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Designated according to Article 29 of Regulation (EU) No 305/2011

Member of
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European Technical Assessment

ETA 14/0381
of 07/10/14

Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011:	
Trade name of the construction product	**FiGM Intumescent Graphite Mastic**
Product family to which the construction product belongs	Fire Stopping and Sealing Product Penetration Seals
Manufacturer	**Fischerwerke GmbH & Co** Klaus Fischer Strase 1 72178 Waldachtal Germany
Manufacturing plant(s)	E/091
This European Technical Assessment contains	35 pages including 3 Annex(es) which form an integral part of this assessment.
	Annex(es) A - C 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	ETAG 026, edition 2011, used as European Assessment Document (EAD)

General Comments

1. This European Technical Assessment is issued by Exova (UK) Limited trading as Warrington Certification on the basis of ETAG 026 Fire Protective Products Part 1: General June 2013, and Part 2: Fire Stopping and Fire Sealing Products Aug 2011, Used as European Assessment Document.

2. This European Technical Assessment is not to be transferred to manufacturers or agents of manufacturers other than those indicated on page 1, or manufacturing plants other than those indicated on page 1.

Contents

1 SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical Description of the Product

(Detailed information and data are given in Annexes)

1) FiGM Intumescent Graphite Mastic is an acrylic based graphite sealant used to reinstate the fire resistance performance of wall and floor constructions where they have been provided with apertures for the penetration of single or multiple services.

2) FiGM Intumescent Graphite Mastic is gun applied to annular space around the service(s) to the required depth (for details see Annex C)

3) FiGM Intumescent Graphite Mastic is supplied in 330ml cartridges or 2.5kg, 5kg, 10kg pails.

4) FiGM Intumescent Graphite Mastic can be installed in conjunction with Fischer FCPS Coated Panel System ETA 14/0388.

Internal use- ETAG 026-2 (used as European Assessment Document EAD) Type Z_1.

2 Specification Of The Intended Use In Accordance With The Relevant EAD

2.1 Intended Use

The intended use of FiGM Intumescent Graphite Mastic is to reinstate the fire resistance performance of rigid and flexible walls and rigid floor constructions where they are penetrated by various cables, cable trays and plastic and insulated metallic pipes

1) The specific elements of construction that the system FiGM Intumescent Graphite Mastic 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, aerated concrete or masonry, with a minimum density of 650 kg/m^3.
Rigid walls:	The wall must have a minimum thickness of 120 mm and comprise concrete, aerated concrete or masonry, with a minimum density of 650 kg/m^3.
Rigid floors:	The floor must have a minimum thickness of 150 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.
Flexible walls	The wall must have a minimum thickness of 120 mm and comprise timber or steel studs lined on both faces with minimum 2 layers of 15 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 FiGM Intumescent Graphite Mastic may be used to provide a penetration seal with plastic and insulated metallic pipes, and cables and cable trays (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 FiGM Intumescent Graphite Mastic may be used to seal apertures in the wall separating element up to 100mm wide by 300mm high. The system fischer FiGM Intumescent Graphite Mastic may be used to seal apertures in the floor separating element up to 250mm wide by 250mm high. The minimum permitted separation between adjacent seals/apertures is 200mm.

5) Pipes must be installed singular, cables require no minimum separation.

6) Services in walls and floors shall be supported at the distances specified in Annex C from the face of the separating element.

7) The provisions made in this European Technical Assessment are based on an assumed working life of the fischer FiGM Intumescent Graphite Mastic 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 Z_1: Intended for use in internal conditions with humidity equal to or higher than 85% RH excluding temperatures below 0^{o}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 EOTA ETAG 026 Part 2: 2011-08-08 (used as European Assessment Document, EAD)

ETAG Clause No.	ETA Clause No.	Characteristic	Assessment of characteristic
		Mechanical resistance and stability	Not relevant
		Safety in case of fire	**See Clause 3.1**
2.4.1	3.1	Reaction to fire	**Class F according to EN 13501-1**
2.4.2	3.2	Resistance to fire	**See clause 3.2 & Annex C**
		Hygiene, Health and the Environment	
2.4.3	3.3	Air permeability	**See clause 3.3**
2.4.4	3.4	Water permeability	No performance determined
2.4.5	3.5	Dangerous substances	**See clause 3.5**
		Safety in use	
2.4.6	3.6	Mechanical resistance and stability	No performance determined
2.4.7	3.7	Resistance to impact/movement	No performance determined
2.4.8	3.8	Adhesion	No performance determined
		Protection against noise	No performance determined
2.4.9	3.9	Airborne sound insulation	**Rw (C;Ctr)= 52(-1;-6).**
		Energy, Economy and Heat Retention	
2.4.10	3.10	Thermal properties	No performance determined
2.4.11	3.11	Water vapour permeability	No performance determined
		General aspects relating to fitness for use	
2.4.12	3.12	Durability and serviceability	**Z_1**

3.1 Reaction to fire

System fischer FiGM Intumescent Graphite Mastic is classified '**F'** in accordance with EN 13501-1.

3.2 Resistance to fire

System fischer FiGM Intumescent Graphite Mastic 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 FiGM Intumescent Graphite Mastic 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 Air permeability

System fischer FiGM Intumescent Graphite Mastic has been tested in accordance with BS EN 1314-1 to provide the following results:

Product Tested		fischer FiGM Intumescent Graphite Mastic		
	Results under positive chamber pressure		Results under negative chamber pressure	
Pressure (Pa)	Leakage (m^3/h)	Leakage ($m^3/m^2/h$)	Leakage (m^3/h	Leakage ($m^3/m^2/h$)
50	0.2	5.6	0.3	8.3
100	0.4	11.1	0.6	16.7
150	0.7	19.4	0.9	25.0
200	1.0	27.8	1.2	33.3
250	1.1	30.6	1.6	44.4
300	1.2	33.3	1.9	52.8
450	2.2	61.1	2.7	75.0
600	2.4	66.7	3.4	94.4

3.4 Water permeability

No performance determined

3.5 Dangerous substances

The applicant is required to submit 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.

The applicant declares that Product FiGM Intumescent Graphite Mastic 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 FiGM Intumescent Graphite Mastic 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).amendments).

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

3.6 Mechanical resistance and stability

No performance determined.

3.7 Resistance to impact/movement

No performance determined.

3.8 Adhesion

Not relevant.

3.9 Airborne sound insulation

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

Rw (C;Ctr)= 52(-1;-6).

3.10 Thermal Properties

No performance determined.

3.11 Water vapour permeability

No performance determined.

3.12 Durability and serviceability

fischer FiGM Intumescent Graphite Mastic has been tested in accordance with EOTA Technical Report - TR024 – Edition November 2006, for the type Z_1 use category specified in ETAG 026-3 (used as European Assessment Document, EAD), 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^oC, without exposure to rain or UV.

4 Assessment And Verification Of Constancy Of Performance (Hereinafter 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 uses	Level or Class	System
Fire stopping and fire sealing products	For fire compartmentation and / or fire protection or fire performance	Any	System 1

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

Tasks for the Manufacturer

Factory production control

The manufacturer shall exercise permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of results performed. This production control system shall ensure that the product is in conformity with this European technical assessment.

The manufacturer may only use constituent materials stated in the technical documentation of this European technical assessment.

The factory production control shall be in accordance with the Control Plan of 11.2.14 relating to the European technical assessment ETA 14/0381 which is part of the technical documentation of this European technical assessment. The “Control Plan” is laid down in the context of the factory production control system operated by the manufacturer and deposited at Exova (UK) Limited trading as Warrington Certification.

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

Other tasks of manufacturer

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

Tasks of approved bodies

The approved body shall perform the

— initial type-testing of the product,

— initial inspection of factory and of factory production control,

— continuous surveillance, assessment and approval of factory production control,

In accordance with the provisions laid down in the "Control Plan" of 11.2.14 relating to the European Technical Assessment ETA 14/0381.

