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Notified body No.:

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Product Name:

Firebreak Compound

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1. Introduction

This classification report defines the classification assigned to the element Firebreak Compound, in accordance with the procedures given in BS EN 13501-2: 2007+A1: 2009.

2. Details of classification product

2.1 General

The element Firebreak Compound is defined as fire resisting penetration sealing system to be used to reinstate the performance of walls and floors.

2.2 Product description

The element Firebreak Compound is fully described in the test reports provided in support of classification detailed in clause 3.1.

3. Test reports in support of classification

3.1 Summary of test reports

Name of laboratory	Name of sponsor	Test and Date	Test method
Chiltern International Fire - Notified Body No. 1314	Neutron Fire Technologies Limited	Chilt/ FF11003A, 22/11/2011	BS EN 1366-3: 2009
		Chilt/ RF11158 rev A, 18/01/2012	
		BMT/FER/F13261, 16/12/2013	
		BMT/FEI/F13120 Revision B, 17/12/2013	
		BMT/FEP/F14039 Revision A, 18/03/2014	

3.2 Results

Summary of report No.: Chilt/ FF11003A

A fire resistance test in accordance with BS EN 1366-3: 2009, on penetration seals installed in a 150 mm thick concrete floor supporting construction.

Specimen	Penetrating Service	Integrity	Insulation*
E	Pipe	241	241
F	Pipe		27
G	Pipe		36
H	Pipe		16
I	Pipe		21
J	Pipe		98
A	Ladder		211
	Cable D1		145
	Cable E		60
	Cable D2		71
B	Ladder		241
	Cable D3		67
C	Ladder		153
	Cable A1		137
	Cable A2		119
	Cable A3		130
	Cable B	98	
	Cable C1	96	
	Cable C2	61	
	Cable C3	75	
D	Tray	104	77
	Cable F		78
	Conduit H		28
	Conduit I		19
	Cable G1/G2	137	35

* additional insulation values were also generated with insulated services

Summary of report No.: Chilt/ RF11158 Rev A

A fire resistance test in accordance with BS EN 1366-3: 2009, on penetration seals installed in a 150 mm thick rigid wall supporting construction.

Specimen	Penetrating Service	Integrity	Insulation*
A	Pipe	257	204
B	Pipe		229
C	Pipe		42
D	Pipe		105
E	Pipe		52
F	Pipe		24
Ladder 1	Ladder		118
	Cable D1		70
	Cable E		48
	Cable D2		131
Ladder 2	Ladder		129
	Cable D3		159
Tray 1	Ladder	257	189
	Cable A1		161
	Cable A2		135
	Cable A3		164
	Cable B		78
	Cable C1		71
	Cable C2		107
	Cable C3		79
Tray 2	Tray		174
	Cable F	207	122
	Cable G1	257	62
	Cable G2		54

* additional insulation values were also generated with insulated services

Summary of report No.: BMT/FER/F13261

A fire resistance test in accordance with BS EN 1366-3: 2009, on penetration seals installed in a 100 mm thick flexible wall supporting construction.

Specimen	Penetrating Service	Integrity	Insulation*	
N1	Pipe	132	112	
N2	Pipe		28	
Ladder N	Tray		N/A	
	Cable B		74	
	Cable A1		100	
	Cable A2		101	
Ladder N	Cable A3		116	
	P1		Pipe	132
	P2		Pipe	80
Ladder P	Tray		87	
	Cable E		59	
	Cable C1		67	
	Cable C2		72	
	Cable C3		64	
Q1	Pipe		132	
Q2	Pipe		132	
Q3	Pipe		33	
Q4	Pipe		132	
R	Pipe		23	

* additional insulation values were also generated with insulated services

Summary of report No.: BMT/FER/F14039 Revision A

A fire resistance test in accordance with BS EN 1366-3: 2009, on penetration seals installed in a 100 mm thick flexible wall supporting construction.

Specimen	Penetrating Service	Integrity	Insulation*	
N	Cable D1	132	132	
	Cable D2			
	Cable bundle F			
	Cable G1			
	Cable G2			
	Cable E			
	Cable D3			
	Tray			
L	Cable D1	132	132	
	Cable D2			
	Cable bundle F			
	Cable G1			105
	Cable G2			99
	Cable E			97
	Cable D3			96
	Tray			132

Summary of report No.: BMT/FEI/F13120 Revision B

A fire resistance test in accordance with BS EN 1366-3: 2009, on penetration seals installed in a 150 mm thick concrete floor supporting construction.

Specimen	Penetrating Service	Integrity	Insulation*
A1	Ladder	132	132
A2	Ladder		
A3	Tray		113
A4	Tray		132
A	Cable D3	132	39
	Cable D2		66
	Cable E		23
	Cable D1		41
	Cables A1		93
	Cables A2		132
	Cables A3		112
	Cables B		34
	Cable C1	107	64
	Cable C2		76
	Cable C3		50
	Cable G1	132	30
	Cables G2		25
	Cables F	107	40
B1	Pipe	132	12
B2	Pipe		81
B3	Pipe		19
B4	Pipe		8
B5	Pipe		10
B6	Pipe		36

* additional insulation values were also generated with insulated services



4. Classification and field of application

4.1 Reference of classification

This classification has been carried out in accordance with Clause 7 of EN 13501-2:2007+A1: 2009.

