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Authorised and notified according to Article 29 of the Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011

MEMBER OF EOTA

European Technical Assessment ETA-20/1319 of 2021/01/01

I General Part

Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011: ETA-Danmark A/S	
Trade name of the construction product:	Nullifire FB750
Product family to which the above construction product belongs:	Fire Stopping and Sealing Product: • Penetration Seals
Manufacturer:	Tremco CPG UK Limited Torrington Avenue Coventry CV4 9TJ United Kingdom
Manufacturing plant:	A/016
This European Technical Assessment contains:	45 pages including 3 annexes which form an integral part of the document
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of:	EAD 350454-00-1104 for Fire stopping and fire sealing products - Penetration seals, September 2017
This version replaces:	-

I. SPECIFIC PARTS OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical description of the product

1) Nullifire FB750 is a coated mineral wool board 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) The Nullifire FB750 is supplied coated on both faces, the board or boards are then cut to allow the penetration of the required services, before being inserted into the aperture in the wall or floor.

3) The applicant has submitted a written declaration that Nullifire FB750 does not contain substances which have to be classified as dangerous according to Directive 67/548/EEC and Regulation (EC) No 1272/2008 and listed in the "Indicative list on dangerous substances" of the EGDS - taking into account the installation conditions of the construction product and the release scenarios resulting from there.

   In addition to the specific clauses relating to dangerous substances contained in this European Technical Assessment, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Construction Products Regulation, these requirements need also to be complied with, when and where they apply.

2 Specification of the intended uses of the product in accordance with the applicable European Assessment Document (Hereinafter EAD): ETAG 026-2.

Detailed information and data is given in Annex A.

1) The intended use of Nullifire FB750 is to reinstate the fire resistance performance of flexible wall, rigid wall and floor constructions where they are penetrated by various cables and metallic pipes.

2) The specific elements of construction that the system Nullifire FB750 may be used to provide a penetration seal in, are as follows:

   a. Flexible walls: The wall must have a minimum thickness of 100 mm and comprise steel studs lined on both faces with minimum 2 layers of 12.5 mm thick boards. Apertures is flexible walls shall be framed with steel studs and coated all around with Nullifire FS702 sealant.

   b. 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. Apertures is rigid walls shall be coated all around with Nullifire FS702 sealant.

   c. Rigid floors: The floor must have a minimum thickness of 150 mm and comprise aerated concrete or concrete with a minimum density of 650 kg/m^3. Apertures is rigid walls shall be coated all around with Nullifire FS702 sealant.

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

3) The System Nullifire FB750 may be used to provide a penetration seal with cables, cable trays, metallic pipes (for details see Annex A).

4) The total amount of cross sections of services (including insulation) shall not exceed 60% of the penetration area.

5) The system Nullifire FB750 may be used to seal apertures in the separating element up to 1200mm wide by 1800mm high in a wall, and 1800mm by 600 mm in a floor. The minimum permitted separation between adjacent seals/apertures is 200mm. Services should be a minimum of 100mm from seal edges. Services within the system Nullifire FB750 seal do not require a minimum separation, except pipes which should be a minimum of 100 mm from other services in the aperture.

6) Services in floors shall be supported at 200mm and 450mm from the top face. Services in walls shall be supported at 200mm and 450mm from both faces of the wall.

7) The provisions made in this European Technical Assessment are based on an assumed working life of the Nullifire FB750 of 10 years, provided that the conditions laid down in the product datasheet 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 or the Technical Assessment Body, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

8) Type Z_1: intended for use at internal conditions with high humidity, excluding temperatures below 0°C

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

Product-type: Coated Board		Intended use: Penetration Seal
	Essential characteristic	Performance
Safety in case of fire		
	Reaction to fire	Class E
	Resistance to fire	Annex A
Hygiene, health and environment		
	Air permeability (material property)	Annex B
	Water permeability (material property)	No performance assessed
	Release of dangerous substances	Use categories: IA3, S/W3 Declaration of manufacturer
Safety in use		
	Mechanical resistance and stability	No performance assessed
	Resistance to impact/movement	No performance assessed
	Adhesion	No performance assessed
Protection against noise		
	Airborne sound insulation	Annex C
Energy economy and heat retention		
	Thermal properties	No performance assessed
	Water vapour permeability	No performance assessed
General aspects relating to fitness for use		
	Durability and serviceability	Z_1

4 ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE (HEREINAFTER AVCP) SYSTEM APPLIED, WITH REFERENCE TO ITS LEGAL BASE

According to the decision 1999/454/EC – Commission Decision of date 22nd June 1999 on on the procedure for attesting the conformity of construction products pursuant to Article 20(2) of Council Directive 89/106/EEC as regards fire stopping, fire sealing and fire protective products, published in the Official Journal of the European Union (OJEU) L178/52 of 14/07/1999, see http://eur-lex.europa.eu/JOIndex.do) of the European Commission[1], as amended, the system(s) of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) given in the following table(s) applies (apply).

Product(s)	Intended use(s)	Level(s) or class(es)	System(s)
Fire stopping and Fire Sealing Products	For fire compartmentation and/or fire protection or fire performance	Any	1

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

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at ETA-Danmark A/S prior to CE marking

Issued in Copenhagen on 2021-01-01 by

Thomas Bruun

Managing Director, ETA-Danmark

[1] Official Journal of the European Communities L178/52 of 14/7/1999

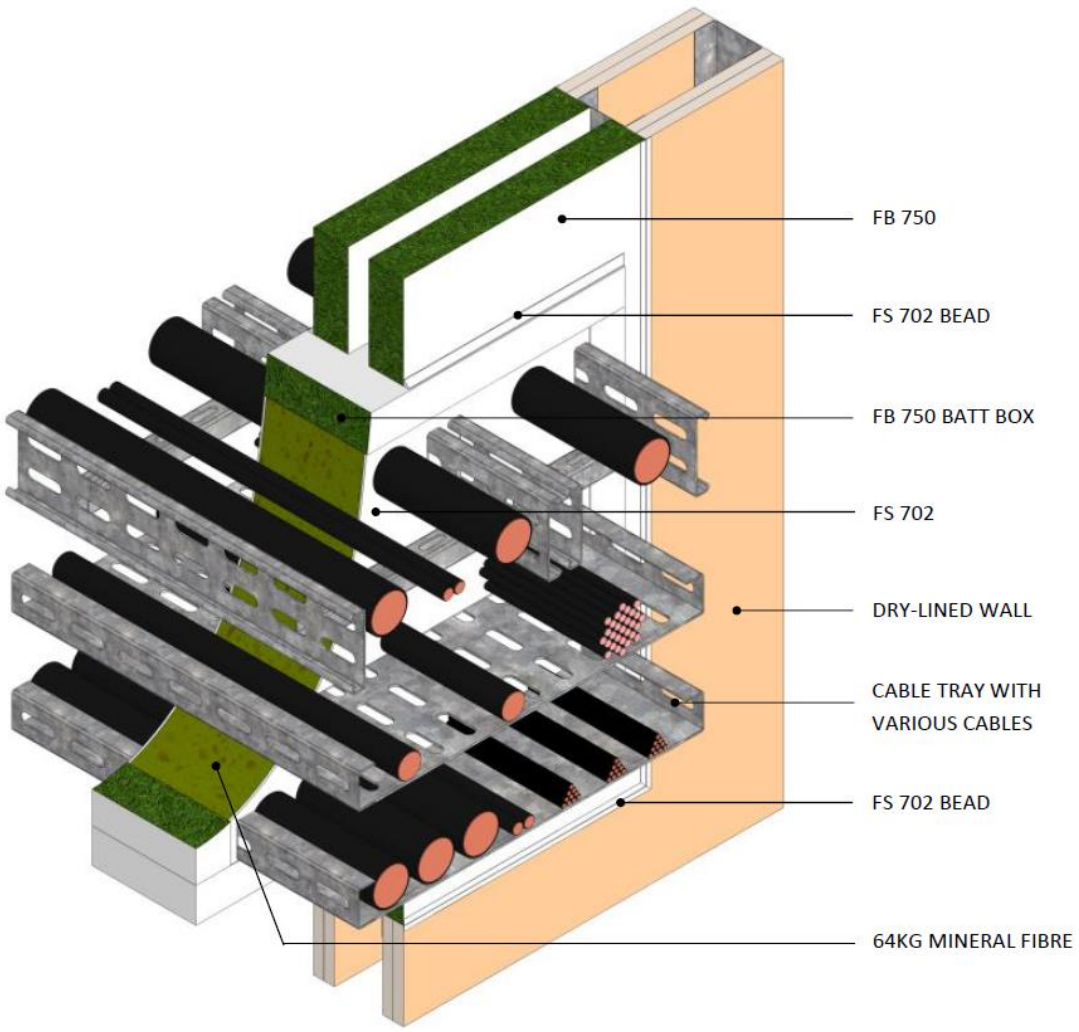
ANNEX A – Resistance to Fire Classification – Nullifire FB750

A.1 Flexible and Rigid wall constructions with wall thickness of minimum 130 mm

A.1.1 Cable penetration seal with 2x 50 mm thick Nullifire FB750 incorporating a 'Batt box'

Penetration Seal: Cables penetrating through a flexible or rigid wall construction. 2 x 50 mm Nullifire FB750 installed with a 30 mm air gap, centrally within the wall. Nullifire FS702 is applied to seal around the services insulation and on both faces at the interface between seal and supporting construction. A 'batt box' 150 mm deep is formed within the primary seal, comprising a lining 50 mm thick Nullifire FB750 infilled with stone wool mineral fibre 64 kg/m^3 coated on both faces with 3 mm Nullifire FS702. Maximum seal size of 1200mm wide by 1800mm high.

Construction details:



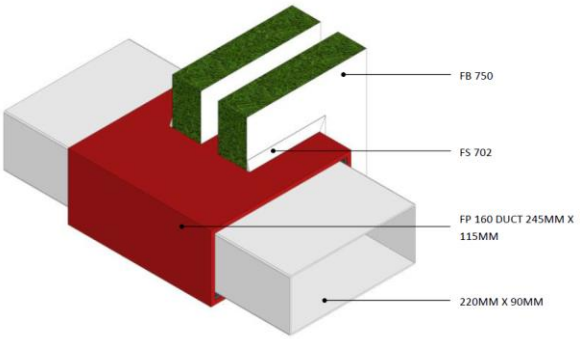
A.1.1.1 Double side 'Batt Box' penetration seal with cables

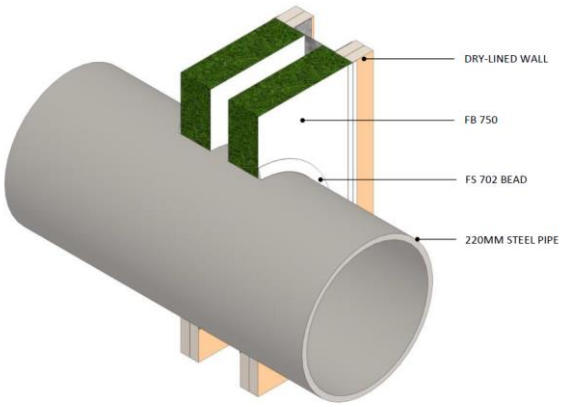
Services	Classification
Electrical cables up to 80 mm Ø (single, bundled and on steel trays/ladders up to 500 mm wide)	**EI 120**
Telecom cable up to 21mm Ø in tied bundles up to 100mm Ø	
Unsheathed wires up to 24 mm diameter	

A.1.2 Pipe and cable penetration seal with 2x 50 mm thick Nullifire FB750

Penetration Seal: Pipes and cables penetrating through a flexible (lined aperture) or rigid wall construction. 2 x 50 mm Nullifire FB750 installed with a 30 mm air gap, centrally within the wall. Nullifire FS702 is applied to seal around the services insulation and on both faces at the interface between seal and supporting construction. Maximum seal size of 1200mm wide by 1800mm high.

Construction details:





A.1.2.1 Double side penetration seal

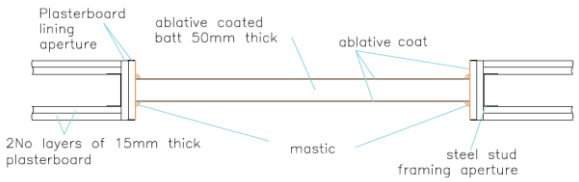
Services	Additional seal components	Classification
Rectangular PVC pipe, 220 x 90 mm / 2 mm wall	Nullifire FP160 Duct 0.7mm thick steel - 245mm wide x 115mm high x 250mm deep with 62mm protruding from each face and containing 2No. layers 4mm thick x 250mm wide intumescent, fitted on both faces	**EI 120 U/U**
Steel pipe, 220 mm diameter / 8.5 – 14.2 mm wall	None	**E 120 U/U** **EI 60 U/U**

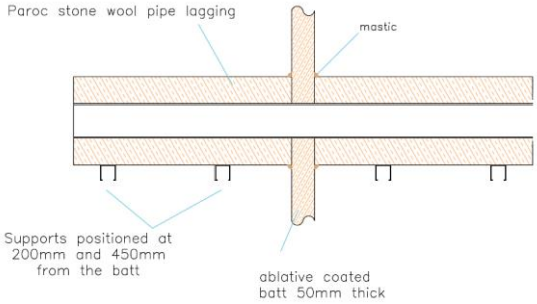
A.2 Flexible and Rigid wall constructions with wall thickness of minimum 130 mm

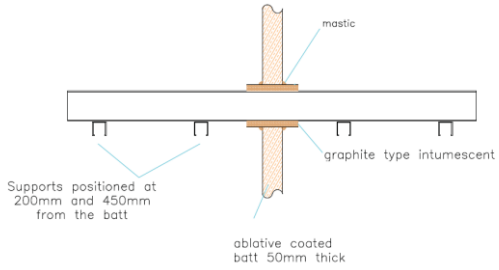
A.2.1 Cable and pipe penetration seal with 1x 50 mm thick Nullifire FB750 in lined aperture

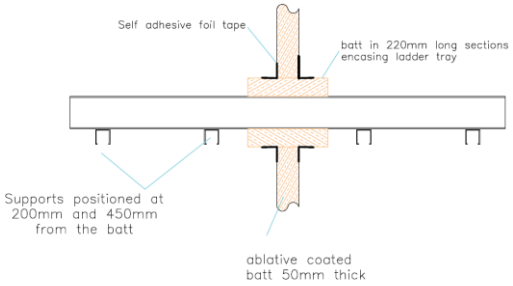
Penetration Seal: Cables penetrating through a flexible or rigid wall construction. 1 x 50 mm Nullifire FB750 installed centrally. Nullifire FS702 is applied to seal around the services insulation and on both faces at the interface between seal and supporting construction. Maximum seal size of 1800 high x 1200 mm wide.

