kg/m³
- III coating of Polyack F; thickness $\geq 0,5$ mm
- VIII sealing of Polyack KG

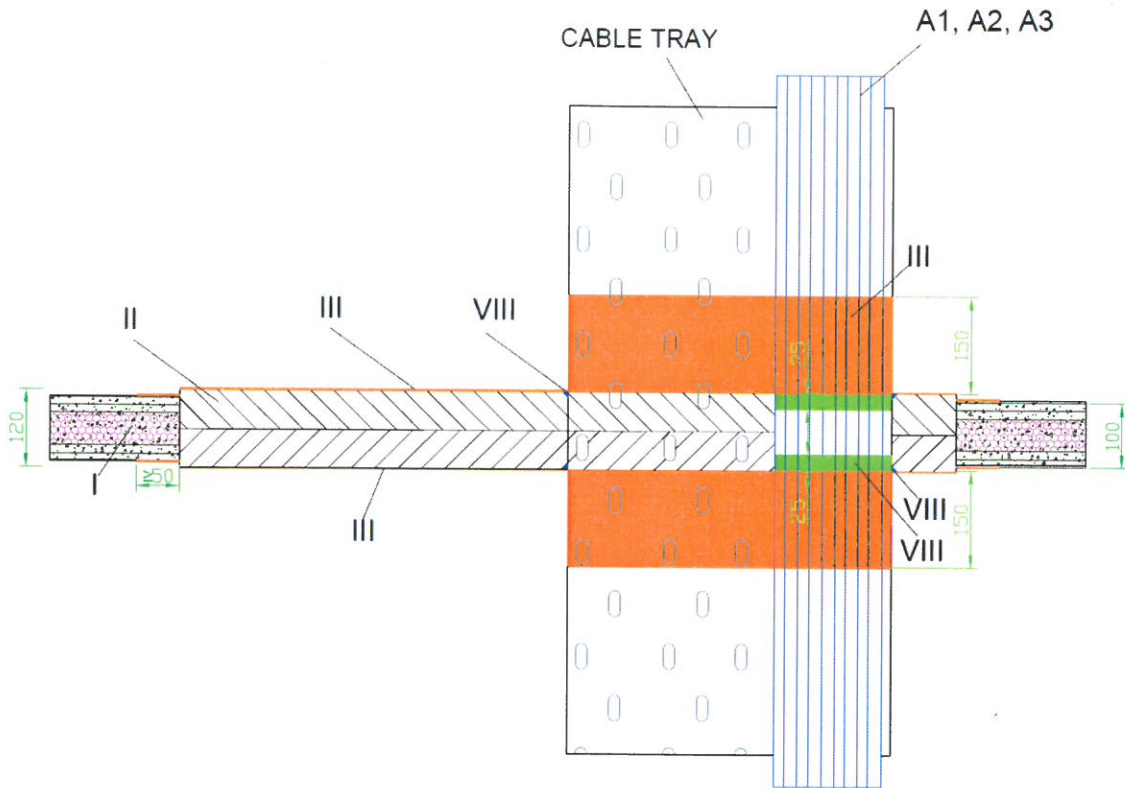
Polyack F, Polyack K, Polyack KG, PS Bandage	Annex C1 of European Technical Assessment ETA-18/0171
Construction details of penetration seals Single cables and cable bundles penetration seal in flexible or rigid wall	

Resistance to fire classification of single cables and cable bundles in mixed penetration seals in flexible or rigid wall, made in accordance with fig. C1 and Annex B.

No.	Type of service	Fire resistance class
D3	Cable N2XH-J 4 x 185 SM; Tray 200 mm	EI 120 / E 120
2 x E	2 x cable N-YY-O 1 x 185 RM; Tray 200 mm	EI 90 / E 120
C1	Cable NYCWY 4 x 95 SM/50; Tray 300 mm	EI 90 / E 120
2 x B	2 x cable NYY-O 1 x 95 RM; Tray 300 mm	EI 120 / E 120
F	Bundle of telecommunication cables, J-Y(St)Y 20 x 2 x 0,6 mm, diameter Ø 100 mm; Tray 300 mm	EI 120 / E 120

Polylack F, Polylack K, Polylack KG, PS Bandage	Annex C2
<p style="text-align: center;">Resistance to fire classification of penetration seals Single cables and cable bundles penetration seals in flexible or rigid wall</p>	<p>of European Technical Assessment ETA-18/0171</p>

Fig. C2. Cable bundles in cable trays in penetration seal in flexible or rigid wall



- I flexible or rigid wall with thickness ≥ 100 mm
- II stone mineral wool board with thickness ≥ 60 mm and density ≥ 150 kg/m³
- III coating of Polylack F; thickness $\geq 0,5$ mm
- VIII sealing of Polylack KG

<p>Polylack F, Polylack K, Polylack KG, PS Bandage</p>	<p>Annex C4</p>
<p>Construction details of penetration seals Cable bundles penetration seal in flexible or rigid wall</p>	<p>of European Technical Assessment ETA-18/0171</p>

Resistance to fire classification cable bundles in mixed penetration seals in flexible or rigid wall, made in accordance with fig. C2 and Annex B.

No.	Type of service	Fire resistance class
A1	Bundle of cables NYY-J 5 x 1,5 RE, 10 pieces of cables in the bundle; Tray 500 mm	EI 120 / E 120
A2	Bundle of cables H07RN-F 5G1,5, 10 pieces of cables in the bundle; Tray 500 mm	EI 120 / E 120
A3	Bundle of cables N2XH-O 5 x 1,5 RE, 10 pieces of cables in the bundle; Tray 500 mm	EI 120 / E 120

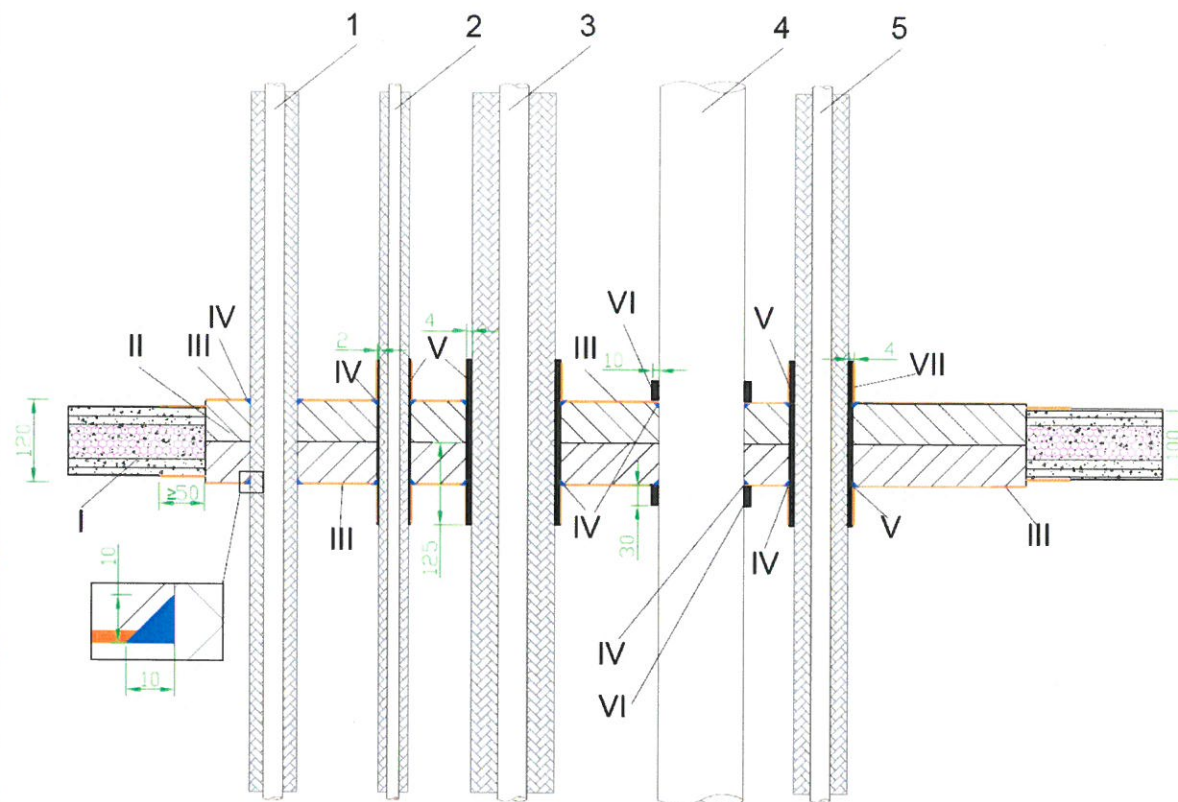
Polylack F, Polylack K, Polylack KG, PS Bandage

Construction details of penetration seals
Cable bundles penetration seals in flexible or rigid wall

Annex C5

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Fig. C3. Copper and plastic pipes in penetration seal in flexible or rigid wall



- I flexible or rigid wall with thickness ≥ 100 mm
- II stone mineral wool board with thickness ≥ 60 mm and density ≥ 150 kg/m³
- III coating of Polylack F; thickness $\geq 0,5$ mm
- IV sealing of Polylack K
- V PS Bandage
- VI PS collar
- VII coating of Polylack F; thickness $\geq 0,3$ mm

Polylack F, Polylack K, Polylack KG, PS Bandage	Annex C6 of European Technical Assessment ETA-18/0171
Construction details of penetration seals Copper and plastic pipes penetration seal in flexible or rigid wall	

Resistance to fire classification of copper and plastic pipes in mixed penetration seals in flexible or rigid wall, made in accordance with fig. C3 and Annex B.

