



European Technical Assessment

ETA 14/0388
of 28/10/19

Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011: Warringtonfire Testing and Certification Ltd.	
Trade name of the construction product	fischer FCPS Coated Panel System
Product family to which the construction product belongs	EC PAC 35 – fire Stopping, Fire Sealing & Fire Protective Products. Fire Retardant Products
Manufacturer	fischerwerke GmbH & Co Klaus-Fischer-Straße 1, Weinhalde 14-18, 72178 Waldachtal. Germany
Manufacturing plant(s)	E/091
This European Technical Assessment contains	49 pages including 3 Annex(es) which form an integral part of this assessment.
	Annex(es) A - B Contain(s) confidential information and is/are not included in the European Technical Assessment when that assessment is publicly available.
This European Technical Assessment is issued in accordance with regulation (EU) No 305/2011, on the basis of	EAD 350454-00-1104
This report is a corrigendum to:	ETA issued on 08/10/2014

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Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

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1. Technical Description of the Product

- 1) fischer FCPS Coated Panel System is a coated mineral wool board used to reinstate the fire resistance performance of wall constructions where they have been provided with apertures for the penetration of single or multiple services.
- 2) fischer FCPS Coated Panel System is supplied coated on both faces. The board is then cut and friction fit into the aperture, prior to being inserted into the aperture in the wall.
- 3) fischer FCPS Coated Panel System 50 Coated Boards are 50 mm thick and supplied in overall dimensions 1200 mm x 600 mm with a density of 140 kg.m³.
- 4) fischer FCPS Coated Panel System 60 Coated Boards are 60 mm thick and supplied in overall dimensions 1200 mm x 600 mm with a density of 160 kg.m³ and are coated to one face only.
- 5) fischer FiAM Intumescent Acoustic Mastic is required to seal all joints and junctions during the sealing process. fischer FiAM Intumescent Acoustic Mastic is subject to a separate ETA referenced 14/0378 & 14/0379.
- 6) fischer FiGM PFS+ Intumescent Graphite Mastic is required to seal around specific services (See Annex C). fischer FiGM PFS+ Intumescent Graphite Mastic is subject to a separate ETA referenced ETA 14/0381.

Internal use- EAD 350454-00-1104 Type Z₁.

2. Specification Of The Intended Use In Accordance With The Applicable European Assessment Document (EAD)

2.1 Intended Use

The intended use of fischer FCPS Coated Panel System is to reinstate the fire resistance performance of rigid and flexible wall constructions where they are penetrated by various cables, combustible pipes and metallic pipes

- 1) The specific elements of construction that the system fischer FCPS Coated Panel System may be used to provide a penetration seal in, are as follows:

Rigid walls:	The wall must have a minimum thickness of 150 mm and comprise concrete, aerated concrete or masonry, with a minimum density of 650 kg/m ³ .
Rigid walls:	The wall must have a minimum thickness of 100 mm and comprise concrete, aerated concrete or masonry, with a minimum density of 650 kg/m ³ .
Flexible walls	The wall must have a minimum thickness of 100 mm and comprise timber or steel studs lined on both faces with minimum 2 layers of 12.5 mm thick, 'Type F' Gypsum boards according to EN 520. In timber stud walls, no part of the penetration shall be closer than 100 mm to a stud, the cavity must be closed between the penetration seal and the stud and minimum 100 mm of insulation of class A1 or A2 according to EN 13501-1, is provided within the cavity between the penetration seal and the stud.

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

- 2) The fischer FCPS Coated Panel System may be used to provide a penetration seal with pipes and cables, and cable trays and ladders (for details see Annex C).
- 3) The total amount of cross sections of services (including insulation) should not exceed 60% of the penetration area.
- 4) The system fischer FCPS Coated Panel System may be used to seal apertures in the separating element up to 730 mm wide by 1200 mm high or 600 mm x 600 mm dependant on the configuration. The minimum permitted separation between adjacent seals/apertures is 200 mm.
- 5) Cables require no minimum separation.
- 6) The provisions made in this European Technical Assessment are based on an assumed working life of the fischer FCPS Coated Panel System of 10 years, provided that the conditions laid down in the product data sheet for the packaging/transport/storage/installation/use/repair are met. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

2.2 Use Category

Type Z₁: Intended for use in internal conditions with humidity equal to or higher 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

The assessment of fitness for use has been made in accordance with EAD 350454-00-1104

2	Safety in case of fire	
	Reaction to fire	See clause 2.1
	Resistance to fire	See clause 2.2 & Annex C
3	Hygiene, Health and the Environment	
	Air permeability	See clause 3.1
	Dangerous substances	See clause 3.2
4	Safety in use	
	Durability and serviceability	See clause 4.1
5	Protection against Noise	
	Airborne sound insulation	See clause 5.1

3.2 Safety in case of fire

3.2.1 Reaction to Fire

System fischer FCPS Coated Panel System is classified 'F' in accordance with EN 13501-1.

3.2.2 Resistance to Fire

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

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

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

Pipes must be perpendicular to the seal surface.

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

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

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

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

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

3.3 Health, Hygiene and the Environment

3.3.1 Air permeability

System fischer FCPS Coated Panel System has been tested in accordance with BS EN 1314-1 to provide the following results:

Product tested				
Pressure (Pa)	Results under positive chamber pressure		Results under negative chamber pressure	
	Leakage (m ³ /h)	Leakage (m ³ /m ² /h)	Leakage (m ³ /h)	Leakage (m ³ /m ² /h)
50	0.6	0.8	1.1	1.5
100	1.0	1.4	1.3	1.8
150	2.8	3.9	1.5	2.1
200	3.8	5.3	1.9	2.6
250	4.5	6.3	2.0	2.8
300	5.0	6.9	2.4	3.3
450	5.1	7.1	1.9	2.6
600	6.7	9.3	2.2	3.1

3.3.2 Dangerous substances

Fischerwerke GmbH has submitted a written declaration stating whether or not the fire stopping and fire sealing product contains dangerous substances according to European and national regulations, when and where relevant in the Member States of destination, and shall list these substances.

Fischerwerke GmbH have presented a declaration that Product fischer FCPS Coated Panel System and Coating is in compliance with Council Directive 76/769/EEC of 27th July 1976 on the approximation of the laws, regulations and administrative provisions of the Member States relating to restrictions on the marketing and use of certain dangerous substances and preparations (incl. all amendments and adaptations).

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

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

3.4 Safety and Serviceability in use.

3.4.1 Durability and serviceability

fischer FCPS Coated Panel System has been tested in accordance with EOTA Technical Report - TR024 – Edition November 2006, for the type Z₁ use category specified in, EAD 350454-00-1104 – Fire Stopping and Fire Sealing products and the results of the tests have demonstrated suitability for penetration seals intended for use in internal conditions with humidity equal to or higher than 85% RH excluding temperatures below 0°C, without exposure to rain or UV.

3.4.2 Thermal Properties

The results of the test provided the following single number rating:

Rw (C;Ctr)= 24(-2;-3)

4. Assessment And Verification Of Constancy Of Performance (Here in after AVCP) System Applied, With References To Its Legal base

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

Products	Intended use/s	AVCP System
Fire stopping and fire sealing products	For fire compartmentation and / or fire protection or fire performance	System 1

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

5.1 Tasks for the Manufacturer

5.1.1 Factory production control

The manufacturer has a Factory Production Control System (FPC) and exercises permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer are documented in a systematic manner in the form of policies, procedures and work instructions. This FPC system ensures that the product is in conformity with this European Technical Assessment.

The manufacturer shall only use raw materials or components that are supplied with the relevant inspection documents as laid down in the Control Plan. All incoming raw materials shall be subject to inspection, verification, controls and tests (as applicable) by the manufacturer.

The Control Plan, Reference, 4.10.13, which is part of the technical documentation of this European Technical Assessment includes details of the extent, nature and frequency of testing and controls to be performed within the FPC system and has been agreed between the Assessment holder and Warringtonfire Testing and Certification Limited. Any changes to the FPC; Control Plan or the Product shall only be made following approval by Warringtonfire Testing and Certification Limited.

The results of FPC are recorded and evaluated. These records include but are not limited to:

- Product specification and designation, basic materials and components
- Type(s) of Control testing
- Date of manufacture of the product and date of testing of the product or basic material and components;
- Result of control and testing and, if appropriate, comparison with requirements;
- Signature of the person responsible for FPC

These records shall be presented to Warringtonfire Testing and Certification Limited upon request.

The manufacturer shall, on the basis of a contract, involve a body (bodies) which is (are) approved for the tasks referred to in section 5.2 of this ETA. For this purpose, the "Control Plan" referred to in

sections 5.1.1 and 5.2 shall be handed over by the manufacturer to the approved body or bodies involved.

5.1.2 Other tasks of manufacturer

5.1.2.1 Additional information

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

(a) Technical data sheet:

- Field of application:
- Building elements for which the penetration seal is suitable, type and properties of the building elements like minimum thickness, density, and - in case of lightweight constructions – the construction requirements.
- Services for which the penetration seal is suitable, type and properties of the services like material, diameter, thickness etc. in case of pipes including insulation materials; necessary/allowed supports/fixings (e.g. cable trays)
- Limits in size, minimum thickness etc. of the penetration seal
- Construction of the penetration seal including the necessary components and additional products (e.g. backfilling material) with clear indication whether they are generic or specific.

(b) Installation instruction:

- Steps to be followed
- Procedure in case of retrofitting.

5.2 Tasks of notified body

5.2.1 Initial Type Testing of the Product

For initial 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 Warringtonfire Testing and Certification Limited and the Notified Body.

5.2.2 Initial Inspection of Factory and of Factory Production Control

The Notified Body shall ascertain that, in accordance with the provisions laid down in the Control Plan, Reference 4.10.13, the factory and the factory production control are suitable to ensure continuous and orderly manufacturing of the product according to the specifications mentioned in Section 2, as well as to the Annexes to this European Technical Assessment.

5.2.3 Continuous Surveillance

The Notified Body shall visit the factory twice a year for regular inspection. It shall be verified that the system of factory production control and the specified manufacturing process is maintained in accordance with the provisions of this European Technical Assessment and the Control Plan.

Continuous surveillance and assessment of factory production control shall be performed in accordance with the provisions laid down in the agreed Control Plan.

The results of product certification and continuous surveillance shall be made available on demand by the certification or inspection body or to Warringtonfire Testing and Certification Limited. In cases where the provisions of this European Technical Assessment and the prescribed Control Plan are no longer fulfilled, the conformity certificate shall be withdrawn and the relevant authority/ies shall be informed.

Issued in Warrington, England on 28.10.2019

By

A handwritten signature in black ink, appearing to read 'R. Wakefield', written over a thin horizontal line.

Robert Wakefield, Principal Engineer

Annex A

Reference Documents and LIST OF ABBREVIATIONS

References to standards mentioned in the ETA:

EN 13501-1	Fire classification of construction products and building elements – Part 1: Classification using test data from reaction to fire tests
EN 13501-2	Fire classification of construction products and building elements – Part 2: Classification using test data from fire resistance tests
EOTA TR 024	Characterisation, Aspects of Durability and Factory Production Control for Reactive Materials, Components and Products
EAD 350454-00-1104	Guideline For European Technical Approval of Fire Stopping and Fire Sealing Products, Part 3: Penetration Seals (used as European Assessment Document, EAD)

Annex B

Resistance to Fire Classification of fischer FCPS Coated Panel System

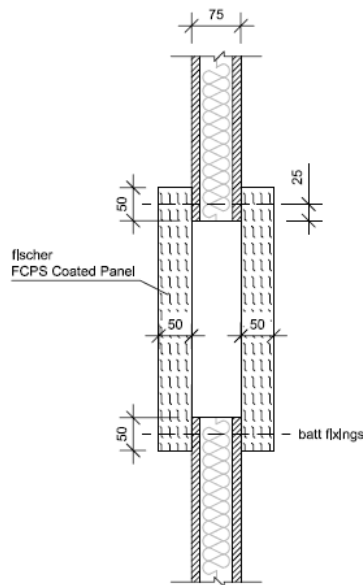
C1 Fischer FCPS Coated Panel System Penetration Seal in Flexible or Rigid Walls min. 70 mm thick

C1.1 Single Layer (50 mm both sides) fischer FCPS Coated Panel System Patress Install Penetration Seal

C1.1.1 Cables and Conduits Penetrations

Construction details:

- Single layer of fischer FCPS Coated Panel System patress installed both sides of the wall.
- Max. Aperture size 570 mm wide x 200 mm high.
- Patress installation of fischer FCPS Coated Panel System.
 - The fischer FCPS Coated Panel System are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 50 mm. Batt's mechanically fixed to substrate with min 6 mm x 80 mm steel screws and steel retaining washer. Fixings installed at max 300 mm centres.
- First service support 1025 mm from both faces of the substrate.