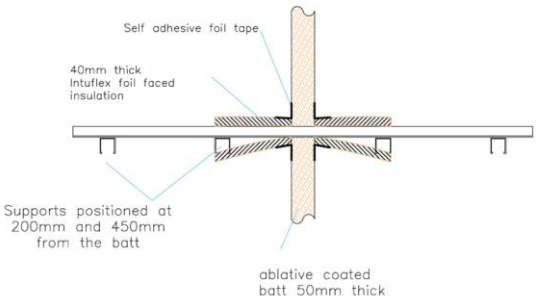
Construction details:











A.2.1.1 Single layer penetration seals

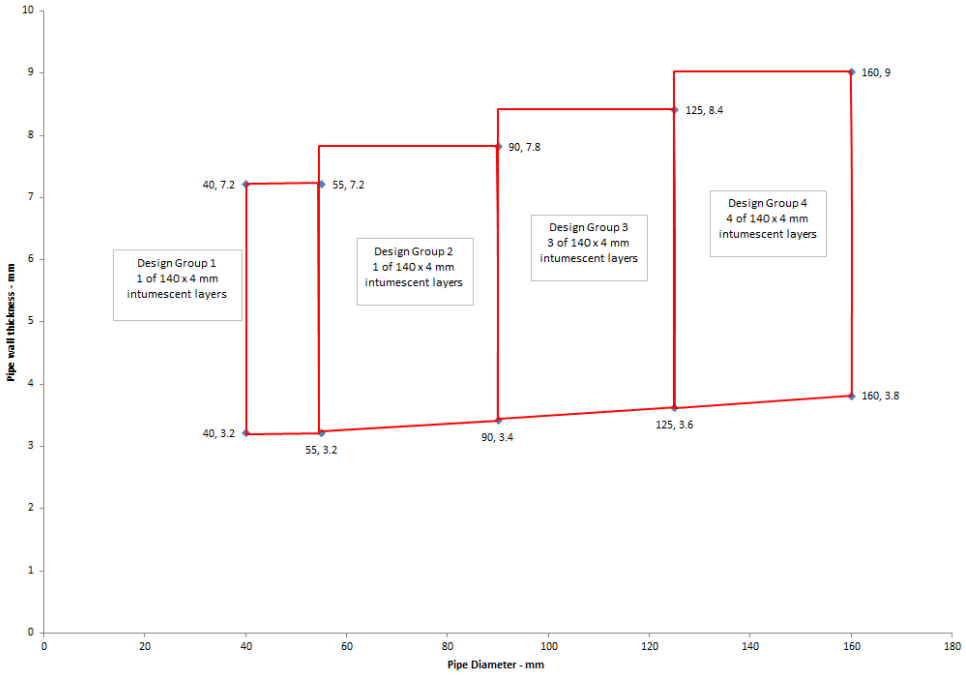
Services	Additional seal components	Classification
Electrical cables up to 21 mm Ø (single, bundled and on steel trays/ladders up to 500 mm wide)	40 mm thick Intuflex, 200 mm long insulation LI to both sides	**EI 60**
Telecom cable up to 21mm Ø in tied bundles up to 100mm Ø		
Unsheathed wires up to 24 mm diameter		
Electrical cables up to 22-80 mm Ø (single, bundled and on steel trays/ladders up to 500 mm wide)	50 mm thick Nullifire FB750, 220 mm long insulation LS	
Copper pipe 159 mm diameter / 2 mm wall	30 mm thick Paroc Stone wool pipe insulation CI	**EI 60 C/U**
Copper pipe 15 mm diameter / 1 mm wall	40 mm thick Paroc Stone wool pipe insulation CI	
PVC-U* pipes up to 160 mm diameter / 3.8-9.0 mm wall	Nullifire FP160 150 mm long / 4 of 140 x 4 mm intumescent layers	**EI 60 U/C**
PE$^{\$}$ pipes up to 160 mm diameter / 6.4-15.0 mm wall		
PVC-U* pipes up to 55 mm diameter / 3.2-7.2 mm wall	Nullifire FP160 150 mm long / 1 of 140 x 4 mm intumescent layers	
PE$^{\$}$ pipes up to 55 mm diameter / 3.2-7.6 mm wall		
PVC-U* pipes up to 90 mm diameter / 3.4-7.8 mm wall	Nullifire FP160 150 mm long / 2 of 140 x 4 mm intumescent layers	
PE$^{\$}$ pipes up to 90 mm diameter / 4.3-10.0 mm wall		
PVC-U* pipes up to 125 mm diameter / 3.6-8.4 mm wall	Nullifire FP160 150 mm long / 3 of 140 x 4 mm intumescent layers	
PE$^{\$}$ pipes up to 125 mm diameter / 5.4-12.5 mm wall		

***** PVC-U pipe according to EN 1329-1, EN 1452-2 and EN 1453-1

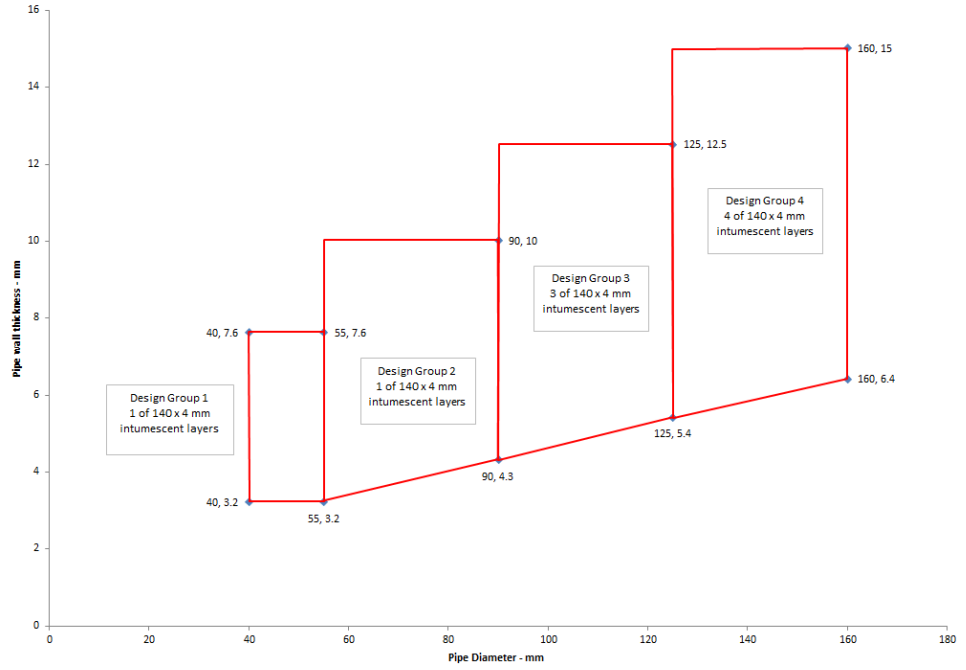
$^{\$}$ PE pipe according to EN 1519-1, EN 12201-2 and EN 1266-1, ABS pipe according to EN 1455-1 and SAN+PVC pipe according to EN 1565-1

LI = local Interupted, CI – Continuous Interupted, LS – Local Sustained

PVC-U pipes - EI 60 U/C



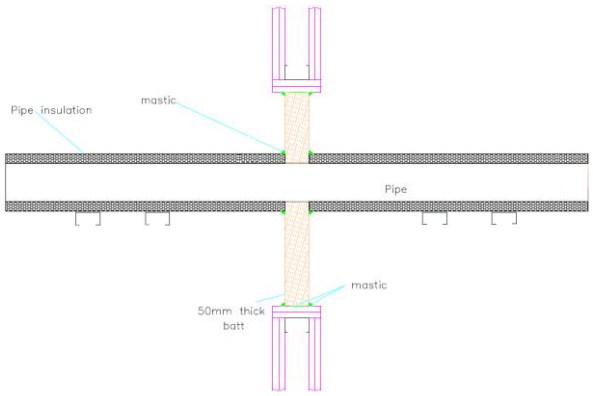
PE pipes - EI 60 U/C

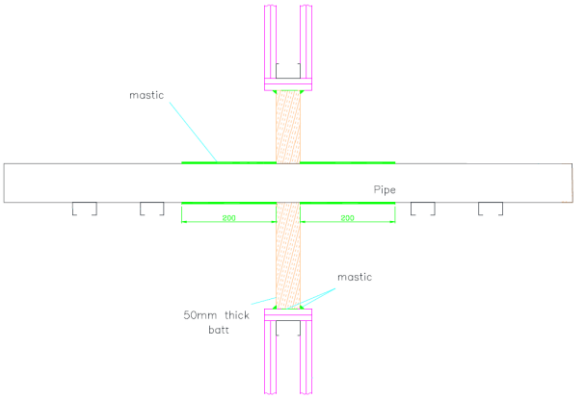


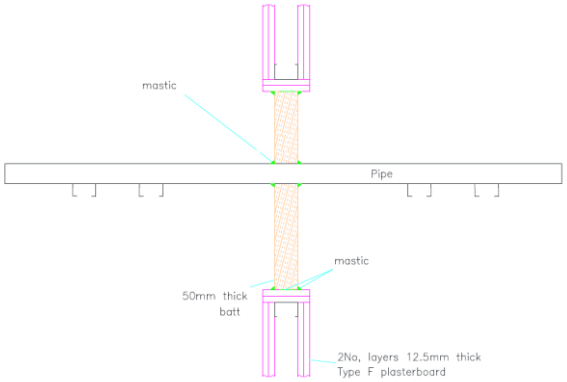
A.2.2 Pipe penetration seal with 1x 50 mm thick Nullifire FB750 in lined aperture continued, including 'batt box'

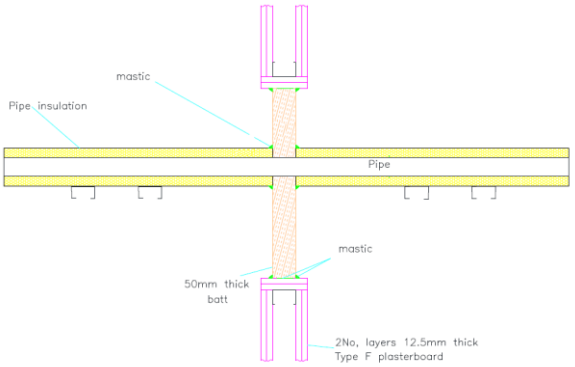
Penetration Seal: Cables penetrating through a flexible or rigid wall construction. 1 x 50 mm Nullifire FB750 installed centrally. Nullifire FS702 is applied to seal around the services insulation and on both faces at the interface between seal and supporting construction. Maximum seal size of 1800 high x 1200 mm wide.

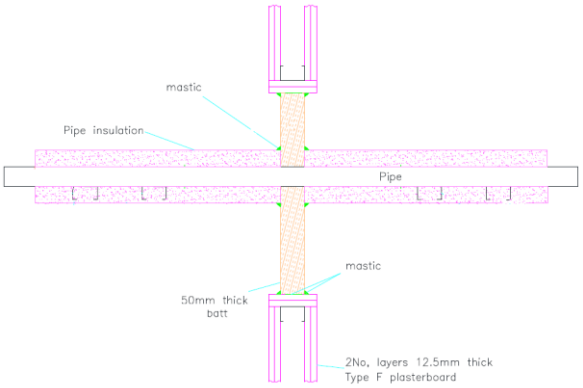
Construction details:

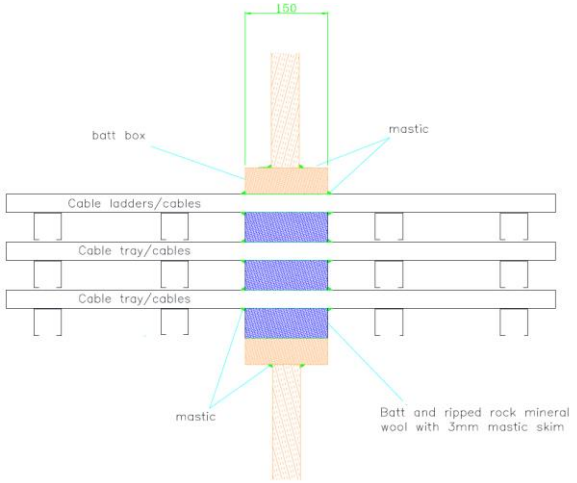












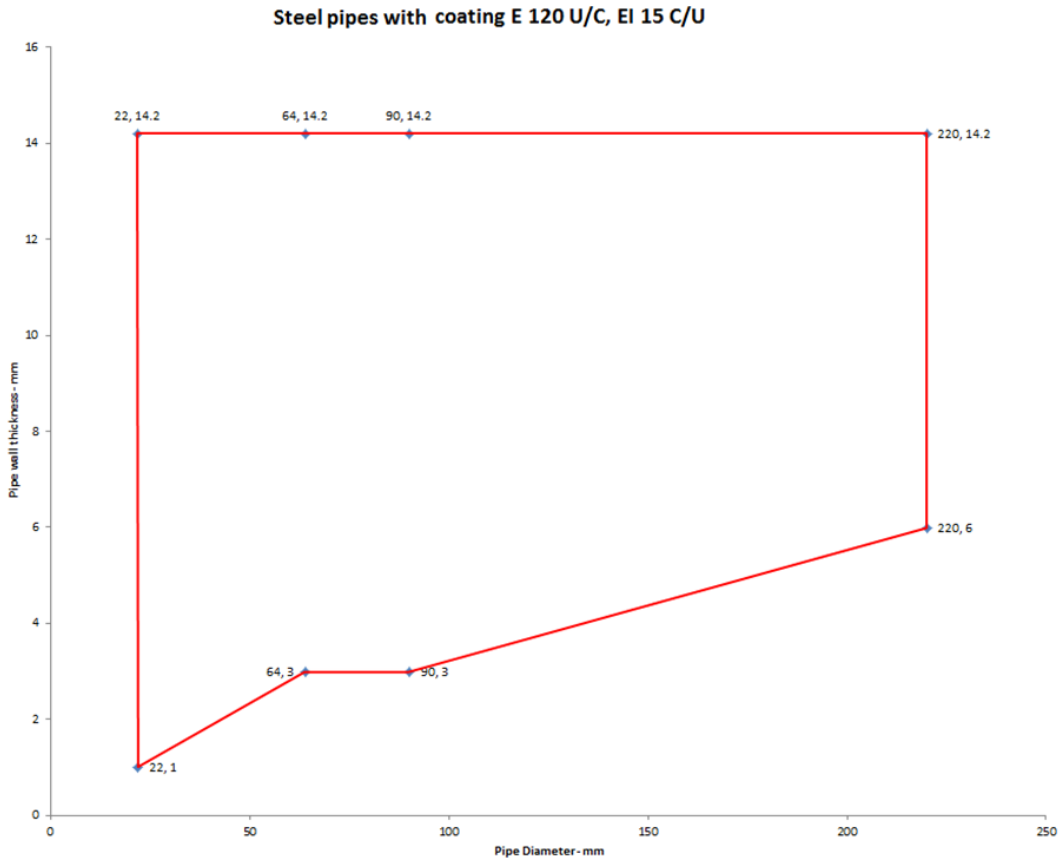
A.2.2.1 Single layer penetration seals

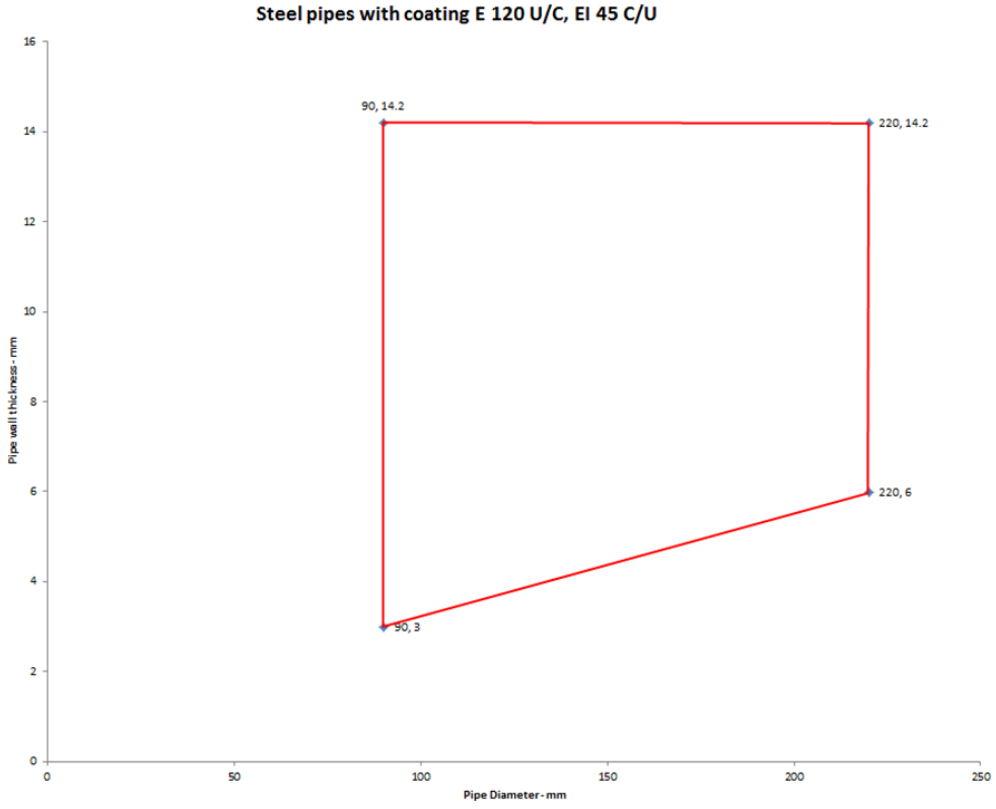
Services	Additional seal components	Classification
Electrical cables up to 21 mm Ø (single, bundled and on steel trays/ladders up to 500 mm wide)	150mm deep 50mm wide perimeter batt lining the aperture fixed to the outer layers of batt with 2No. 100mm long 'pig tail' screws on each corner. 'Ripped' rock mineral wool (33kg/m^3 density) stuffing around the cables and trays/ladders finished with a nominal skim of 3mm Nullifire FS702	**E 120 EI 60**
Telecom cable up to 21mm Ø in tied bundles up to 100mm Ø		**E 120 EI 90**
Unsheathed wires up to 24 mm diameter		**E 120 EI 60**
Electrical cables up to 22-80 mm Ø (single, bundled and on steel trays/ladders up to 500 mm wide)		**E 120 EI 45**
Steel pipe 64 mm diameter / 3.0-14.2 mm wall	5x 1mm thick coating on pipe, 200mm along the pipe	**E 120 C/U EI 45 C/U**
Steel pipe 90 mm diameter / 3.0-14.2 mm wall	20 mm thick Kaiflex elastomeric insulation CI	**E 120 C/U EI 45 C/U**
Steel pipe 90 mm diameter / 3.0-14.2 mm wall	5x 1mm thick coating on pipe, 200mm along the pipe	**E 120 C/U EI 20 C/U**
Steel pipe 220 mm diameter / 6.0-14.2 mm wall	5x 1mm thick coating on pipe, 200mm along the pipe	**E 120 C/U EI 45 C/U**
Copper pipe 22 mm diameter / 1.0-14.2 mm wall	N/A	**E 120 C/U**
Copper pipe 22 mm diameter / 1.0-14.2 mm wall	40mm thick glass wool insulation (80kg/m^3) CI	**E 120 C/U EI 60 C/U**
Copper pipe 22 mm diameter / 1.0-14.2 mm wall	25mm thick Kingspan Phenolic insulation (37kg/m^3) CI	
Copper pipe 22 mm diameter / 1.0-14.2 mm wall	5x 1mm thick coating on pipe, 200mm along the pipe	**E 120 C/U EI 15 C/U**

