

European Technical Assessment

ETA-21/0412 of 15th of august 2021

English translation prepared by CSTB - Original version in French language

General Part

Nom commercial
Trade name

Nullifire FB750 Intubatt

Famille de produit
Product family

Produits de compartimentage et de calfeutrement au feu :
- Calfeutremments de pénétration
Fire Stopping and Sealing Product :
- Penetration Seals

Titulaire
Manufacturer

Tremco CPG UK Ltd.
Coupland Rd, Hindley Green, Wigan WN2 4HT

Usine de fabrication
Manufacturing plant

Tremco CPG UK Ltd. Coupland Rd, Hindley Green, Wigan WN2 4HT

Cette évaluation contient:
This Assessment contains

134 pages incluant 127 pages d'annexes qui font partie intégrante de cette évaluation
134 pages including 127 pages of annexes which form an integral part of this assessment

Base de l'ETE
Basis of ETA

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EAD 350454-00-1104

Cette évaluation remplace:
This Assessment replaces

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ETA 20/1319 issued on 01/01/2021

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CS: Continuous Sustained insulation

CI: Continuous Interrupted insulation

LS: Local Sustained insulation

Specific Part

1 Technical description of the product

Nullifire FB750 Intubatt 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. Nullifire FB750 Intubatt is a 50mm thick board made of 140 kg/m³ (-5/+15 %) mineral fibre insulation board coated on both sides in factory with ablative acrylic coating, with a minimum Dry Film Thickness of 0.26mm.

The Nullifire FB750 Intubatt 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.

2 Specification of the intended use

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

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

- a. Flexible walls: The wall must have a minimum thickness of 90mm or as defined within the tables in Annex A, and comprise steel studs lined on both faces with minimum 2 layers of 12.5 mm thick boards. Apertures in flexible walls shall be constructed as per the requirements shown in tables contained within this document.
- b. Rigid walls: The wall must have a minimum thickness of 90 mm of concrete, aerated concrete or masonry, with a minimum density of 650 kg/m³ or as defined within the tables shown in annex A.
- 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/m³.

The supporting construction must be classified in accordance with EN 13501-2 for the required fire resistance period. The standard EN 1366-3 allows different flexible wall configurations of plasterboard linings, but does not allow overall thickness to be reduced.

The System Nullifire FB750 Intubatt may be used to provide a penetration seal with cables, cable trays, metallic pipes, combustible pipes and other services (for details see Annex A). Blank seals are also possible.

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

The installation instructions for service support requirements are as per the requirements of the standard. The current standard EN 1366-3 2009 offers guidance as follows to how services may be supported for the purposes of the test. REF 6.3.3.1 Testing carried out without support. Standard Services support construction as in practise Full Scale representation as in practise. A load may be applied to simulate practical conditions. The "C" option applies a load to the most onerous service (Cable Trays) The services within this document suit the most onerous requirement, option C of the above. Tested services were rigidly supported via steel angles, hangers or channels not further than 430mm from the surface of the sealing system on both faces. Service support should be in accordance with service manufacturer's recommendations / specifications and non combustible.

The manufacturer must be contacted for minimum / maximum service separation distances, opening distances, and for full application instructions.

The provisions made in this European technical assessment are based on an assumed working life of the Nullifire FB750 Intubatt of 25 years. 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.

3 Performance of the product

3.1 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class according to EN 13501-1 : E
Resistance to fire	Class according to EN 13501-2 See Annex A

3.2 Hygiene, health and the environment (BWR 3)

Essential characteristic	Performance
Release of dangerous substances	<p>The applicant has submitted a written declaration that Nullifire FB750 Intubatt 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.</p> <p>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 Directive, these requirements need also to be complied with, when and where they apply.</p>
Air permeability	According to EN 1026 See Annex B
Water permeability	No performance assessed

3.3 Safety and accessibility in use (BWR 4)

No performance assessed or claimed.

For floors, precautions/protections are to be taken to prevent a person stepping onto this horizontal FB750 Intubatt seal.