Service(s)	Classification
500 mm wide x 60 mm deep steel cable basket containing 3 x type 'B' cable and 20 x bundle of telecommunication cables	EI90
500 mm wide x 60 mm deep steel cable tray containing 1 x type 'B' cable, 3 x type 'A1' cable, 3 x type 'A2' cable, and 3 x type 'A3' cable	

Service(s)	Classification
20 mm dia Adaptaflex SPL20 flexible conduit	EI90
20 mm dia Kopex KSU 316 stainless steel flexible conduit	
150 mm wide x 60 mm deep steel cable tray containing 4 x FP200 Gold (Firealarm cable 7 mm dia red) Cables	

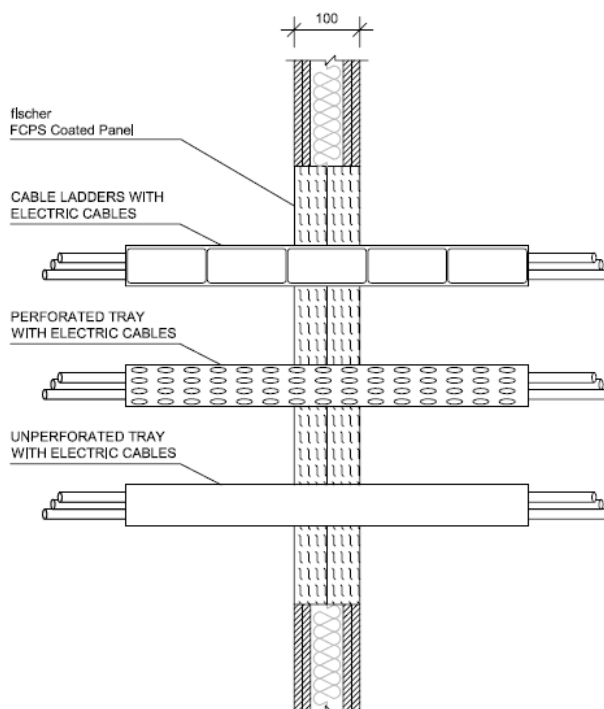
C2 fischer FCPS Coated Panel System Penetration Seal in Flexible or Rigid Walls min. 100 mm thick

C2.1 Double Layer (50 mm) fischer FCPS Coated Panel System Penetration Seal

C2.1.1 Cable Penetrations

Construction details:

- Double layer of fischer FCPS Coated Panel System (50 mm) installed internally within the wall.
- Max. Aperture size 730 mm wide x 1200 mm high.
- First service support 250 mm from both faces of the substrate.

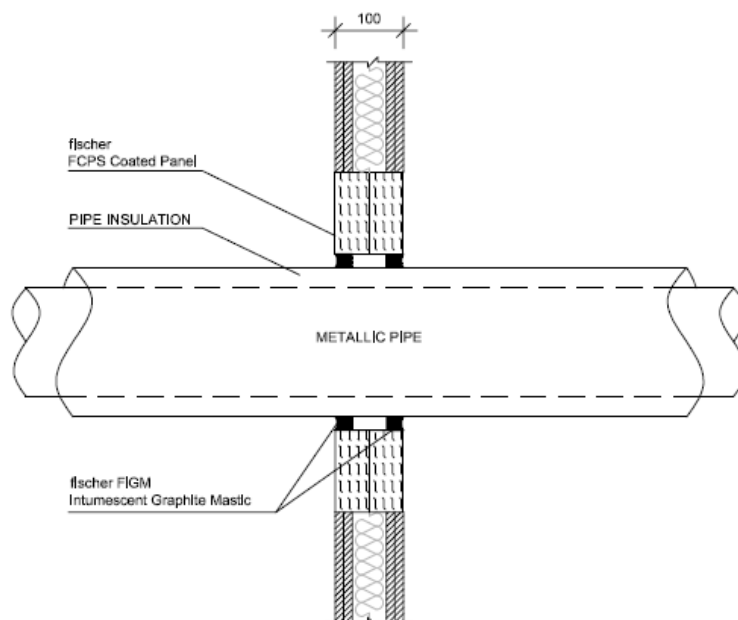


Service(s)	Classification
Electrical cables up to 21 mm dia	EI 60
Electrical cables 22 mm to 80 mm dia	E 60 EI 45
Cable Trays and Ladders	EI 60
100 mm diameter bundle telecommunication cable type "F"	EI 60
Unsheathed electrical cables up to 17 mm dia	E 60 EI 30
Unsheathed electrical cables 18-24 mm dia	E 60 EI 15
Steel or Copper Conduits up to 16 mm	E 60 EI 15
Plastic conduits up to 16 mm	EI 60

C2.1.2 Metallic Pipe Penetrations

Construction details:

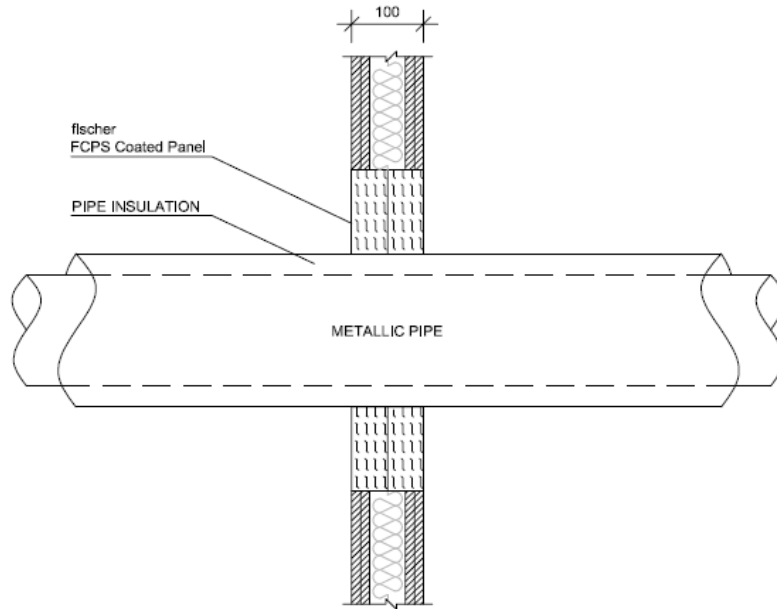
- Double layer of fischer FCPS Coated Panel System (50 mm) installed internally within the wall.
- Max. Aperture size 730 mm wide x 1200 mm high.
- Continuous / Sustained CS insulated metallic pipes.
- 15 mm deep x 15 mm wide annulus fischer FIGM PFS+ Intumescent Graphite Mastic to both faces.
- First service support 250 mm from both faces of the substrate.



Service(s)	Classification
Single copper or mild steel pipe 40 mm diameter and 1.5 – 14.2 mm wall with continuous/sustained 20 mm thick foil faced glass wool insulation (min 80 kg/m ³)	E 90 U/C EI 60 U/C
Single copper or mild steel pipe 40-159 mm diameter and 2.3 – 14.2 mm wall with continuous/sustained 30 mm thick foil faced glass wool insulation (min 80 kg/m ³)	EI 60 U/C

Construction details:

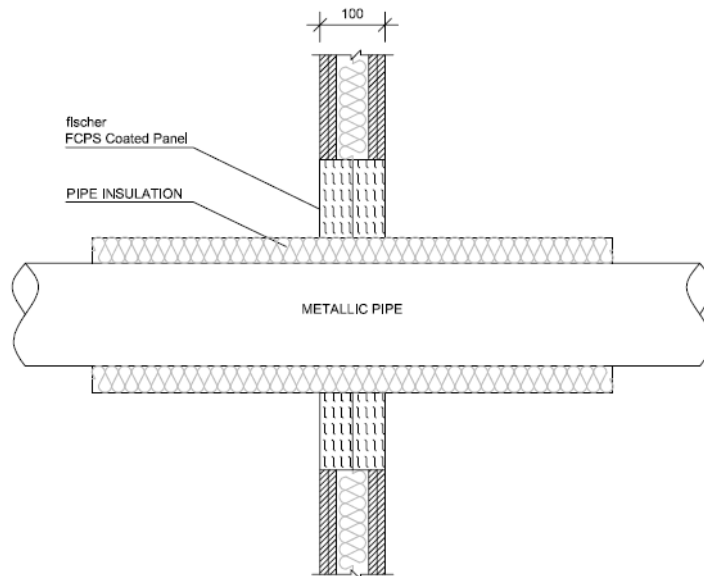
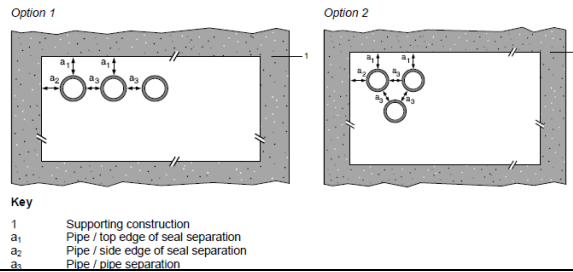
- Double layer of fischer FCPS Coated Panel System (50 mm) installed internally within the wall.
- Max. Aperture size 600 mm wide x 600 mm high.
- Continuous / Sustained CS insulated metallic pipes.
- First service support 400 mm from both faces of the substrate.



Service(s)	Classification
Steel or Copper Pipe 42-159 mm Ø, 1.2 mm – 14.2 mm wall thickness. 25 mm thick foil faced glass fibre insulation min. 30 kg/m ³ (C/S)	E 120 C/U EI 45 C/U
Steel or Copper Pipe 42 mm Ø, 1 mm – 14.2 mm wall thickness. 25 mm thick foil faced glass fibre insulation min. 30 kg/m ³ (C/S)	E 120 C/U EI 60 C/U

Construction details:

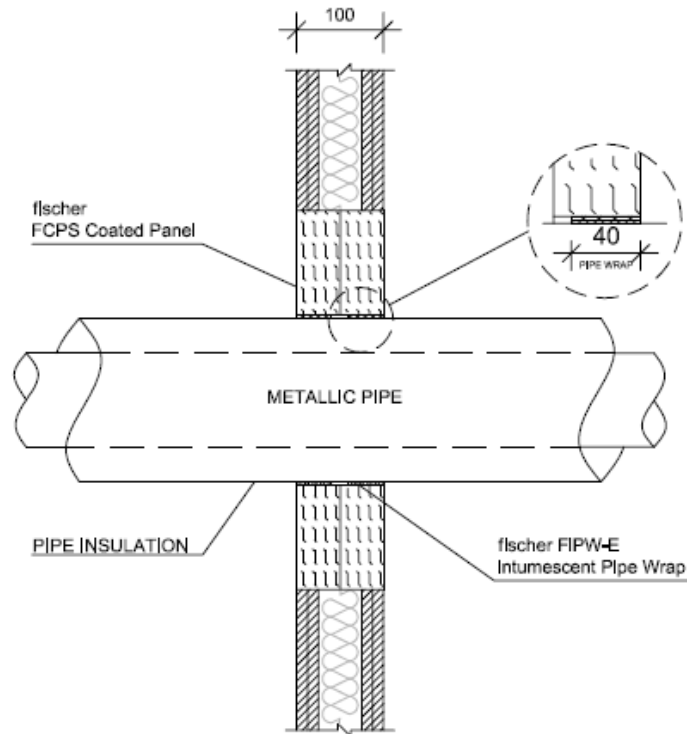
- Double layer of fischer FCPS Coated Panel System (50 mm) installed internally within the wall.
- Max. Aperture size 730 mm wide x 1200 mm high.
- Locally / Sustained (LS) insulated metallic pipes.
- Penetrations positioned as per option 1 or 2 below, 0 mm distance between services and 50 mm to edge of seal.
- First service support 400 mm from both faces of the substrate.