***** PVC-U pipe according to EN 1329-1, EN 1452-2 and EN 1453-1

$ PE pipe according to EN 1519-1, EN 12201-2 and EN 1266-1, ABS pipe according to EN 1455-1 and SAN+PVC pipe according to EN 1565-1

LI = local Interupted, CI – Continuous Interupted, LS – Local Sustained


Steel pipes with coating E 120 U/C, EI 15 C/U
Pipe wall thickness - mm
Pipe Diameter - mm
22, 14.2
64, 14.2
90, 14.2
220, 14.2
220, 6
64, 3
90, 3
22, 1
0
2
4
6
8
10
12
14
16
0
50
100
150
200
250

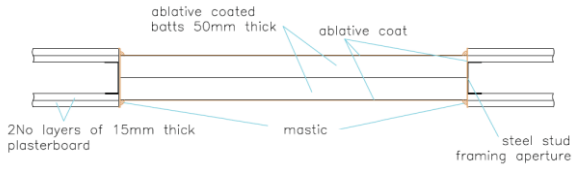

Steel pipes with coating E 120 U/C, EI 45 C/U
Pipe wall thickness - mm
Pipe Diameter - mm
90, 14.2
220, 14.2
220, 6
90, 3
0
2
4
6
8
10
12
14
16
0
50
100
150
200
250

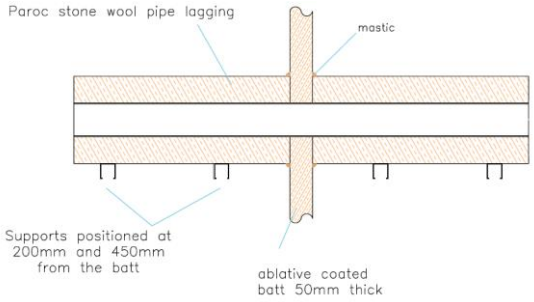
A.3 Flexible and Rigid wall constructions with wall thickness of minimum 130 mm

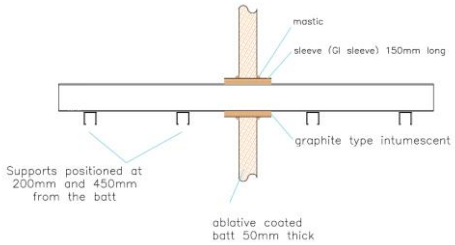
A.3.1 Cable penetration seal with 2 x 50 mm thick Nullifire FB750

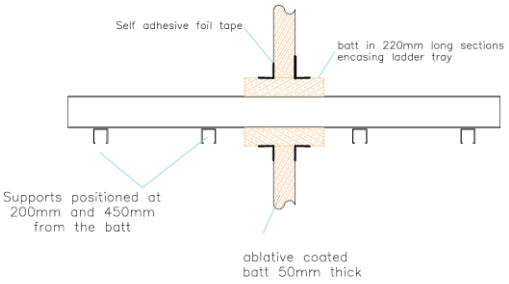
Penetration Seal: Cables penetrating through a flexible or rigid wall construction. 2 x 50 mm Nullifire FB750 with no air gap, centrally within the wall. Nullifire FS702 is applied to seal around the services insulation and on both faces at the interface between seal and supporting construction. Maximum seal size of 1200mm wide by 1800mm high.

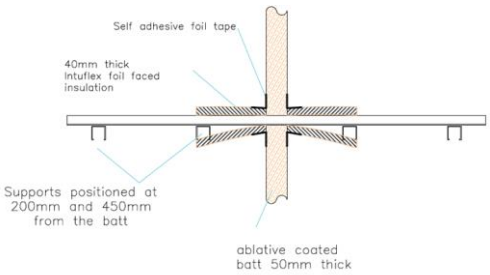
Construction details:











A.3.1.1 Double layer penetration seal with cables

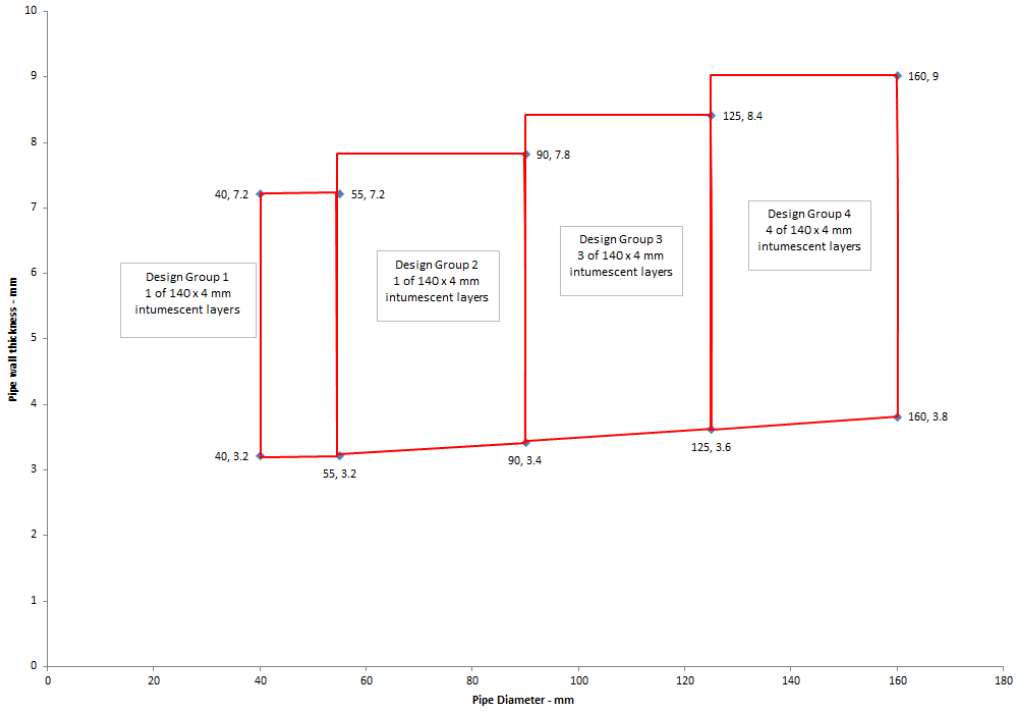
Services	Additional seal components	Classification
Electrical cables up to 21 mm Ø (single, bundled and on steel trays/ladders up to 500 mm wide)	40 mm thick Intuflex, 200 mm long insulation LI to both sides	**EI 120**
Telecom cable up to 21mm Ø in tied bundles up to 100mm Ø		
Unsheathed wires up to 24 mm diameter		
Electrical cables up to 22-80 mm Ø (single, bundled and on steel trays/ladders up to 500 mm wide)	50 mm thick Nullifire FB750, 220 mm long insulation LS	
Copper pipe 159 mm diameter / 2 mm wall	30 mm thick Paroc Stone wool pipe insulation CI	**EI 120 C/U**
Copper pipe 15 mm diameter / 1 mm wall	40 mm thick Paroc Stone wool pipe insulation CI	
PVC-U* pipes up to 160 mm diameter / 3.8-9.0 mm wall	Nullifire FP160 150 mm long / 4 of 140 x 4 mm intumescent layers	**EI 120 U/C**
PE$^{\$}$ pipes up to 160 mm diameter / 6.4-15.0 mm wall		
PVC-U* pipes up to 55 mm diameter / 3.2-7.2 mm wall	Nullifire FP160 150 mm long / 1 of 140 x 4 mm intumescent layers	
PE$^{\$}$ pipes up to 55 mm diameter / 3.2-7.6 mm wall		
PVC-U* pipes up to 90 mm diameter / 3.4-7.8 mm wall	Nullifire FP160 150 mm long / 2 of 140 x 4 mm intumescent layers	
PE$^{\$}$ pipes up to 90 mm diameter / 4.3-10.0 mm wall		
PVC-U* pipes up to 125 mm diameter / 3.6-8.4 mm wall	Nullifire FP160 150 mm long / 3 of 140 x 4 mm intumescent layers	
PE$^{\$}$ pipes up to 125 mm diameter / 5.4-12.5 mm wall		

***** PVC-U pipe according to EN 1329-1, EN 1452-2 and EN 1453-1

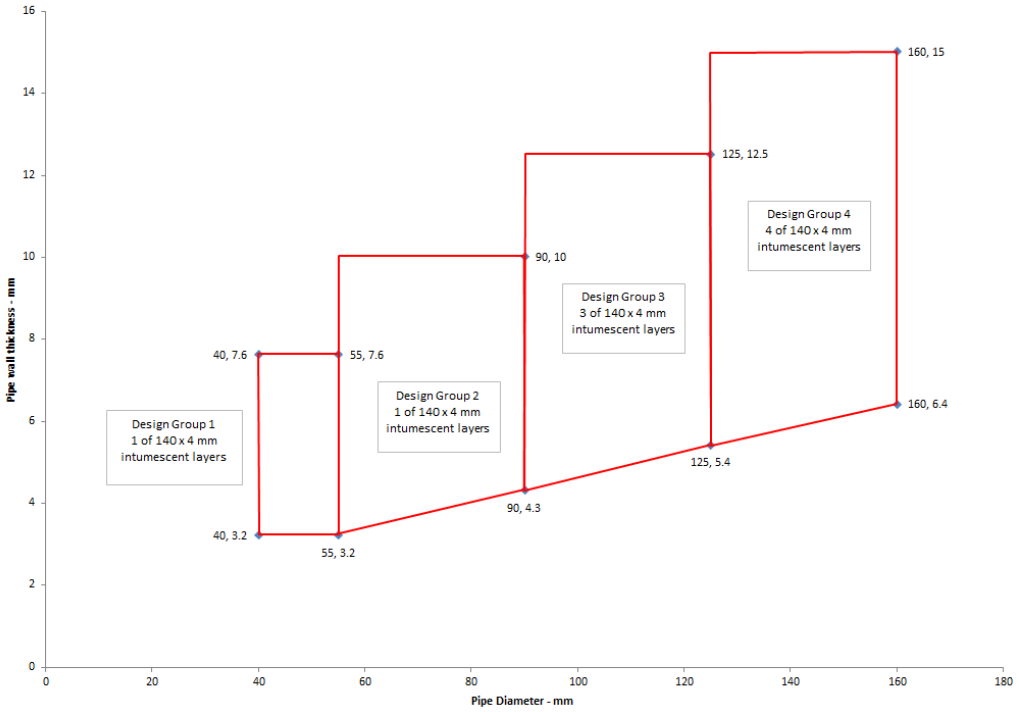
$^{\$}$ PE pipe according to EN 1519-1, EN 12201-2 and EN 1266-1, ABS pipe according to EN 1455-1 and SAN+PVC pipe according to EN 1565-1

LI = local Interupted, CI – Continuous Interupted, LS – Local Sustained

PVC-U pipes - EI 120 U/C



PE pipes - EI 120 U/C

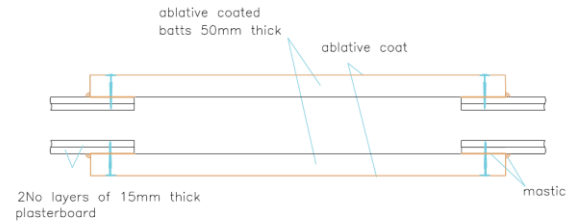


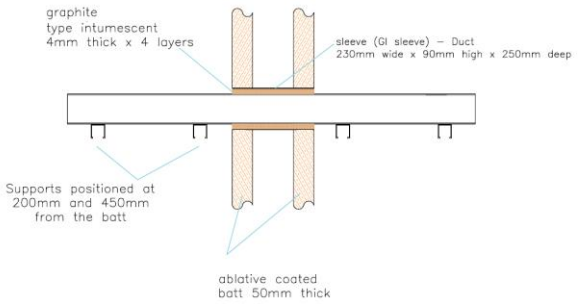
A.4 Flexible and Rigid wall constructions with wall thickness of minimum 130 mm

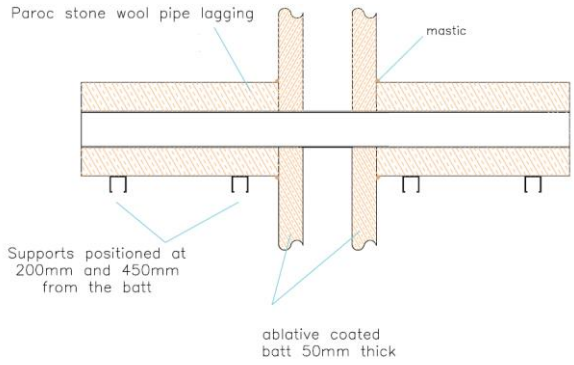
A.4.1 Cable penetration seal with 2 x 50 mm thick Nullifire FB750, pattress fixed

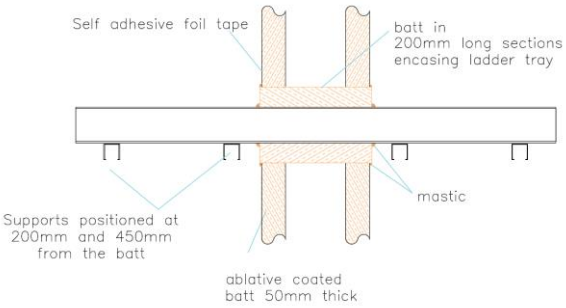
Penetration Seal: Cables penetrating through a flexible or rigid wall construction. 2 x 50 mm Nullifire FB750 pattress fixed (130 mm air gap) and overlapped onto the wall by 100 mm all around. The batts are fixed with 75 mm long screws, with 'penny' washers at 300 mm centres and Nullifire FS702 is applied to seal around the services insulation and on both faces at the interface between seal and supporting construction. Maximum seal size of 1200mm wide by 1800mm high.

Construction details:









A.4.1.1 Double layer pattress penetration seal with cables

Services	Additional seal components	Classification
Type D3 Electrical cables up to 62.5 mm Ø (single, on steel ladder up to 200 mm wide)	50 mm thick Nullifire FB750, 230 mm long insulation LS	**EI 120**
Copper pipe 159 mm diameter / 2 mm wall	30 mm thick Paroc Stone wool pipe insulation CI	**EI 120 C/U**
Copper pipe 15 mm diameter / 1 mm wall	40 mm thick Paroc Stone wool pipe insulation CI	
PVC-U* square pipe 204 mm wide by 60 mm high / 1.5 mm wall	Nullifire FP160 250 mm long x 230 mm wide x 90 mm high / 4 of 250 x 4 mm intumescent layers	**EI 120 U/C**

***** PVC-U pipe according to EN 1329-1, EN 1452-2 and EN 1453-1

LI = local Interupted, CI – Continuous Interupted, LS – Local Sustained

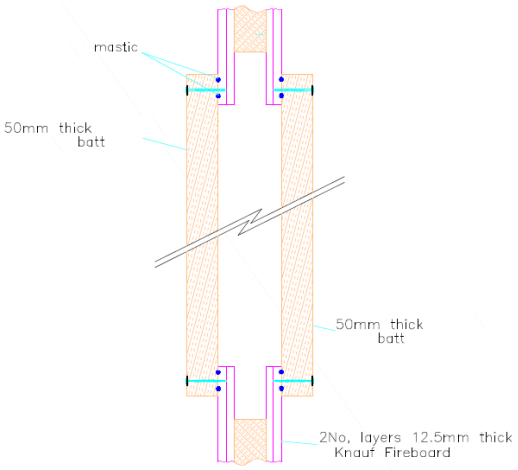
Type D3 cable = 4 x 185 mm^2 core HD604.5 electrical cable with XLPE insulation, EVA sheath and 52 mm diameter

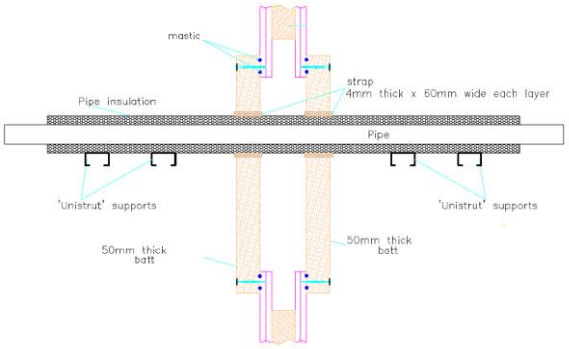
A.5 Flexible and Rigid wall constructions with wall thickness of minimum 100 mm

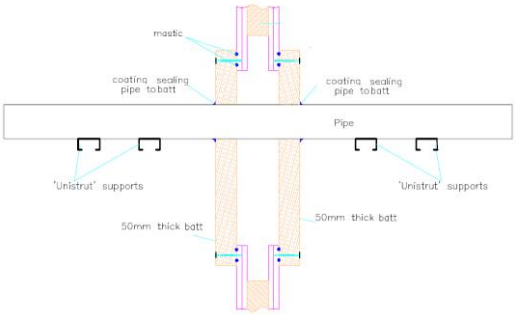
A.5.1 Pipe penetration seal with 2 x 50 mm thick Nullifire FB750, pattress fixed

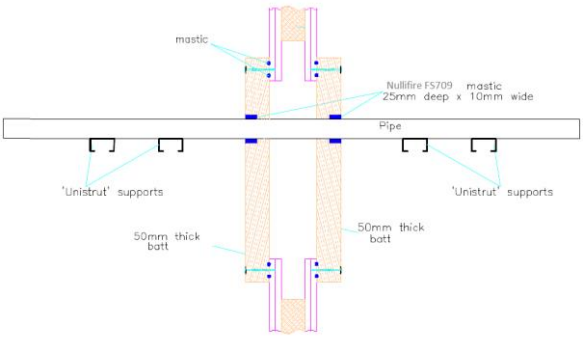
Penetration Seal: Cables penetrating through a flexible or rigid wall construction. 2 x 50 mm Nullifire FB750 pattress fixed (130 mm air gap) and overlapped onto the wall by 100 mm all around. The batts are fixed with 75 mm long screws, with 'penny' washers at 300 mm centres and Nullifire FS702 is applied to seal around the services insulation and on both faces at the interface between seal and supporting construction. Maximum seal size of 1200mm wide by 1800mm high. Minimum separation between pipes of 95mm and 100 mm to the edges of the seal.