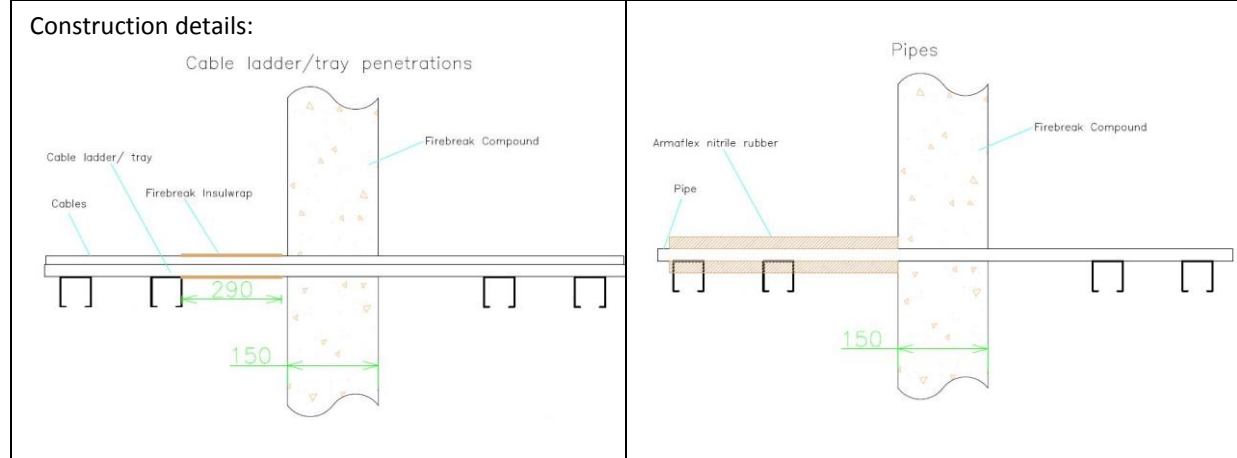
4.2 Classification

The element, product name Firebreak Compound is classified according to the following combinations of performance parameters and classes as appropriate.

R	E	I	W	-	t	-	M	C	S	IncSlow	sn	ef	r
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Firebreak Compound penetration seal in rigid walls min. 150 mm thick

Penetration Seal: Metallic pipes (insulated and un-insulated) and various cables (insulated and un-insulated) penetrating through a rigid wall construction. Firebreak Compound installed centrally within the wall to full depth. Firebreak Compound is applied to seal around the services and gaps of service penetration.



Services	Armaflex Nitrile Rubber Service Insulation	Classification
Steel pipe 38mm Ø, 1.9 – 14.2mm wall	25 mm (CI)	EI 240 C/U
Steel pipe 38 - 194mm Ø, 5 – 14.2mm wall		
Copper pipe 22mm Ø, 1 – 9mm wall	20 mm (CI)	
Copper pipe 42 mmØ, 1.2 – 14.2mm wall	25 mm (CI)	E 240 C/U
Copper pipe 42 - 89mm Ø, 1.6 – 14.2mm wall,		EI 90 C/U
Steel pipe 19mm Ø, 1.2 – 9mm wall	20 mm by 500 mm (LI)	EI 240 C/U
Steel pipe 38mm Ø, 1.9 – 14.2mm wall	25 mm by 500 mm (LI)	E 240 C/U
Steel pipe 38 - 194mm Ø, 5 – 14.2mm wall		EI 30 C/U
Copper pipe 22mm Ø, 1 – 9mm wall	20 mm by 500 mm (LI)	E 240 C/U
Copper pipe 42mm Ø, 1.2 – 14.2mm wall	25 mm by 500 mm (LI)	EI 120 C/U
Copper pipe 42 - 89mm Ø, 1.6 – 14.2mm wall		E 240 C/U
Steel pipe 19mm Ø, 1.2 – 9mm wall	20 mm by 500 mm (LI)	EI 60 C/U
Steel pipe 19mm Ø, 1.2 – 9mm wall	20 mm by 500 mm (LI)	EI 240 C/U

‘ C=Icontinued interrupted

‘ L=Ilocal interrupted

Services	Insulwrap Aluminium Foil Face Insulation (LI)	Classification	
Steel pipe 38mm Ø, 1.9 – 14.2mm wall	None	E 240 C/U EI 180 C/U	
Steel pipe 38 - 194mm Ø, 5 – 14.2mm wall		E 240 C/U EI 15 C/U	
Copper pipe 22mm Ø, 1 – 9mm wall		E 240 C/U EI 90 C/U	
Electrical cables up to 21 mm Ø		E 240 EI 60	
Electrical cables up to 80 mm Ø		E 240 EI 45	
Non-sheathed wire up to 17 mm Ø		E 240 EI 60	
Non-sheathed wire 18-24 mm Ø		E 240 EI 45	
Up to 21mm Ø telecomm cables in bundles of up to 100 mm diameter		E 180 EI 120	
Electrical cables up to 21 mm Ø		5mm thick by 300mm long	E 240 EI 120
Electrical cables up to 80 mm Ø			E 240 EI 90
Non-sheathed wire up to 17 mm Ø	EI 240		
Non-sheathed wire 18-24 mm Ø	E 240 EI 180		
Up to 21mm Ø telecomm cables in bundles of up to 100 mm diameter	E 180 EI 120		