Service(s)	Classification
Steel or Copper Pipe 42-159 mm Ø, 1.2 mm – 14.2 mm wall thickness 40 mm thick Stonewool insulation min. 40 kg/m ³ (LS 400 mm)	EI 45 C/U
Steel 42-324 mm Ø, 16 mm wall thickness. 40 mm thick Stonewool insulation min. 40 kg/m ³ (LS 400 mm)	EI 45 C/U
Steel or Copper Pipe 42-159 mm Ø, 1.2 mm – 14.2 mm wall thickness fischer FPC Panel Coating along the penetration 2 mm DFT (LS 400 mm)	E 120 C/U EI 45 C/U
Steel 42-324 mm Ø, 16 mm wall thickness. 14.2 mm wall thickness fischer FPC Panel Coating along the penetration 2 mm DFT (LS 400 mm)	E 120 C/U EI 45 C/U

Construction details:

- Double layer of fischer FCPS Coated Panel System (50 mm) installed internally within the wall.
- Max. Aperture size 750 mm wide x 1200 mm high.
- Continuous / Sustained CS insulated metallic pipes.
- 2 x 2 mm thick layers of fischer FiPW-E Intumescent Pipe Wrap Endless installed both sides of the fischer FCPS Coated Panel System.
- First service support 400 mm from both faces of the substrate.

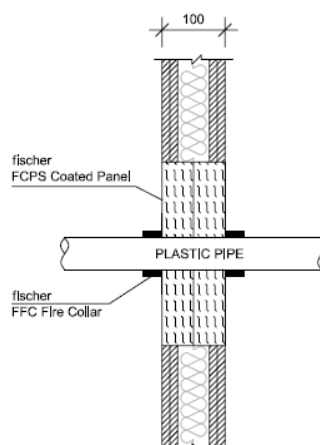
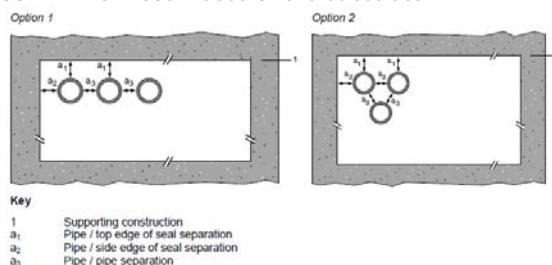


Service(s)	Classification
Steel or Copper Pipe 42-159 mm Ø, 1.2 mm – 14.2 mm wall thickness. 13-25 mm thick K Flex ST Insulation (C/S)	E 120 C/U EI 60 C/U
Steel or Copper Pipe 42 mm Ø, 1 – 14.2 mm wall thickness. 25-13 mm thick K Flex ST insulation (C/S)	E 120 C/U EI 90 C/U
Steel or Copper Pipe 42-108 mm Ø, 1.2 – 14.2 mm wall thickness. 25 -40 mm thick Kingspan Kooltherm FM insulation (C/S)	E 120 C/U EI 60 C/U
Steel or Copper Pipe 42 mm Ø, 1–14.2 mm wall thickness. 25 -40 mm thick Kingspan Kooltherm FM insulation (C/S)	E 120 C/U EI 90 C/U
Steel or Copper Pipe 42 mm Ø, 1.2–14.2 mm wall thickness. 50 mm thick glass fibre insulation (C/S)	E 120 C/U EI 90 C/U

C2.1.3 Plastic Pipe Penetrations

Construction details:

- Double layer of fischer FCPS Coated Panel System (50 mm) installed internally within the wall.
- Max. Aperture size 730 mm wide x 1200 mm high.
- fischer FFC Firestop Collar secured both faces of the substrate utilising 80 mm long steel pig tail screw through to fischer FCPS Coated Panel System.
- Penetrations positioned as per option 1 or 2 below, 0 mm distance between services and 50 mm to edge of seal.
- First service support 400 mm from both faces of the substrate.



Service(s)	fischer FFC Firestop Collar Ref	Classification
PVC Pipe 32 mm Ø, 1.8 mm wall thickness	32 mm	EI 120 U/C
PVC Pipe 40 mm Ø, 1.8 mm wall thickness	40 mm	
PVC Pipe 50 mm Ø, 1.8 mm wall thickness	50 mm	
PVC Pipe 55 mm Ø, 1.8-2.3 mm wall thickness	55 mm	
PVC Pipe 63 mm Ø, 2.3-3 mm wall thickness	63 mm	
PVC Pipe 75 mm Ø, 3.1-4.8 mm wall thickness	75 mm	
PVC Pipe 82 mm Ø, 3.1-4.8 mm wall thickness	82 mm	
PVC Pipe 90 mm Ø, 4.2-7.4 mm wall thickness	90 mm	
PVC Pipe 100 mm Ø, 4.2-7.4 mm wall thickness	100 mm	
PVC Pipe 110 mm Ø, 4.2-7.4 mm wall thickness	110 mm	
PVC Pipe 125 mm Ø, 6 mm wall thickness	125 mm	
PVC Pipe 140 mm Ø, 6.1-7.5 mm wall thickness	140 mm	
PVC Pipe 160 mm Ø, 6.2-9.5 mm wall thickness	160 mm	

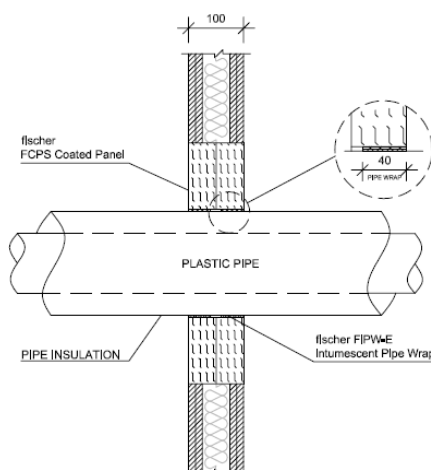
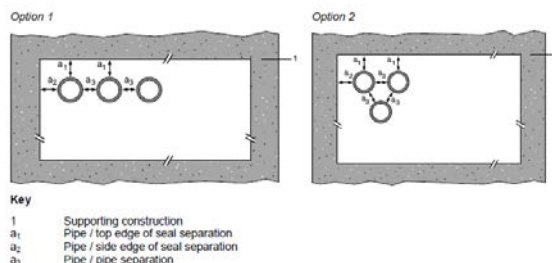
Service(s)	fischer FFC Firestop Collar Ref	Classification
PP Pipe 32 mm Ø, 2.9 mm wall thickness	32 mm	EI 120 U/C
PP Pipe 40 mm Ø, 2.9 mm wall thickness	40 mm	
PP Pipe 50 mm Ø, 2.9 mm wall thickness	50 mm	
PP Pipe 55 mm Ø, 2.9-4.4 mm wall thickness	55 mm	
PP Pipe 63 mm Ø, 2.9-4.4 mm wall thickness	63 mm	
PP Pipe 75 mm Ø, 2.8-6.7 mm wall thickness	75 mm	
PP Pipe 82 mm Ø, 2.8-6.7 mm wall thickness	82 mm	
PP Pipe 90 mm Ø, 2.7-10 mm wall thickness	90 mm	
PP Pipe 100 mm Ø, 2.7-10 mm wall thickness	100 mm	
PP Pipe 110 mm Ø, 2.7-10 mm wall thickness	110 mm	
PP Pipe 125 mm Ø, 3.1 mm wall thickness	125 mm	
PP Pipe 140 mm Ø, 3.5-8 mm wall thickness	140 mm	

Service(s)	fischer FFC Firestop Collar Ref	Classification
PE Pipe 32 mm Ø, 2.9 mm wall thickness	32 mm	EI 120 U/C
PE Pipe 40 mm Ø, 2.9 mm wall thickness	40 mm	
PE Pipe 50 mm Ø, 2.9 mm wall thickness	50 mm	
PE Pipe 55 mm Ø, 2.9-4.4 mm wall thickness	55 mm	
PE Pipe 63 mm Ø, 2.9-4.4 mm wall thickness	63 mm	
PE Pipe 75 mm Ø, 2.8-6.7 mm wall thickness	75 mm	
PE Pipe 82 mm Ø, 2.8-6.7 mm wall thickness	82 mm	
PE Pipe 90 mm Ø, 2.7-10 mm wall thickness	90 mm	
PE Pipe 100 mm Ø, 2.7-10 mm wall thickness	100 mm	
PE Pipe 110 mm Ø, 2.7-10 mm wall thickness	110 mm	
PE Pipe 125 mm Ø, 3.1 mm wall thickness	125 mm	
PE Pipe 140 mm Ø, 3.9-5.8 mm wall thickness	140 mm	
PE Pipe 160 mm Ø, 4.9-9.5 mm wall thickness	160 mm	

C2.1.4 Insulated Plastic Pipe Penetrations

Construction details:

- Double layer of fischer FCPS Coated Panel System (50 mm) installed internally within the wall.
- Max. Aperture size 730 mm wide x 1200 mm high.
- fischer FiPW-E Intumescent Pipe Wrap Endless secured internally within both faces of the fischer FCPS Coated Panel System.
- Penetrations positioned as per option 1 or 2 below, 0 mm distance between services and 50 mm to edge of seal.
- First service support 400 mm from both faces of the substrate.

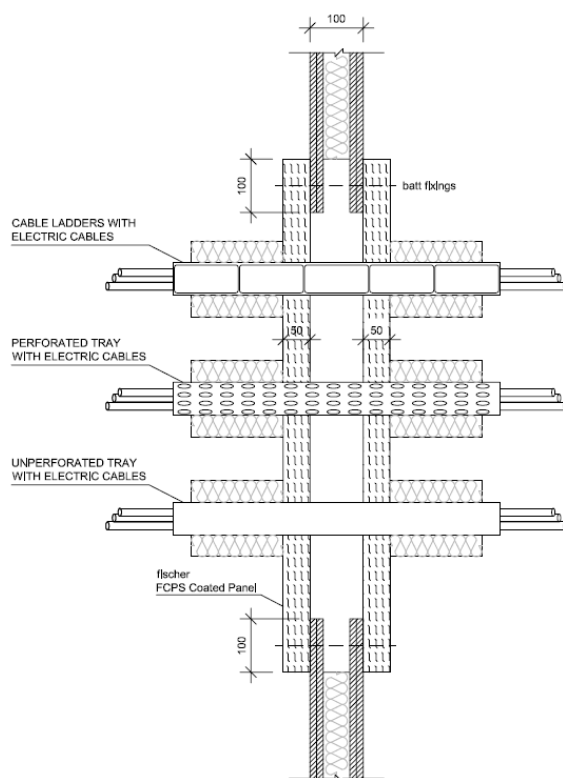


Service(s)	fischer FiPW-E Pipe Wrap Ref	Classification
PVC Pipe 40 mm Ø, 1.9 mm wall thickness. 25 mm thick Kingspan Kooltherm FM insulation (C/S)	3 x 2 mm thickness	E 120 U/C EI 90 U/C
PVC Pipe 40 mm Ø, 3 mm wall thickness. 15 mm thick Kingspan Kooltherm FM insulation (C/S)	3 x 2 mm thickness	
PVC Pipe 110 mm Ø, 4.2 mm wall thickness. 25 mm thick Kingspan Kooltherm FM insulation (C/S)	5 x 2 mm thickness	EI 120 U/C
PVC Pipe 110 mm Ø, 6.6 mm wall thickness. 20 mm thick Kingspan Kooltherm FM insulation (C/S)	5 x 2 mm thickness	E 120 U/C EI 90 U/C
PVC Pipe 40 mm Ø, 1.9 mm wall thickness. 32 mm thick Armacell Armaflex Class O (C/S)	3 x 2 mm thickness	E 120 U/C EI 90 U/C
PVC Pipe 40 mm Ø, 3 mm wall thickness. 9 mm thick Armacell Armaflex Class O (C/S)	3 x 2 mm thickness	
PVC Pipe 110 mm Ø, 4.2 mm wall thickness. 32 mm thick Armacell Armaflex Class O (C/S)	5 x 2 mm thickness	EI 120 U/C
PVC Pipe 110 mm Ø, 6.6 mm wall thickness. 13 mm thick Armacell Armaflex Class O (C/S)	5 x 2 mm thickness	E 120 U/C EI 90 U/C

C2.2 Single Layer (50 mm) fischer FCPS Coated Panel System Patress Installed Both Faces Penetration Seal
 C2.2.1 Cable Penetrations

Construction details:

- Single layer of fischer FCPS Coated Panel System (50 mm) installed both faces of the wall.
 - Patress installation of fischer FCPS Coated Panel System. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 100 mm. Batts mechanically fixed to substrate with min 6 mm x 80 mm steel screws and steel retaining washer. Fixings installed at max 300 mm centres.
- Max. Aperture size 750 mm wide x 1200 mm high.
- Cables and cable trays wrapped with a single layer of 40 mm thick, 40kg/m³ Stonewool (L/I 300 mm).
- First service support 400 mm from both faces of the substrate.