No.	Type of service	Fire resistance class
1	Copper pipe, diameter Ø 28 mm, pipe wall thickness 1,0 mm, with non-combustible stone wool insulation with thickness of 20 mm, continuous pipe insulation	EI 120 – C/U, E 120 – C/U EI 120 – C/C, E 120 – C/C
2	Copper pipe, diameter Ø 18 mm, pipe wall thickness 1,0 mm, with combustible insulation K-Flex ST with thickness of 13 mm, continuous pipe insulation	EI 120 – C/U, E 120 – C/U EI 120 – C/C, E 120 – C/C
3	Copper pipe, diameter Ø 42 mm, pipe wall thickness 1,5 mm, with combustible insulation K-Flex ST with thickness of 40 mm, continuous pipe insulation	EI 120 – C/U, E 120 – C/U EI 120 – C/C, E 120 – C/C
4	Plastic pipe PE-HD, diameter Ø 125 mm, pipe wall thickness 4,6 mm	EI 120 – U/C, E 120 – U/C EI 120 – C/C, E 120 – C/C
5	Copper pipe, diameter Ø 28 mm, pipe wall thickness 1,0 mm, with combustible insulation K-Flex ST with thickness of 25 mm, continuous pipe insulation	EI 120 – C/U, E 120 – C/U EI 120 – C/C, E 120 – C/C

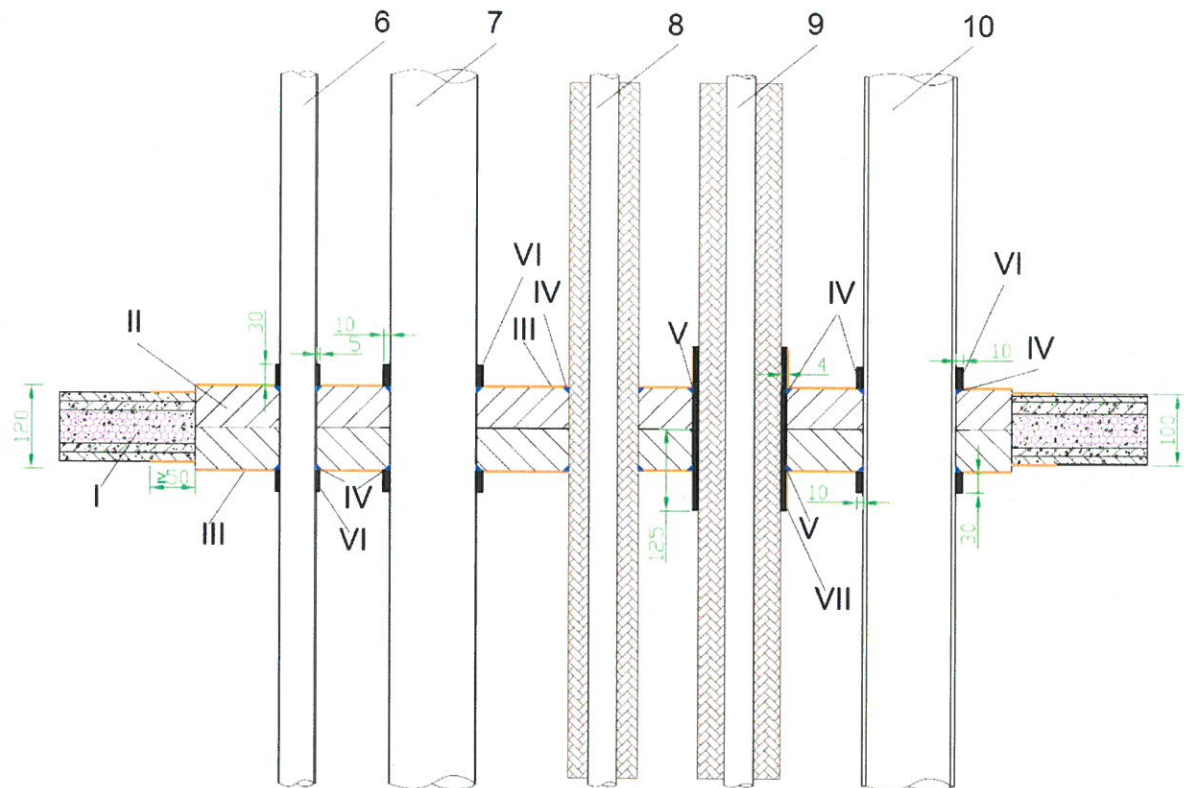
Polylack F, Polylack K, Polylack KG, PS Bandage

Annex C7

Resistance to fire classification of penetration seals
Copper and plastic pipes penetration seals in flexible or rigid wall

of European
Technical Assessment
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Fig. C4. Copper and plastic pipes in penetration seal in flexible or rigid wall



- I flexible or rigid wall with thickness ≥ 100 mm
- II stone mineral wool board with thickness ≥ 60 mm and density ≥ 150 kg/m³
- III coating of Polylack F; thickness $\geq 0,5$ mm
- IV sealing of Polylack K
- V PS Bandage
- VI PS collar
- VII coating of Polylack F; thickness $\geq 0,3$ mm

Polylack F, Polylack K, Polylack KG, PS Bandage

Annex C8

Construction details of penetration seals
Copper and plastic pipes penetration seal in flexible or rigid wall

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Technical Assessment
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Resistance to fire classification of plastic or copper pipes in mixed penetration seals in flexible or rigid wall, made in accordance with fig. C4 and Annex B.

No.	Type of service	Fire resistance class
6	Plastic pipe PE-HD, diameter Ø 50 mm, pipe wall thickness 3,0 mm	EI 120 – U/C, E 120 – U/C EI 120 – C/C, E 120 – C/C
7	Plastic pipe PVC-U, diameter Ø 125 mm, pipe wall thickness 2,5 mm	EI 120 – U/C, E 120 – U/C EI 120 – C/C, E 120 – C/C
8	Copper pipe, diameter Ø 42 mm, pipe wall thickness 1,5 mm, with non-combustible stone wool insulation with thickness of 30 mm, continuous pipe insulation	EI 120 – C/U, E 120 – C/U EI 120 – C/C, E 120 – C/C
9	Copper pipe, diameter Ø 42 mm, pipe wall thickness 1,5 mm, with combustible insulation NH/Armaflex with thickness of 40 mm, continuous pipe insulation	EI 120 – C/U, E 120 – C/U EI 120 – C/C, E 120 – C/C
10	Plastic pipe PP-R, diameter Ø 125 mm, pipe wall thickness 12,5 mm	EI 120 – U/C, E 120 – U/C EI 120 – C/C, E 120 – C/C