3.4 Protection against noise (BWR 5)

Essential characteristic	Performance
Airborne sound insulation	According to EN 10140-2 See Annex C

3.5 Energy economy and heat retention (BWR 6)

No performance assessed

3.6 General aspects relating to fitness for use

Essential characteristic	Performance
Durability and serviceability	Type Z ₁ : intended for use in internal conditions with humidity equal to or higher than 85% RH excluding temperatures below 0°C, without exposure to rain or UV.

4 Assessment and verification of constancy of performance (AVCP)

According to the Decision 1999/454/EC of the European Commission¹, the system of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) given in the following table applies.

Product	Intended use	Level or class	System
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

Technical details necessary for the implementation of the Assessment and verification of constancy of performance (AVCP) system are laid down in the control plan deposited at Centre Scientifique et Technique du Bâtiment.

The control plan including confidential informations, it is not included in the published part of this ETA.

The manufacturer shall, on the basis of a contract, involve a notified body approved in the field of fire stopping and sealing products for issuing the certificate of conformity CE based on the control plan.

The Notified Body shall visit the factory at least twice a year for surveillance of the manufacturer.

The original French version is signed by

Anca Cronopol Head of Division

¹ Official Journal of the European Communities L 178/52 of 14.7.1999

Annex A: Resistance to fire

WALLS

A1. CABLES & CABLE CARRIERS - DOUBLE BATT PATTRISS

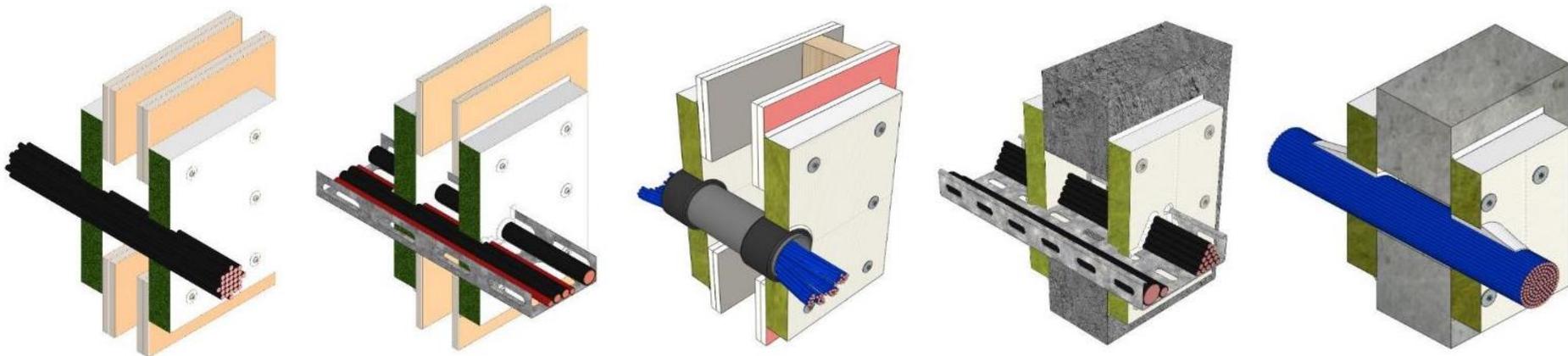
Cables, Metal Cable Trays, Trunking, Baskets and Ladders passing through Flexible and Rigid Walls as identified below, protected by double pattress (surface mounted) FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.

Wall Details: Flexible or Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2.
Flexible Walls constructed from steel or timber faced studs with a minimum of 2x12.5mm EN 520 type F boards on each side of studs.

Maximum Opening size: 1100mm by 1100mm. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.