The approved body shall retain the essential points of its actions referred to above and state the results obtained and conclusions drawn in a written report.

The approved certification body involved by the manufacturer shall issue an EC certificate of conformity of the product stating the conformity with the provisions of this European technical assessment.

In cases where the provisions of the European technical assessment and its "Control Plan" are no longer fulfilled the certification body shall withdraw the certificate of conformity and inform Exova (UK) Limited trading as Warrington Certification without delay.

Signatories

Responsible Officer

C. Abbott* - Principal Certification Engineer

Approved

A. Kearns* - Technical Manager

* For and on behalf of Exova (UK) Limited trading as Warrington Certification

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

Other reference documents:

EOTA TR 024	Characterisation, Aspects of Durability and Factory Production Control for Reactive Materials, Components and Products
ETAG No. 026: Part 2	Guideline For European Technical Approval of Fire Stopping and Fire Sealing Products, Part 3: Penetration Seals (used as European Assessment Document, EAD)

Annex B

Description of Product and Product Literature

fischer FiGM Intumescent Graphite Mastic

A detailed specification of the product is contained in document “Evaluation Report” relating to the European Technical Approval ETA – 14/0381 issued on 07/10/14, of fischer FiGM Intumescent Graphite Mastic which is a non-public part of this ETA.

Annex C

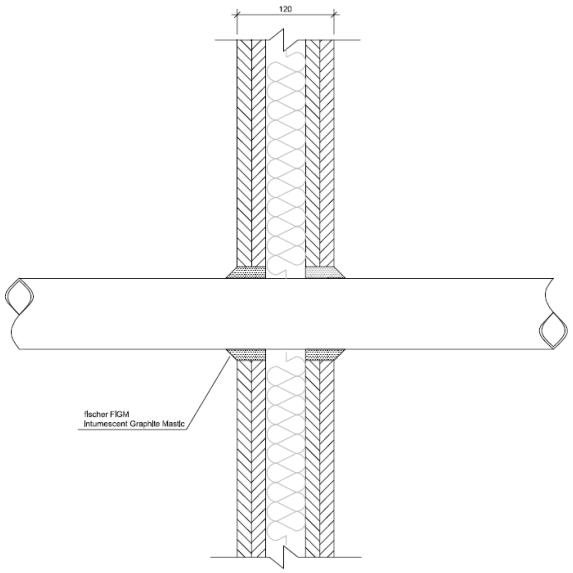
Resistance to Fire Classification of FiGM Intumescent Graphite Mastic

C.1.1 Flexible and Rigid wall constructions according to 1.2.1 with wall thickness of minimum 120 mm

C.1.1.1 Penetration seal with FiGM Intumescent Graphite Mastic – Plastic Pipes

Construction details:

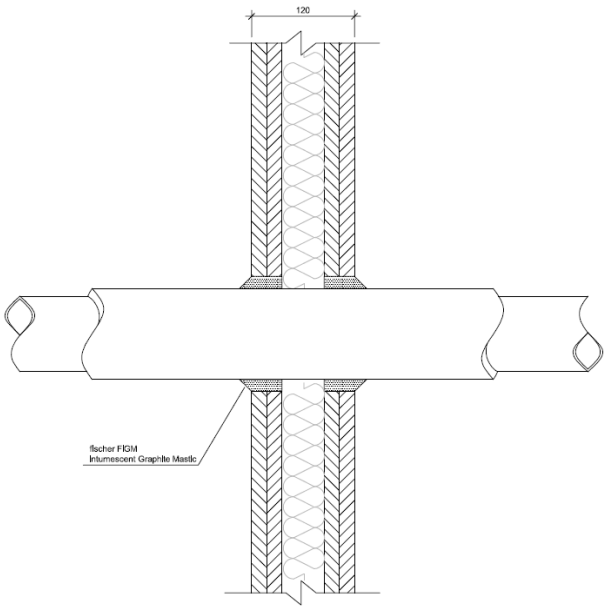
- FiGM Intumescent Graphite Mastic applied into the annular space to the required depth as per table C1.3
- First support positioned 150mm from both faces of the substrate



Penetration Specification	FiGM Intumescent Graphite Mastic (installed both faces)	Backing Material	Classification
PVC Pipe 40mm ø 1.9-3mm wall thickness	10mm annulus x 25mm deep	N/A	**EI120 U/C**
PVC Pipe 125mm ø 4.8-7.4mm wall thickness	16mm annulus x 25mm deep	30mm deep, 80Kg/m^3	**EI120 U/C**
HDPE Pipe 63mm ø 7.2mm wall thickness, Cables up to 21mm ø	300mm wide x 100mm high x 25mm deep	N/A	**EI120 U/C**
HDPE Pipe 90mm ø 9.2mm wall thickness,	12.5mm annulus x 25mm deep	N/A	**EI120 U/C**
ABS Pipe 90mm ø 6mm wall thickness,	12.5mm annulus x 25mm deep	N/A	**EI120 U/C**

C.1.2.1 Penetration seal with FiGM Intumescent Graphite Mastic – Insulated Metallic Pipes

- FiGM Intumescent Graphite Mastic applied into the annular space to the required depth as per table C2.3
- First support positioned 150mm from both faces of the substrate



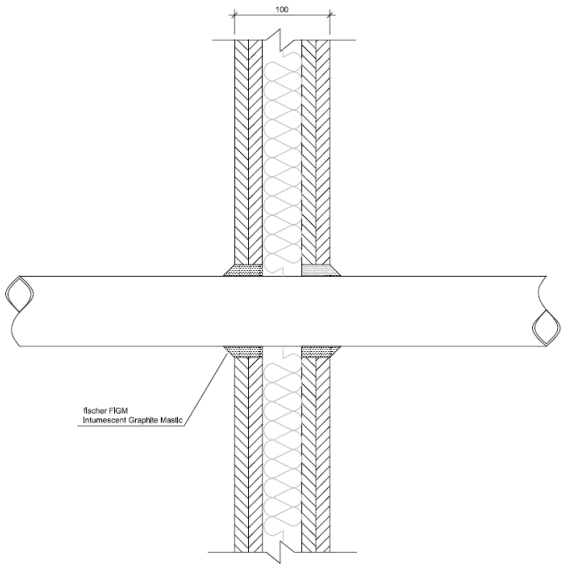
Penetration Specification	FiGM Intumescent Graphite Mastic (installed both faces)	Backing Material	Classification
Copper/Steel Pipe 60mm ø 0.8mm -14.2mm wall thickness, insulated with 32mm 'Armaflex AF' (CS) Continued Sustained	20mm annulus x 25mm deep	N/A	**E120 U/C** **EI90 U/C**
Copper/Steel Pipe 15mm ø 0.8mm -7mm wall thickness, insulated with 13mm 'Armaflex AF' (CS) Continued Sustained	15mm annulus x 25mm deep	N/A	**EI120 U/C**

C.2.1 Flexible and Rigid wall constructions according to 1.2.1 with wall thickness of minimum 100 mm

C.2.1.1 Penetration seal with FiGM Intumescent Graphite Mastic – Plastic Pipes

Construction details:

- FiGM Intumescent Graphite Mastic applied into the annular space to the required depth as per table C3.3
- First support positioned 270mm from both faces of the substrate