‘ C=local interrupted

‘ L=local interrupted

Specific Cables*	Insulwrap Aluminium Foil Face Insulation (LI)	Classification
C1, C3, D1, D3 electrical cables	None	E 240 EI 60
C2 electrical cables		E 240 EI 90
A1, A2, A3, D2 electrical cables		E 240 EI 120
C2, D1, D3 electrical cables	5mm thick by 300mm long	E 240 EI 120
C3 electrical cables		E 240 EI 180
A1, A2, A3, D2 electrical cables		EI 240

* as defined in EN 1366-3: 2009

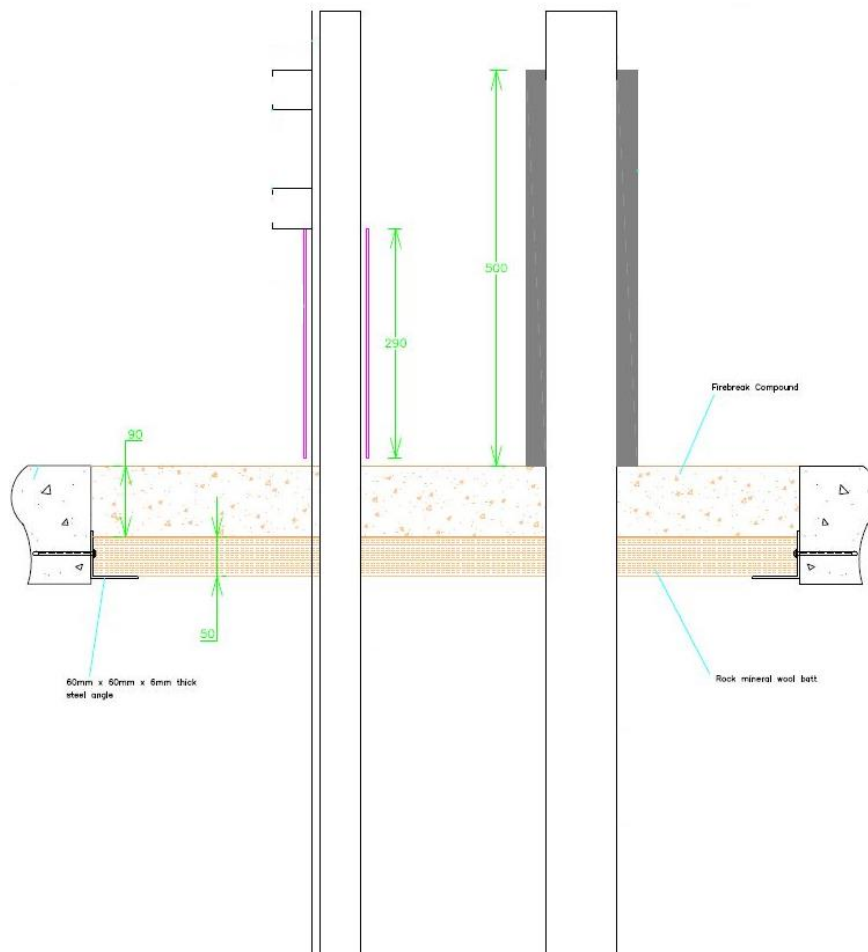
Firebreak Compound penetration seal in rigid floors min. 150 mm thick

Penetration Seal: Metallic pipes (insulated and un-insulated) and various cables (insulated and un-insulated) penetrating through a rigid floor construction. Firebreak Compound installed flush to the top of the floor and to a minimum 90 mm depth, maximum seal size 1400 x 1200 mm.

A steel support and mineral fibre board structure is installed as a shutter and a structural support for the Firebreak Compound seal

Firebreak Compound is poured around the services and gaps of service penetration

Construction details:



Services	Armaflex Nitrile Rubber Service Insulation	Classification
Steel pipe 19mm Ø, 1.2 – 9mm wall	20 mm (CI)	E 240 C/U EI 180 C/U
Steel pipe 38mm Ø, 1.9 – 14.2mm wall	25 mm (CI)	
Steel pipe 38 - 194mm Ø, 5 – 14.2mm wall		
Copper pipe 22mm Ø, 1 – 9mm wall	20 mm (CI)	EI 240 C/U
Copper pipe 42mm Ø, 1.6 – 14.2mm wall	25 mm (CI)	E 240 C/U EI 60 C/U
Copper pipe 42 - 89mm Ø, 1.6 – 14.2mm wall		
Steel pipe 19mm Ø, 1.2 – 9mm wall	20 mm by 500 mm (LI)	E 240 C/U EI 180 C/U
Steel pipe 38mm Ø, 1.9 – 14.2mm wall	25 mm by 500 mm (LI)	E 240 C/U EI 60 C/U
Steel pipe 38 - 194mm Ø, 5 – 14.2mm wall		
Copper pipe 22mm Ø, 1 – 9mm wall	20 mm by 500 mm (LI)	E 240 C/U EI 45 C/U
Copper pipe 42 mm Ø, 1.6 – 14.2mm wall	25 mm by 500 mm (LI)	EI 240 C/U
Copper pipe 42 - 89mm Ø, 1.6 – 14.2mm wall		
Steel pipe 19mm Ø, 1.2 – 9mm wall	None	E 240 C/U EI 30 C/U
Steel pipe 38 - 194mm Ø, 5 – 14.2mm wall		E 240 C/U EI 15 C/U
Copper pipe 22mm Ø, 1 – 9mm wall		EI 240 C/U
Copper pipe 42mm Ø, 1.6 – 14.2mm wall		E 240 C/U EI 90 C/U
Copper pipe 42 - 89mm Ø, 1.6 – 14.2mm wall		E 240 C/U EI 15 C/U
Electrical cables up to 21 mm Ø		E 240 EI 90
Electrical cables up to 80 mm Ø		E 240 EI 60
Non-sheathed wire up to 24 mm Ø		E 240 EI 30
Up to 21mm Ø telecomm cables in bundles of up to 100 mm diameter		E 240 EI 60
Services	Insulwrap Aluminium Foil Face Insulation (LI)	Classification
Electrical cables up to 21 mm Ø	5mm thick by 300mm long	E 240 EI 120
Electrical cables up to 80 mm Ø		E 240 EI 90
Non-sheathed wire up to 24 mm Ø		E 120 EI 60
Up to 21mm Ø telecomm cables in bundles of up to 100 mm diameter		E 120 EI 90
Steel or Copper conduits and tubes up to 16 mm Ø	None	E 120 EI 15
Plastic (any) conduits and tubes up to 16 mm Ø		E 90 EI 15

‘ C=Continued interrupted

‘ L=Local interrupted

Specific Cables*	Insulwrap Aluminium Foil Face Insulation (LI)	Classification
A2 electrical cables	None	E 240 EI 120
A1, A2, A3, D2 electrical cables	5mm thick by 300mm long	E 240 EI 120

* as defined in EN 1366-3: 2009

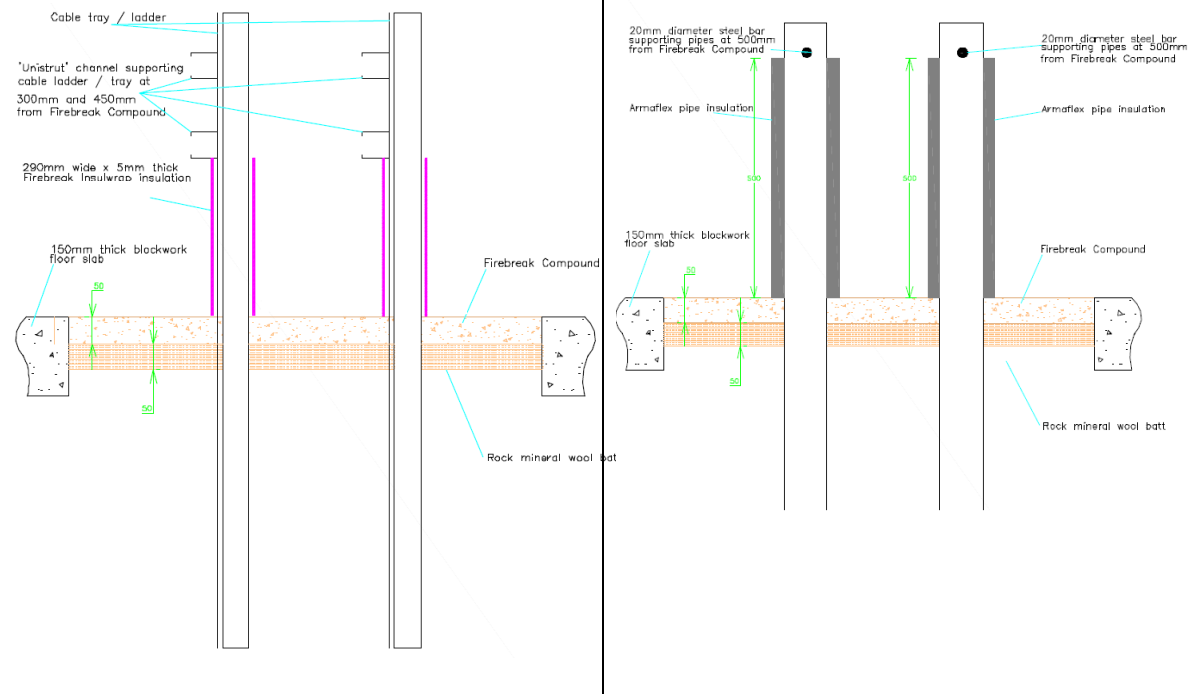
Firebreak Compound penetration seal in rigid floors min. 150 mm thick

Penetration Seal: Metallic pipes (insulated and un-insulated) and various cables (insulated and un-insulated) penetrating through a rigid floor construction. Firebreak Compound installed flush to the top of the floor and to a minimum 50 mm depth, maximum seal size 700 x 600 mm.