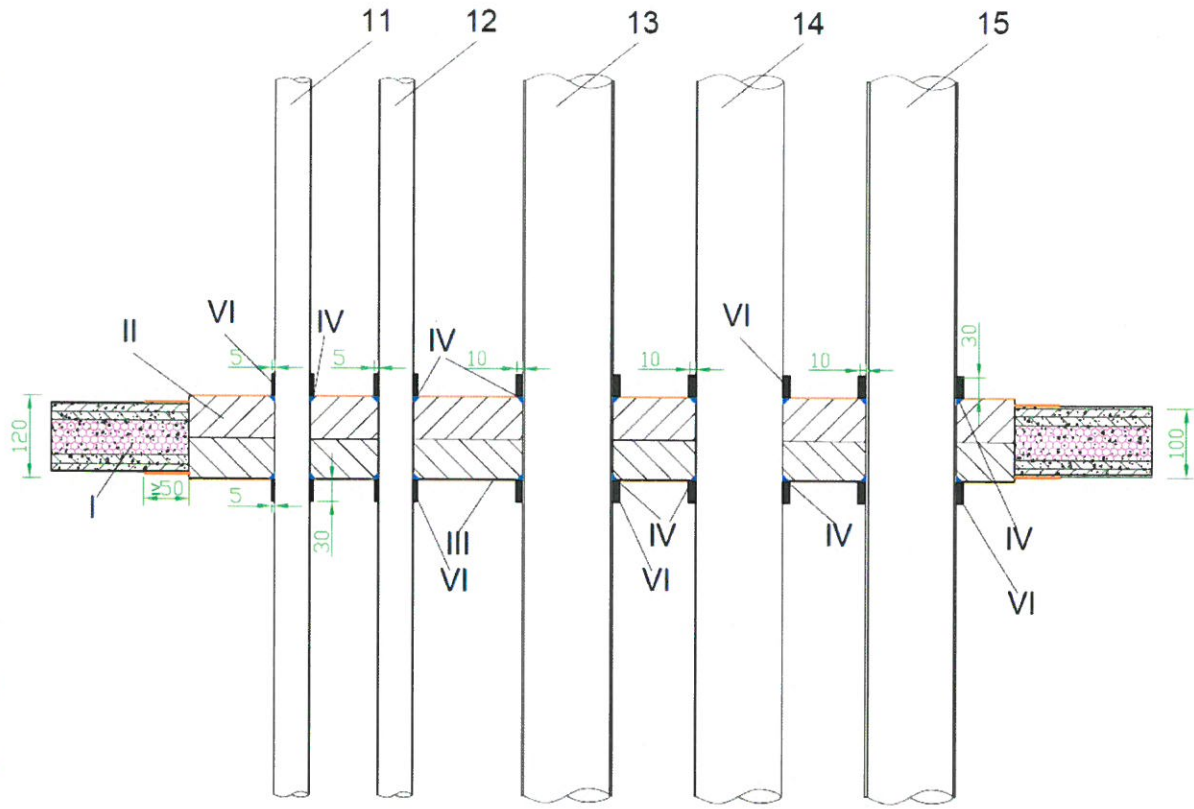
Polylack F, Polylack K, Polylack KG, PS Bandage

Annex C9

Resistance to fire classification of penetration seals
Copper and plastic pipes penetration seals in flexible or rigid wall

of European
Technical Assessment
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Fig. C5. Plastic pipes in penetration seal in flexible or rigid wall



- I flexible or rigid wall with thickness ≥ 100 mm
- II stone mineral wool board with thickness ≥ 60 mm and density ≥ 150 kg/m³
- III coating of Polylack F; thickness $\geq 0,5$ mm
- IV sealing of Polylack K
- VI PS collar

Polylack F, Polylack K, Polylack KG, PS Bandage

Construction details of penetration seals
Plastic pipes penetration seal in flexible or rigid wall

Annex C10

of European
Technical Assessment
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Resistance to fire classification of plastic pipes in mixed penetration seals in flexible or rigid wall, made in accordance with fig. C5 and Annex B.

No.	Type of service	Fire resistance class
11	Plastic pipe PVC-U, diameter Ø 50 mm, pipe wall thickness 1,8 mm	EI 120 – U/C, E 120 – U/C EI 120 – C/C, E 120 – C/C
12	Plastic pipe PE-HD, diameter Ø 50 mm, pipe wall thickness 4,8 mm	EI 120 – U/C, E 120 – U/C EI 120 – C/C, E 120 – C/C
13	Plastic pipe PE-HD, diameter Ø 125 mm, pipe wall thickness 11,4 mm	EI 120 – U/C, E 120 – U/C EI 120 – C/C, E 120 – C/C
14	Plastic pipe PP-R, diameter Ø 125 mm, pipe wall thickness 4,6 mm	EI 120 – U/C, E 120 – U/C EI 120 – C/C, E 120 – C/C
15	Plastic pipe PVC-U, diameter Ø 125 mm, pipe wall thickness 7,4 mm	EI 120 – U/C, E 120 – U/C EI 120 – C/C, E 120 – C/C

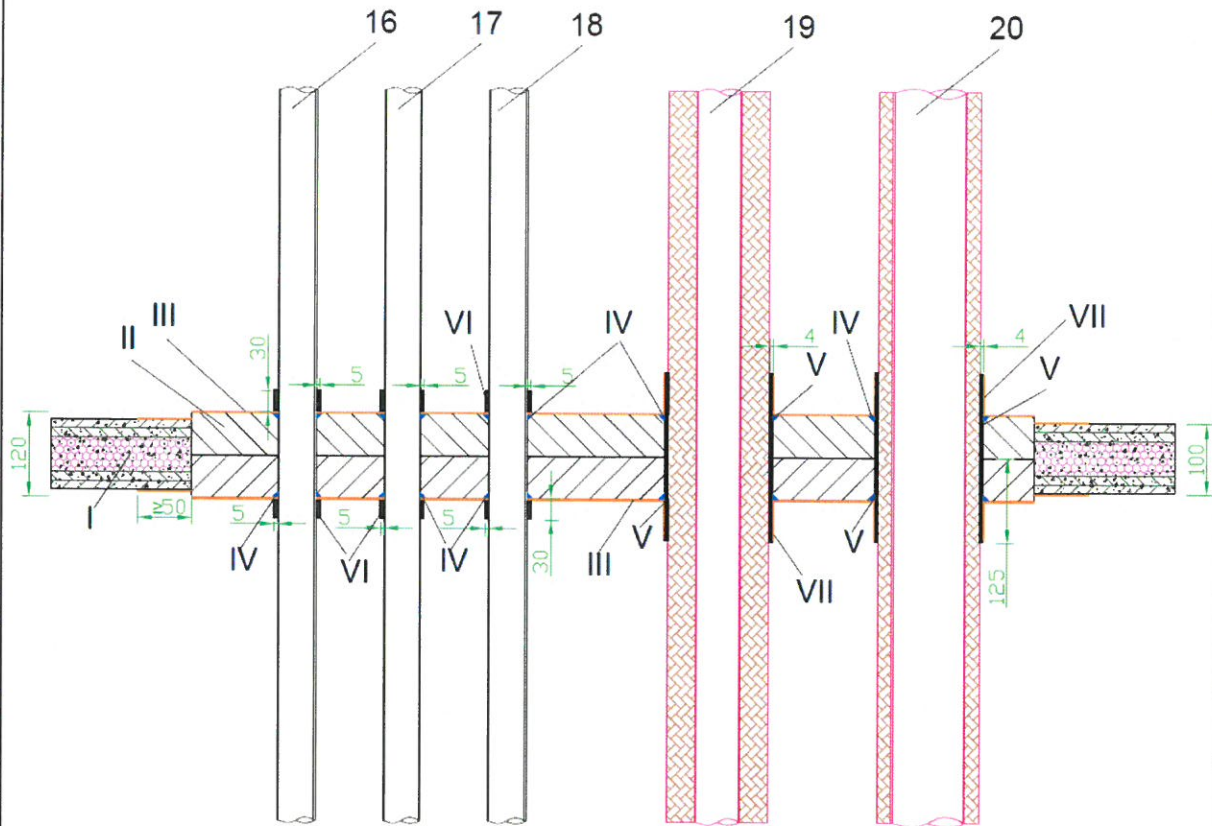
Polylack F, Polylack K, Polylack KG, PS Bandage

Annex C11

Resistance to fire classification of penetration seals
Plastic pipes penetration seals in flexible or rigid wall

of European
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Fig. C6. Steel and plastic pipes in penetration seal in flexible or rigid wall



- I flexible or rigid wall with thickness ≥ 100 mm
- II stone mineral wool board with thickness ≥ 60 mm and density ≥ 150 kg/m³
- III coating of Polylack F; thickness $\geq 0,5$ mm
- IV sealing of Polylack K
- V PS Bandage
- VI PS collar
- VII coating of Polylack F; thickness $\geq 0,3$ mm

Polylack F, Polylack K, Polylack KG, PS Bandage

Annex C12

Construction details of penetration seals
Steel and plastic pipes penetration seal in flexible or rigid wall

of European
Technical Assessment
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Resistance to fire classification of steel and plastic pipes in mixed penetration seals in flexible or rigid wall, made in accordance with fig. C6 and Annex B.