Construction details:









A.5.1.1 Double layer pattress penetration seal with pipes

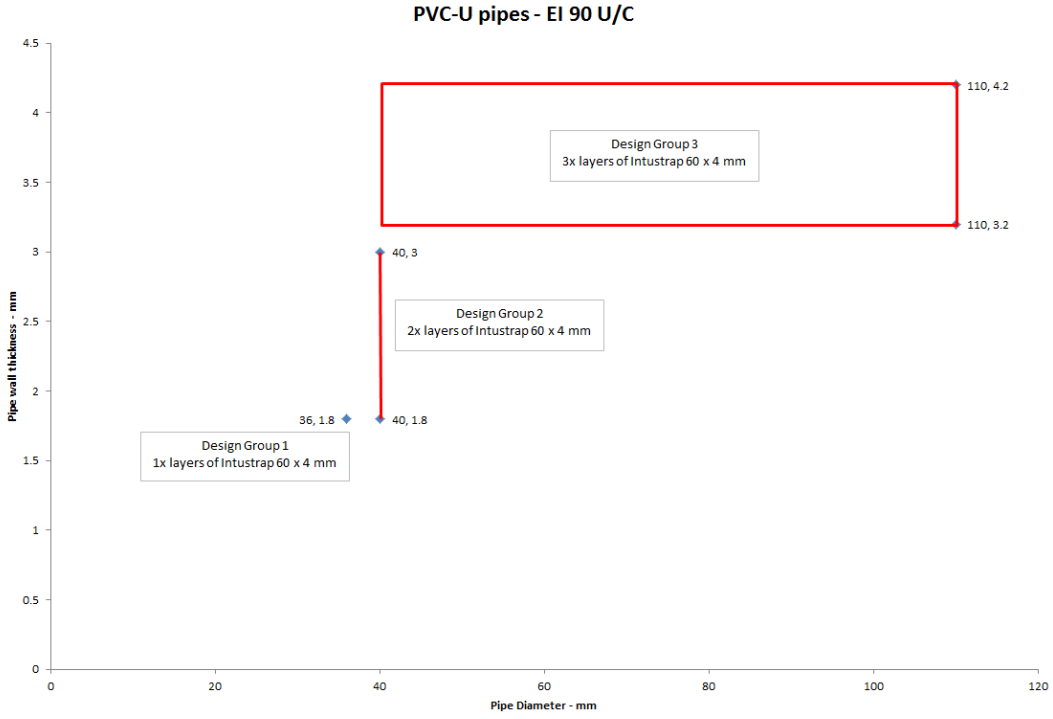
Services	Additional seal components	Classification
PVC-U[#] pipe, up to 40mm diameter / 1.9-3.0 mm wall, insulated with 19mm Kaiflex ST - CS	2 x layers of 60 x 4 mm Nullifire FP302 to both faces	**EI 90 U/C**
PE[$] pipe, up to 40mm diameter / 2.4-3.7 mm wall, insulated with 19mm Kaiflex ST - CS		
PP[@] pipe, up to 40mm diameter / 1.8-5.5 mm wall, insulated with 19mm Kaiflex ST - CS		
PE[$] pipe, up to 110mm diameter / 3.4 mm wall	3 x layers of 60 x 4 mm Nullifire FP302 to both faces	
PVC-U[#] pipe, up to 110mm diameter / 3.2-4.2 mm wall		
PP[@] pipe, up to 110mm diameter / 3.4 mm wall		
PVC-U[#] pipe, up to 36mm diameter / 1.8 mm wall	1 x layers of 60 x 4 mm Nullifire FP302 to both faces	
PEX pipe, up to 28mm diameter / 2.6 mm wall	25 x 10 mm Nullifire FS709, flush to both faces	
Copper pipe, 15mm diameter / 0.7-14.2 mm wall thickness	Nullifire FB750 coating sealing pipe to batt	**EI 90 C/U**
Copper pipe, 159mm diameter / 2.0-14.2 mm wall thickness		**E 90 C/U** **EI 20 C/U**

[#] PVC-U pipe according to EN 1329-1, EN 1452-2 and EN 1453-1

[$] EN12201 DIN 8074/8075

[@] ISO 15494 DIN 8077/8078

LI = local Interupted, CI – Continuous Interupted, LS – Local Sustained, CS – Continuous Sustained

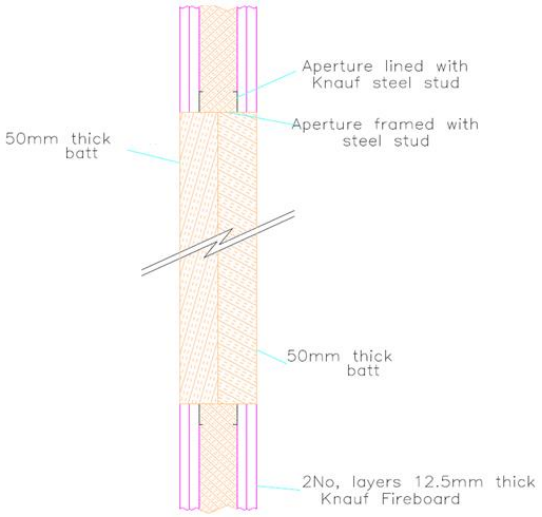


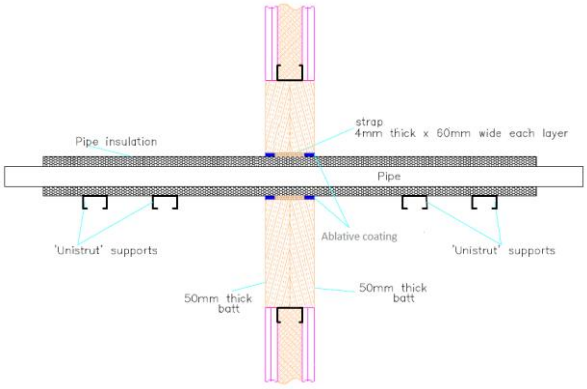
A.6 Flexible and Rigid wall constructions with wall thickness of minimum 100 mm

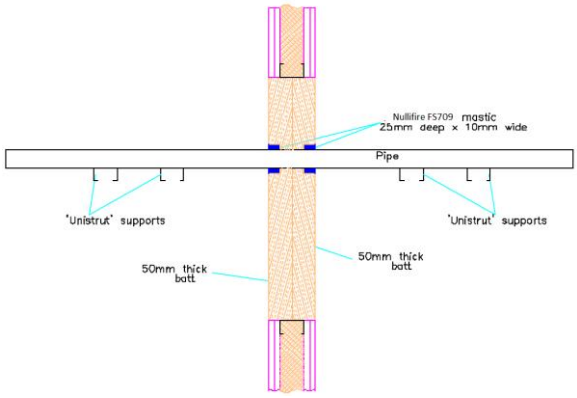
A.6.1 Pipe penetration seal with 2 x 50 mm thick Nullifire FB750, back to back

Penetration Seal: Pipes penetrating through a flexible or rigid wall construction. 2 x 50 mm Nullifire FB750 installed back to back. Nullifire FS702 is applied to seal around the services insulation and on both faces at the interface between seal and supporting construction. Maximum seal size of 1200mm wide by 1800mm high. Minimum separation between pipes of 65mm and 100 mm to the edges of the seal.

Construction details:







A.6.1.1 Back to back penetration seal with pipes

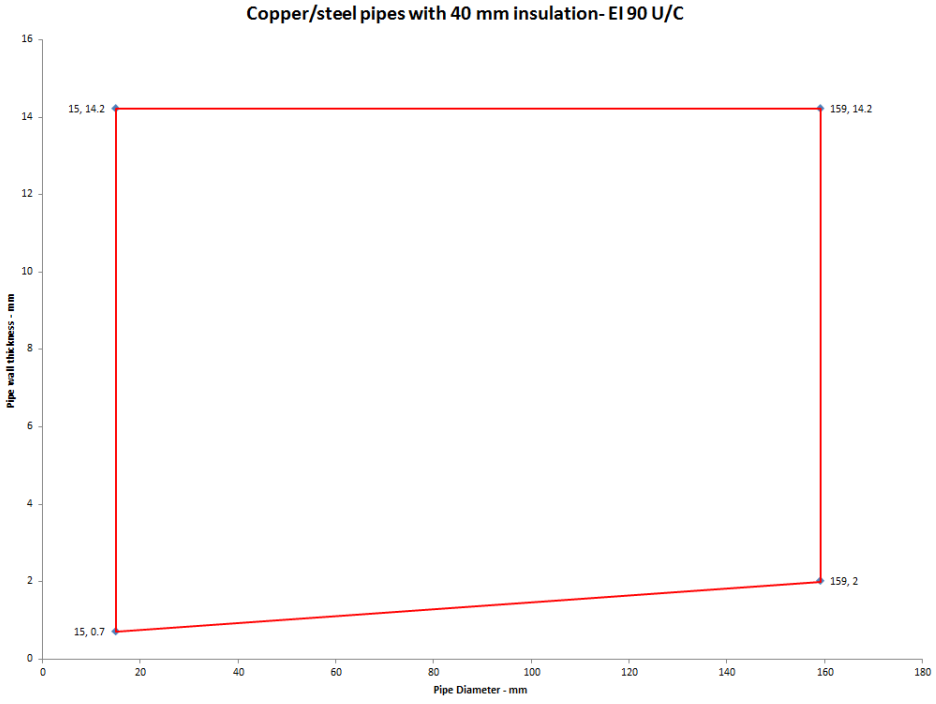
Services	Additional seal components	Classification
PVC-U[#] pipe, up to 40mm diameter / 1.9-3.0 mm wall, insulated with 19mm Kaiflex ST - CS	2 x layers of 60 x 4 mm Nullifire FP302 central plus 8mm wide x 20mm deep Nullifire FB750 coating flush to both faces	**EI 60 U/C**
PE[$] pipe, up to 40mm diameter / 2.4-3.7 mm wall, insulated with 19mm Kaiflex ST - CS		
PP[@] pipe, up to 40mm diameter / 1.8-5.5 mm wall, insulated with 19mm Kaiflex ST - CS		
PVC-U[#] pipe, up to 110mm diameter / 4.2 mm wall		**EI 90 U/C**
PE[$] pipe, up to 110mm diameter / 3.4 mm wall	3 x layers of 60 x 4 mm Nullifire FP302 central plus 12mm wide x 20mm deep Nullifire FB750 coating flush to both faces	
PVC-U[#] pipe, up to 110mm diameter / 4.2 mm wall		
PP[@] pipe, up to 110mm diameter / 3.4 mm wall		
PEX pipe, up to 28mm diameter / 2.6 mm wall	25 x 10 mm Nullifire FS709, flush to both faces	**EI 60 U/C**
Copper or steel pipe, 15mm diameter / 0.7-14.2 mm wall thickness, 40mm thick foil faced rock mineral fibre - CS	Nullifire FB750 coating sealing pipe to batt	**EI 90 C/U**
Copper or steel pipe, 159mm diameter / 2.0-14.2 mm wall thickness, 40mm thick foil faced rock mineral fibre - CS		

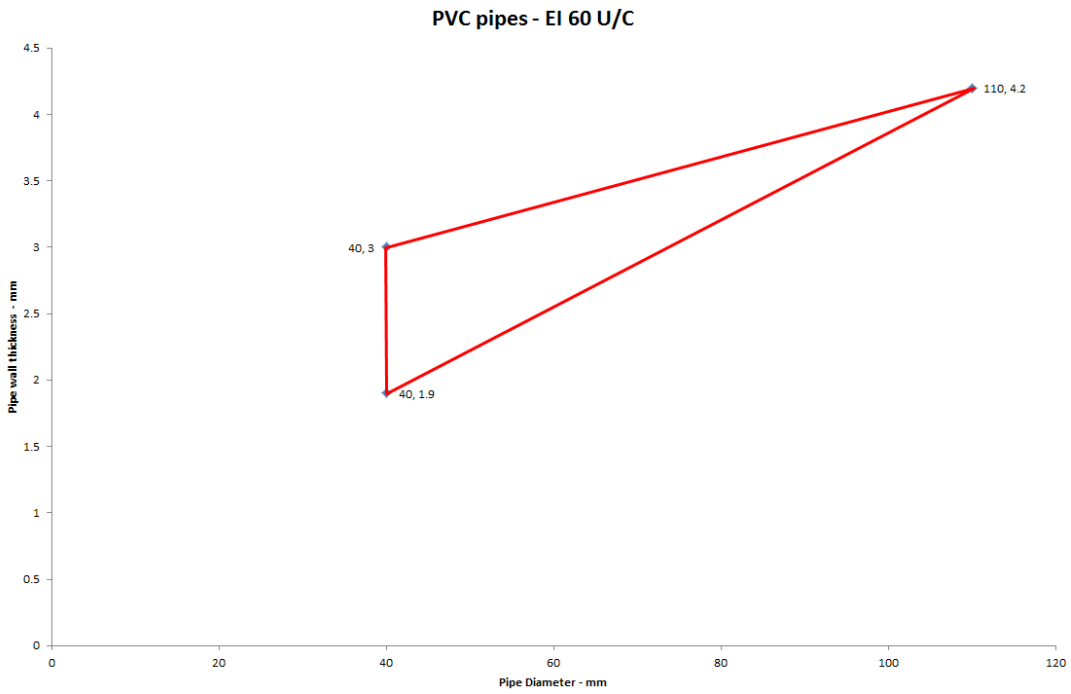
[#] PVC-U pipe according to EN 1329-1, EN 1452-2 and EN 1453-1

[$] EN12201 DIN 8074/8075

[@] ISO 15494 DIN 8077/8078

LI = local Interupted, CI – Continuous Interupted, LS – Local Sustained, CS – Continuous Sustained



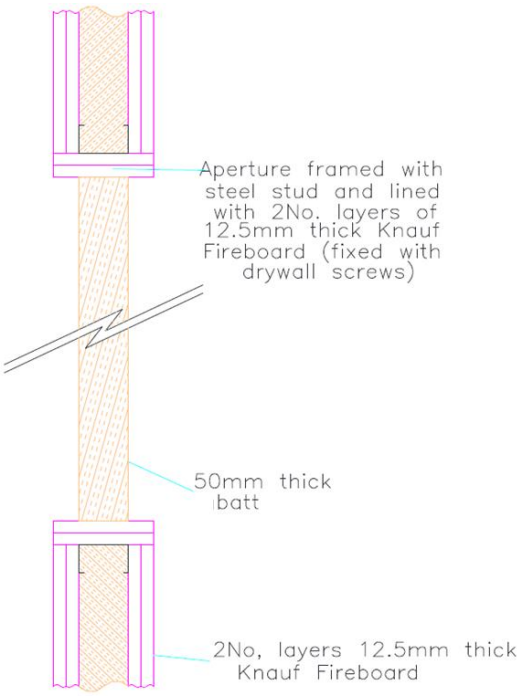

PVC pipes - EI 60 U/C
Pipe wall thickness - mm
Pipe Diameter - mm
110, 4.2
40, 3
40, 1.9
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
0
20
40
60
80
100
120