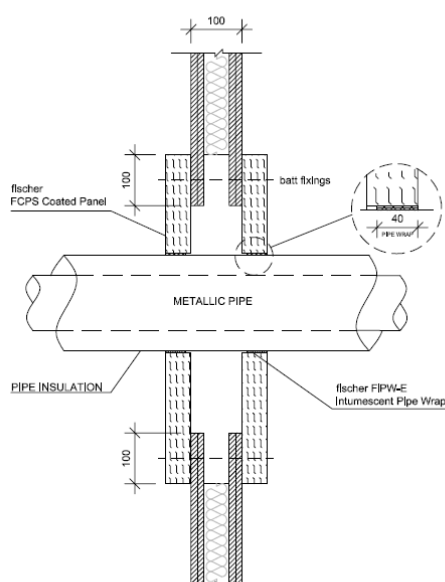


Service(s)	Classification
Electrical cables up to 80 mm Ø	EI120
Cable Trays and Ladders	
100 mm diameter bundle telecommunication cable type "F"	
Unsheathed electrical cables up to 24 mm Ø	
Steel or Copper Conduits up to 16 mm Ø	
Plastic conduits up to 16 mm Ø	

C2.2.2 Metallic Pipe Penetrations

Construction details:

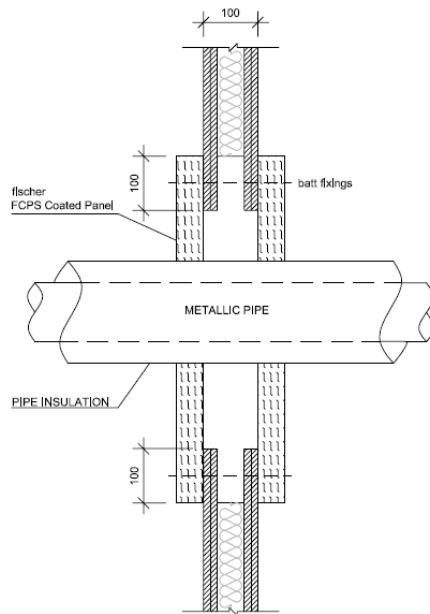
- Single layer of fischer FCPS Coated Panel System (50 mm) installed both faces of the wall.
 - Patress installation of fischer FCPS Coated Panel System. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 100 mm. Batts mechanically fixed to substrate with min 6 mm x 80 mm steel screws and steel retaining washer. Fixings installed at max 300 mm centres.
- Max. Aperture size 750 mm wide x 1200 mm high.
- Continuous / Sustained CS insulated metallic pipes.
- 2 x 2 mm thick layers of fischer FiPW-E Intumescent Pipe Wrap Endless installed both sides of the fischer FCPS Coated Panel System.
- First service support 400 mm from both faces of the substrate.



Service(s)	Classification
Steel or Copper Pipe 42-159 mm Ø, 1.2 mm – 14.2 mm wall thickness. 13-25 mm thick K Flex ST Insulation (C/S)	E 120 C/U EI 60 C/U
Steel or Copper Pipe 42-159 mm Ø, 1.2 – 14.2 mm wall thickness. 25 mm thick K Flex ST insulation (C/S)	E 120 C/U EI 90 C/U
Steel or Copper Pipe 42 mm Ø, 1 – 14.2 mm wall thickness. 25-13 mm thick K Flex ST insulation (C/S)	EI 120 C/U
Steel or Copper Pipe 42-108 mm Ø, 1.2 – 14.2 mm wall thickness. 25 -40 mm thick Kingspan Kooltherm FM insulation (C/S)	E 120 C/U EI 90 C/U
Steel or Copper Pipe 42 mm Ø, 1–14.2 mm wall thickness. 25 -40 mm thick Kingspan Kooltherm FM insulation (C/S)	EI 120 C/U
Steel or Copper Pipe 42 mm Ø, 1.2–14.2 mm wall thickness. 50 mm thick glass fibre insulation min. 30kg/m ³ (C/S)	E 120 C/U EI 90 C/U

Construction details:

- Single layer of fischer FCPS Coated Panel System (50 mm) installed both faces of the wall.
 - Patress installation of fischer FCPS Coated Panel System. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 100 mm. Batts mechanically fixed to substrate with min 6 mm x 80 mm steel screws and steel retaining washer. Fixings installed at max 300 mm centres.
- Max. Aperture size 600 mm wide x 600 mm high.
- Continuous / Sustained CS insulated metallic pipes.
- First service support 400 mm from both faces of the substrate.

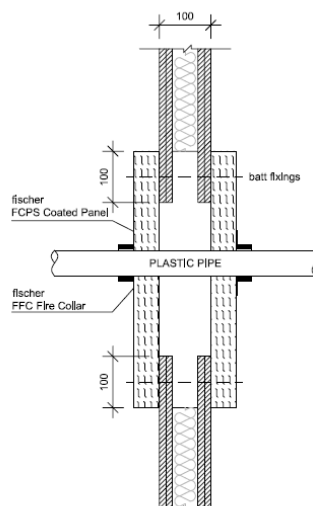
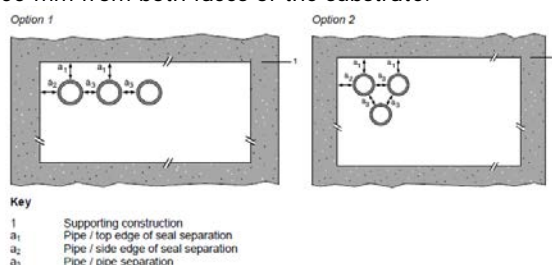


Service(s)	Classification
Steel or Copper Pipe 42-159 mm Ø, 1.2 mm – 14.2 mm wall thickness. 25 mm thick foil faced glass fibre insulation min. 30kg/m ³ (C/S)	E 120 C/U EI 90 C/U
Steel or Copper Pipe 42 mm Ø, 1 mm – 14.2 mm wall thickness. 25 mm thick foil faced glass fibre insulation min. 30kg/m ³ (C/S)	EI 120 C/U

C2.2.2 Plastic Pipe Penetrations

Construction details:

- Single layer of fischer FCPS Coated Panel System (50 mm) installed both faces of the wall.
 - Patress installation of fischer FCPS Coated Panel System. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 100 mm. Batts mechanically fixed to substrate with min 6 mm x 80 mm steel screws and steel retaining washer. Fixings installed at max 300 mm centres.
- Max. Aperture size 730 mm wide x 1200 mm high.
- fischer FFC Firestop Collar secured both faces of the substrate utilising 80 mm long steel pig tail screw through to fischer FCPS Coated Panel System.
- Penetrations positioned as per option 1 or 2 below, 0 mm distance between services and 50 mm to edge of seal.
- First service support 400 mm from both faces of the substrate.



Service(s)	fischer FFC Firestop Collar Ref	Classification
PVC Pipe 32 mm Ø, 1.8 mm wall thickness	32 mm	EI 120 U/C
PVC Pipe 40 mm Ø, 1.8 mm wall thickness	40 mm	
PVC Pipe 50 mm Ø, 1.8 mm wall thickness	50 mm	
PVC Pipe 55 mm Ø, 1.8-2.3 mm wall thickness	55 mm	
PVC Pipe 63 mm Ø, 2.3-3 mm wall thickness	63 mm	
PVC Pipe 75 mm Ø, 3.1-4.8 mm wall thickness	75 mm	
PVC Pipe 82 mm Ø, 3.1-4.8 mm wall thickness	82 mm	
PVC Pipe 90 mm Ø, 4.2-7.4 mm wall thickness	90 mm	
PVC Pipe 100 mm Ø, 4.2-7.4 mm wall thickness	100 mm	
PVC Pipe 110 mm Ø, 4.2-7.4 mm wall thickness	110 mm	
PVC Pipe 125 mm Ø, 6 mm wall thickness	125 mm	
PVC Pipe 140 mm Ø, 6.1-7.5 mm wall thickness	140 mm	
PVC Pipe 160 mm Ø, 6.2-9.5 mm wall thickness	160 mm	

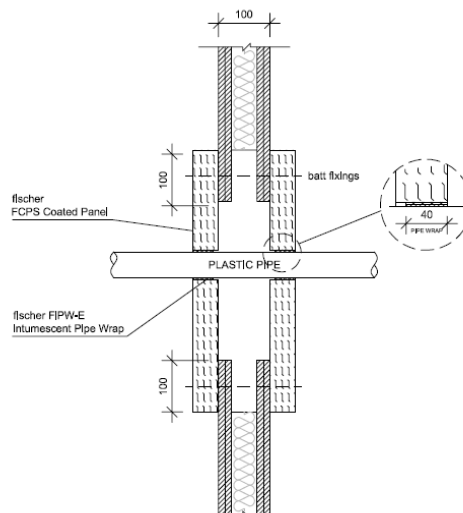
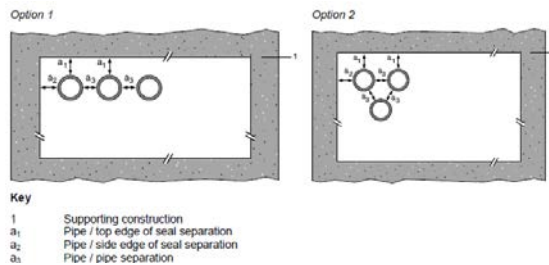
Service(s)	fischer FFC Firestop Collar Ref	Classification
PP Pipe 32 mm Ø, 2.9 mm wall thickness	32 mm	EI 120 U/C
PP Pipe 40 mm Ø, 2.9 mm wall thickness	40 mm	
PP Pipe 50 mm Ø, 2.9 mm wall thickness	50 mm	
PP Pipe 55 mm Ø, 2.9-4.4 mm wall thickness	55 mm	
PP Pipe 63 mm Ø, 2.9-4.4 mm wall thickness	63 mm	
PP Pipe 75 mm Ø, 2.8-6.7 mm wall thickness	75 mm	
PP Pipe 82 mm Ø, 2.8-6.7 mm wall thickness	82 mm	
PP Pipe 90 mm Ø, 2.7-10 mm wall thickness	90 mm	
PP Pipe 100 mm Ø, 2.7-10 mm wall thickness	100 mm	
PP Pipe 110 mm Ø, 2.7-10 mm wall thickness	110 mm	
PP Pipe 125 mm Ø, 3.1 mm wall thickness	125 mm	
PP Pipe 140 mm Ø, 3.5-8 mm wall thickness	140 mm	
PP Pipe 160 mm Ø, 4-14.6 mm wall thickness	160 mm	