No.	Type of service	Fire resistance class
16	Plastic pipe PVC-U, diameter Ø 50 mm, pipe wall thickness 5,6 mm	EI 120 – U/C, E 120 – U/C EI 120 – C/C, E 120 – C/C
17	Plastic pipe PP-R, diameter Ø 50 mm, pipe wall thickness 1,8 mm	EI 120 – U/C, E 120 – U/C EI 120 – C/C, E 120 – C/C
18	Plastic pipe PP-R, diameter Ø 50 mm, pipe wall thickness 4,6 mm	EI 120 – U/C, E 120 – U/C EI 120 – C/C, E 120 – C/C
19	Steel pipe, diameter Ø 60 mm, pipe wall thickness 2,0 mm, with combustible insulation K-Flex ST with thickness of 40 mm, continuous pipe insulation	EI 120 – C/U, E 120 – C/U EI 120 – C/C, E 120 – C/C
20	Steel pipe, diameter Ø 100 mm, pipe wall thickness 2,5 mm, with combustible insulation K-Flex ST with thickness of 25 mm, continuous pipe insulation	EI 120 – C/U, E 120 – C/U EI 120 – C/C, E 120 – C/C

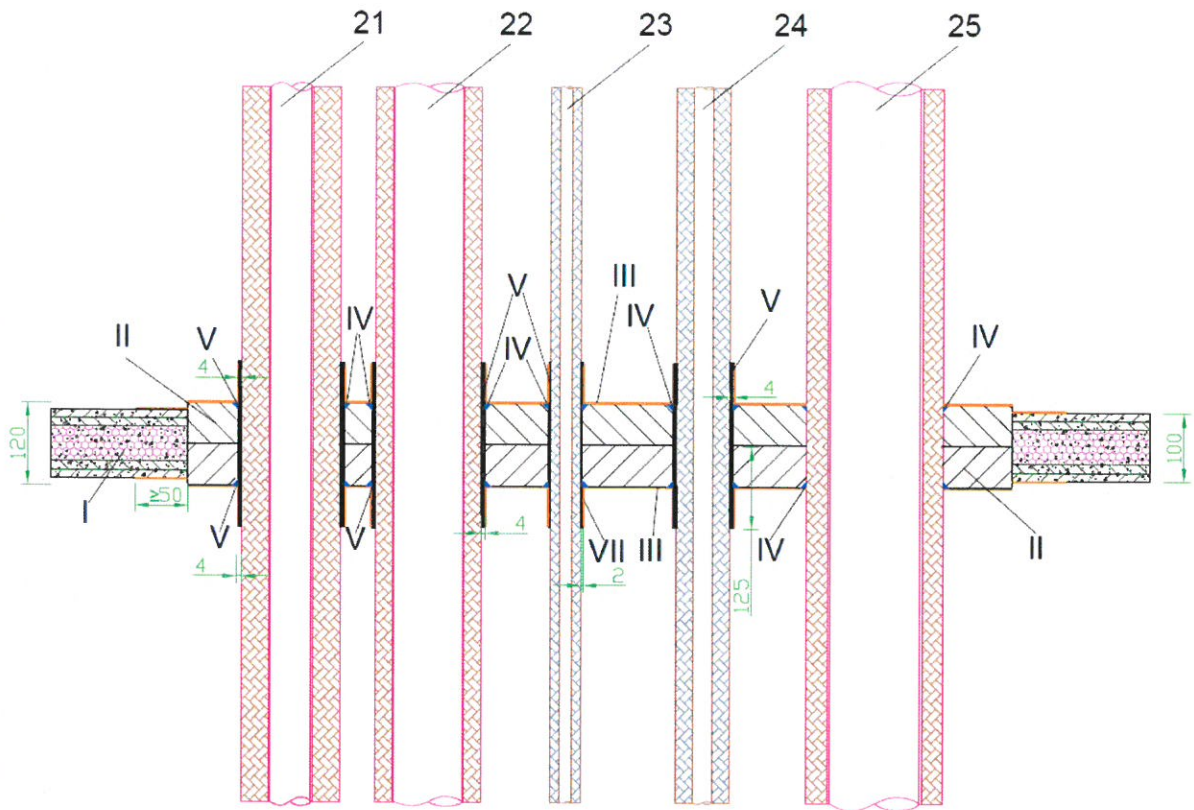
Polylack F, Polylack K, Polylack KG, PS Bandage

Annex C13

Resistance to fire classification of penetration seals
Steel and plastic pipes penetration seals in flexible or rigid wall

of European
Technical Assessment
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Fig. C7. Steel and copper pipes in penetration seal in flexible or rigid wall



- I flexible or rigid wall with thickness ≥ 100 mm
- II stone mineral wool board with thickness ≥ 60 mm and density ≥ 150 kg/m³
- III coating of Polylack F; thickness $\geq 0,5$ mm
- IV sealing of Polylack K
- V PS Bandage
- VII coating of Polylack F; thickness $\geq 0,3$ mm

Polylack F, Polylack K, Polylack KG, PS Bandage

Annex C14

Construction details of penetration seals
Steel and copper pipes penetration seal in flexible or rigid wall

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Resistance to fire classification of steel and copper pipes in mixed penetration seals in flexible or rigid wall, made in accordance with fig. C7 and Annex B.

No.	Type of service	Fire resistance class
21	Steel pipe, diameter Ø 60 mm, pipe wall thickness 2,0 mm, with combustible insulation NH/Armaflex with thickness of 40 mm, continuous pipe insulation	EI 120 – C/U, E 120 – C/U EI 120 – C/C, E 120 – C/C
22	Steel pipe, diameter Ø 100 mm, pipe wall thickness 2,5 mm, with combustible insulation NH/Armaflex with thickness of 25 mm, continuous pipe insulation	EI 120 – C/U, E 120 – C/U EI 120 – C/C, E 120 – C/C
23	Copper pipe, diameter Ø 18 mm, pipe wall thickness 1,0 mm, with combustible insulation NH/Armaflex with thickness of 13 mm, continuous pipe insulation	EI 120 – C/U, E 120 – C/U EI 120 – C/C, E 120 – C/C
24	Copper pipe, diameter Ø 28 mm, pipe wall thickness 1,0 mm, with combustible insulation NH/Armaflex with thickness of 25 mm, continuous pipe insulation	EI 120 – C/U, E 120 – C/U EI 120 – C/C, E 120 – C/C
25	Steel pipe, diameter Ø 130 mm, pipe wall thickness 4,0 mm, with non-combustible stone wool insulation with thickness of 30 mm, continuous pipe insulation	EI 120 – C/U, E 120 – C/U EI 120 – C/C, E 120 – C/C

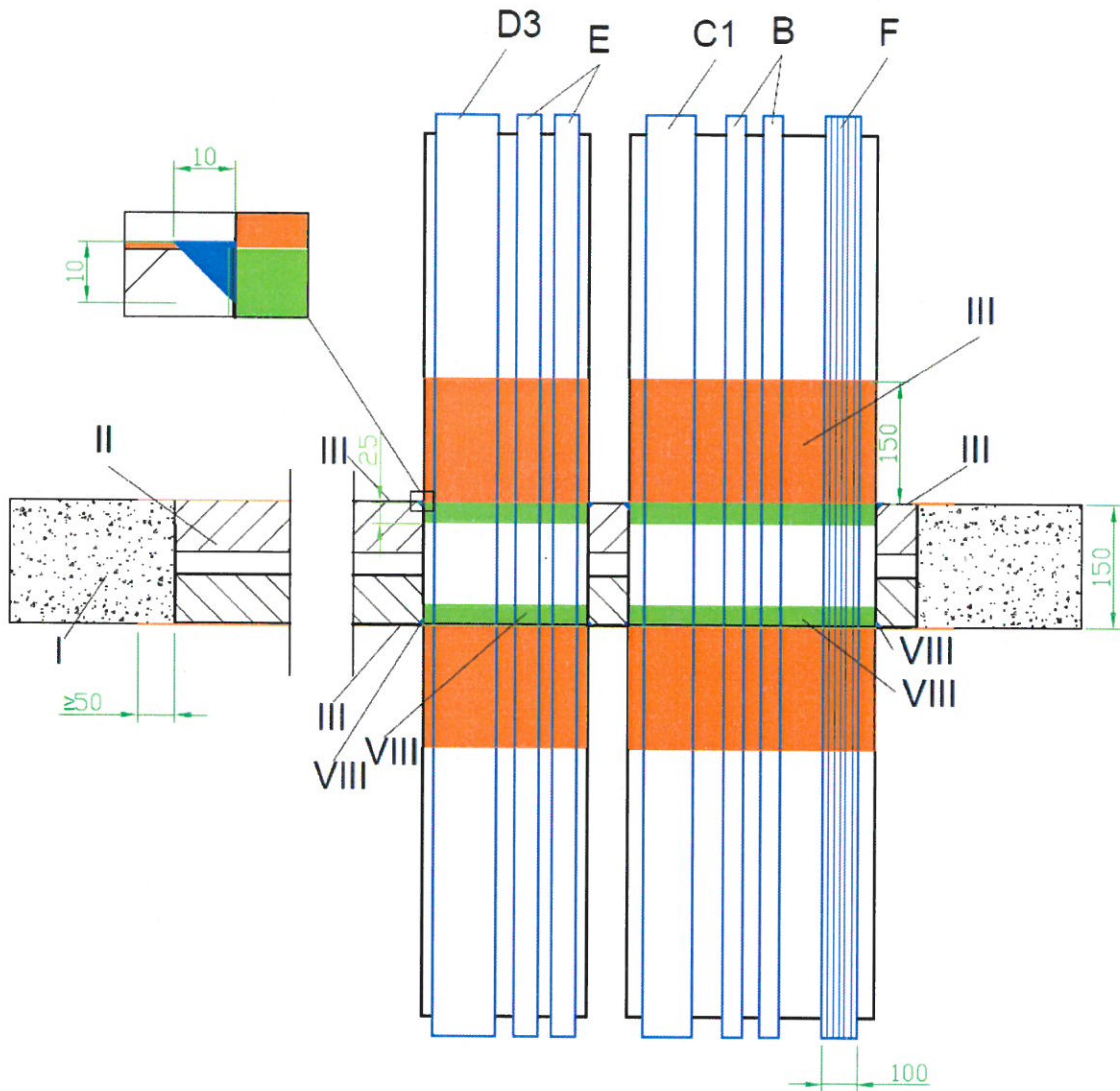
Polylack F, Polylack K, Polylack KG, PS Bandage