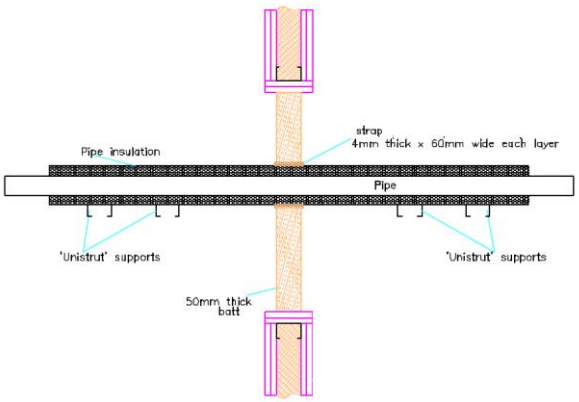
A.7 Flexible and Rigid wall constructions with wall thickness of minimum 100 mm

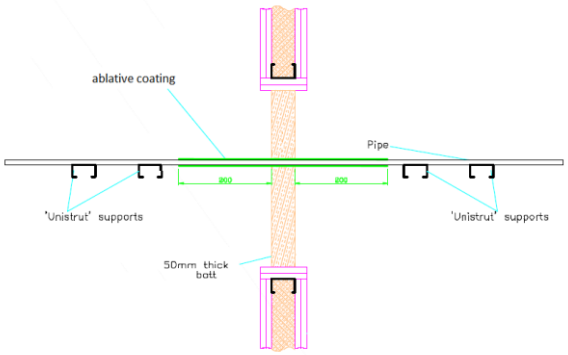
A.7.1 Pipe penetration seal with 1 x 50 mm thick Nullifire FB750

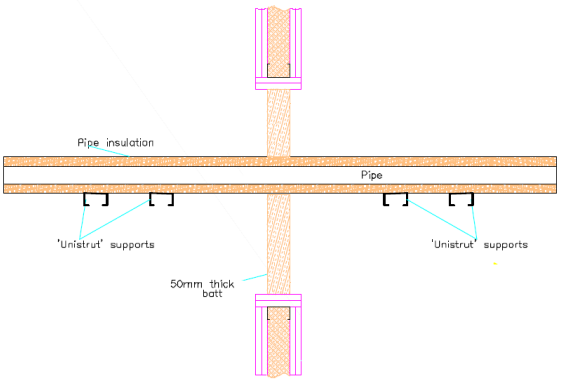
Penetration Seal: Pipes penetrating through a flexible or rigid wall construction. 1 x 50 mm Nullifire FB750 installed centrally into lined aperture. Nullifire FS702 is applied to seal around the services insulation and on both faces at the interface between seal and supporting construction. Maximum seal size of 1200mm wide by 1800mm high. Minimum separation between pipes of 100 mm and 58 mm to the edges of the seal.

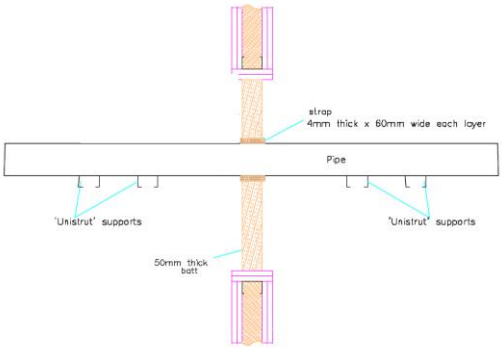
Construction details:











A.7.1.1 Single layer penetration seal with pipes

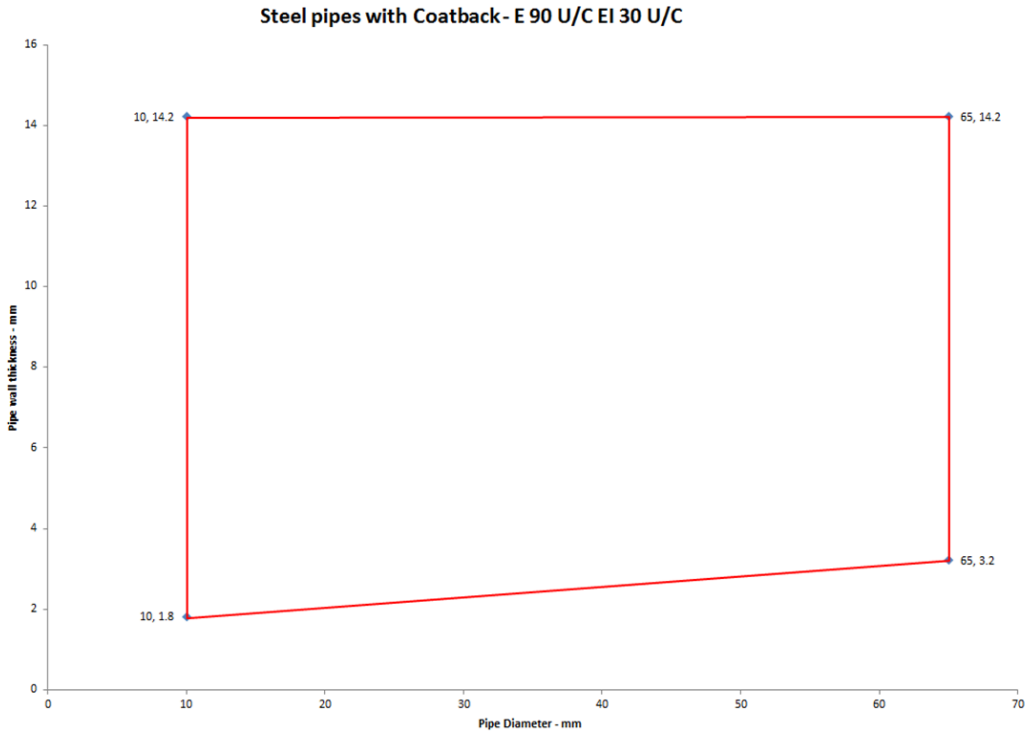
Services	Additional seal components	Classification
PVC-U[#] pipe, up to 40mm diameter / 1.9-3.0 mm wall, insulated with 19mm Kaiflex ST - CS	2 x layers of 60 x 4 mm Nullifire FP302, central	**E 60 U/C** **EI 45 U/C**
PE[$] pipe, up to 40mm diameter / 2.4-3.7 mm wall, insulated with 19mm Kaiflex ST - CS		
PP[@] pipe, up to 40mm diameter / 1.8-5.5 mm wall, insulated with 19mm Kaiflex ST - CS		
Copper or steel pipe, 15 mm diameter / 0.7-14.2 mm wall, insulated with 40 mm glass wool - CS	None	**EI 90 C/U**
Copper or steel pipe, 159 mm diameter / 2.0-14.2 mm wall, insulated with 30 mm foil faced stone wool - CS		**E 90 C/U** **EI 60 C/U**
PE[$] pipe, up to 110mm diameter / 3.5 mm wall	3 x layers of 60 x 4 mm Nullifire FP302, central	**E 90 U/C** **EI 45 U/C**
Copper or steel pipe, 10mm diameter / 0.5-14.2 mm wall thickness	Nullifire FB750 coating sealing pipe to batt and 200 x1.6 mm coatback	**E 90 C/U**
Copper or steel pipe, 35mm diameter / 0.7-14.2 mm wall thickness		
Steel pipe, 65mm diameter / 3.2-14.2 mm wall thickness		**E 90 C/U** **EI 30 C/U**
Steel pipe, 10mm diameter / 1.8-14.2 mm wall thickness		**E 90 C/U** **EI 60 C/U**

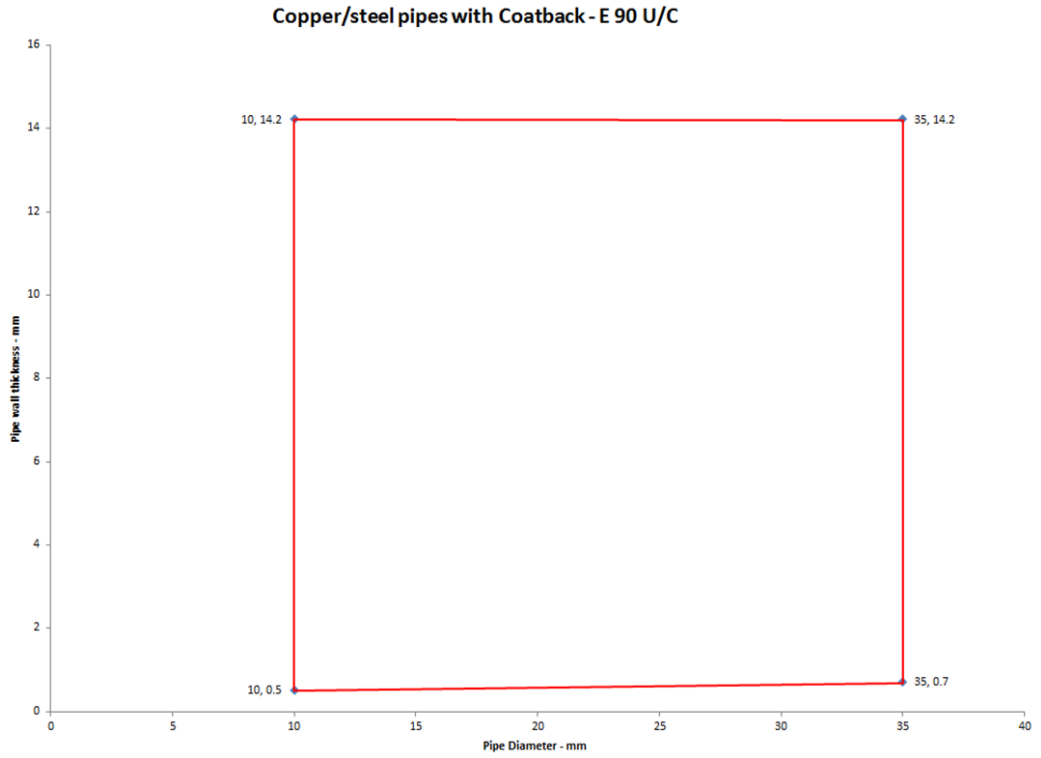
[#] PVC-U pipe according to EN 1329-1, EN 1452-2 and EN 1453-1

[$] EN12201 DIN 8074/8075

[@] ISO 15494 DIN 8077/8078

LI = local Interupted, CI – Continuous Interupted, LS – Local Sustained, CS – Continuous Sustained


Steel pipes with Coatback - E 90 U/C EI 30 U/C
Pipe wall thickness - mm
Pipe Diameter - mm
10, 14.2
65, 14.2
65, 3.2
10, 1.8
0
2
4
6
8
10
12
14
16
0
10
20
30
40
50
60
70

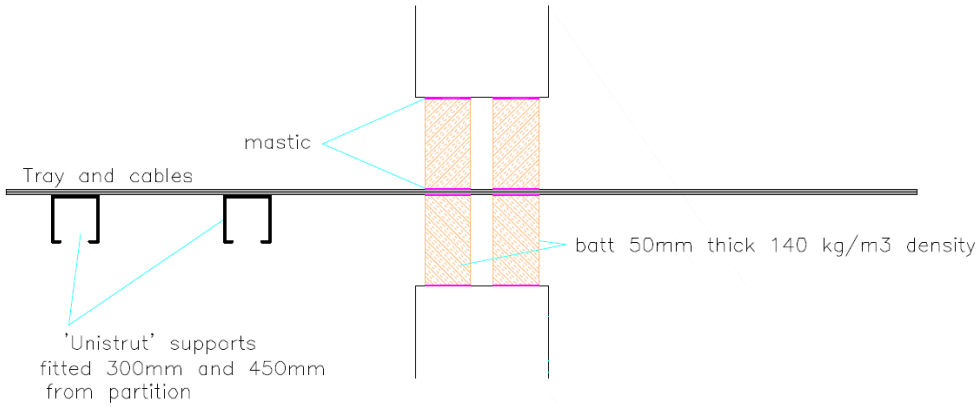

Copper/steel pipes with Coatback - E 90 U/C
Pipe wall thickness - mm
Pipe Diameter - mm
10, 14.2
35, 14.2
10, 0.5
35, 0.7
0
2
4
6
8
10
12
14
16
0
5
10
15
20
25
30
35
40

A.8 Rigid wall constructions with wall thickness of minimum 130 mm

A.8.1 Cable penetration seal with 2 x 50 mm thick Nullifire FB750

Penetration Seal: Cables penetrating through a rigid wall construction. 2 x 50 mm Nullifire FB750 with 20 mm air gap, centrally within the wall. Nullifire FS702 is applied to seal around the services insulation and on both faces at the interface between seal and supporting construction. Maximum seal size of 1200mm wide by 1800mm high.

Construction details:



A.8.1.1 Double layer penetration seal with cables

Services	Additional seal components	Classification
Type A1 Electrical cables up to 14 mm Ø (bundle)	Nullifire FS702 around cables	**EI120**
Type D2 Electrical cables up to 80 mm Ø (single)		
Type C2 Electrical cables up to 61 mm Ø (single)		
Cat, 5E Electrical cables (bundle)		
Twin and earth cables (bundle)		

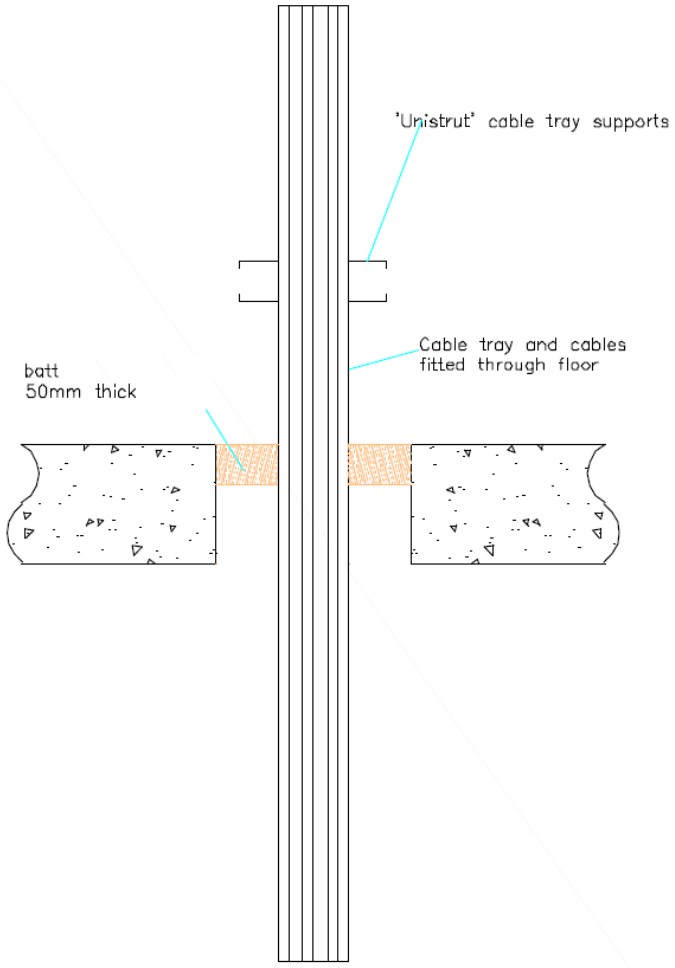
Type A1 cable = 5 x 1.5 mm^2 core HD603.3 electrical cable with PVC insulation, PVC sheath and 14 mm diameter
Type D2 cable = 4 x 185 mm^2 core HD22.4 electrical cable with EPR insulation, PO sheath and 64-80 mm diameter
Type C2 cable = 4 x 95 mm^2 core HD22.4 electrical cable with EPR insulation, PO sheath and 48.4-61 mm diameter

A.9 Rigid floor constructions with floor thickness of minimum 150 mm

A.9.1 Cable penetration seal with 1 x 50 mm thick Nullifire FB750 flush to the top face

Penetration Seal: Cables penetrating through a rigid floor construction. 1 x 50 mm Nullifire FB750 flush to the top face. Nullifire FS702 is applied to seal around the services insulation and on both faces at the interface between seal and supporting construction. Maximum seal opening size of 550 x 330 mm.