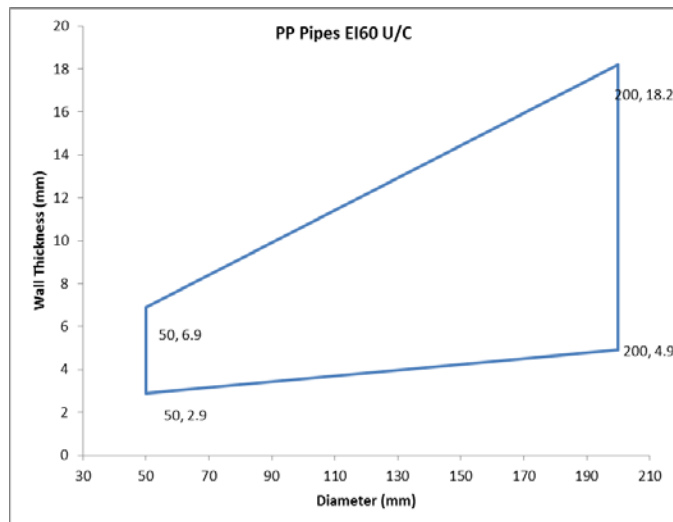
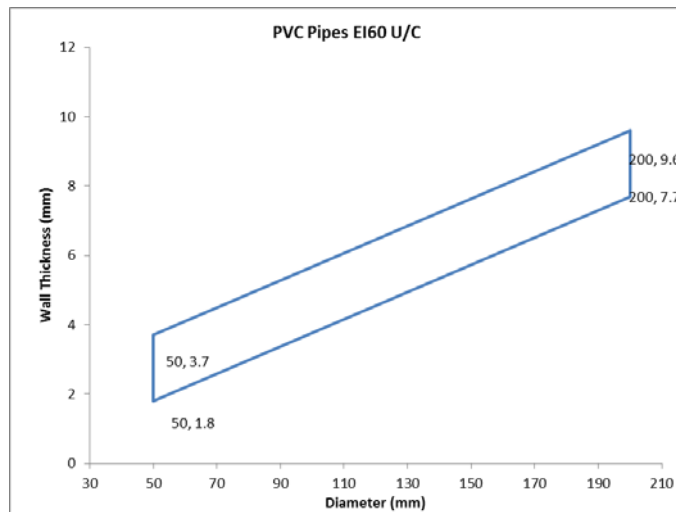
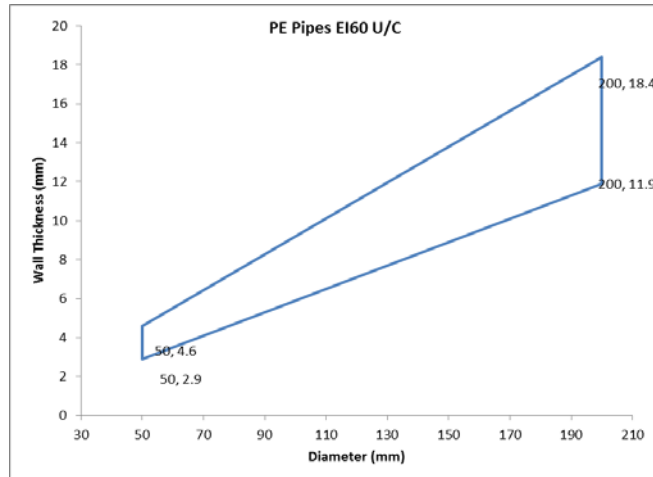
Service(s)	fischer FFC Firestop Collar Ref	Classification
PE Pipe 32 mm Ø, 2.9 mm wall thickness	32 mm	EI 120 U/C
PE Pipe 40 mm Ø, 2.9 mm wall thickness	40 mm	
PE Pipe 50 mm Ø, 2.9 mm wall thickness	50 mm	
PE Pipe 55 mm Ø, 2.9-4.4 mm wall thickness	55 mm	
PE Pipe 63 mm Ø, 2.9-4.4 mm wall thickness	63 mm	
PE Pipe 75 mm Ø, 2.8-6.7 mm wall thickness	75 mm	
PE Pipe 82 mm Ø, 2.8-6.7 mm wall thickness	82 mm	
PE Pipe 90 mm Ø, 2.7-10 mm wall thickness	90 mm	
PE Pipe 100 mm Ø, 2.7-10 mm wall thickness	100 mm	
PE Pipe 110 mm Ø, 2.7-10 mm wall thickness	110 mm	
PE Pipe 125 mm Ø, 3.1 mm wall thickness	125 mm	
PE Pipe 140 mm Ø, 3.9-5.8 mm wall thickness	140 mm	
PE Pipe 160 mm Ø, 4.9-9.5 mm wall thickness	160 mm	

Construction details:

- Single layer of fischer FCPS Coated Panel System (50 mm) installed both faces of the wall.
 - Patress installation of fischer FCPS Coated Panel System. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 100 mm. Batts mechanically fixed to substrate with min 6 mm x 80 mm steel screws and steel retaining washer. Fixings installed at max 300 mm centres.
- Max. Aperture size 730 mm wide x 1200 mm high.
- fischer FiPW Intumescent Pipe Wrap Endless secured internally within both faces of the fischer FCPS Coated Panel System.
- Penetrations positioned as per option 1 or 2 below, 0 mm distance between services and 50 mm to edge of seal.
- First service support 400 mm from both faces of the substrate.

Intumescent Thickness	
Pipe Diameter	Intumescent Material
ø 32 mm - ø 50 mm	40 mm (W) x 2 mm (T)
ø 51 mm - ø 82 mm	40 mm (W) x 4 mm (T)
ø 83 mm - ø 115 mm	40 mm (W) x 6 mm (T)
ø 116 mm - ø 160 mm	40 mm (W) x 8 mm (T)
ø 161 mm - ø 200 mm	40 mm (W) x 10 mm (T)
ø 201 mm - ø 250 mm	40 mm (W) x 12 mm (T)





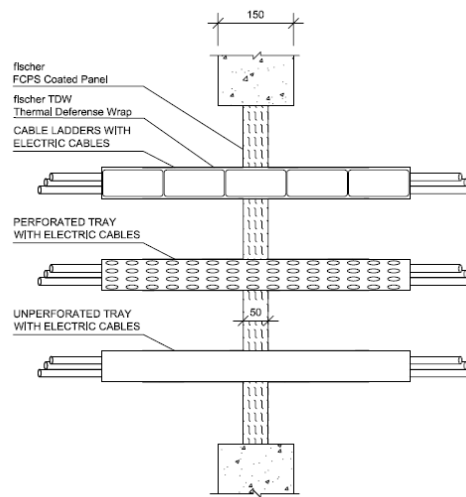
C3 fischer FCPS Coated Panel System Penetration Seal in Rigid Walls min. 150 mm thick

C3.1 Single Layer (50 mm) fischer FCPS Coated Panel System Penetration Seal

C3.1.1 Cable Penetrations

Construction details:

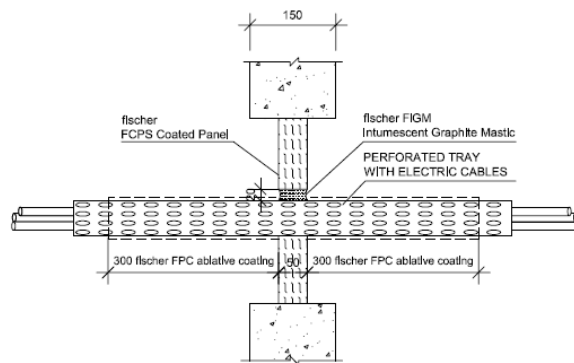
- Single layer of fischer FCPS Coated Panel System (50 mm) installed internally within the wall.
- Max. Aperture size 600 mm wide x 600 mm high.
- Cables and cable trays wrapped with a single layer of 6 mm thick fischer Thermal Defense Wrap (L/I 300 mm).
- First service support 250 mm from both faces of the substrate.



Service(s)	Classification
Electrical cables up to 80 mm Ø	EI 60
Cable Trays and Ladders	EI 60
100 mm diameter bundle telecommunication cable type "F"	EI 60
Unsheathed electrical cables up to Ø 24 mm	EI 60

Construction details:

- Single layer of fischer FCPS Coated Panel System (50 mm) installed internally within the wall.
- Max. Aperture size 750 mm wide x 1100 mm high.
- All cables coated with 2 mm DFT fischer FPC Panel Coating 300 mm along the cables both sides of the seal.
- 50 mm deep x 20 mm wide annulus fischer FiGM PFS+ Intumescent Graphite Mastic.
- First service support 400 mm from both faces of the substrate.

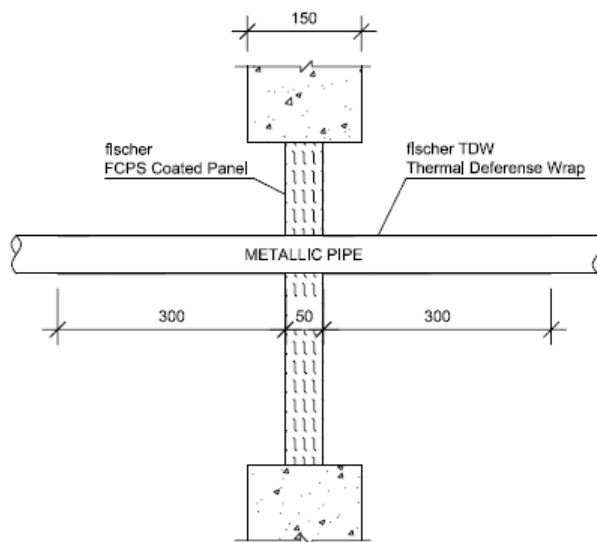


Service(s)	Classification
500 mm perforated cable tray	EI30
Electrical cables up to 21 mm \varnothing	EI45
1 off 'C1' Cable	
1 off 'C2' Cable	
1 off 'C3' Cable	

C3.1.2 Metallic Pipe Penetrations

Construction details:

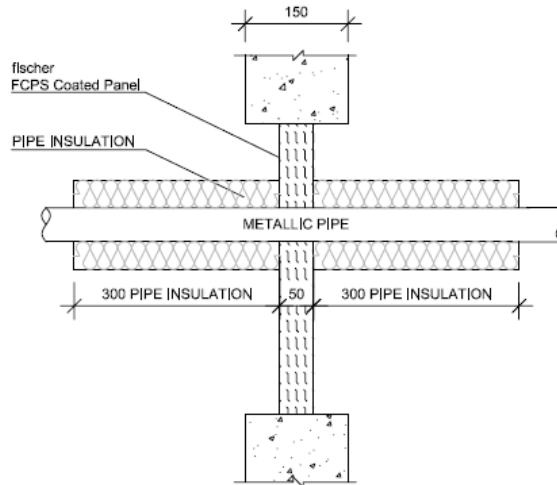
- Single layer of fischer FCPS Coated Panel System (50 mm) installed internally within the wall.
- Max. Aperture size 600 mm wide x 600 mm high.
- Metallic pipes wrapped with a single layer of 6 mm thick fischer Thermal Defense Wrap (L/I 300 mm).
- First service support 250 mm from both faces of the substrate.



Service(s)	Classification
Steel or Copper Pipe 108 mm Ø, 1.5 mm – 14.2 mm Wall Thickness. (LI) 40 mm stone wool insulation (min 140Kg/m ³)	E60 C/U EI45 C/U

Construction details:

- Single layer of fischer FCPS Coated Panel System (50 mm) installed internally within the wall.
- Max. Aperture size 730 mm wide x 1100 mm high.
- First service support 400 mm from both faces of the substrate.