Annex C15

Resistance to fire classification of penetration seals
Steel and copper pipes penetration seals in flexible or rigid wall

of European
Technical Assessment
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Fig. C8. Single cables and cable bundles in cable trays in penetration seal in rigid floor



- I rigid floor with thickness ≥ 150 mm
- II stone mineral wool board with thickness ≥ 60 mm and density $\geq 150 \text{ kg/m}^3$
- III coating of Polylack F; thickness $\geq 0,5$ mm
- VIII sealing of Polylack KG

Polylack F, Polylack K, Polylack KG, PS Bandage	Annex C16 of European Technical Assessment ETA-18/0171
Construction details of penetration seals Single cables and cable bundles penetration seal in rigid floor	

Resistance to fire classification of single cables and cable bundles in mixed penetration seals in rigid floor, made in accordance with fig. C8 and Annex B.

No.	Type of service	Fire resistance class
D3	Cable N2XH-J 4 x 185 SM; Tray 200 mm	EI 120 / E 120
2 x E	2 x cable N-YY-O 1 x 185 RM; Tray 200 mm	EI 120 / E 120
C1	Cable NYCWY 4 x 95 SM/50; Tray 300 mm	EI 120 / E 120
2 x B	2 x cable NYY-O 1 x 95 RM; Tray 300 mm	EI 120 / E 120
F	Bundle of telecommunication cables, J-Y(St)Y 20 x 2 x 0,6 mm, diameter Ø 100 mm; Tray 300 mm	EI 120 / E 120

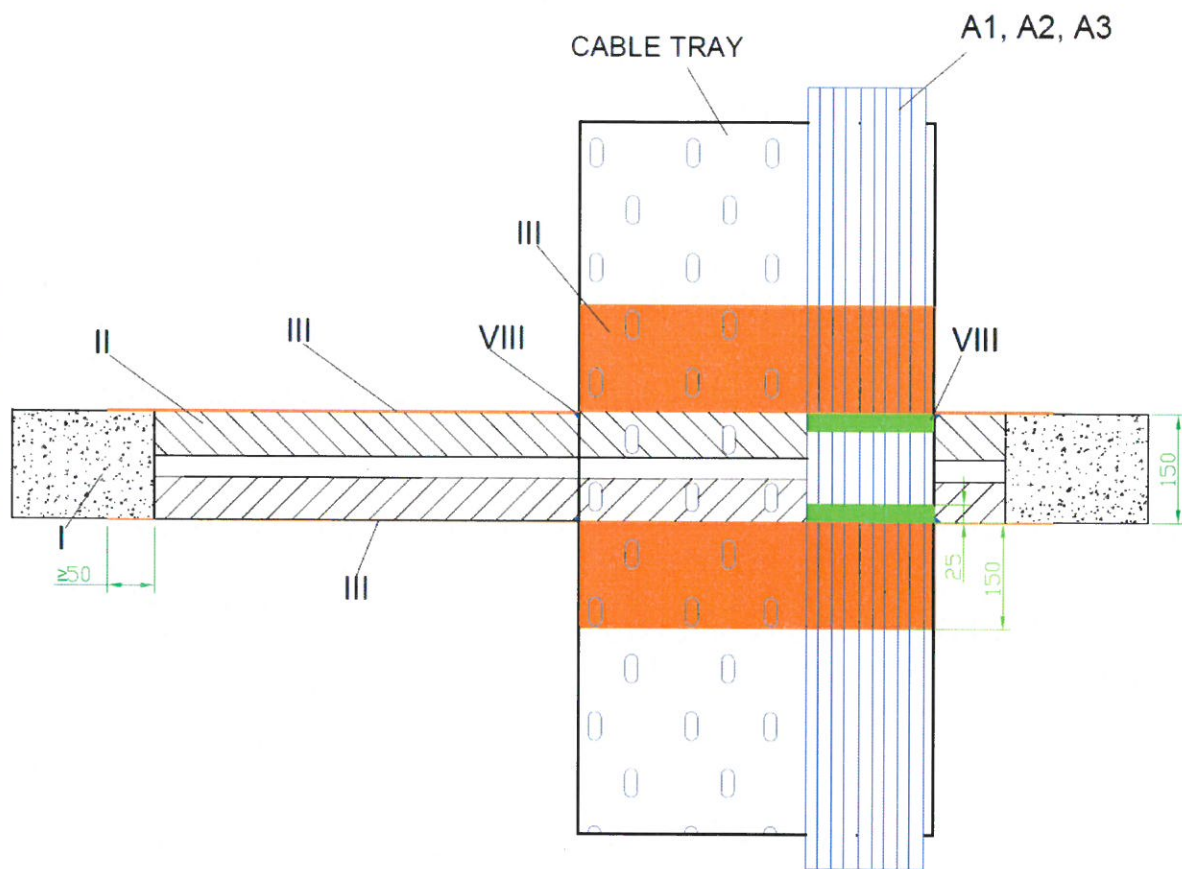
Polylack F, Polylack K, Polylack KG, PS Bandage

Annex C17

Resistance to fire classification of penetration seals
Single cables and cable bundles penetration seals in rigid floor

of European
Technical Assessment
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Fig. C9. Cable bundles in cable trays in penetration seal in rigid floor



- I rigid floor with thickness ≥ 150 mm
- II stone mineral wool board with thickness ≥ 60 mm and density ≥ 150 kg/m³
- III coating of Polylack F; thickness $\geq 0,5$ mm
- VIII sealing of Polylack KG

Polylack F, Polylack K, Polylack KG, PS Bandage	Annex C18 of European Technical Assessment ETA-18/0171
Construction details of penetration seals Cable bundles penetration seal in rigid floor	

Resistance to fire classification of single cables and cable bundles in mixed penetration seals in rigid floor, made in accordance with fig. C9 and Annex B.