Construction details:



A.9.1.1 Single layer penetration seal with cables

Services	Classification
Type B Electrical cables up to 21 mm Ø (single, on steel ladder up to 150 mm wide)	**E 60 EI 30**
Type C1 Electrical cables up to 47 mm Ø (single, on steel ladder up to 150 mm wide)	
Type C2 Electrical cables up to 61 mm Ø (single, on steel ladder up to 150 mm wide)	
Type C3 Electrical cables up to 42 mm Ø (single, on steel ladder up to 150 mm wide)	
Unsheathed wires up to 24 mm diameter	

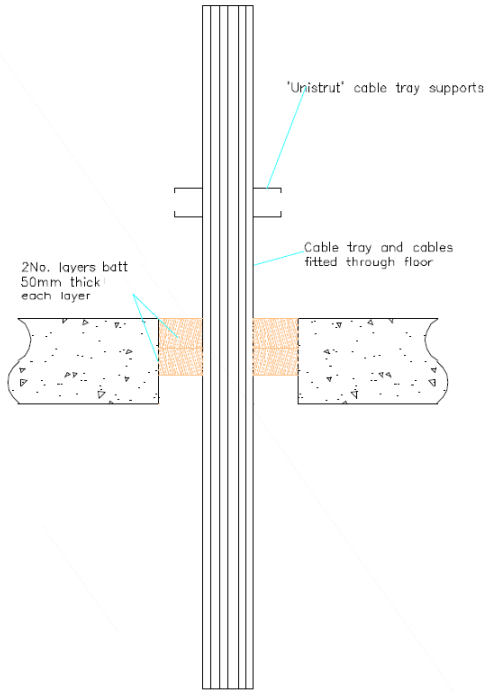
Type B cable = 1 x 95 mm^2 core HD603.3 electrical cable with PVC insulation, PVC sheath and 18-21 mm diameter
Type C1 cable = 4 x 95 mm^2 core HD604.5 electrical cable with XLPE insulation, EVA sheath and 42 mm diameter
Type C2 cable = 4 x 95 mm^2 core HD22.4 electrical cable with EPR insulation, PO sheath and 48.4-61 mm diameter
Type C3 cable = 4 x 95 mm^2 core HD603.3 electrical cable with PVC insulation, PVC sheath and 42 mm diameter

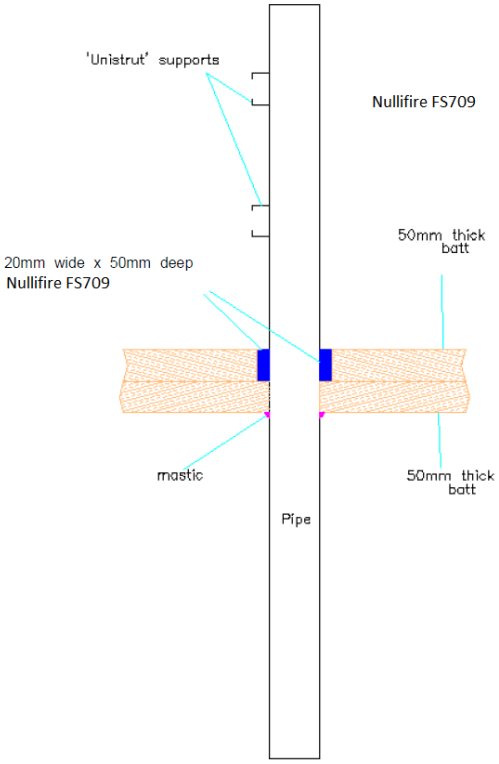
A.10 Rigid floor constructions with floor thickness of minimum 150 mm

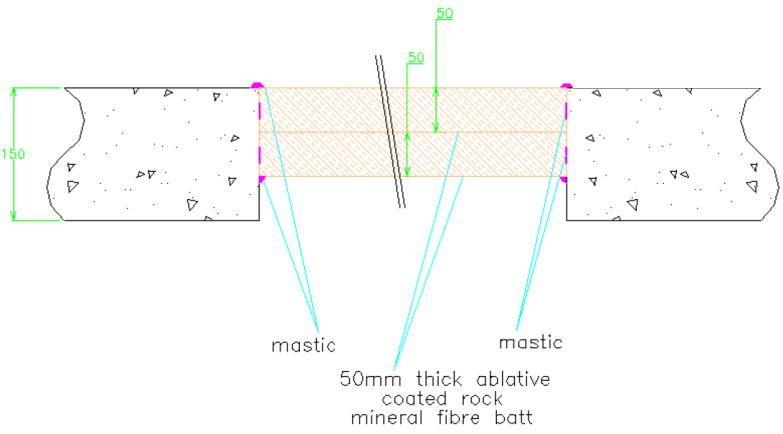
A.10.1 Pipe and cable penetration seal with 2 x 50 mm thick Nullifire FB750 flush to the top face and Nullifire FS709 with combustible pipes

Penetration Seal: Pipes and cables penetrating through a rigid floor construction. 2 x 50 mm Nullifire FB750 flush to the top face. Nullifire FS702 is applied to seal around the services insulation and on both faces at the interface between seal and supporting construction. Maximum seal opening size of 600 x 600 mm. Minimum separation between pipes of 145mm and 110 mm to the edges of the seal.

Construction details:







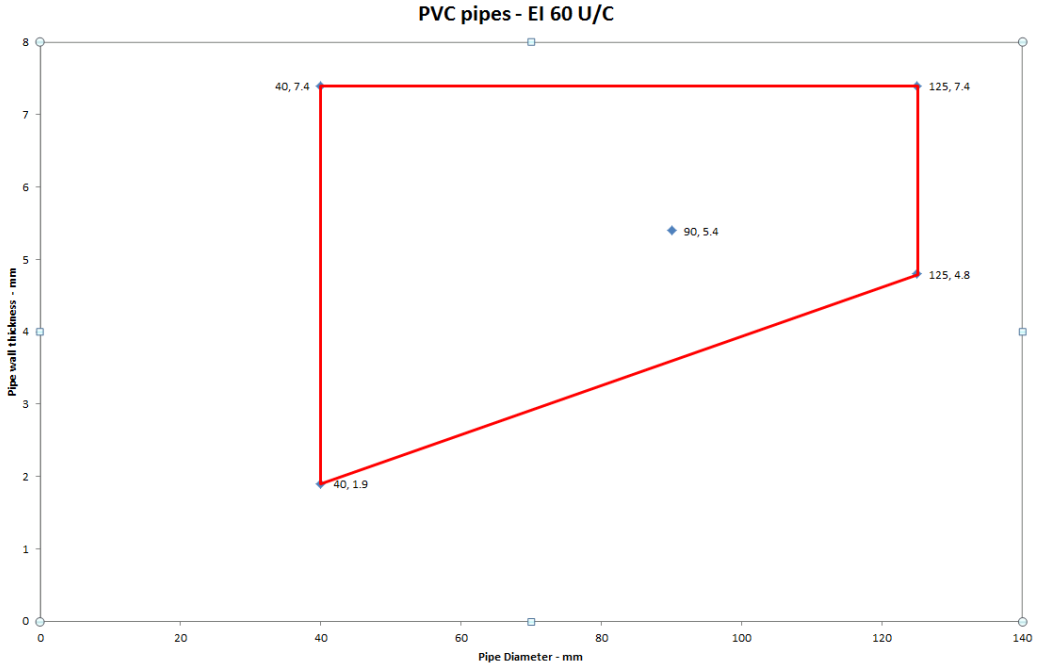
A.10.1.1 Single layer penetration seal with cables

Services	Additional seal component	Classification
Type B Electrical cables up to 21 mm Ø (single, on steel ladder up to 150 mm wide)	None	**E 120 EI 60**
Type C1 Electrical cables up to 47 mm Ø (single, on steel ladder up to 150 mm wide)		
Type C2 Electrical cables up to 61 mm Ø (single, on steel ladder up to 150 mm wide)		
Type C3 Electrical cables up to 42 mm Ø (single, on steel ladder up to 150 mm wide)		
Unsheathed wires up to 24 mm diameter		**E 120 EI 30**

Type B cable = 1 x 95 mm^2 core HD603.3 electrical cable with PVC insulation, PVC sheath and 18-21 mm diameter
Type C1 cable = 4 x 95 mm^2 core HD604.5 electrical cable with XLPE insulation, EVA sheath and 42 mm diameter
Type C2 cable = 4 x 95 mm^2 core HD22.4 electrical cable with EPR insulation, PO sheath and 48.4-61 mm diameter
Type C3 cable = 4 x 95 mm^2 core HD603.3 electrical cable with PVC insulation, PVC sheath and 42 mm diameter

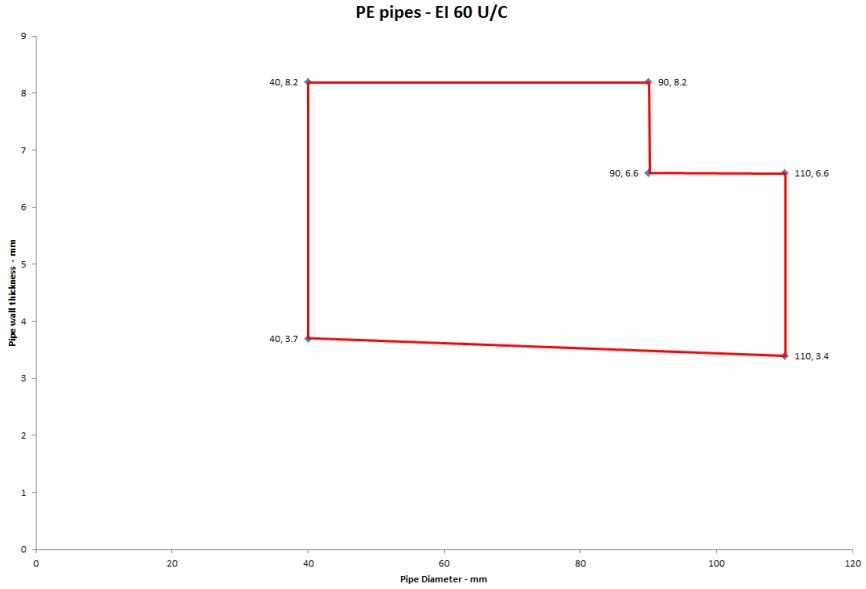
Services	Additional seal component	Classification
PVC[#] pipe, up to 40 mm diameter / 1.9 mm wall thickness PVC[#] pipe, up to 90 mm diameter / 5.4 mm wall thickness PVC[#] pipe, up to 125 mm diameter / 4.8 - 7.4 mm wall thickness	20 mm wide x 50 mm deep Nullifire FS709 installed from the top face	**EI 60 U/C**

[#] EN1452-2



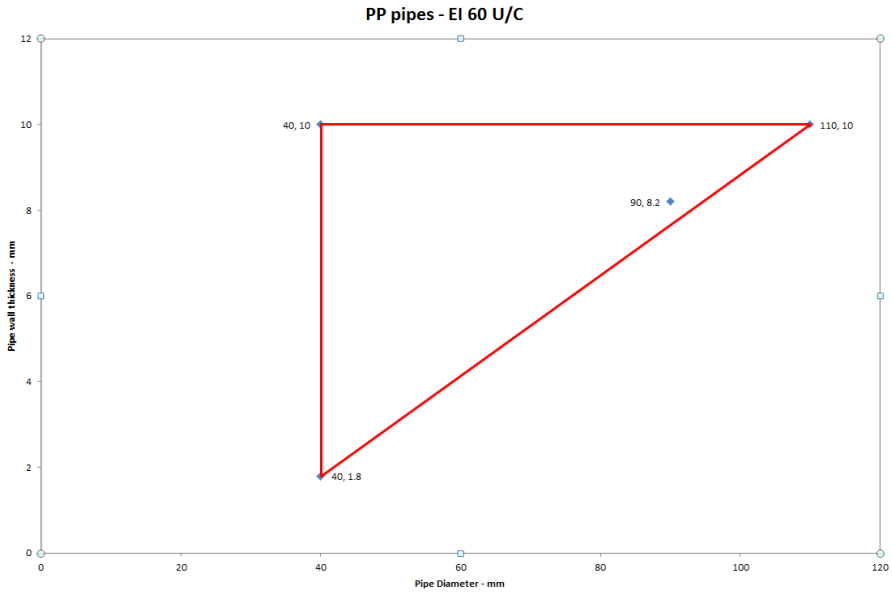
Services	Additional seal component	Classification
PE[$] pipe, up to 40 mm diameter / 3.7 mm wall thickness PE[$] pipe, up to 90 mm diameter / 8.2 mm wall thickness PE[$] pipe, up to 110 mm diameter / 3.4 – 6.6 mm wall thickness	20 mm wide x 50 mm deep Nullifire FS709 installed from the top face	**EI 60 U/C**

[$] EN12201 DIN 8074/8075



Services	Additional seal component	Classification
PP[@] pipe, up to 40 mm diameter / 1.8 mm wall thickness PP[@] pipe, up to 90 mm diameter / 8.2 mm wall thickness PP[@] pipe, up to 110 mm diameter / 10 mm wall thickness	20 mm wide x 50 mm deep Nullifire FS709 installed from the top face	**EI 60 U/C**
PP[@] pipe, up to 110 mm diameter / 2.7 mm wall thickness		**E 30 U/C** **EI 20 U/C**

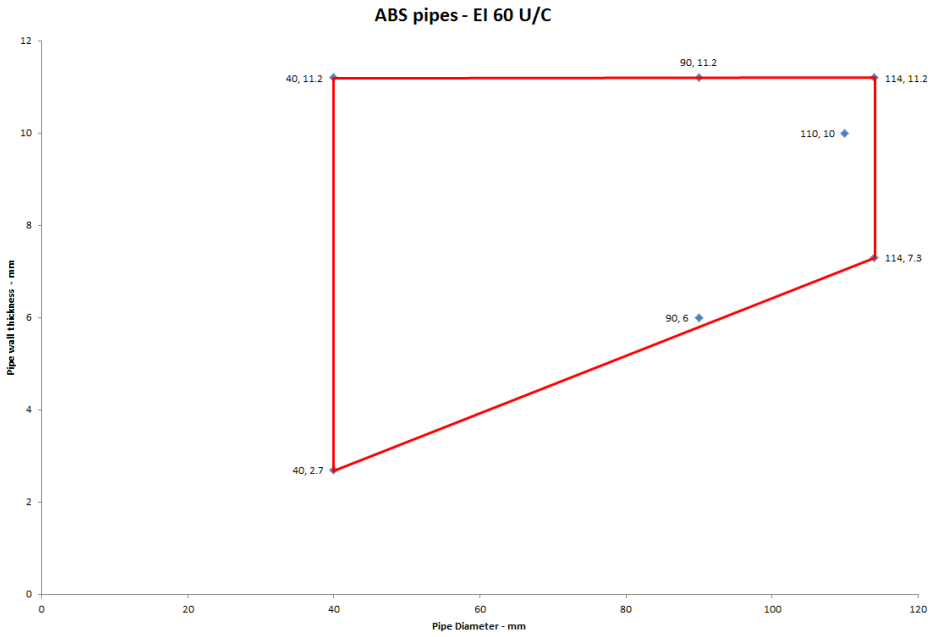
[@] ISO 15494 DIN 8077/8078



Services	Additional seal component	Classification

ABS* pipe, up to 40 mm diameter / 2.7 mm wall thickness ABS* pipe, up to 90 mm diameter / 6.0 - 11.2 mm wall thickness ABS* pipe, up to 114 mm diameter / 7.3 - 11.2 mm wall thickness	20 mm wide x 50 mm deep Nullifire FS709 installed from the top face	**EI 60 U/C**

* BS 5391-1:2006

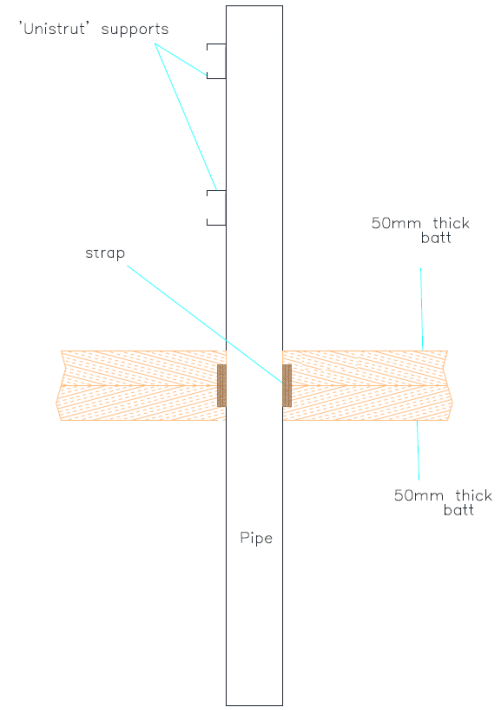


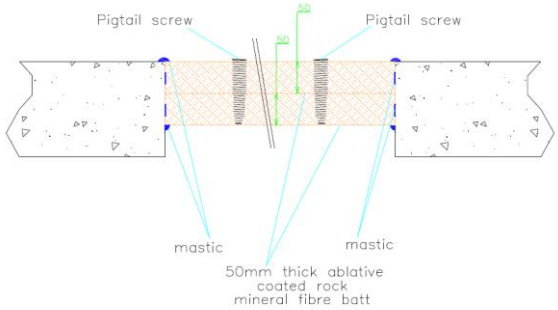
A.11 Rigid floor constructions with floor thickness of minimum 150 mm

A.11.1 Pipe penetration seal with 2 x 50 mm thick Nullifire FB750 flush to the top face and Nullifire FP302 with combustible pipes

Penetration Seal: Pipes penetrating through a rigid floor construction. 2 x 50 mm Nullifire FB750 flush to the top face. Nullifire FS702 is applied to seal around the services insulation and on both faces at the interface between seal and supporting construction. Boards are held together with 100mm long pigtail screws, 28 off per sq metre Maximum seal opening size of 600 x 600 mm.