A mineral fibre board structure is installed as a shutter and a structural support for the Firebreak Compound seal

Firebreak Compound is poured around the services and gaps of service penetration

Construction details:



Services	Armaflex Nitrile Rubber Service Insulation (optional top face only)	Classification
Steel pipe 19mm Ø, 1.0 – 14.2mm wall	19 mm by 500 mm (LI)	EI 120 C/U
Steel pipe 40mm Ø, 1.2 – 14.2mm wall		
Steel pipe 194mm Ø, 8.0 – 14.2mm wall	25 mm by 500 mm (LI)	E 120 C/U EI 30 C/U
Copper pipe 22mm Ø, 1 – 9mm wall	19 mm by 500 mm (LI)	EI 120 C/U
Copper pipe 42mm Ø, 1.2 – 14.2mm wall		
Copper pipe 89mm Ø, 1.6 – 14.2mm wall	25 mm by 500 mm (LI)	E 120 C/U EI 30 C/U
Copper pipe 22-89mm Ø, 1.2 – 14.2mm wall	None	E 120 C/U
Steel pipe 19mm Ø, 1.0 – 14.2mm wall		E 120 C/U EI 60 C/U
Steel pipe 40mm Ø, 1.2 – 14.2mm wall		E 120 C/U EI 30 C/U
Steel pipe 194mm Ø, 8.0 – 14.2mm wall		E 120 C/U EI 15 C/U
Steel pipe 19mm Ø, 1.0 – 14.2mm wall	19 mm (CI)	EI 120 C/U
Steel pipe 40mm Ø, 1.2 – 14.2mm wall	25 mm (CI)	EI 120 C/U
Steel pipe 194mm Ø, 8.0 – 14.2mm wall		E 120 C/U EI 30 C/U
Copper pipe 22mm Ø, 1 – 9mm wall	19 mm (CI)	EI 120 C/U
Copper pipe 42mm Ø, 1.2 – 14.2mm wall	25 mm (CI)	
Copper pipe 89mm Ø, 1.6 – 14.2mm wall		
Services	Insulwrap Aluminium Foil Face Insulation (LI)	Classification
Electrical cables up to 21 mm Ø	5mm thick by 300mm long	E 120 EI 90
Electrical cables up to 80 mm Ø		E 90 EI 60
Non-sheathed wire up to 24 mm Ø		E 120 EI 90
Up to 21mm Ø telecomm cables in bundles of up to 100 mm diameter		EI 90
Steel ladders and non-perforated trays up to 500 x 60 x 1.5 mm	None	EI 120
Steel perforated trays up to 500 x 60 x 1.5 mm		EI 90
Electrical cables up to 21 mm Ø		E 120 EI 30
Electrical cables up to 80 mm Ø		E 90
Non-sheathed wire up to 24 mm Ø		EI 15
Up to 21mm Ø telecomm cables in bundles of up to 100 mm diameter		E 90 EI 30

‘ C=Icontinued interrupted

‘ L=Ilocal interrupted

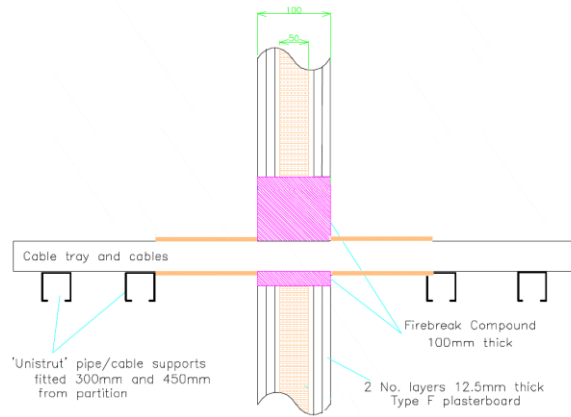
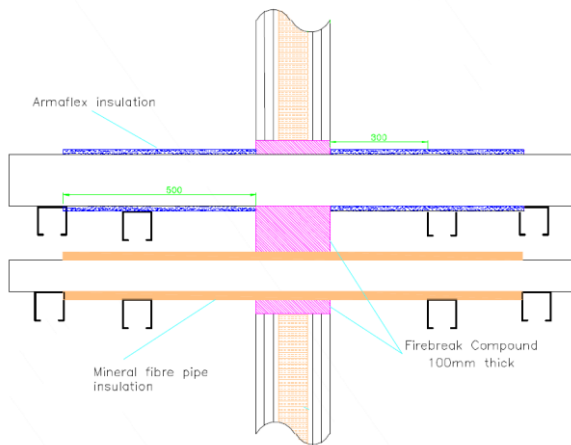
Specific Cables*	Insulwrap Aluminium Foil Face Insulation (LI)	Classification
C3, D1, D3 electrical cables	None	E 240 EI 30
C1, C2, D2 electrical cables		E 240 EI 60
A1, A3, electrical cables		E 240 EI 90
A2 electrical cables		E 240 EI 120
B, C1, C2, D1, D3 electrical cables	5mm thick by 300mm long	E 240 EI 90
A1, A2, A3, D2 electrical cables		E 240 EI 120