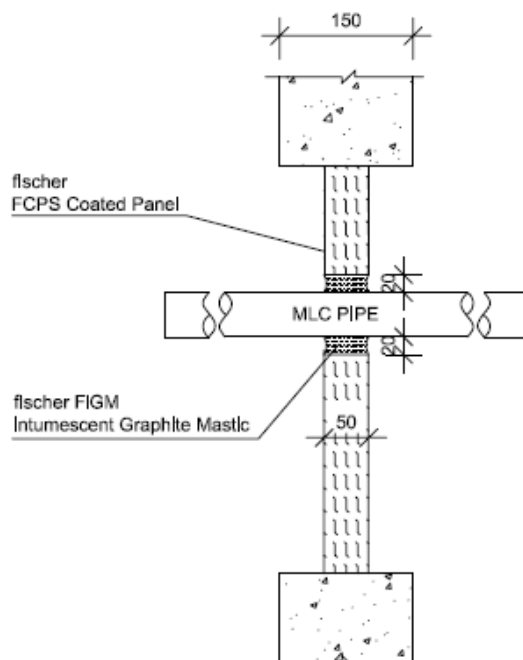


Service(s)	Classification
Steel or Copper Pipe 42 mm Ø, 1.2 mm – 14.2 mm wall thickness. (L/I 300 mm) 40 mm stone wool insulation (min 40Kg/m ³)	EI45 C/U
Steel or Copper Pipe 42 mm – 159 mm Ø, 2 mm – 14.2 mm wall thickness. (L/I 300 mm) 40 mm stone wool insulation (min 40Kg/m ³)	E45 C/U EI15 C/U

C3.1.3 MLC Pipe Penetrations

Construction details:

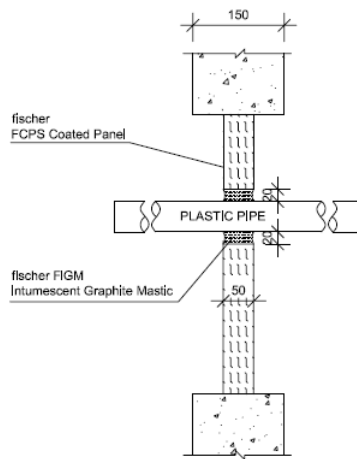
- Single layer of fischer FCPS Coated Panel System (50 mm) installed internally within the wall.
- Max. Aperture size 750 mm wide x 1100 mm high.
- fischer FIGM PFS+ Intumescent Graphite Mastic 20 mm annulus full 50 mm depth of the fischer FCPS Coated Panel System.
- First service support 400 mm from both faces of the substrate.



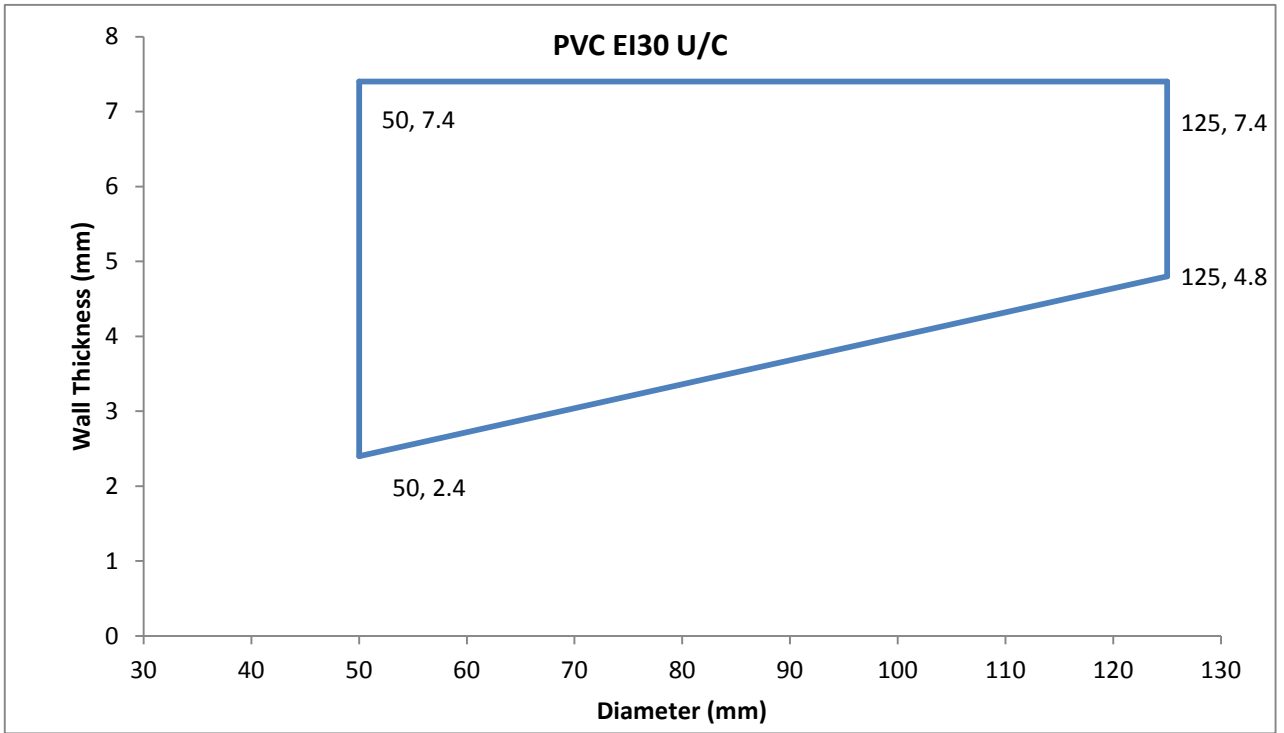
Penetration Specification	Classification
Uponor MLC (Multi-Layer Composite) Pipe 40 mm \varnothing 4 mm wall thickness	E45 U/C EI30 U/C
Uponor MLC (Multi-Layer Composite) Pipe 50 mm \varnothing 4.5 mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 63 mm \varnothing 6 mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 75 mm \varnothing 7.5 mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 90 mm \varnothing 8.5 mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 110 mm \varnothing 10 mm wall thickness	

Construction details:

- Single layer of fischer FCPS Coated Panel System (50 mm) installed internally within the wall.
- Max. Aperture size 750 mm wide x 1100 mm high.
- fischer FIGM PFS+ Intumescent Graphite Mastic 20 mm annulus full 50 mm depth of the fischer FCPS Coated Panel System.
- First service support 400 mm from both faces of the substrate.



Penetration Specification	Classification
PVC Pipe 50 mm \varnothing 2.4-7.4 mm wall thickness	EI45 U/C
Also scope as per graphs below	

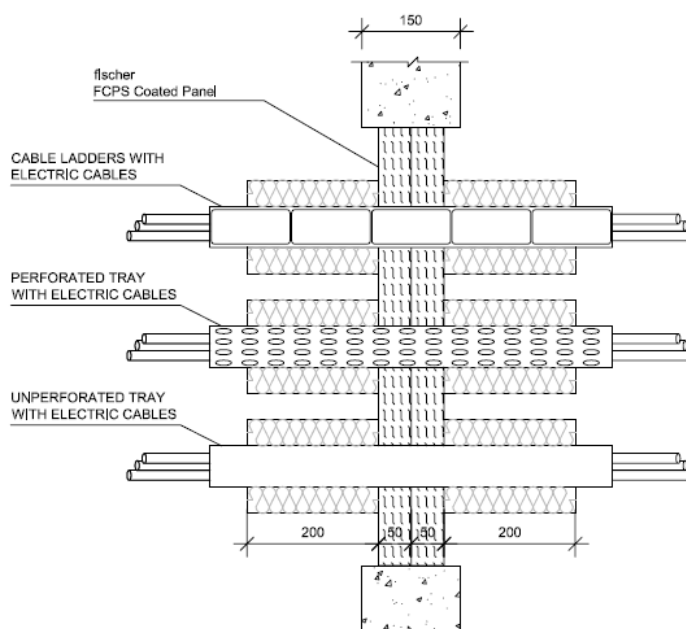


C3.2 Double Layer (50 mm) fischer FCPS Coated Panel System Penetration Seal

C3.2.1 Cable Penetrations

Construction details:

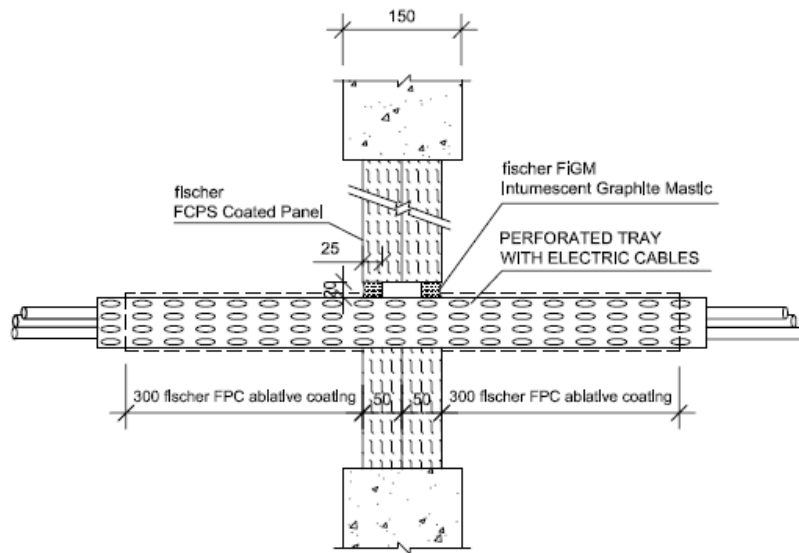
- Double layer of fischer FCPS Coated Panel System (50 mm) installed internally within the wall.
- Max. Aperture size 700 mm wide x 1100 mm high.
- Cables and cable trays wrapped with Stone Wool Insulation 45 mm thick, 40 kg/m³ (L/I 200 mm).
- First service support 400 mm from both faces of the substrate.



Service(s)	Classification
Electrical cables up to 21 mm dia	EI 120
Electrical cables 22 mm – 80 mm dia	E120, E190
Cable Trays and Ladders	EI 120
100 mm diameter bundle telecommunication cable type "F"	EI 120
Unsheathed electrical cables up to 24 mm dia	EI 120

Construction details:

- Double layer of fischer FCPS Coated Panel System (50 mm) installed internally within the wall.
- Max. Aperture size 750 mm wide x 1200 mm high.
- Cables and cable trays wrapped with Stone Wool Insulation 45 mm thick, 40 kg/m³ (L/I 200 mm).
- fischer FIGM PFS+ Intumescent Graphite Mastic 20 mm annulus full 50 mm depth of the fischer FCPS Coated Panel System.
- First service support 400 mm from both faces of the substrate.

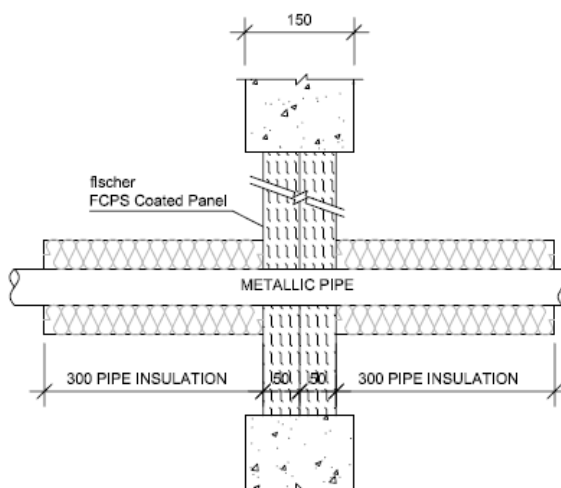


Penetration Specification	Classification
500 mm perforated cable tray	E120
Electrical cables up to 21 mm ø	
1 off 'C1' Cable	
1 off 'C2' Cable	E120 E190
1 off 'C3' Cable	E120

C3.2.2 Metallic Pipe Penetrations

Construction details:

- Double layer of fischer FCPS Coated Panel System (50 mm) installed internally within the wall.
- Max. Aperture size 700 mm wide x 1100 mm high.
- Cables and cable trays wrapped with 40 mm stone wool insulation (min 40 kg/m³) (L/I 300 mm).
- First service support 400 mm from both faces of the substrate.