No.	Type of service	Fire resistance class
A1	Bundle of cables NYY-J 5 x 1,5 RE, 10 pieces of cables in the bundle; Tray 500 mm	EI 120 / E 120
A2	Bundle of cables H07RN-F 5G1,5, 10 pieces of cables in the bundle; Tray 500 mm	EI 120 / E 120
A3	Bundle of cables N2XH-O 5 x 1,5 RE, 10 pieces of cables in the bundle; Tray 500 mm	EI 120 / E 120

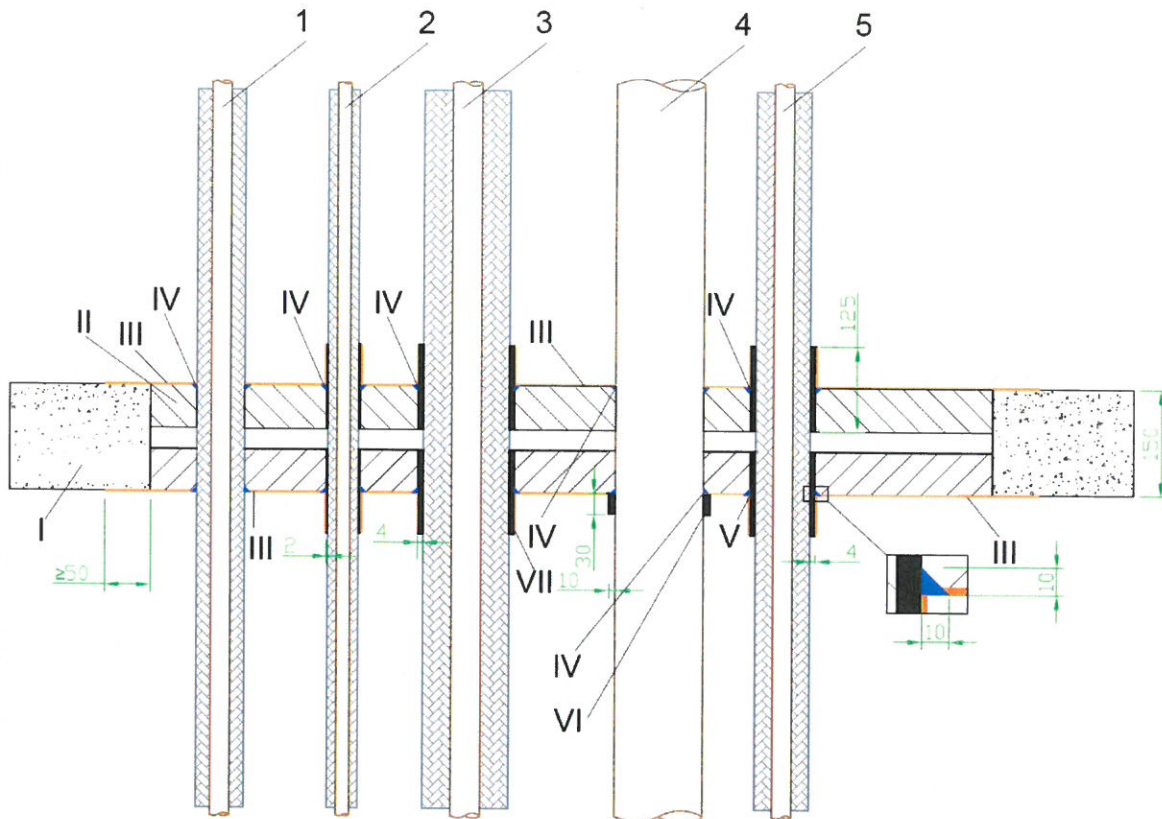
Polylack F, Polylack K, Polylack KG, PS Bandage

Annex C19

Resistance to fire classification of penetration seals
Cable bundles penetration seals in rigid floor

of European
Technical Assessment
ETA-18/0171

Fig. C10. Copper and plastic pipes in penetration seal in rigid floor



- I rigid floor with thickness ≥ 150 mm
- II stone mineral wool board with thickness ≥ 60 mm and density ≥ 150 kg/m³
- III coating of Polylack F; thickness $\geq 0,5$ mm
- IV sealing of Polylack K
- V PS Bandage
- VI PS collar
- VII coating of Polylack F; thickness $\geq 0,3$ mm

Polylack F, Polylack K, Polylack KG, PS Bandage

Construction details of penetration seals
Copper and plastic pipes penetration seal in rigid floor

Annex C20

of European
Technical Assessment
ETA-18/0171

Resistance to fire classification of single cables and cable bundles in mixed penetration seals in rigid floor, made in accordance with fig. C10 and Annex B.

No.	Type of service	Fire resistance class
1	Copper pipe, diameter Ø 28 mm, pipe wall thickness 1,0 mm, with non-combustible stone wool insulation with thickness of 20 mm, continuous pipe insulation	EI 120 – C/U, E 120 – C/U EI 120 – C/C, E 120 – C/C
2	Copper pipe, diameter Ø 18 mm, pipe wall thickness 1,0 mm, with combustible insulation K-Flex ST with thickness of 13 mm, continuous pipe insulation	EI 120 – C/U, E 120 – C/U EI 120 – C/C, E 120 – C/C
3	Copper pipe, diameter Ø 42 mm, pipe wall thickness 1,5 mm, with combustible insulation K-Flex ST with thickness of 40 mm, continuous pipe insulation	EI 120 – C/U, E 120 – C/U EI 120 – C/C, E 120 – C/C
4	Plastic pipe PE-HD, diameter Ø 125 mm, pipe wall thickness 4,6 mm	EI 120 – U/C, E 120 – U/C EI 120 – C/C, E 120 – C/C
5	Copper pipe, diameter Ø 28 mm, pipe wall thickness 1,0 mm, with combustible insulation K-Flex ST with thickness of 25 mm, continuous pipe insulation	EI 120 – C/U, E 120 – C/U EI 120 – C/C, E 120 – C/C

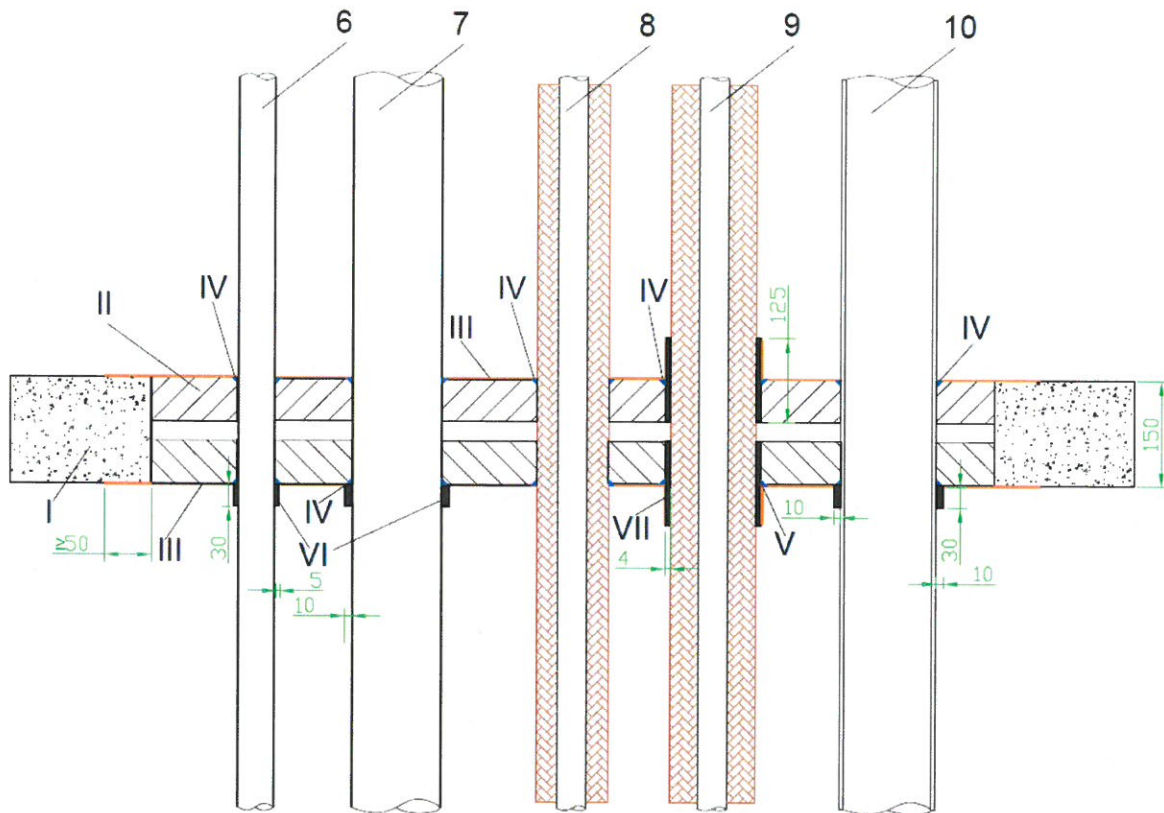
Polylack F, Polylack K, Polylack KG, PS Bandage

Annex C21

Resistance to fire classification of penetration seals
Copper and plastic pipes penetration seals in rigid floor

of European
Technical Assessment
ETA-18/0171

Fig. C11. Copper and plastic pipes in penetration seal in rigid floor



- I rigid floor with thickness ≥ 150 mm
- II stone mineral wool board with thickness ≥ 60 mm and density ≥ 150 kg/m³
- III coating of Polylack F; thickness $\geq 0,5$ mm
- IV sealing of Polylack K
- V PS Bandage
- VI PS collar
- VII coating of Polylack F; thickness $\geq 0,3$ mm

Polylack F, Polylack K, Polylack KG, PS Bandage

Annex C22

Construction details of penetration seals
Copper and plastic pipes penetration seal in rigid floor

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Resistance to fire classification of plastic or copper pipes in mixed penetration seals in rigid floor, made in accordance with fig. C11 and Annex B.