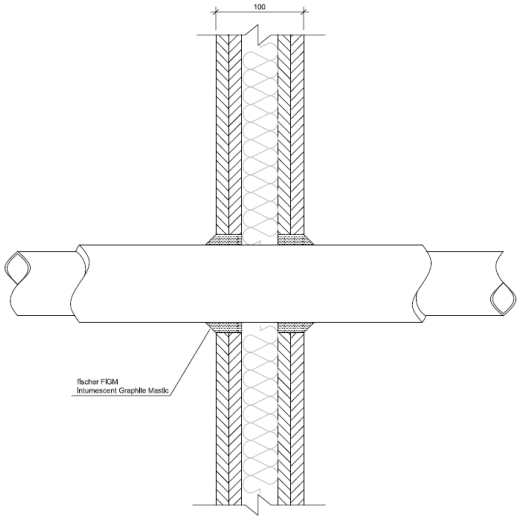


Penetration Specification	FiGM Intumescent Graphite Mastic (installed both faces)	Backing Material	Classification
PVC Pipe 40mm ø 1.9mm wall thickness	20mm annulus x 25mm deep	N/A	**EI120 C/U**
PVC Pipe 125mm ø 9.2mm wall thickness	20mm annulus x 25mm deep	N/A	**EI60 C/U**
ABS Pipe 40mm ø 1.9mm wall thickness	20mm annulus x 25mm deep	N/A	**EI120 C/U**
HDPP Pipe 40mmø 2mm wall thickness	20mm annulus x 25mm deep	N/A	**EI120 C/U**

C.2.2.1 Penetration seal with FiGM Intumescent Graphite Mastic – Insulated Metallic Pipes

Construction details:

- FiGM Intumescent Graphite Mastic applied into the annular space to the required depth as per table C4.3
- First support positioned 400mm from both faces of the substrate

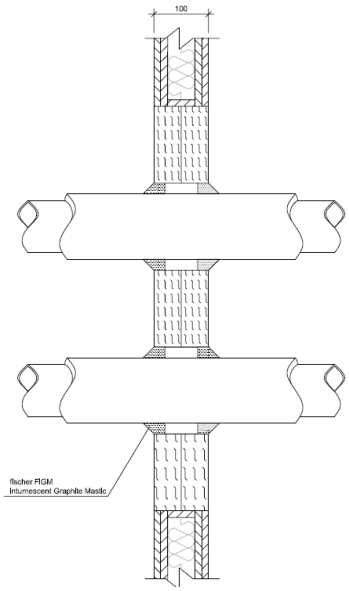


Penetration Specification	FiGM Intumescent Graphite Mastic (installed both faces)	Backing Material	Classification
Copper/Steel Pipe 40mm ø 1.5mm – 14.2mm wall thickness insulated with32mm 'Armaflex AF' (LS 650mm) Local Sustained 650mm	20mm annulus x 25mm deep	N/A	**E120 C/U** **EI30 C/U**
Copper/Steel Pipe 40mm - 159mm ø 2.0 mm – 14.2mm wall thickness insulated with32mm 'Armaflex AF' (LS 650mm) Local Sustained 650mm	20mm annulus x 25mm deep	N/A	**E120 C/U** **EI30 C/U**
Copper/Steel Pipe 159mm ø 2.0 mm – 14.2mm wall thickness insulated with 30mm x 80kg/m³ 'Pipelane' SGR glass wool tube (LS 650mm) Local Sustained 650mm	20mm annulus x 25mm deep	N/A	**E120 C/U** **EI30 C/U**

C.2.3.1 Penetration seal with FiGM Intumescent Graphite Mastic – Insulated Metallic Pipes

Construction details:

- FiGM Intumescent Graphite Mastic applied into the annular space to the required depth as per table
- First support positioned 400mm from both faces of the substrate



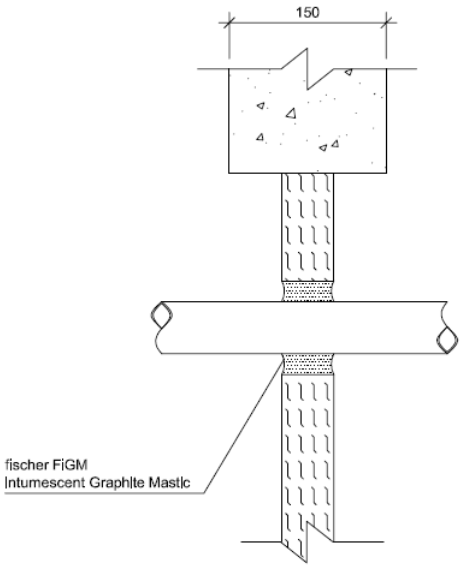
Penetration Specification	FiGM Intumescent Graphite Mastic	Fischer FCPS Coated Panel System	Classification
Copper/Steel Pipe 40mm ø 1.5mm -14.2mm wall thickness, insulated with 20mm thick foil faced glasswool insulation min density 80kg/m^3 (CS) Continued Sustained	15mm annulus, 15mm deep both faces of the Fischer FCPS Coated Panel System, incorporating a 15mm fillet projecting from the face of the seal	Double layer of 50mm Fischer FCPS Coated Panel System max 600mm high x 600mm wide	**EI60 C/U**
Copper/Steel Pipe 159mm ø 2.3mm -14.2mm wall thickness, insulated with 30mm thick foil faced glasswool insulation min density 80kg/m^3 (CS) Continued Sustained			**E90 C/U** **EI60 C/U**
Steel Pipe 40mm ø 1.7mm - 14.2mm wall thickness, insulated with 20mm thick foil faced glasswool insulation min density 80kg/m^3 (CS) Continued Sustained			**E90 C/U** **EI60 C/U**
Steel Pipe 150mm ø 2.3mm - 14.2mm wall thickness, insulated with 30mm thick foil faced glasswool insulation min density 80kg/m^3 (CS) Continued Sustained			**EI60 C/U**

C.3.1 Rigid wall constructions according to 1.2.1 with wall thickness of minimum 150 mm incorporating Fischer FCPS Coated Panel System

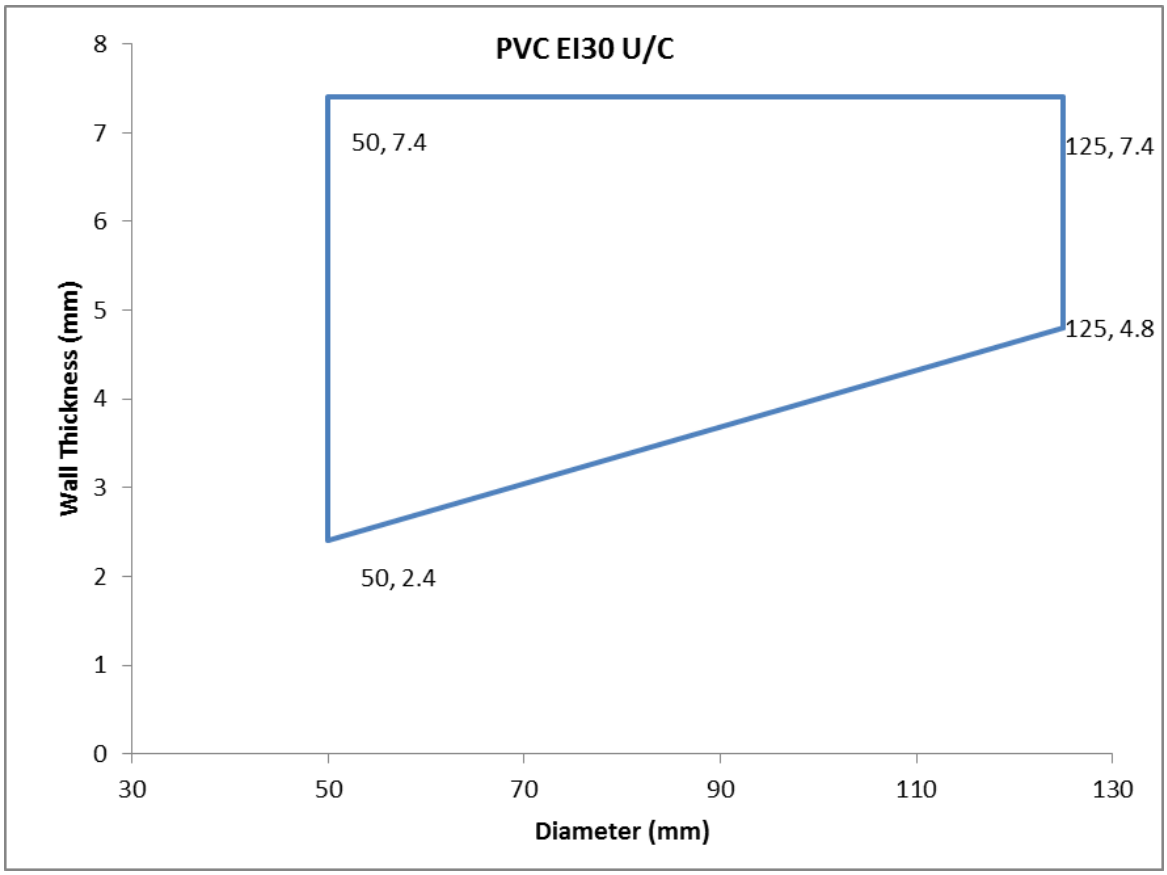
C.3.1.1 Penetration seal with FiGM Intumescent Graphite Mastic – Plastic Pipes