* as defined in EN 1366-3: 2009

Firebreak Compound penetration seal in flexible and rigid walls min. 100 mm thick

Penetration Seal: Metallic pipes (insulated and un-insulated) and various cables (insulated and un-insulated) penetrating through a flexible or rigid wall construction. Firebreak Compound installed centrally within the wall to full depth. Firebreak Compound is applied to seal around the services and gaps of service penetration.

Construction details:



Services	Armaflex Nitrile Rubber Service Insulation	Classification
Copper pipe 22-38 mm Ø, 1 – 14.2mm wall	19 mm x 500 mm (LI)	EI 120 C/U
Copper pipe 93 mmØ, 1.6 – 14.2mm wall	25 mm x 500 mm (LI)	
Steel pipe 19mm Ø, 1.2 – 14.2mm wall	19 mm x 500 mm (LI)	
Steel pipe 38mm Ø, 1.2 – 14.2mm wall	25 mm x 500 mm (LI)	
Steel pipe 193.7mm Ø, 1.2 – 14.2mm wall	25 mm x 500 mm (LI)	E 120 C/U EI 60 C/U
Steel pipe 193.7mm Ø, 1.2 – 14.2mm wall	25 mm (CI)	E 120 C/U EI 90 C/U
Copper pipe 22 mm Ø, 1 – 14.2mm wall	None	E 120 C/U EI 90 C/U
Copper pipe 38 mm Ø, 1.2 – 14.2mm wall	None	E 120 C/U EI 15 C/U
Copper pipe 93 mmØ, 1.6 – 14.2mm wall	None	E 120 C/U EI 30 C/U
Steel pipe 19mm Ø, 1.2 – 14.2mm wall	None	EI 120 C/U
Steel pipe 38mm Ø, 1.2 – 14.2mm wall	None	E 120 C/U EI 60 C/U
Steel pipe 193.7mm Ø, 1.2 – 14.2mm wall	None	E 120 C/U EI 15 C/U
Services	Rock Mineral Wool Service Insulation	Classification
Copper pipe 22-93 mm Ø, 1 – 14.2mm wall	25 mm (CI)	EI 120 C/U

‘ C=Iccontinued interrupted

‘ L=Iločal interrupted

Services	Insulwrap Aluminium Foil Face Insulation (LI)	Classification
Electrical cables up to 21 mm diameter	None	E 120 EI 60
Electrical cables up to 80 mm diameter	None	E 120 EI 45
Electrical cables up to 80 mm diameter	5mm thick by 300mm long	EI 120
Steel cable trays up to 150 x 50 x 1.5 mm	None	E 120 EI 60
Up to 21mm Ø telecomm cables in bundles of up to 100 mm diameter	5mm thick by 300mm long	EI 120
Non-sheathed wire up to 24 mm Ø		
Steel cable trays up to 300 x 25 x 1.5 mm		
Up to 21mm Ø telecomm cables in bundles of up to 100 mm diameter	None	EI 120
Non-sheathed wire up to 24 mm Ø		E 120 EI 90
Steel cable trays up to 300 x 25 x 1.5 mm		EI 120

‘ C=Iccontinued interrupted

‘ L=Iločal interrupted

Specific Cables*	Insulwrap Aluminium Foil Face Insulation (LI)	Classification
C1, C2, C3 electrical cables	None	E 240 EI 60
A1, A2, A3, D3 electrical cables		E 240 EI 90
D1, D2 electrical cables		E 240 EI 120

* as defined in EN 1366-3: 2009

4.3 Field of Application

This classification is valid for the following end use applications (as defined in EN1366-3: 2009, referencing the following appropriate clauses of EN1366-3: 2009).

4.3.1 General Rules

13.1 Orientation

Test results are only applicable to the orientation in which the penetration seals were tested, i.e. in a wall or floor.

13.2 Supporting construction

13.2.1 Rigid floor and wall constructions

Test results obtained with rigid standard supporting constructions may be applied to concrete or masonry separating elements of a thickness and density equal to or greater than that of the supporting construction used in the test. This rule does not apply to pipe closure devices positioned within the supporting construction in case of higher thickness of the supporting construction unless the length of the seal is increased by an equal amount and the distance from the surface of the supporting construction remains the same on both sides.