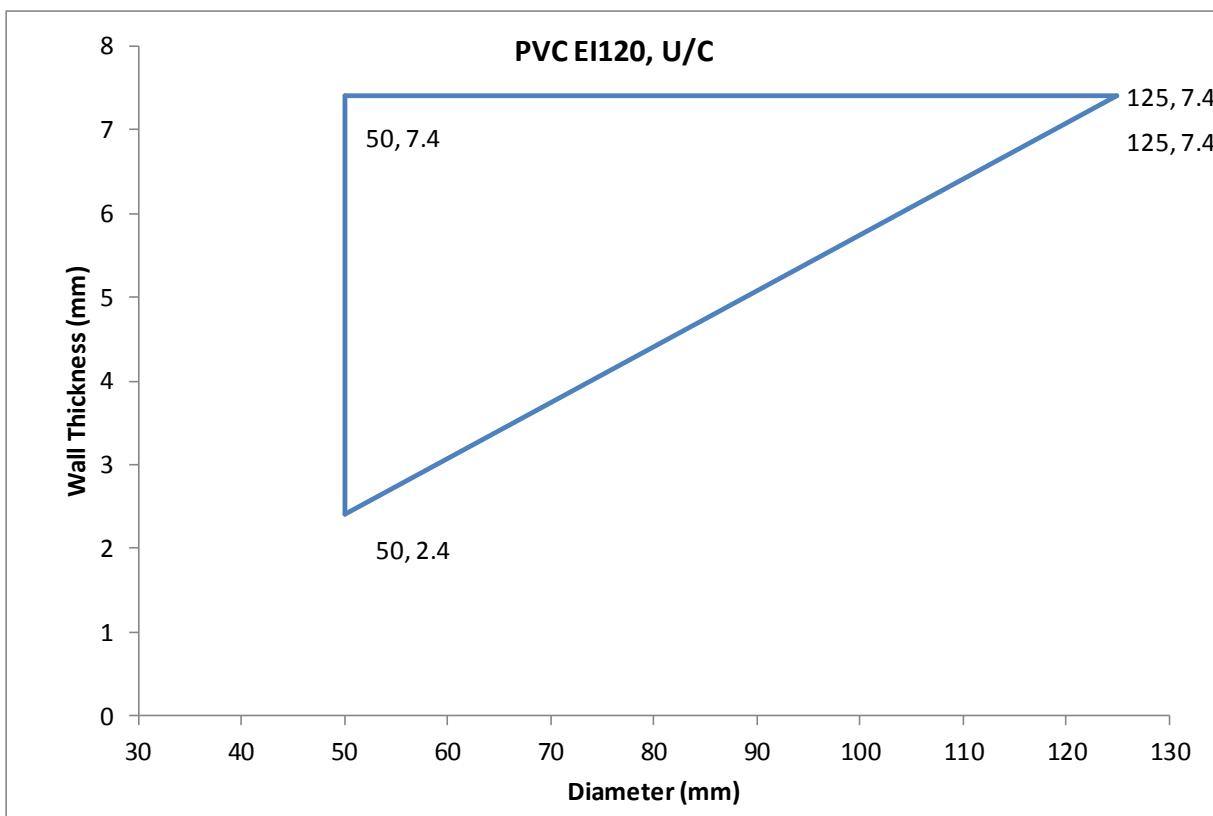
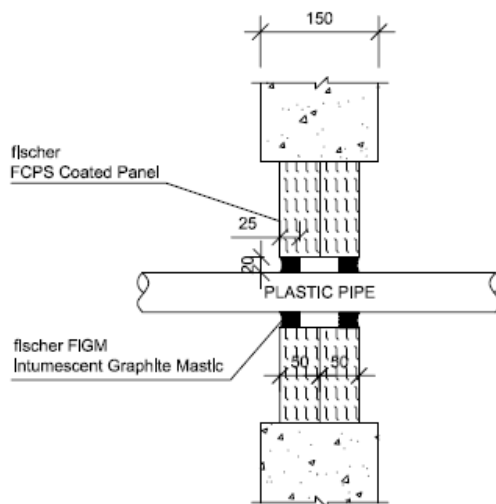


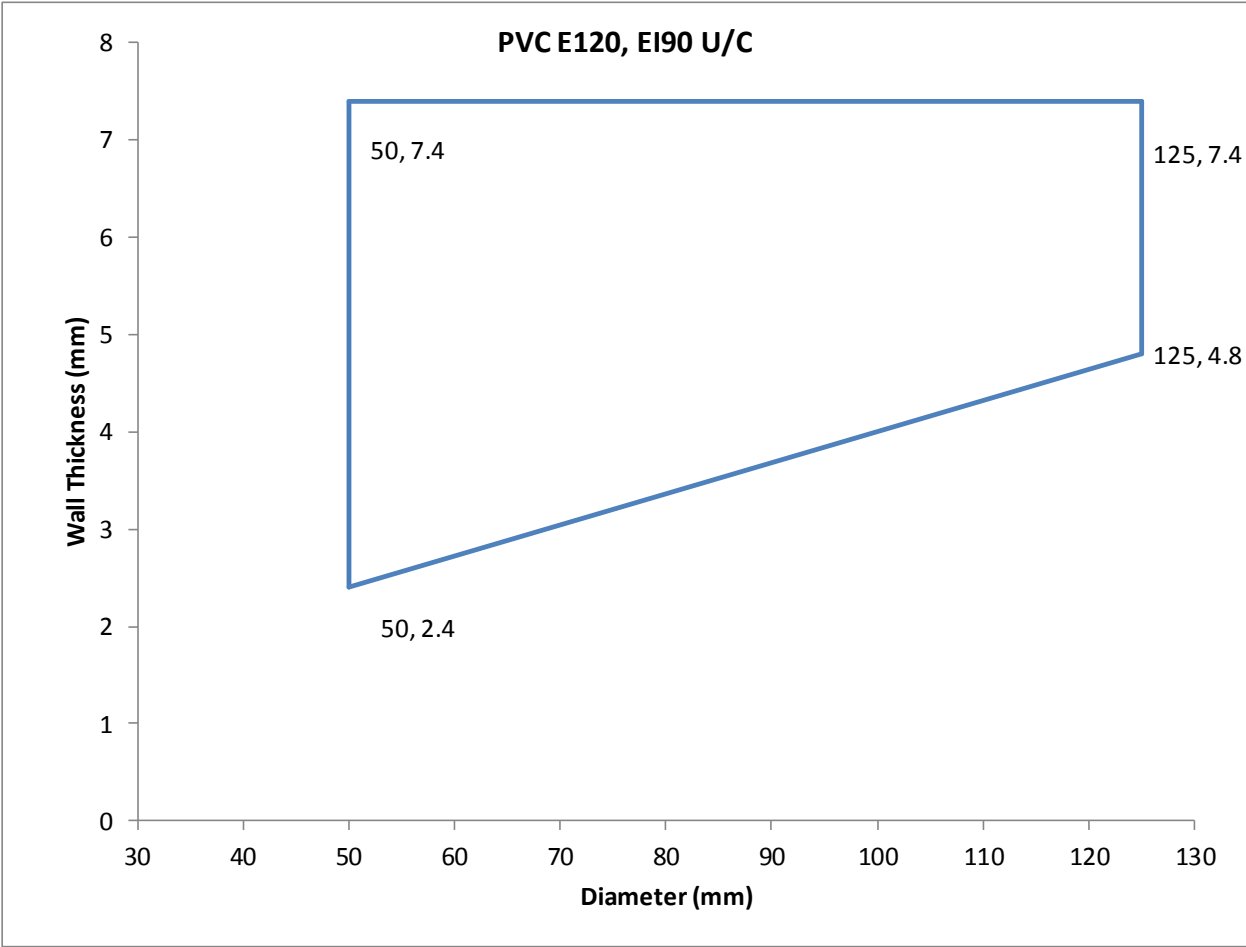
Service(s)	Classification
Steel or Copper Pipe 42 mm Ø, 1.2 mm – 14.2 mm wall thickness. (L/I 300 mm) 40 mm stone wool insulation (min 40 kg/m ³)	E120 C/U EI60 C/U
Steel or Copper Pipe 42 mm – 159 mm Ø, 2 mm – 14.2 mm wall thickness. (L/I 300 mm) 40 mm stone wool insulation (min 40 kg/m ³)	E120 C/U EI30 C/U

C3.2.3 Plastic Pipe Penetrations

Construction details:

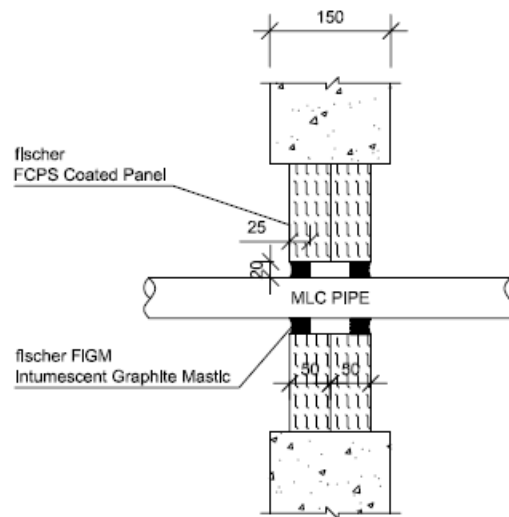
- Double layer of fischer FCPS Coated Panel System (50 mm) installed internally within the wall.
- Max. Aperture size 750 mm wide x 1100 mm high.
- fischer FIGM PFS+ Intumescent Graphite Mastic 20 mm annulus, 25 mm deep both faces of the fischer FCPS Coated Panel System.
- First service support 400 mm from both faces of the substrate.





Construction details:

- Double layer of fischer FCPS Coated Panel System (50 mm) installed internally within the wall.
- Max. Aperture size 750 mm wide x 1100 mm high.
- fischer FiGM PFS+ Intumescent Graphite Sealant 20 mm annulus, 25 mm deep both faces of the fischer FCPS Coated Panel System.
- First service support 400 mm from both faces of the substrate.



Penetration Specification	Classification
Uponor MLC (Multi-Layer Composite) Pipe 40 mm ø 4 mm wall thickness	EI120 U/C
Uponor MLC (Multi-Layer Composite) Pipe 50 mm ø 4.5 mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 63 mm ø 6 mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 75 mm ø 7.5 mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 90 mm ø 8.5 mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 110 mm ø 10 mm wall thickness	

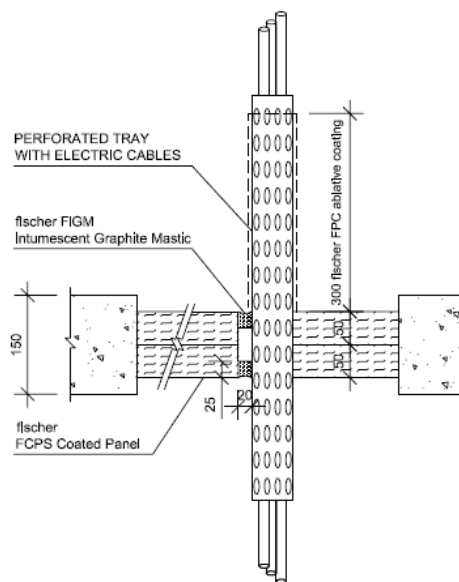
C3 fischer FCPS Coated Panel System Penetration Seal in Rigid Floors min. 150 mm thick

C3.1 Double Layer (50 mm) fischer FCPS Coated Panel System Penetration Seal

C3.1.1 Cable Penetrations

Construction details:

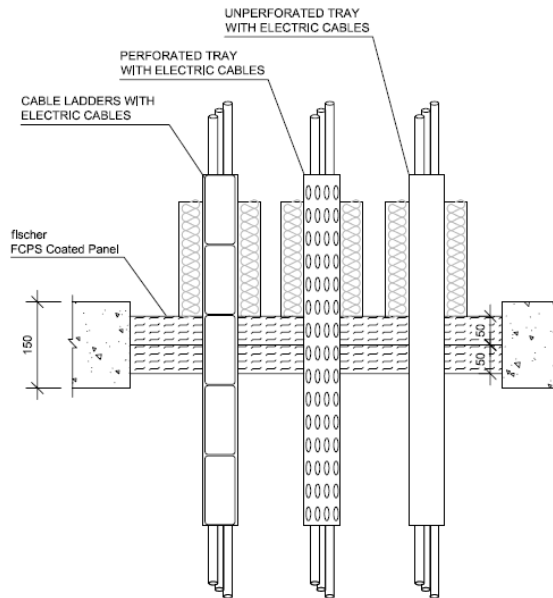
- Double layer of fischer FCPS Coated Panel System (50 mm) installed internally within the floor.
- Max. Aperture size 700 mm wide x 1100 mm high.
- All cables coated with 2 mm DFT PST Coating 300 mm along the cables upper side of the seal
- fischer FiGM PFS+ Intumescent Graphite Mastic 20 mm annulus full 25 mm depth both sides of the floor.
- First service support 400 mm from both faces of the substrate.