Construction details:

- FiGM Intumescent Graphite Mastic applied into the annular space to the required depth as per table
- First support positioned 400mm from both faces of the substrate



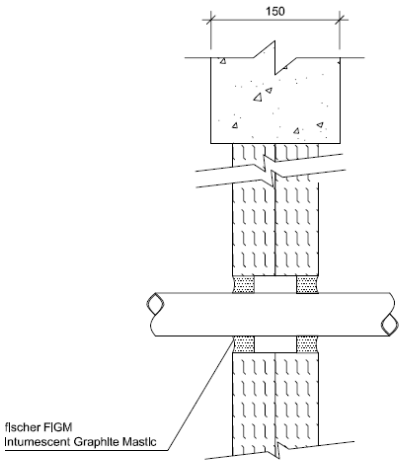
Penetration Specification	FiGM Intumescent Graphite Mastic	Fischer FCPS Coated Panel System	Classification
PVC Pipe 50mm ø 2.4-7.4mm wall thickness	20mm annulus full 50mm depth of the Fischer FCPS Coated Panel System	Single layer of 50mm Fischer FCPS Coated Panel System max 1100mm high x 750mm wide	**EI45 U/C**
Pipe Diameters as below			**See below**



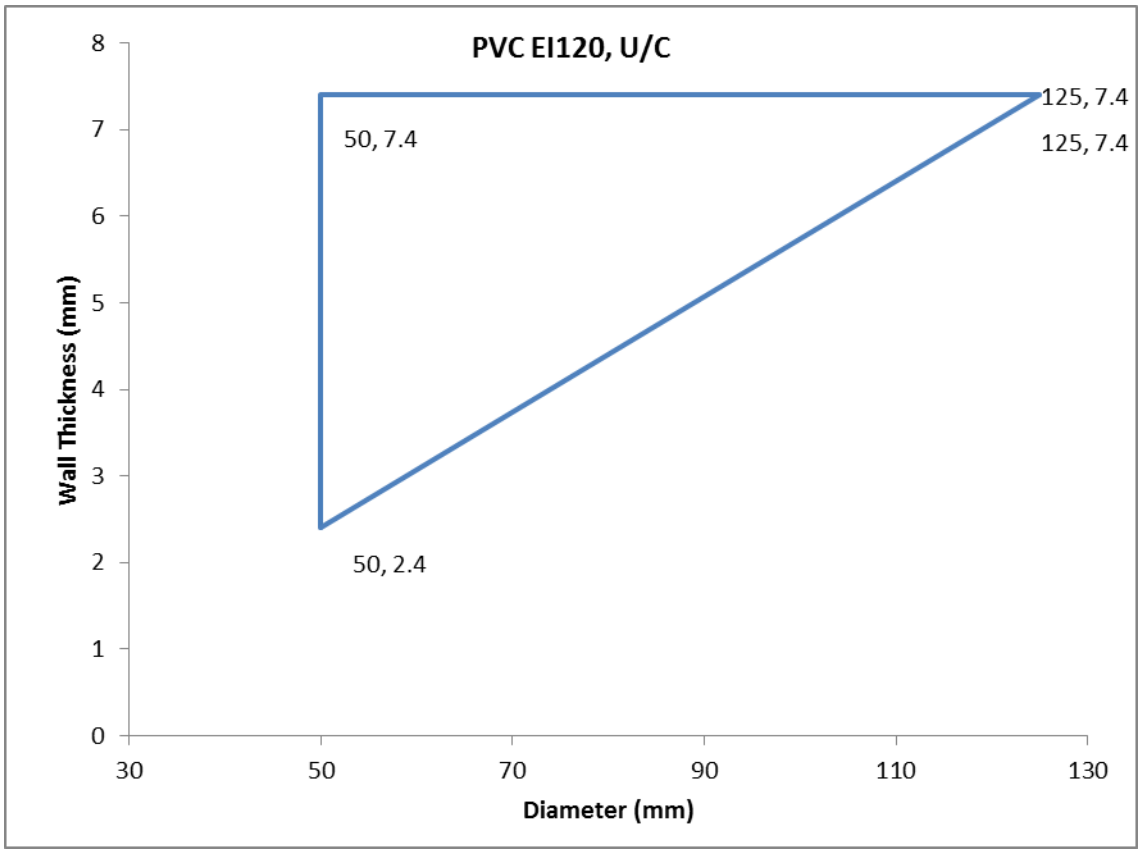
Penetration Specification	FiGM Intumescent Graphite Mastic	Fischer FCPS Coated Panel System	Classification
Uponor MLC (Multi-Layer Composite) Pipe 40mm ø 4mm wall thickness	20mm annulus full 50mm depth of the Fischer FCPS Coated Panel System	Single layer of 50mm Fischer FCPS Coated Panel System max 1100mm high x 750mm wide	**E45 U/C EI30 U/C**
Uponor MLC (Multi-Layer Composite) Pipe 50mm ø 4.5mm wall thickness			
Uponor MLC (Multi-Layer Composite) Pipe 63mm ø 6mm wall thickness			
Uponor MLC (Multi-Layer Composite) Pipe 75mm ø 7.5mm wall thickness			
Uponor MLC (Multi-Layer Composite) Pipe 90mm ø 8.5mm wall thickness			
Uponor MLC (Multi-Layer Composite) Pipe 110mm ø 10mm wall thickness			

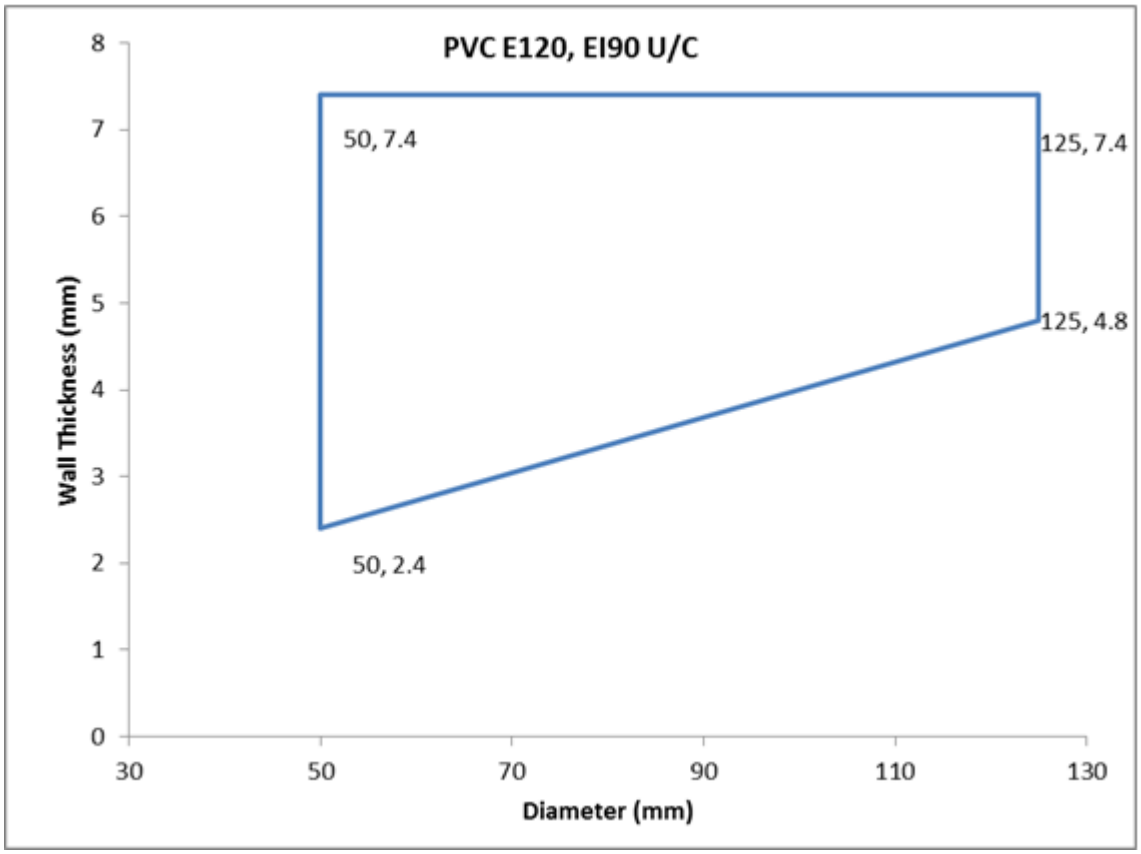
Construction details:

- FiGM Intumescent Graphite Mastic applied into the annular space to the required depth as per table
- Stopeal Coated Batt 2 x 50mm thick
- First support positioned 400mm from both faces of the substrate



Penetration Specification	FiGM Intumescent Graphite Mastic	Fischer FCPS Coated Panel System	Classification
Pipe Diameters as below	20mm annulus, 25mm deep both faces of the Fischer FCPS Coated Panel System	Double layer of 50mm Fischer FCPS Coated Panel System max 1100mm high x 750mm wide	**See below**


PVC EI120, U/C
Wall Thickness (mm)
Diameter (mm)
50, 7.4
125, 7.4
125, 7.4
50, 2.4
0
1
2
3
4
5
6
7
8
30
50
70
90
110
130

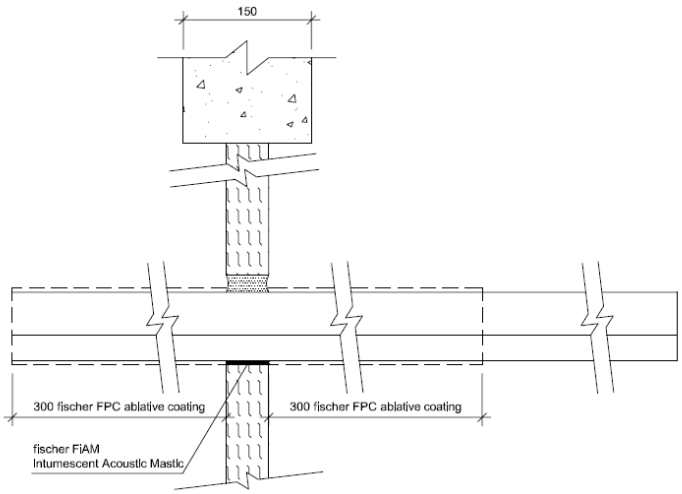

PVC E120, EI90 U/C
Wall Thickness (mm)
Diameter (mm)
50, 7.4
125, 7.4
125, 4.8
50, 2.4
0
1
2
3
4
5
6
7
8
30
50
70
90
110
130

Penetration Specification	FiGM Intumescent Graphite Mastic	Fischer FCPS Coated Panel System	Classification
Uponor MLC (Multi-Layer Composite) Pipe 40mm ø 4mm wall thickness	20mm annulus, 25mm deep both faces of the Fischer FCPS Coated Panel System	Double layer of 50mm Fischer FCPS Coated Panel System max 1100mm high x 750mm wide	**EI120 U/C**
Uponor MLC (Multi-Layer Composite) Pipe 50mm ø 4.5mm wall thickness			
Uponor MLC (Multi-Layer Composite) Pipe 63mm ø 6mm wall thickness			
Uponor MLC (Multi-Layer Composite) Pipe 75mm ø 7.5mm wall thickness			
Uponor MLC (Multi-Layer Composite) Pipe 90mm ø 8.5mm wall thickness			
Uponor MLC (Multi-Layer Composite) Pipe 110mm ø 10mm wall thickness			

C.3.2.1 Penetration seal with FiGM Intumescent Graphite Mastic – Electrical Cables

Construction details:

- FiGM Intumescent Graphite Mastic applied into the annular space to the required depth as per table
- First support positioned 400mm from both faces of the substrate

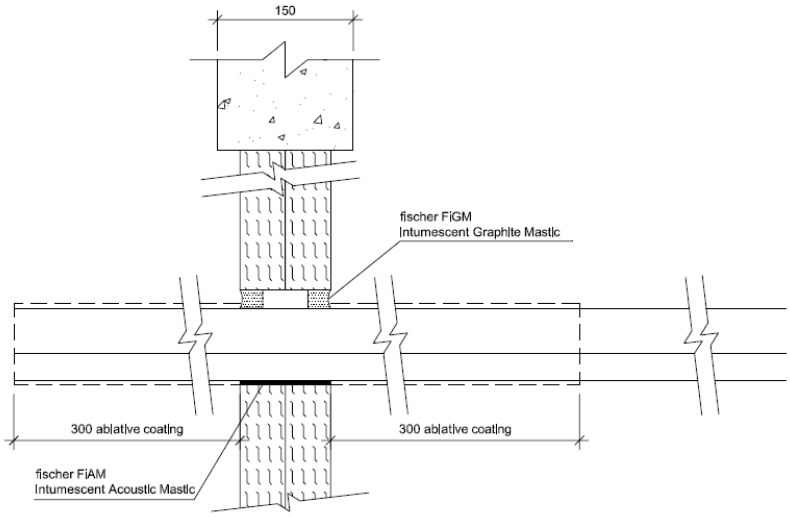


Penetration Specification	FiGM Intumescent Graphite Mastic	Fischer FCPS Coated Panel System	Classification
*500mm perforated cable tray	20mm gap full 50mm depth of the Fischer FCPS Coated Panel System	Single layer of 50mm Fischer FCPS Coated Panel System max 1100mm high x 750mm wide	**EI30**
*Electrical cables up to 21mm ø			**EI45**
*1 off 'C1' Cable			
*1 off 'C2' Cable			
*1 off 'C3' Cable			

*All cables coated with 2mm DFT FPC Panel Coating 300mm along the cables both sides of the seal

Construction details:

- FiGM Intumescent Graphite Mastic applied into the annular space to the required depth as per table
- First support positioned 400mm from both faces of the substrate



Penetration Specification	FiGM Intumescent Graphite Mastic	Fischer FCPS Coated Panel System	Classification
*500mm perforated cable tray	20mm annulus, 25mm deep both faces of the Fischer FCPS Coated Panel System	Double layer of 50mm Fischer FCPS Coated Panel System max 1100mm high x 750mm wide	**EI120**
*Electrical cables up to 21mm ø			
*1 off 'C1' Cable			
*1 off 'C2' Cable			**E120 EI90**
*1 off 'C3' Cable			**EI120**