No.	Type of service	Fire resistance class
6	Plastic pipe PE-HD, diameter Ø 50 mm, pipe wall thickness 3,0 mm	EI 120 – U/C, E 120 – U/C EI 120 – C/C, E 120 – C/C
7	Plastic pipe PVC-U, diameter Ø 125 mm, pipe wall thickness 2,5 mm	EI 120 – U/C, E 120 – U/C EI 120 – C/C, E 120 – C/C
8	Copper pipe, diameter Ø 42 mm, pipe wall thickness 1,5 mm, with non-combustible stone wool insulation with thickness of 30 mm, continuous pipe insulation	EI 120 – C/U, E 120 – C/U EI 120 – C/C, E 120 – C/C
9	Copper pipe, diameter Ø 42 mm, pipe wall thickness 1,5 mm, with combustible insulation NH/Armaflex with thickness of 40 mm, continuous pipe insulation	EI 120 – C/U, E 120 – C/U EI 120 – C/C, E 120 – C/C
10	Plastic pipe PP-R, diameter Ø 125 mm, pipe wall thickness 12,5 mm	EI 90 – U/C, E 90 – U/C EI 90 – C/C, E 90 – C/C

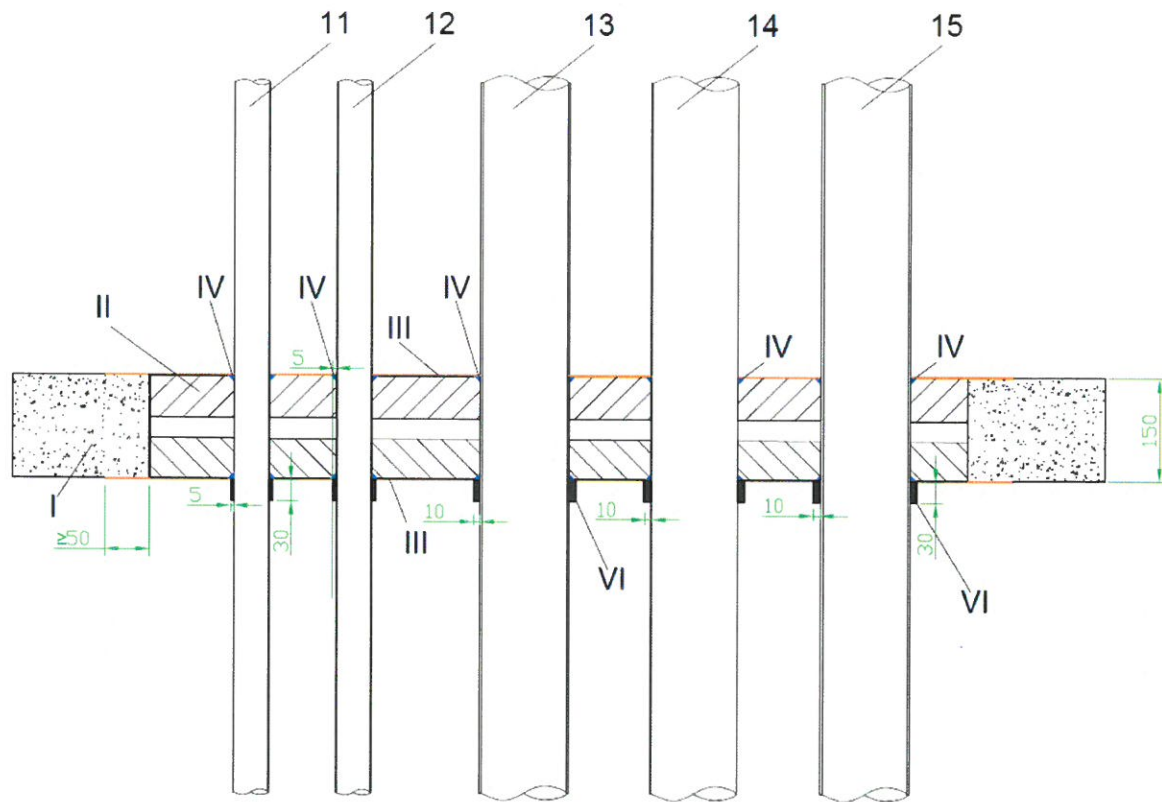
Polylack F, Polylack K, Polylack KG, PS Bandage

Annex C23

Resistance to fire classification of penetration seals
Copper and plastic pipes penetration seals in rigid floor

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Fig. C12. Plastic pipes in penetration seal in rigid floor



- I rigid floor with thickness ≥ 150 mm
- II stone mineral wool board with thickness ≥ 60 mm and density $\geq 150 \text{ kg/m}^3$
- III coating of Polylack F; thickness $\geq 0,5$ mm
- IV sealing of Polylack K
- VI PS collar

Polylack F, Polylack K, Polylack KG, PS Bandage	Annex C24 of European Technical Assessment ETA-18/0171
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Resistance to fire classification of plastic pipes in mixed penetration seals in rigid floor, made in accordance with fig. C12 and Annex B.

No.	Type of service	Fire resistance class
11	Plastic pipe PVC-U, diameter Ø 50 mm, pipe wall thickness 1,8 mm	EI 120 – U/C, E 120 – U/C EI 120 – C/C, E 120 – C/C
12	Plastic pipe PE-HD, diameter Ø 50 mm, pipe wall thickness 4,8 mm	EI 120 – U/C, E 120 – U/C EI 120 – C/C, E 120 – C/C
13	Plastic pipe PE-HD, diameter Ø 125 mm, pipe wall thickness 11,4 mm	EI 120 – U/C, E 120 – U/C EI 120 – C/C, E 120 – C/C
14	Plastic pipe PP-R, diameter Ø 125 mm, pipe wall thickness 4,6 mm	EI 120 – U/C, E 120 – U/C EI 120 – C/C, E 120 – C/C
15	Plastic pipe PVC-U, diameter Ø 125 mm, pipe wall thickness 7,4 mm	EI 120 – U/C, E 120 – U/C EI 120 – C/C, E 120 – C/C

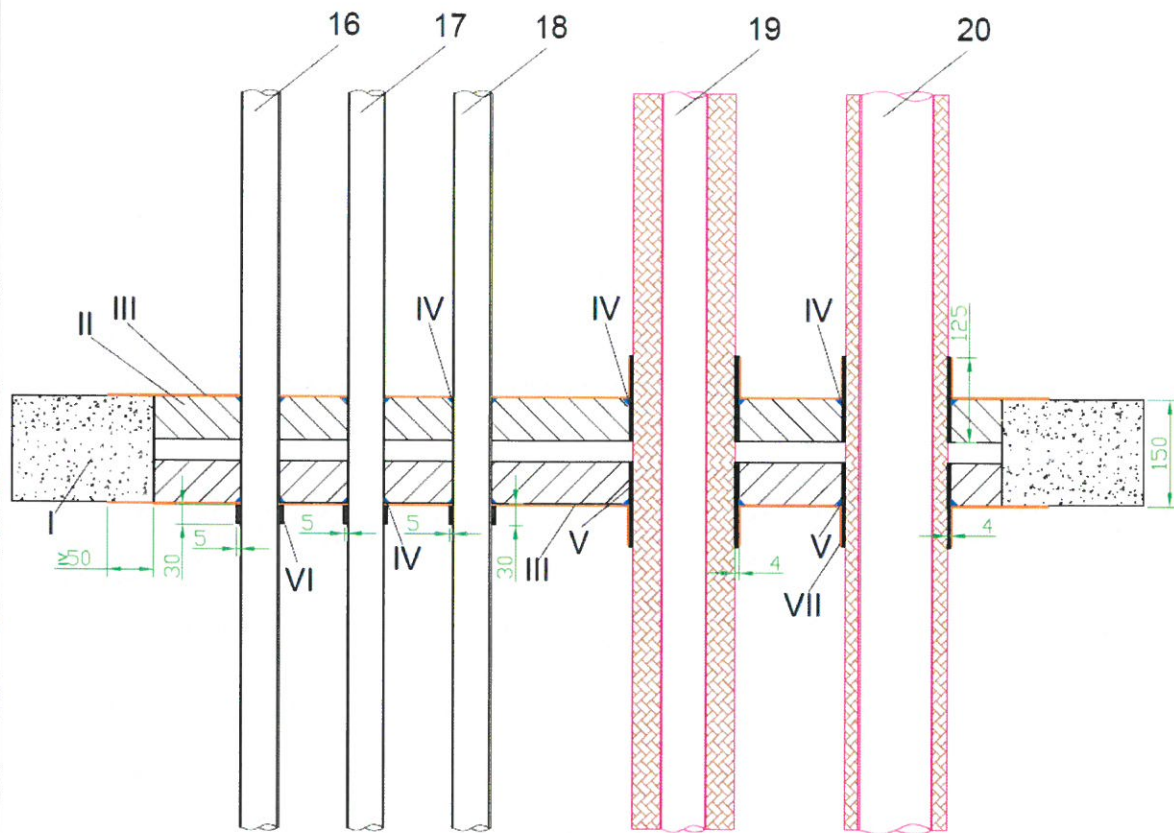
Polylack F, Polylack K, Polylack KG, PS Bandage