Penetration Specification	Classification
500 mm perforated cable tray	EI60
Electrical cables up to 21 mm ø	
1 off 'C1' Cable	
1 off 'C2' Cable	
1 off 'C3' Cable	

Construction details:

- Double layer of fischer FCPS Coated Panel System (50 mm) installed internally within the floor.
- Max. Aperture size 700 mm wide x 1100 mm high.
- Cables and cable trays wrapped with a single layer of 40 mm thick stonewool, min 40kg/m³ (L/I 300 mm).
- First service support 400 mm from both faces of the substrate.

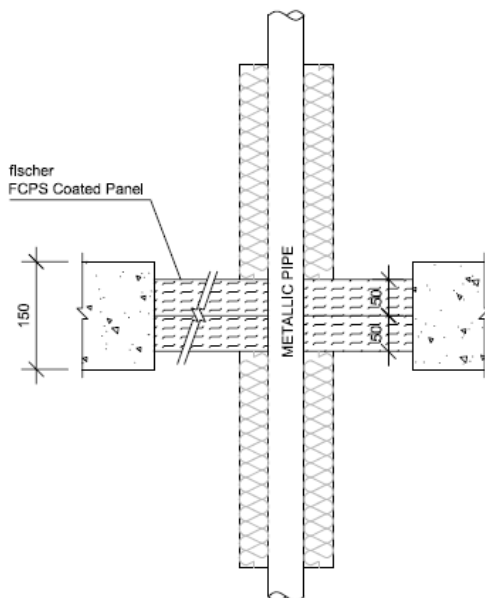


Service(s)	Classification
Electrical cables up to 80 mm dia	EI60
Cable Trays and Ladders	
100 mm diameter bundle telecommunication cable type "F"	
Unsheathed electrical cables up to 17 mm dia	
Unsheathed electrical cables 18-24 mm dia	
Steel or Copper Conduits up to 16 mm	
Plastic conduits up to 16 mm	

C3.1.2 Metallic Pipe Penetrations

Construction details:

- Double layer of fischer FCPS Coated Panel System (50 mm) installed internally within the wall.
- Max. Aperture size 700 mm wide x 1100 mm high.
- Cables and cable trays wrapped with 40 mm stone wool insulation (min 40 kg/m³) (L/I 300 mm).
- First service support 400 mm from both faces of the substrate.

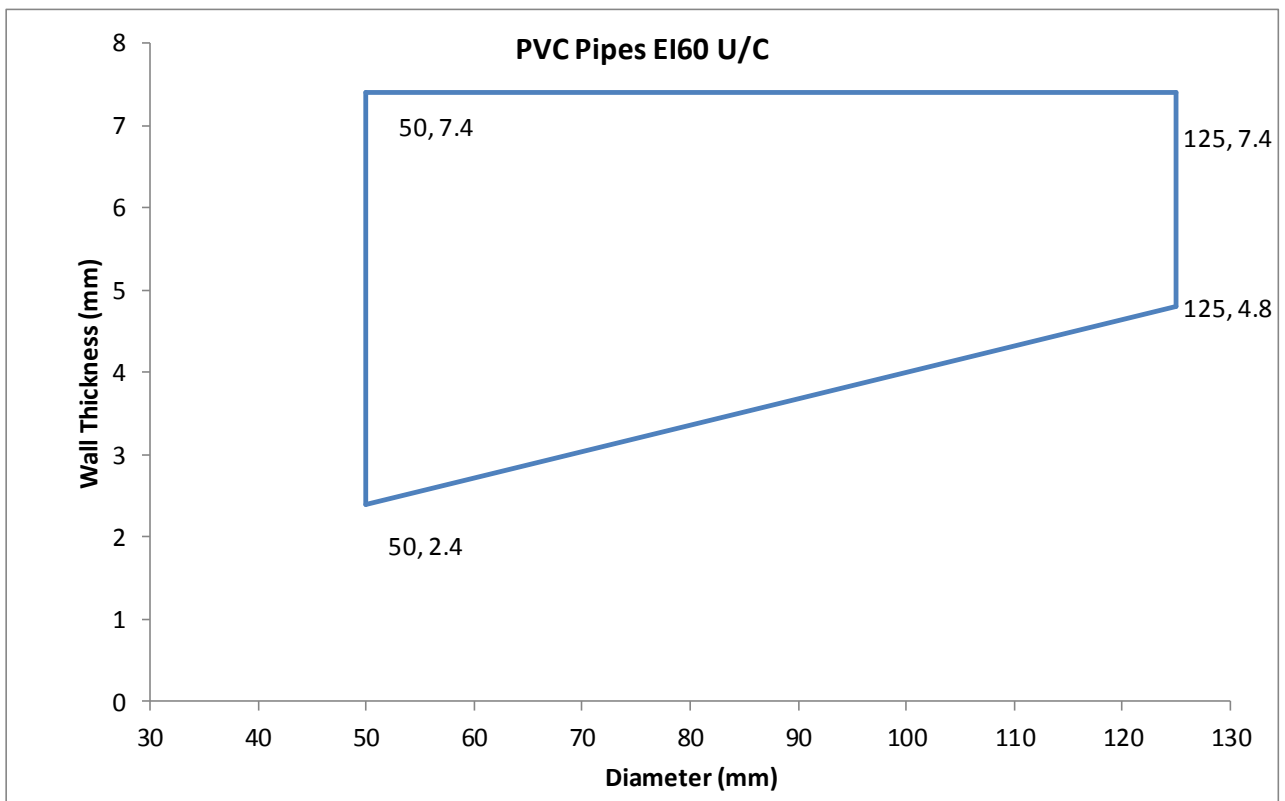
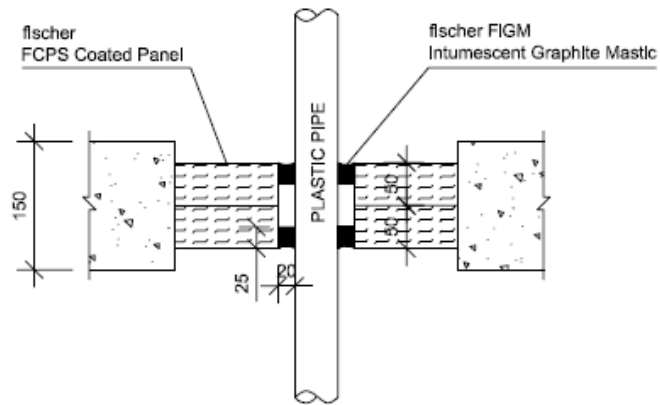


Service(s)	Classification
Steel or Copper Pipe 42 mm Ø, 1.2 mm – 14.2 mm wall thickness.	EI 120 C/U
Steel or Copper Pipe 42 mm – 159 mm Ø, 2 mm – 14.2 mm wall thickness.	E120 C/U EI30 C/U

C3.1.3 Plastic Pipe Penetrations

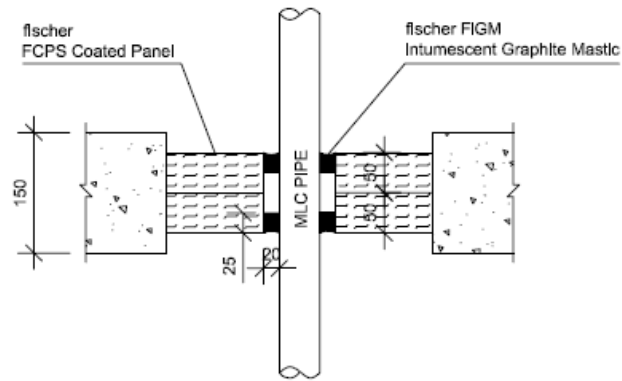
Construction details:

- Double layer of fischer FCPS Coated Panel System (50 mm) installed internally within the floor.
- Max. Aperture size 750 mm wide x 1100 mm high.
- fischer FIGM PFS+ Intumescent Graphite Mastic 20 mm annulus, 25 mm deep both faces of the fischer FCPS Coated Panel System.
- First service support 400 mm from both faces of the substrate.



Construction details:

- Double layer of fischer FCPS Coated Panel System (50 mm) installed internally within the floor.
- Max. Aperture size 750 mm wide x 1100 mm high.
- fischer FIGM PFS+ Intumescent Graphite Mastic 20 mm annulus, 25 mm deep both faces of the fischer FCPS Coated Panel System.
- First service support 400 mm from both faces of the substrate.



Penetration Specification	Classification
Uponor MLC (Multi-Layer Composite) Pipe 40 mm ø 4 mm wall thickness	E160 U/C
Uponor MLC (Multi-Layer Composite) Pipe 50 mm ø 4.5 mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 63 mm ø 6 mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 75 mm ø 7.5 mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 90 mm ø 8.5 mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 110 mm ø 10 mm wall thickness	

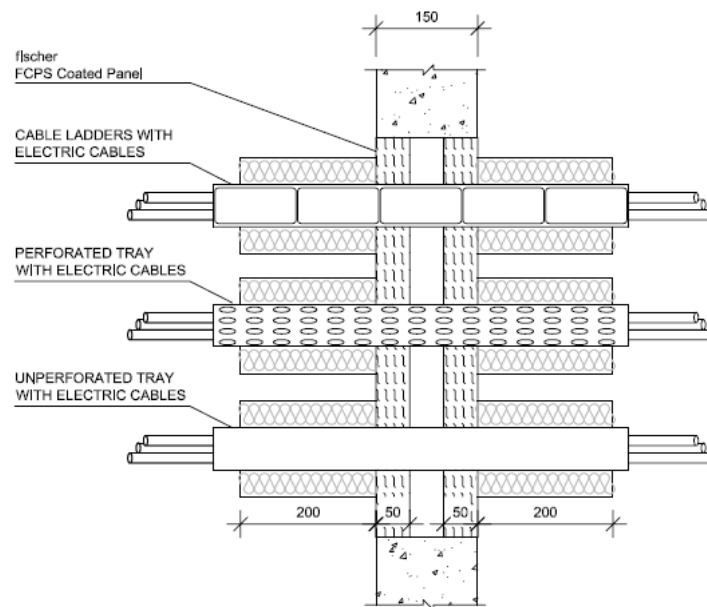
C3 fischer FCPS Coated Panel System Penetration Seal in Rigid Walls min. 150 mm thick

C3.1 Double Layer (50 mm) fischer FCPS Coated Panel System Penetration Seal

C3.1.1 Cable Penetrations

Construction details:

- Double layer of fischer FCPS Coated Panel System (50 mm) installed internally within the wall.
- Max. Aperture size 700 mm wide x 1100 mm high.
- Cables and cable trays wrapped with Stone Wool Insulation 45 mm thick, 40 kg/m³ (L/I 200 mm).
- First service support 400 mm from both faces of the substrate.



Service(s)	Classification
Electrical cables up to 21 mm dia	EI 120
Electrical cables 22 mm – 80 mm dia	E120 EI90
Cable Trays and Ladders	EI 120
100 mm diameter bundle telecommunication cable type "F"	EI 120
Unsheathed electrical cables up to 24 mm dia	EI 120