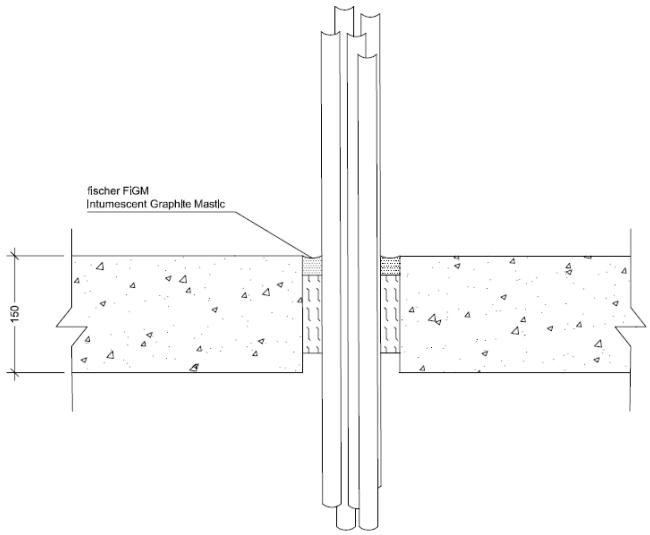
*All cables coated with 2mm DFT FPC Panel Coating 300mm along the cables both sides of the seal

C.4.1 Rigid floor constructions according to 1.2.1 with floor thickness of minimum 150 mm

C4.1.1 Penetration seal with FiGM Intumescent Graphite Mastic – Electrical cables

Construction details:

- FiGM Intumescent Graphite Mastic applied into the annular space to the required depth as per table C5.3
- First support positioned 250mm from the upper face of the substrate

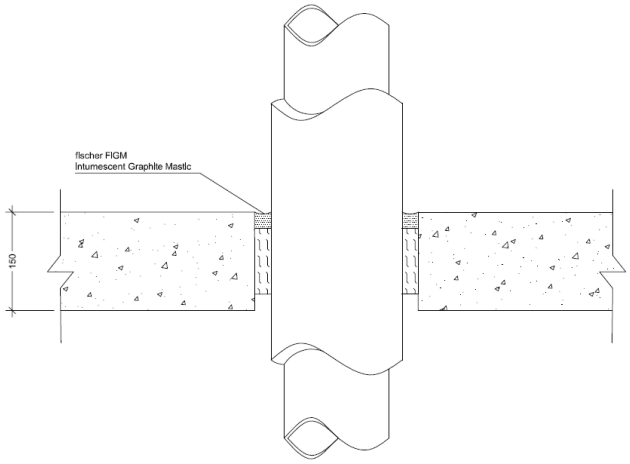


Penetration Specification	FiGM Intumescent Graphite Mastic (installed upper face only)	Aperture Size (mm)	Backing Material	Classification
Electrical Cables 0-21mm ø	25mm deep	Max 200 x 200 Min 50 x 50	100mm Deep stone wool 45 kg/m^3	**E180 EI20**
Electrical Cables 22-80mm ø				**E120 EI20**
Non sheathed electrical cables 0- 24mm ø				**E180 EI15**
Up to 21mm Ø telecomm cables in bundles of up to 100 mm diameter				**E180 EI20**

C.4.2.1 Penetration seal with FiGM Intumescent Graphite Mastic – Insulated Metallic Pipes

Construction details:

- FiGM Intumescent Graphite Mastic applied into the annular space to the required depth as per table C6.3
- First support positioned 250mm from the upper face of the substrate

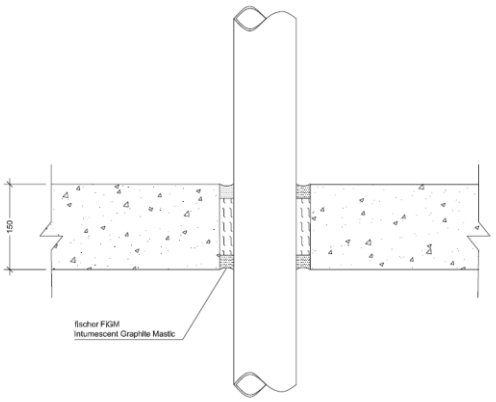


Penetration Specification	FiGM Intumescent Graphite Mastic (installed upper face only)	Aperture Size (mm)	Backing Material	Classification
Copper/Steel Pipe 41mm – 159mm ø 2.5mm - 14.2mm wall thickness, insulated with 16mm - 32mm 'Armaflex' (CS) Continued Sustained	25mm deep	20mm annulus	100mm Deep stone wool 45 kg/m^3	**EI20 U/C**
Copper/Steel Pipe 41mm 1.4 – 14.2mm wall thickness, insulated with 16mm 'Armaflex' (CS) Continued Sustained				**E240 U/C** **EI60 U/C**

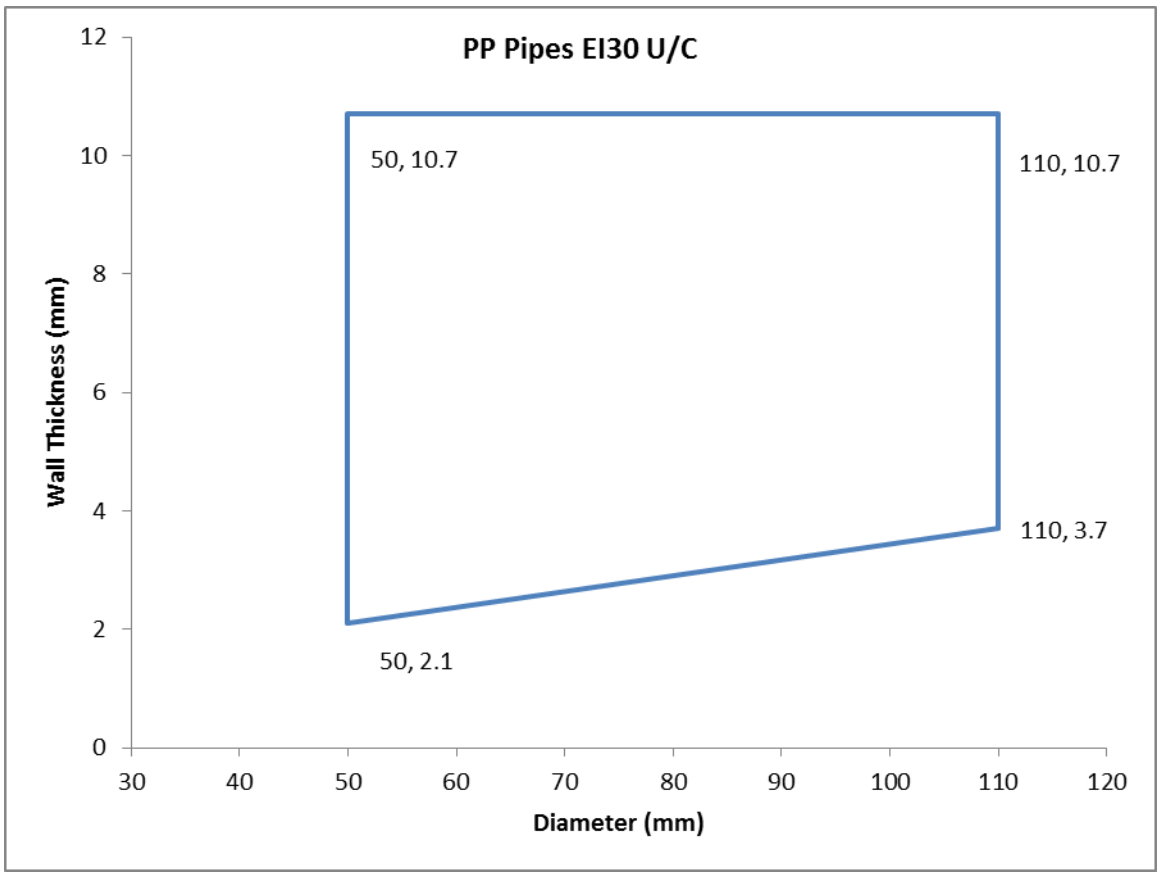
C.4.3.1 Penetration seal with FiGM Intumescent Graphite Mastic – Plastic Pipes

Construction details:

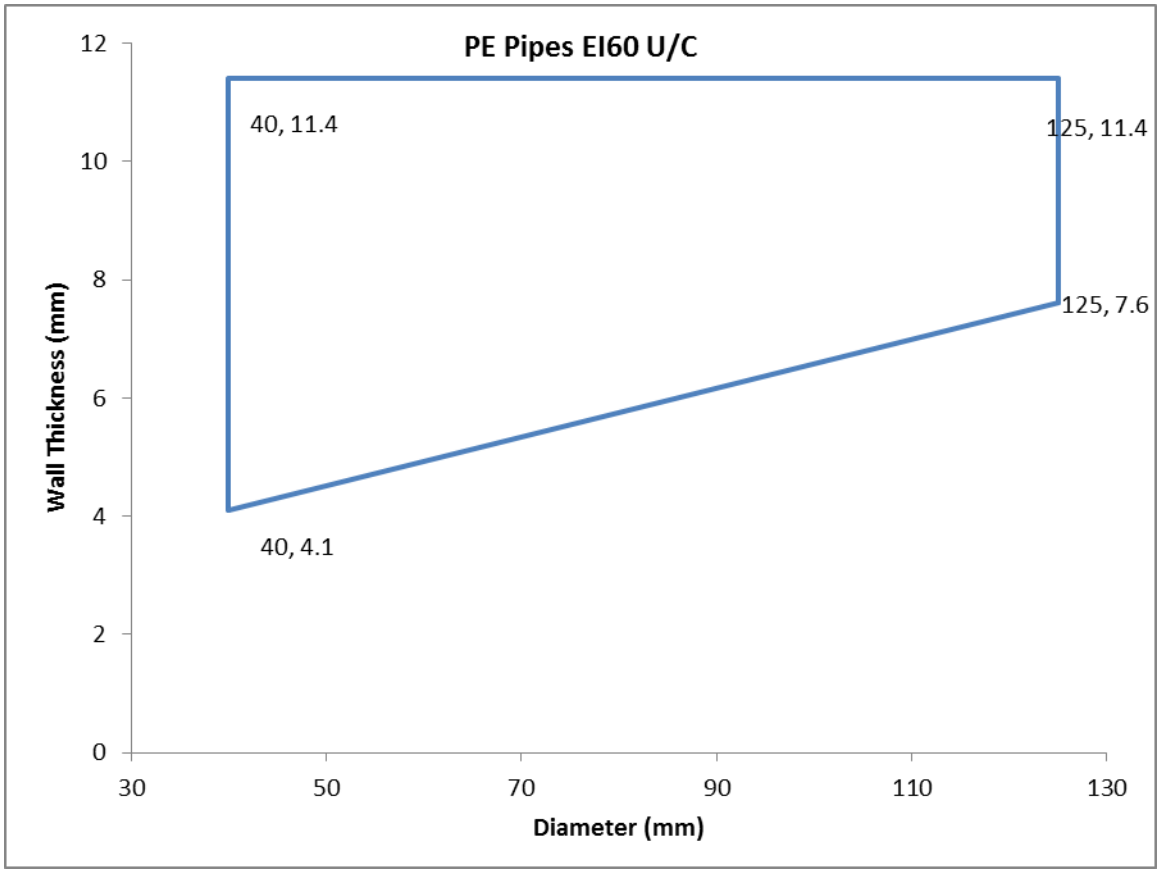
- FiGM Intumescent Graphite Mastic applied into the annular space to the required depth as per table C 7.3-C 7.5
- First support positioned 250mm from the upper face of the substrate



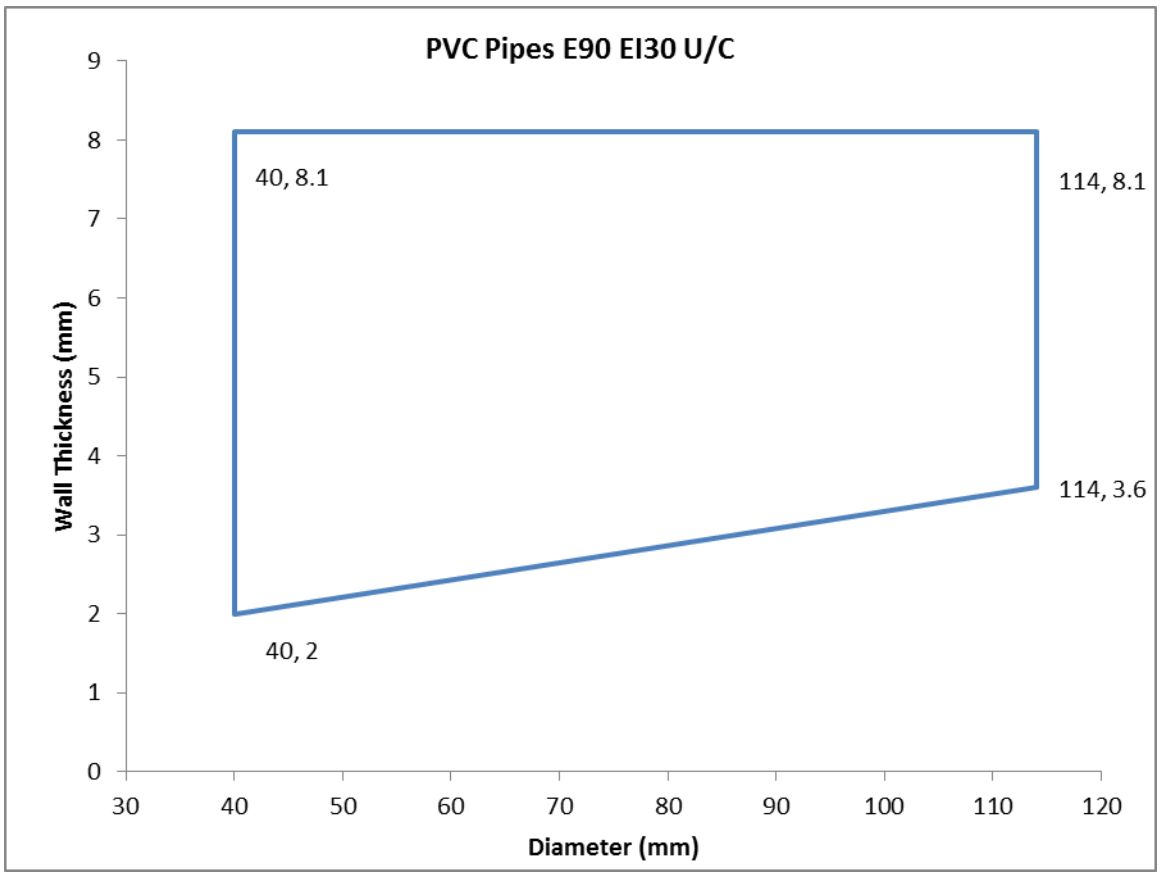
Penetration Specification	FiGM Intumescent Graphite Mastic (installed both faces)	Aperture Size (mm)	Backing Material	Classification
PP Pipe 110mm ø 3.7mm wall thickness	25mm deep	20mm annulus	100mm Deep stone wool 45 kg/m^3	**EI30 U/C**
PP Pipe 110mm ø 10.7mm wall thickness				**EI120 U/C**
PP Pipe 50mm ø 2.1mm wall thickness				**EI240 U/C**



Penetration Specification	FiGM Intumescent Graphite Mastic (installed both faces)	Aperture Size (mm)	Backing Material	Classification
PE Pipe 40mm ø 4.1mm wall thickness	25mm deep	20mm annulus	100mm Deep stone wool 45 kg/m^3	**EI240 U/C**
PE Pipe 125mm ø 7.6 mm wall thickness				**EI60 U/C**
PE Pipe 125mm ø 11.4 mm wall thickness				**EI90 U/C**



Penetration Specification	FiGM Intumescent Graphite Mastic (installed both faces)	Aperture Size (mm)	Backing Material	Classification
PVC Pipe 40mm ø 2mm wall thickness	25mm deep	20mm annulus	100mm Deep stone wool 45 kg/m^3	**EI240 U/C**
PVC Pipe 114mm ø 3.6 mm wall thickness				**E90 U/C EI45 U/C**
PVC Pipe 114mm ø 8.1 mm wall thickness				**EI120 U/C**