Construction details:

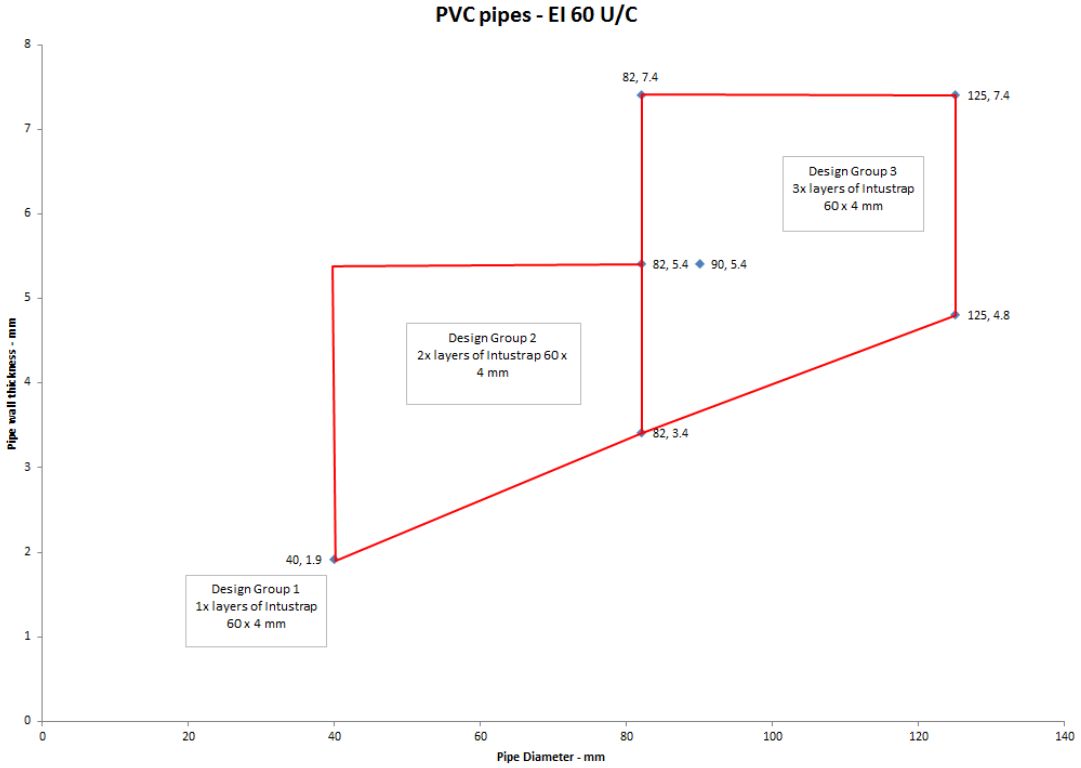




A.11.1.1 Single layer penetration seal with cables

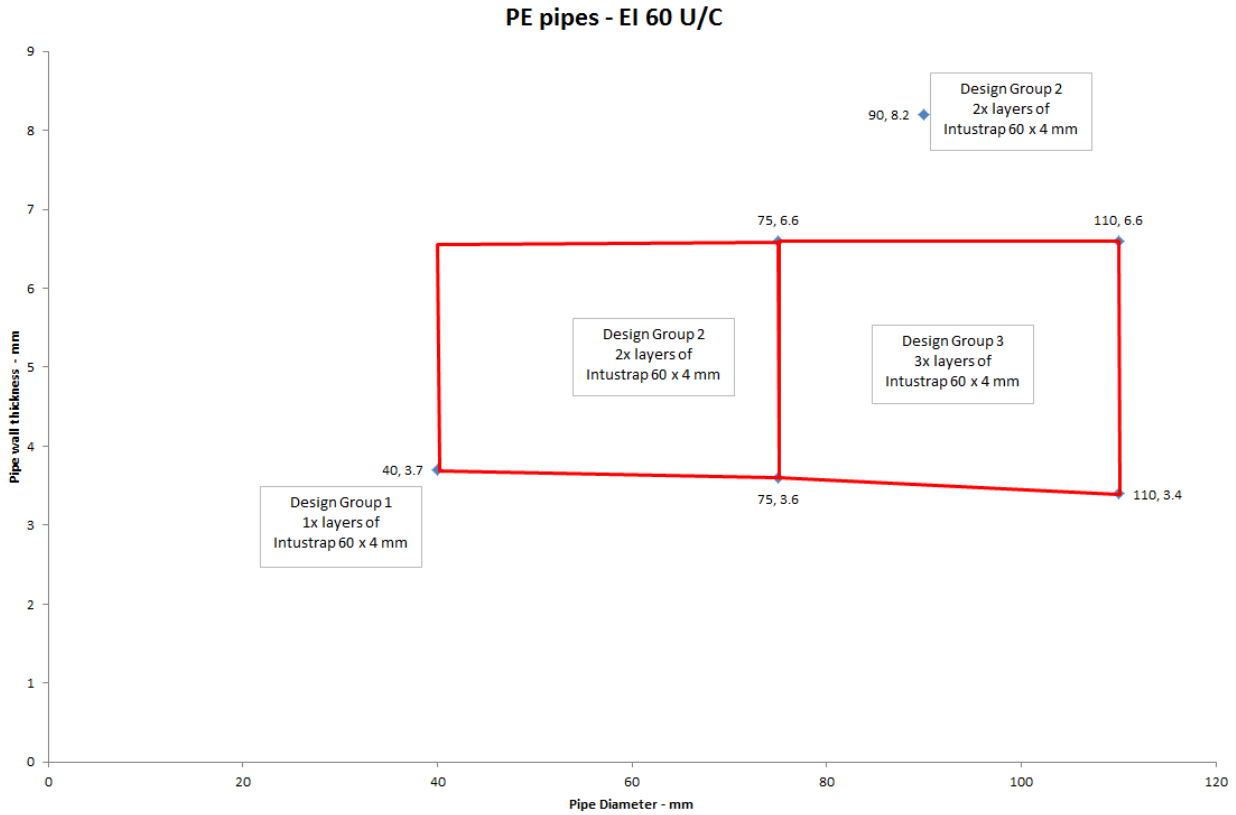
Services	Additional seal component	Classification
PVC[#] pipe, up to 40 mm diameter / 1.9 mm wall thickness	1x layers of Nullifire FP302 60 x 4 mm installed at mid-depth	**EI 60 U/C**
PVC[#] pipe, up to 82 mm diameter / 3.4-5.4 mm wall thickness	2x layers of Nullifire FP302 60 x 4 mm installed at mid-depth	
PVC[#] pipe, up to 90 mm diameter / 5.4 mm wall thickness		
PVC[#] pipe, up to 125 mm diameter / 4.8 - 7.4 mm wall thickness	3x layers of Nullifire FP302 60 x 4 mm installed at mid-depth	

[#] EN1452-2



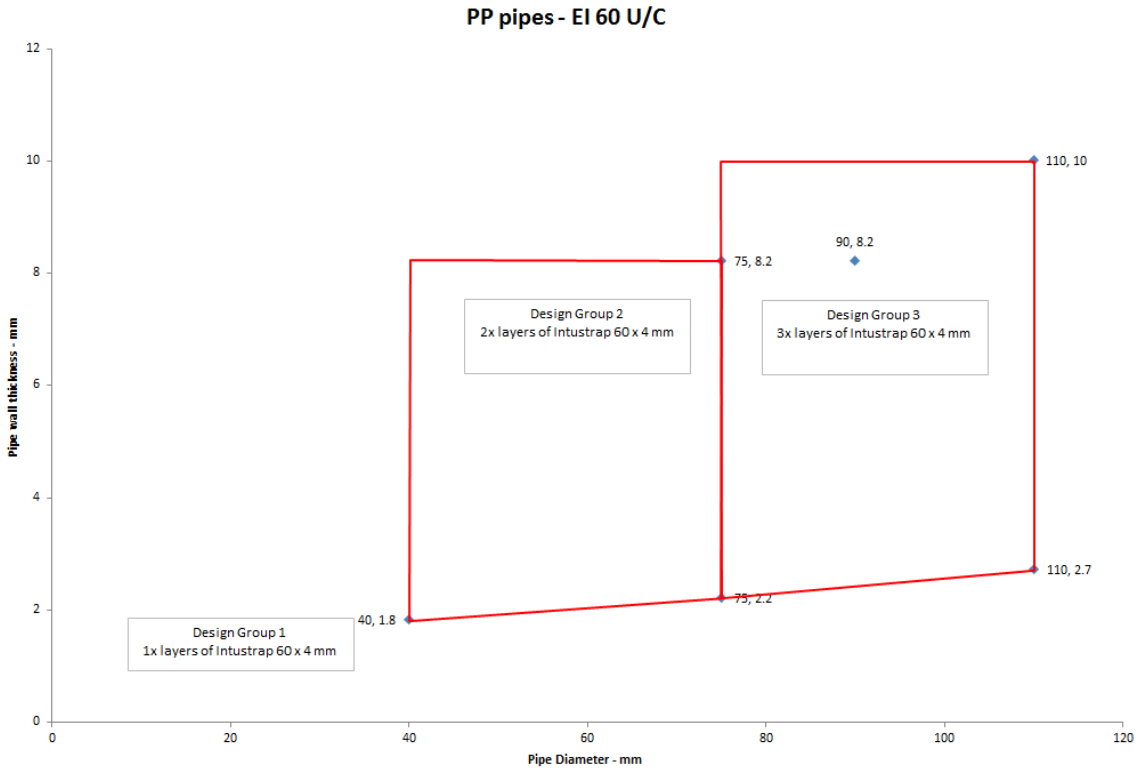
Services	Additional seal component	Classification
PE[$] pipe, up to 40 mm diameter / 3.7 mm wall thickness	1x layers of Nullifire FP302 60 x 4 mm installed at mid-depth	**EI 60 U/C**
PE[$] pipe, up to 75 mm diameter / 3.6-6.6 mm wall thickness	2x layers of Nullifire FP302 60 x 4 mm installed at mid-depth	
PE[$] pipe, up to 90 mm diameter / 8.2 mm wall thickness		
PE[$] pipe, up to 110 mm diameter / 3.4 – 6.6 mm wall thickness	3x layers of Nullifire FP302 60 x 4 mm installed at mid-depth	

[$] EN12201 DIN 8074/8075



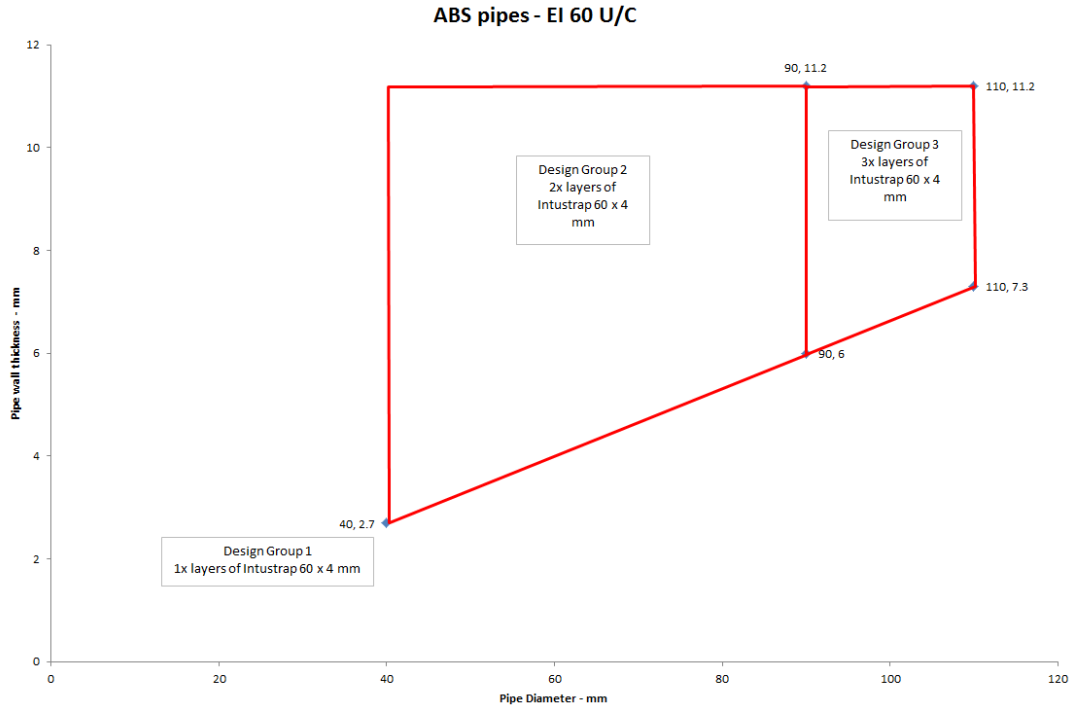
Services	Additional seal component	Classification
PP[@] pipe, up to 40 mm diameter / 1.8 mm wall thickness	1x layers of Nullifire FP302 60 x 4 mm installed at mid-depth	**EI 60 U/C**
PP[@] pipe, up to 75 mm diameter / 2.2- 8.2 mm wall thickness	2x layers of Nullifire FP302 60 x 4 mm installed at mid-depth	
PP[@] pipe, up to 90 mm diameter / 8.2 mm wall thickness	2x layers of Nullifire FP302 60 x 4 mm installed at mid-depth	
PP[@] pipe, up to 110 mm diameter / 2.7-10 mm wall thickness	3x layers of Nullifire FP302 60 x 4 mm installed at mid-depth	

[@] ISO 15494 DIN 8077/8078



Services	Additional seal component	Classification
ABS* pipe, up to 40 mm diameter / 2.7 mm wall thickness	1x layers of Nullifire FP302 60 x 4 mm installed at mid-depth	**EI 60 U/C**
ABS* pipe, up to 90 mm diameter / 6.0 - 11.2 mm wall thickness	2x layers of Nullifire FP302 60 x 4 mm installed at mid-depth	
ABS* pipe, up to 115 mm diameter / 7.3 - 11.2 mm wall thickness	3x layers of Nullifire FP302 60 x 4 mm installed at mid-depth	

* BS 5391-1:2006

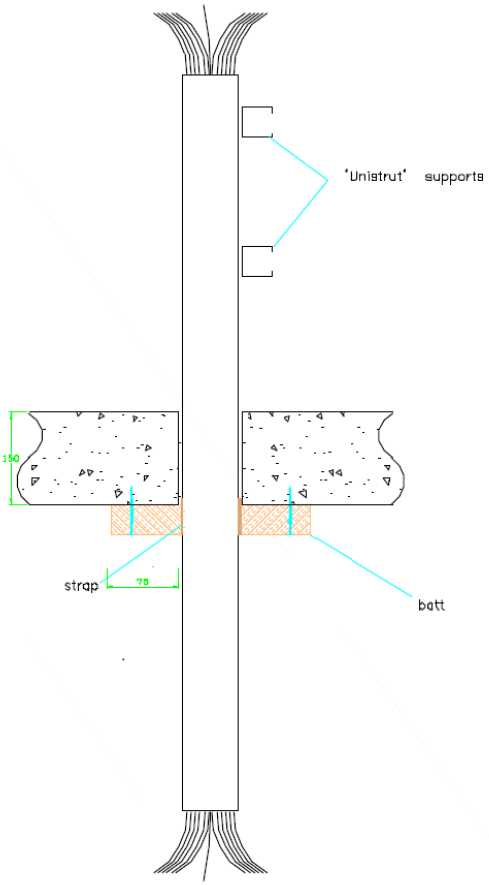


A.12 Rigid floor constructions with floor thickness of minimum 150 mm

A.12.1 Cable and pipe penetration seal with 1 x 50 mm thick Nullifire FB750 pattress fixed

Penetration Seal: Cables and pipes penetrating through a rigid floor construction. 1 x 50 mm Nullifire FB750 pattress fixed to the soffit with 4 x 80mm long wood screws (1No per corner) and a minimum 75 mm overlap all around. Nullifire FS702 is applied to seal around the services insulation and on both faces at the interface between seal and supporting construction. Maximum seal opening size of 70 mm diameter

Construction details:



A.12.1.1 Single layer penetration seal with cables

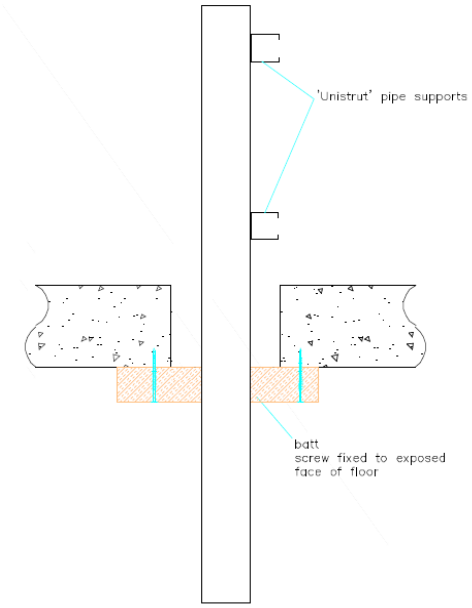
Services	Additional seal components	Classification
Min. 1150 mm long HDPE conduit Ø55mm x 3.2mm wall thickness, containing 8No twin and earth cables	Nullifire FP302 60 mm wide x 4 mm thick recessed into batt and overlapping into floor	**EI 240 U/U**

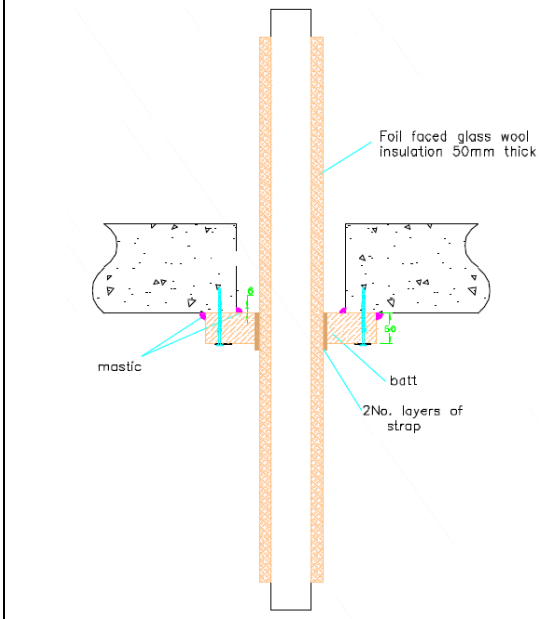
A.13 Rigid floor constructions with floor thickness of minimum 150 mm

A.13.1 Pipe penetration seal with 1 x 50 mm thick Nullifire FB750 pattress fixed

Penetration Seal: Metal pipes penetrating through a rigid floor construction. 1 x 50 mm Nullifire FB750 pattress fixed to the soffit with 80mm long steel screws (200 mm centres) and a minimum 75 mm overlap all around. Nullifire FS702 is applied to seal around the services insulation and on both faces at the interface between seal and supporting construction. Maximum seal opening size of 50 mm diameter and floor opening of 400 x 400 mm.

Construction details:





A.13.1.1 Single layer penetration seal with cables

Services	Additional seal components	Classification
Steel pipe 220 mm diameter / 6.9-14.2 mm wall	None	**E 60 C/U** **EI 15 C/U**
Steel pipe 220 mm diameter / 6.0-14.2 mm wall, insulated with Foil faced glass wool insulation 50mm thick CS	2No. layers 4 x 60 mm Nullifire FP302	**E 90 C/U** **EI 45 C/U**

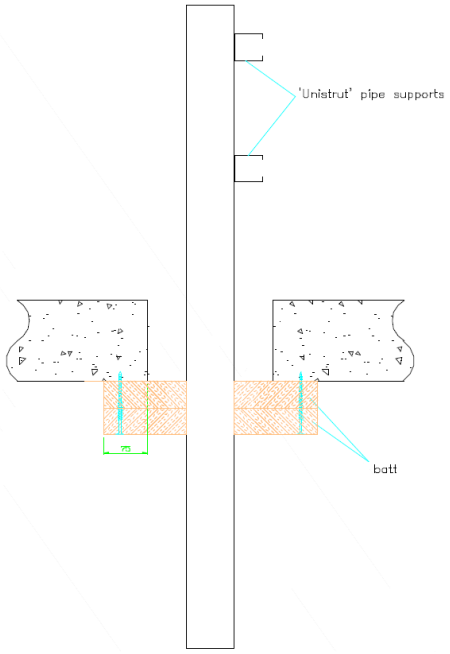
CS = Continuous Sustained

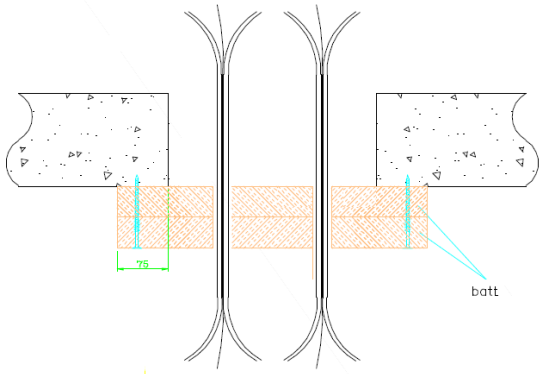
A.14 Rigid floor constructions with floor thickness of minimum 150 mm

A.14.1 Pipe and cable penetration seal with 2 x 50 mm thick Nullifire FB750 pattress fixed

Penetration Seal: Pipe and cable penetrating through a rigid floor construction. 2 x 50 mm Nullifire FB750 pattress fixed to the soffit with 4 x 120mm long steel screws and a minimum 75 mm overlap all around. Nullifire FS702 is applied to seal around the services insulation and on both faces at the interface between seal and supporting construction. Maximum seal size of 650 x 400 mm.

Construction details:





A.14.1.1 Single layer penetration seal with cables

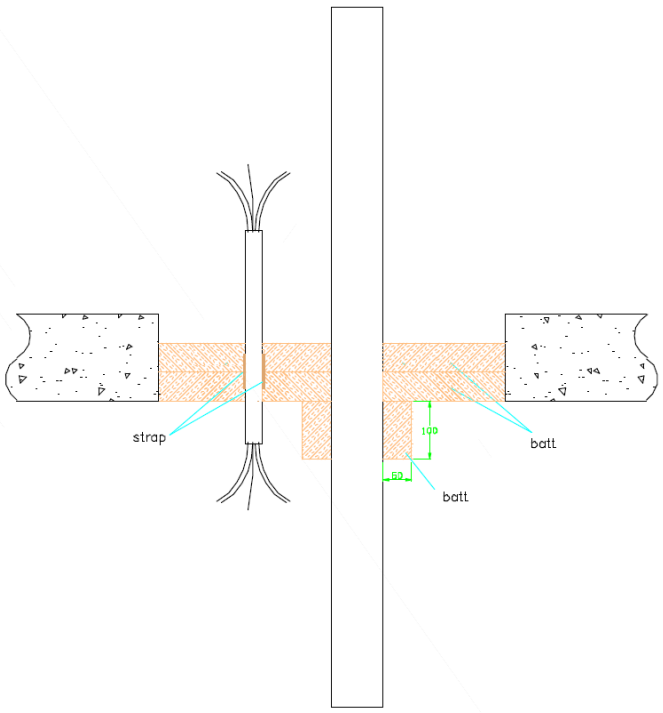
Services	Additional seal components	Classification
Steel pipe 160 mm diameter / 6.0-14.2 mm wall	None	**E 120 C/U** **EI 60 C/U**
Cat 5 electrical cables (bundle)		**EI 120**
Fire alarm cables (bundle)		

A.15 Rigid floor constructions with floor thickness of minimum 150 mm

A.15.1 Cable and timber penetration seal with 2 x 50 mm thick Nullifire FB750

Penetration Seal: Cable or timber penetrating through a rigid floor construction. 2 x 50 mm Nullifire FB750 pattress flush with the soffit. Nullifire FS702 is applied to seal around the services insulation and on both faces at the interface between seal and supporting construction. Maximum seal size of 400 x 400 mm.

Construction details:



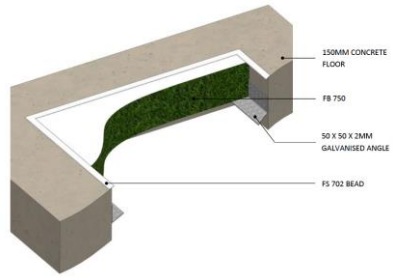
A.15.1.1 Single layer penetration seal with cables

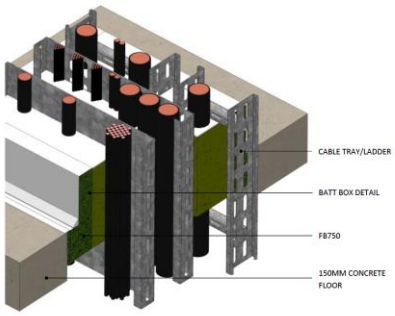
Services	Additional seal components	Classification
ABS Ø55mm x 3.2mm wall thickness x 300mm long conduit containing 10 no. fire alarm cables and 5No. twin and earth cables	Nullifire FP302 1No. layer 60mm wide x 4mm thick at mid-depth	**E 120 U/U EI 60 U/U**
95mm x 45mm European Redwood timber section	100 mm long Nullifire FB750 cladding to the underside of the seal	**E 240 EI 180**

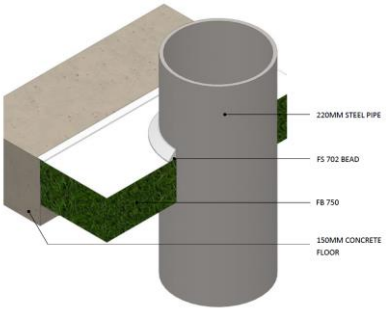
A.15.2 Cable & metal pipe penetration seal with 2x 50 mm thick Nullifire FB750 incorporating a 'Batt box'

Penetration Seal: Metallic pipes (uninsulated) and cables penetrating through a rigid (concrete) floor construction. 2 x 50 mm Nullifire FB750 installed back to back, flush to the top face and supported on all sides by continuous 50 x 50 x 2 mm angle. Nullifire FS702 is applied to seal around the services and on the upper face at the interface between seal and supporting construction. Maximum seal size of 1800 high x 600 mm wide. A 'batt box' 150 mm deep 9flush to the bottom of the seal) is formed within the primary seal, comprising a lining 50 mm thick Nullifire FB750 infilled with stone wool mineral fibre 64 kg/m^3 coated on both faces with 3 mm Nullifire FS702. Maximum seal size of 1400 long x 500 mm wide

Construction details:







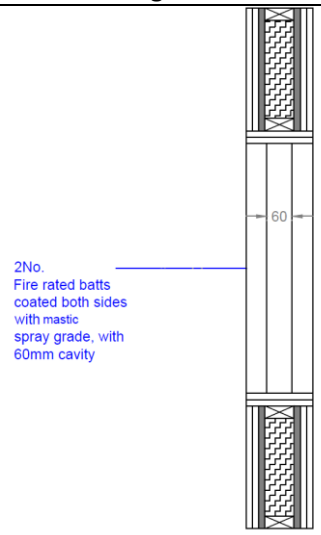
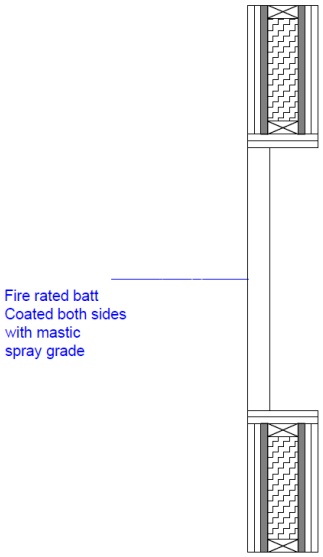
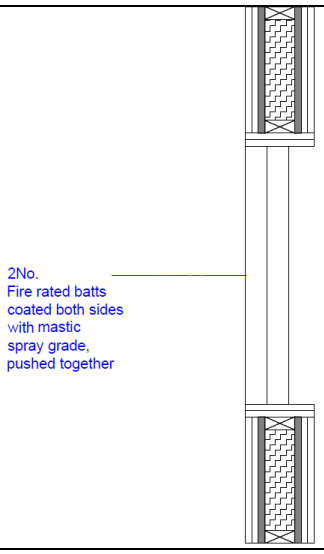
A.15.2.1 Double side 'Batt Box' penetration seal with cables and double side seal with metal pipes

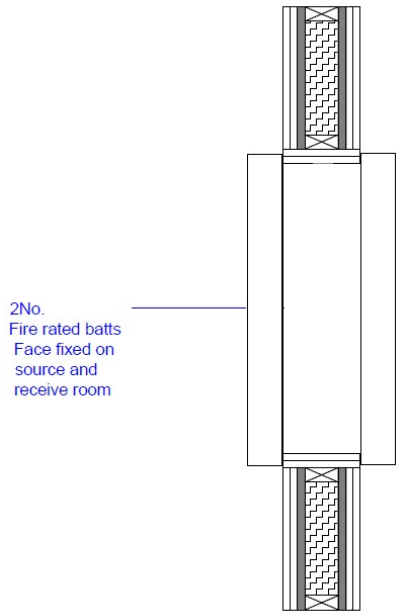
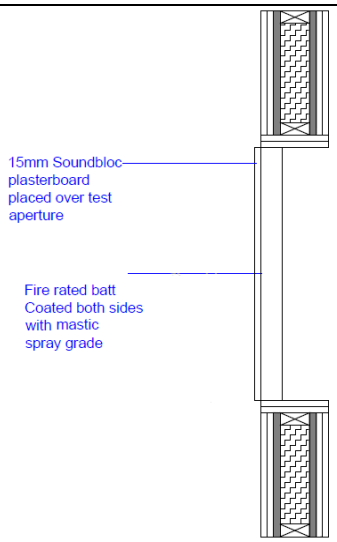
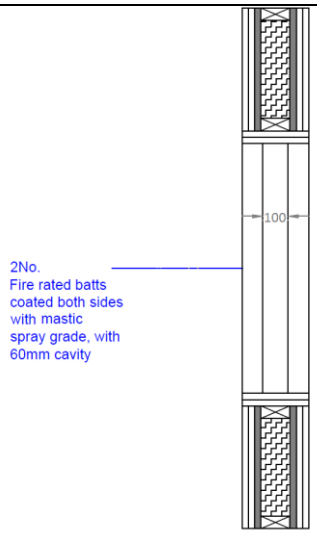
Services	Classification
Electrical cables up to 80 mm Ø (single, bundled and on steel trays/ladders up to 500 mm wide)	**E120, EI 190**
Telecom cable up to 21mm Ø in tied bundles up to 100mm Ø	**EI 120**
Unsheathed wires up to 24 mm diameter	**EI 120**
Steel pipes 220 mm diameter by 8.0-14.2 mm wall	**E 120 C/U, EI 20 C/U**

ANNEX B – Air Permability – Nullifire FB750

Product tested	Nullifire FB750 with perimeter sealed with Nullifire FS702		
Summary of testing procedure			Result
	Pressure (Pa)	Leakage (m^3/h)	Leakage ($m^3/m^2/h$)
Results under negative chamber pressure	50	0.5	0.7
	100	0.5	0.7
	150	0.5	0.7
	200	0.5	0.7
	250	0.6	0.8
	300	0.6	0.8
	450	0.7	0.9
	500	1.0	1.4
	600	1.1	1.5
Results under positive chamber pressure	50	0.2	0.3
	100	0.4	0.5
	150	0.6	0.8
	200	0.6	0.8
	250	0.7	0.9
	300	0.8	1.1
	450	1.1	1.5
	500	1.1	1.5
	600	1.4	1.9

ANNEX C – Airborne sound insulation– Nullifire FB750

Configuration	Performance
	Dnew - 53 (-1;-5) dB Rw (1.87m2) - 40 (-4;-7) dB Rw (14.2m2) - 49 (-4;-7) dB
	Dnew - 31 (-1;-3) dB Rw (1.87m2) - 24 (-1;3) dB Rw (14.2m2) - 33 (-1;-3) dB
	Dnew - 39 (-1;-4) dB Rw (1.87m2) - 32 (-2;-4) dB Rw (14.2m2) - 42 (-2;-4) dB

	Dnew - 39 (-1;-4) dB Rw (1.87m2) - 32 (-2;-4) dB Rw (14.2m2) - 42 (-2;-4) dB
	Dnew - 26 (0;-1) dB Rw (1.87m2) - 46 (-1;-6) dB Rw (14.2m2) - 55 (-1;-6) dB
	Dnew - 50 (-1;-5) dB Rw (wall area) - 51 (-2;-6) dB Rw (specimen area 0.6 m^2) – 38 (-1;-5) dB
	Dnew - 57 (-2;-9) dB Rw (wall area) - 58 (-1;-5) dB Rw (specimen area 0.3 m^2) – 42 (-2;-9) dB