13.2.2 Flexible wall constructions

13.2.2.1 Test results obtained with the standard flexible wall constructions according to 7.2.2.1.2 cover all flexible wall constructions of the same fire resistance classification provided:

- 1) The construction is classified in accordance with EN 13501-2;
- 2) The construction has an overall thickness not less than the minimum thickness of the range given in Table 3 for the standard flexible wall used in the test. This rule does not apply to pipe closure devices positioned within the supporting construction unless the length of the seal is increased by an equal amount and the distance from the surface of the supporting construction remains the same on both sides;
- 3) In the case of penetration seals installed within the wall and where a flexible wall with insulation was used in the test an aperture framing shall be used in practice. The aperture frame and aperture lining shall be made from studs and boards of the same specification as those used in the wall in practice. The thickness of the aperture lining shall be minimum 12.5 mm. This rule does not apply in the case where the insulation was removed around the penetration seal(s) (see 7.2.2.1.2);
- 4) The number of board layers and the overall board layer thickness is equal or greater than that tested when no aperture framing is used
- 5) Flexible wall constructions with timber studs are constructed with at least the same number of layers as given in Table 3, no part of the penetration seal is closer than 100 mm to a stud, the cavity is 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.

13.2.2.2 An aperture framing is considered as being part of the penetration seal. Tests without an aperture framing cover applications with aperture framing but not vice versa.

13.2.2.3 The standard flexible wall construction does not cover sandwich panel constructions and flexible walls where the lining does not cover the studs on both sides. Penetrations in such constructions shall be tested on a case by case basis.

13.2.2.4 Test results obtained with flexible supporting walls may be applied to concrete or masonry elements of an overall thickness equal to or greater than that of the element used in the tests. This rule does not apply to pipe closure devices positioned within the supporting construction unless the length of the seal is increased by an equal amount and the distance from the surface of the supporting construction remains the same on both sides.

13.3 Services

13.3.1 The direct field of application rules apply to the nominal dimensions of services.

13.3.2 For the field of direct application for cable penetration seals including small conduits see A.3, B.2, C.1.2 and C.2.3.

13.4 Service support construction

13.4.3 The distance from the surface of the separating element to the nearest support position for services shall be as tested or less.

13.5 Seal size and distances

13.5.1 The test results obtained using standard wall and floor configurations for penetration seals are valid for any penetration seal size (in terms of linear dimensions) equal to or smaller than that tested, provided the total amount of cross sections of the services (including insulation) does not exceed 60 % of the penetration area, the working clearances are not smaller than the minimum working clearances (as defined in Annexes A & B) used in the test and a blank penetration seal of the maximum seal size desired was tested in addition.

13.5.2 For floor constructions, results from tests with a penetration seal length of minimum 1000 mm apply to any length as long as the perimeter length to seal area ratio is not smaller than that of the tested penetration seal.

13.5.3 The distance between a single service and the seal edge (annular space, e.g. a1 according to Figures B.7) shall remain within the tested range.

4.3.2 Field of application for large cable penetration seals

A.3.1 Cable type (construction characteristics)

A.3.1.1 The configuration options "Small", "Medium" and commonly used in building practice in Europe subject to the rules in A.3.2, except tied bundles, waveguides according to 3.23 and non-sheathed cables (wires). Optical fibre cables are covered.

A.3.1.2 Test results achieved using cable group 5, according to Table A.1, are valid for all non-sheathed cables (wires) subject to the rules in A.3.2.

A.3.1.3 Test results achieved using a tied bundle made from F-cables according to Table A.1 are valid for all tied bundles of cables subject to the rules in A.3.2.

A.3.2 Cable size

A.3.2.1 Test results for the configuration diameter of 30 mm “Large

A.3.2.2 Test results for the configuration option “Medium
mm.

A.3.2.3 Test results for the configuration option “Small

A.3.2.4 Results of a tied bundle made from F-cables are valid for tied bundles with a diameter of less than or equal to the bundle tested made from cables of a diameter not greater than 21 mm.

A.3.2.5 Test results for cable G1 are valid for all non-sheathed cables with a diameter equal to or less than 17 mm, test results for cable G2 are valid for all non-sheathed cables with a diameter equal to or less than 24 mm.

A.3.3 Cable support

A.3.3.1 Results obtained from tests where the supports pass through the seal are applicable to those situations where the support does not. The reverse of this situation does not apply.

A.3.3.2 The test results obtained using standard configurations for cable penetration systems are not valid for lidded cable trays/trunkings where the lid passes through the penetration seal (see also E.3).

A.3.4 Service group 6 according to Table A.2

A.3.4.1 Test results achieved using service type H (conduit or tube) according to Table A.2 are valid for all steel conduits and steel tubes up to a diameter of 16 mm.

A.3.4.2 Test results for tubes made from copper cover tubes made from steel but not vice versa.

A.3.4.3 Test results achieved using service type I according to Table A.2 are valid for all plastic conduits and plastic tubes up to a diameter of 16 mm.

A.3.4.4 For rules regarding the pipe end condition see E.1.5.5 for metal conduits or tubes and E.2.7.3 for plastic conduits.