Annex C25

Resistance to fire classification of penetration seals
Plastic pipes penetration seals in rigid floor

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Fig. C13. Steel and plastic pipes in penetration seal in rigid floor



- I rigid floor with thickness ≥ 150 mm
- II stone mineral wool board with thickness ≥ 60 mm and density ≥ 150 kg/m³
- III coating of Polylack F; thickness $\geq 0,5$ mm
- IV sealing of Polylack K
- V PS Bandage
- VI PS collar
- VII coating of Polylack F; thickness $\geq 0,3$ mm

Polylack F, Polylack K, Polylack KG, PS Bandage

Annex C26

Construction details of penetration seals
Steel and plastic pipes penetration seal in rigid floor

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Resistance to fire classification of steel and plastic pipes in mixed penetration seals in rigid floor, made in accordance with fig. C13 and Annex B.

No.	Type of service	Fire resistance class
16	Plastic pipe PVC-U, diameter Ø 50 mm, pipe wall thickness 5,6 mm	EI 120 – U/C, E 120 – U/C EI 120 – C/C, E 120 – C/C
17	Plastic pipe PP-R, diameter Ø 50 mm, pipe wall thickness 1,8 mm	EI 120 – U/C, E 120 – U/C EI 120 – C/C, E 120 – C/C
18	Plastic pipe PP-R, diameter Ø 50 mm, pipe wall thickness 4,6 mm	EI 120 – U/C, E 120 – U/C EI 120 – C/C, E 120 – C/C
19	Steel pipe, diameter Ø 60 mm, pipe wall thickness 2,0 mm, with combustible insulation K-Flex ST with thickness of 40 mm, continuous pipe insulation	EI 120 – C/U, E 120 – C/U EI 120 – C/C, E 120 – C/C
20	Steel pipe, diameter Ø 100 mm, pipe wall thickness 2,5 mm, with combustible insulation K-Flex ST with thickness of 25 mm, continuous pipe insulation	EI 120 – C/U, E 120 – C/U EI 120 – C/C, E 120 – C/C

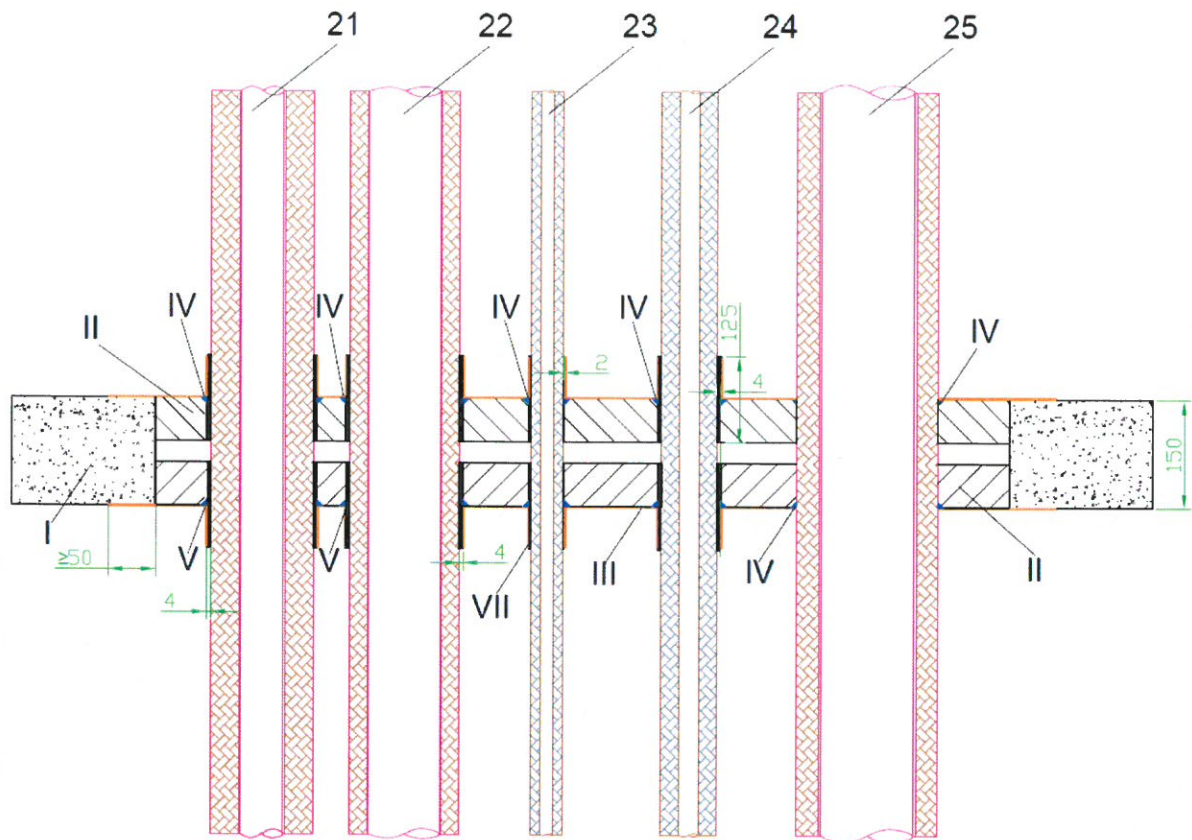
Polylack F, Polylack K, Polylack KG, PS Bandage

Annex C27

Resistance to fire classification of penetration seals
Steel and plastic pipes penetration seals in rigid floor

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Fig. C14. Steel and copper pipes in penetration seal in rigid floor



- I rigid floor with thickness ≥ 150 mm
- II stone mineral wool board with thickness ≥ 60 mm and density ≥ 150 kg/m³
- III coating of Polylack F; thickness $\geq 0,5$ mm
- IV sealing of Polylack K
- V PS Bandage
- VII coating of Polylack F; thickness $\geq 0,3$ mm

Polylack F, Polylack K, Polylack KG, PS Bandage

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Construction details of penetration seals
Steel and copper pipes penetration seal in rigid floor

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Resistance to fire classification of steel and copper pipes in mixed penetration seals in rigid floor, made in accordance with fig. C14 and Annex B.

No.	Type of service	Fire resistance class
21	Steel pipe, diameter Ø 60 mm, pipe wall thickness 2,0 mm, with combustible insulation NH/Armaflex with thickness of 40 mm, continuous pipe insulation	EI 120 – C/U, E 120 – C/U EI 120 – C/C, E 120 – C/C
22	Steel pipe, diameter Ø 100 mm, pipe wall thickness 2,5 mm, with combustible insulation NH/Armaflex with thickness of 25 mm, continuous pipe insulation	EI 120 – C/U, E 120 – C/U EI 120 – C/C, E 120 – C/C
23	Copper pipe, diameter Ø 18 mm, pipe wall thickness 1,0 mm, with combustible insulation NH/Armaflex with thickness of 13 mm, continuous pipe insulation	EI 120 – C/U, E 120 – C/U EI 120 – C/C, E 120 – C/C
24	Copper pipe, diameter Ø 28 mm, pipe wall thickness 1,0 mm, with combustible insulation NH/Armaflex with thickness of 25 mm, continuous pipe insulation	EI 120 – C/U, E 120 – C/U EI 120 – C/C, E 120 – C/C
25	Steel pipe, diameter Ø 130 mm, pipe wall thickness 4,0 mm, with non-combustible stone wool insulation with thickness of 30 mm, continuous pipe insulation	EI 120 – C/U, E 120 – C/U EI 120 – C/C, E 120 – C/C

Polylack F, Polylack K, Polylack KG, PS Bandage

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Resistance to fire classification of penetration seals
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