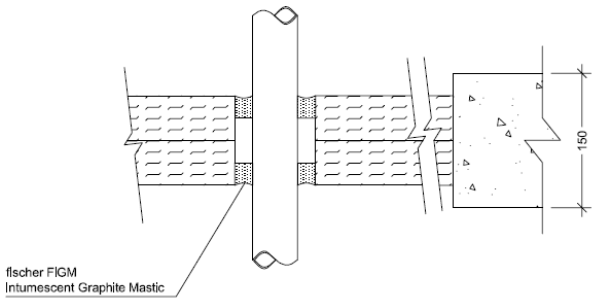


C.5.1 Rigid floor constructions according to 1.2.1 with wall thickness of minimum 150 mm incorporating Fischer FCPS Coated Panel System

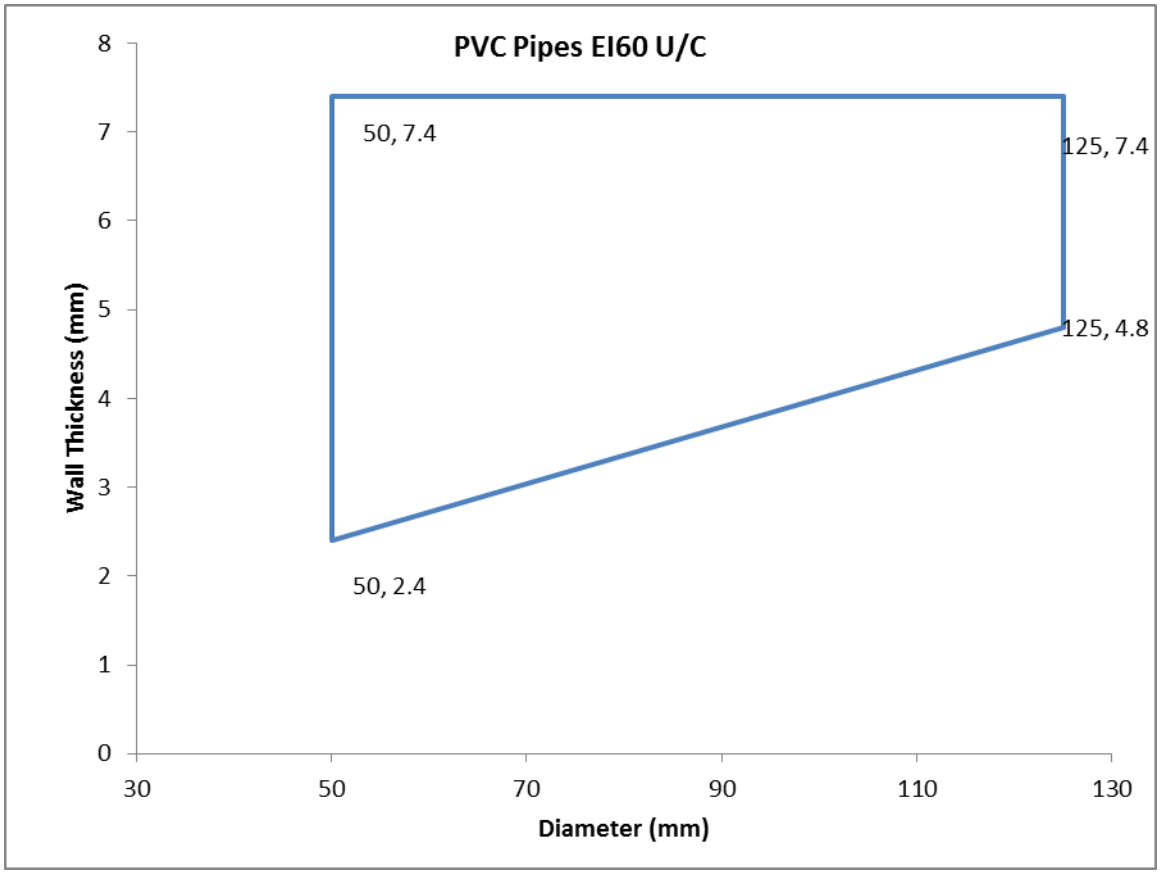
C.5.1.1 Penetration seal with FiGM Intumescent Graphite Mastic – Plastic Pipes

Construction details:

- FiGM Intumescent Graphite Mastic applied into the annular space to the required depth as per table
- First support positioned 400mm from the upper face of the substrate



Penetration Specification	FiGM Intumescent Graphite Mastic	Fischer FCPS Coated Panel System	Classification
Pipe Diameters as below	20mm annulus, 25mm deep both faces of the Fischer FCPS Coated Panel System	Double layer of 50mm Fischer FCPS Coated Panel System max 1100mm high x 750mm wide	**See below**

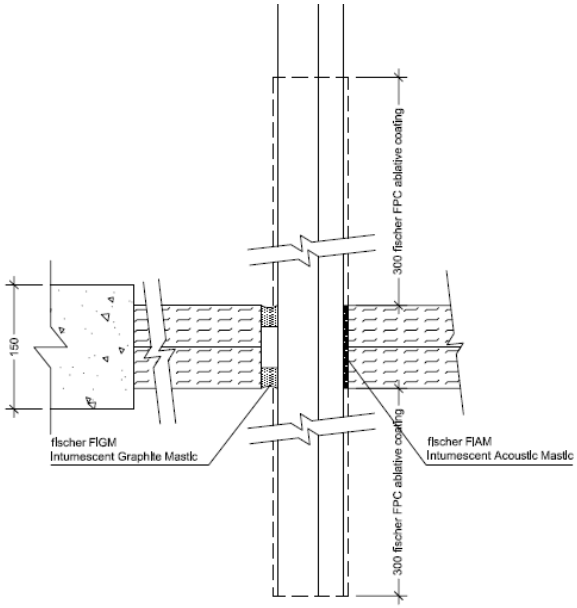

PVC Pipes EI60 U/C
Wall Thickness (mm)
Diameter (mm)
50, 7.4
125, 7.4
125, 4.8
50, 2.4
0
1
2
3
4
5
6
7
8
30
50
70
90
110
130

Penetration Specification	FiGM Intumescent Graphite Mastic	Fischer FCPS Coated Panel System	Classification
Uponor MLC (Multi-Layer Composite) Pipe 40mm ø 4mm wall thickness	20mm annulus, 25mm deep both faces of the Fischer FCPS Coated Panel System	Double layer of 50mm Fischer FCPS Coated Panel System max 1100mm high x 750mm wide	
Uponor MLC (Multi-Layer Composite) Pipe 50mm ø 4.5mm wall thickness			**EI60 U/C**
Uponor MLC (Multi-Layer Composite) Pipe 63mm ø 6mm wall thickness			
Uponor MLC (Multi-Layer Composite) Pipe 75mm ø 7.5mm wall thickness			
Uponor MLC (Multi-Layer Composite) Pipe 90mm ø 8.5mm wall thickness			
Uponor MLC (Multi-Layer Composite) Pipe 110mm ø 10mm wall thickness			

C.5.2.1 Penetration seal with FiGM Intumescent Graphite Mastic – Electrical Cables

Construction details:

- FiGM Intumescent Graphite Mastic applied into the annular space to the required depth as per table
- First support positioned 400mm from the upper face of the substrate



Penetration Specification	FiGM Intumescent Graphite Mastic	Fischer FCPS Coated Panel System	Classification
*500mm perforated cable tray	20mm annulus, 25mm deep both faces of the Fischer FCPS Coated Panel System	Double layer of 50mm Fischer FCPS Coated Panel System max 1100mm high x 750mm wide	**EI60**
*Electrical cables up to 21mm ø			
*1 off 'C1' Cable			
*1 off 'C2' Cable			
*1 off 'C3' Cable			

*All cables coated with 2mm DFT FPC Panel Coating 300mm along the cables upper side of the seal