4.3.2 Field of application for small cable penetration seals

B.2.1 Tests of rectangular seals cover circular seals of the same area but not vice versa.

B.2.2 The field of direct application rules according to 13.5, A.3.1, A.3.2, A.3.3 and A.3.4 apply.

B.2.3 The test results obtained using standard configurations for cable penetration systems are valid for any penetration size equal to or smaller than that tested, provided the total amount of cross sections of the cables (core and insulation) does not exceed 60 % of the penetration and the working clearances are not smaller than the minimum working clearances (a1, a2, see Figures B.1 to B.7) used in the test.

B.2.4 Results from tests with the specimen combination given in B.1.3 are valid for all distance options and combinations. Results from tests according to option 1 or 2 are also valid for situations represented by option 3 but not vice versa.

4.3.3 Field of application for metal pipes

E.1.5.1 Pipe Diameter and pipe wall thickness

Results of tests conducted as specified in the standard configurations may be interpolated for pipes with diameters and wall thicknesses between those tested, based upon the lowest result achieved (see Figure E.3), provided the minimum pipe diameter is greater than or equal to 40 mm. If pipe A according to Figure E.3 was not included in the test the maximum wall thickness is restricted to 14.2 mm.

E.1.5.2 Type of pipe material

Results of tests conducted as specified in the standard configurations, on a particular pipe material covers pipe materials with thermal conductivity lower than that tested, subject to the material having a melting point at least equal to that of the material tested or greater than the furnace temperature achieved at the required classification period.

E.1.5.3 Pipe arrangement

E.1.5.3.1 The results of a test conducted as specified in Option 1 of the standard configurations does not cover 'clusters' of 3 (figure Ee1) or 2 (figure Ee2) are >100 mm in practice a n c e s a

E.1.5.3.2 The results of a test conducted as specified in Option 2 of the standard configurations covers pipes with linear separation.

E.1.5.4 Number of pipes

Results from a multiple penetration seal may be extended to a single penetration seal of the same type but not vice versa.

E.1.5.5 Pipe end configuration

A test with pipe end configuration U/C covers all pipe end situations of Table 2.

E.1.5.6 Pipes fitted with an insulation material having class A1 or A2 according to EN 13501-1 made from glass wool or stone wool

E.1.5.6.1 A test conducted on insulated pipes does not cover non-insulated pipes.

E.1.5.6.2 A test conducted on non-insulated pipes covers the integrity criterion of pipes with interrupted insulation (cases LI and CI).

E.1.5.6.3 Thickness of insulation between tested dimensions (tests with a specific pipe dimension) for all arrangements of insulation according to 3.13 (cases CS, CI, LS and LI) may be used. Where E.1.4.3 allows testing only at minimum insulation thickness, there is no limit for the maximum thickness of the insulation.

E.1.5.6.4 In the case of floor applications the thickness and the length of an asymmetrical local insulation as shown in Figure E.5 may be increased.

E.1.5.6.5 The length of a local insulation may be increased but may not be reduced.

E.1.5.6.6 The density of the insulation may be increased but may not be reduced.

E.1.5.6.7 A test conducted on pipes insulated with glass wool covers pipes insulated with stone wool but not vice versa.

E.1.5.6.8 If a single pipe was tested perpendicular to the supporting construction all angles between 90° and 45° are covered.

E.1.5.6.9 If a pipe was tested perpendicular to the supporting construction as well as oblique, the result is valid for each angle between a right-angle and the angle tested.

E.1.5.7 Pipes fitted with an insulation material having class B to F according to EN 13501-1

E.1.5.7.1 A test conducted on insulated pipes does not cover non-insulated pipes.

E.1.5.7.2 A test conducted on non-insulated pipes does not cover insulated pipes.

E.1.5.7.3 Thickness of insulation between tested dimensions (tests with a specific pipe dimension) for all arrangements of insulation according to 3.13 (cases CS, CI, LS and LI) may be used. Where E.1.4.3 allows testing only at minimum insulation thickness, there is no limit for the maximum thickness of the insulation.

E.1.5.7.4 The length of a local insulation may be increased but may not be reduced.

E.1.5.7.5 In the case where a pipe closure device is used, the maximum pipe closure device size within a design group determined according to E.2.2.1 covers smaller sizes. If the thickness of the active component of the pipe closure device is changed (length remains constant) the maximum pipe closure device sizes from the design groups comprising the smallest and the largest pipe closure device sizes cover the size range / design groups in between provided the thickness of their active components is higher than the calculated value from the straight line that connects the maximum and minimum size in thickness – pipe diameter diagram (see Figure E.8). In this situation pipe diameter includes insulation.

E.1.5.7.6 No extension to the range of pipe insulation materials is permissible beyond that tested.

E.1.5.7.7 If a pipe was tested perpendicular to the supporting construction as well as oblique, the result is valid for each angle between a right angle and the angle tested.

5. Limitations

This classification report does not represent type approval or certification of the product.

6. Signatories

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For and on behalf of UL International (UK) Ltd