Installation Instructions: Boards surface mounted (pattress fit) on both sides of the wall with a minimum 75mm overlap around the opening. (Overlap on the lowest edge can be reduced to 30mm in the event of an obstruction preventing the 75mm overlap). The overlap should be bonded with a 10mm bead of FS702 Intumastic placed 20-60mm from the board edges, and additionally mechanically restrained using 75mm steel screws with a 25mm washer at maximum 300mm centres, 10-65mm from the board perimeter and no more than 50mm from a board joint. A low torque setting should be used to ensure that the embedment of fixing into the board does not exceed 15mm. The fixings may be left exposed or covered using FS702 Intumastic. The FB750 Intubatt should be installed in as few cut pieces as possible. All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullfire product, if the service type is combustible or insulated CS or LS. External sides of the Board may be required to be coated for aesthetic reasons or to prevent fibre migration. (In situations where the required overlap cannot be achieved due to a perpendicular fire resisting wall / soffit, it is possible to reduce the overlap, down to as low as 0mm, provided the board edge is bonded to the adjoining compartment using a 10mm bead of FS702 Intumastic, and subsequently pointed to all mated edges)

The results below are also applicable when using multiple layers of surface mounted FB750 Intubatt. For multiple layers of FB750 Intubatt so a single (or both) face, identically sized boards should be used, ideally with staggered joints where possible. Closing devices should be located in or on the outmost board. Board to board abutment should be bonded with 10mm bead of FS702 Intumastic and mechanically restrained using a 75mm spiral screw to the first and secured layer. Spiral fixings should be at max 200mm centres and no more than 50mm from any joint.



Service	Integrity	Integrity & Insulation	Rigid Wall thickness (mm)					Flexible Wall thickness (mm)		Additional requirements (both sides)
	E (mins)		EI (mins)	≥ 215	≥ 150	≥ 130	≥ 110	≥ 100	≥ 130	
Metal Cable Trays, Trunking, Baskets and Ladder ≤ 450mm width	120	120	✓	✓	✓			✓		200mm extension of 1 layer of FI025 Intuflex, taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
Metal Cable Trays, Trunking, Baskets and Ladder ≤ 450mm width	120	120	✓	✓	✓			✓		200mm extension of 1 layer of FI025 Intuflex, taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
Metal Cable Trays, Trunking, Baskets and Ladder ≤ 225mm width	120	120	✓	✓	✓			✓		-
Metal Cable Trays, Trunking, Baskets and Ladder ≤ 150mm width	120	120	✓	✓	✓	✓				-
Metal Cable Trays, Trunking, Baskets and Ladder ≤ 450mm width	120	120	✓	✓						25mm annulus of FS709 HP Intumescent Sealant, 25mm depth (using FB750 as backer)
Steel trunking ≤ 50mmx50mmx1mm	120	120	✓	✓	✓	✓	✓	✓	✓	FP333 Trunking Infill 29x47x333mm one side only (either side) or central
Bundle of ≤ 37 twin & earth cables, each ≤ 17mm diameter	240	240	✓	✓						200mm extension of 1 layer of FI025 Intuflex, taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
≤ 10 communication cables, each ≤ 7mm diameter within a ≤ 100mmx100mmx1.2mm steel trunking	120	120	✓	✓	✓	✓	✓	✓	✓	-
≤ 4 twin and earth cables, each ≤ 17mm diameter within a ≤ 100mmx100mmx1.2mm steel trunking	120	120	✓	✓	✓	✓	✓	✓	✓	-
≤ 15 Cat 5 Ethernet cables, each ≤ 6mm diameter, within a ≤ 50mmx50mmx1mm steel trunking	120	120	✓	✓	✓	✓	✓	✓	✓	2 layers of FP333 Trunking Infill 47x29x333mm one side only (either side) or central, 50mm minimum extension into seal
16 to 45 Cat 5 Ethernet cables, each ≤ 6mm diameter, within a ≤ 50mmx50mmx1mm steel trunking	120	120	✓	✓	✓	✓	✓	✓	✓	1 layer of FP333 Trunking Infill 47x29x333mm one side only (either side) or central, 50mm minimum extension into seal
≤ 24 Cat 5 Ethernet cables, each ≤ 6mm diameter, within a ≤ 100mmx100mmx1mm steel trunking	120	120	✓	✓	✓	✓	✓	✓	✓	3 layers of FP333 Trunking Infill 97x29x333mm one side only (either side) or central, 50mm minimum extension into seal
25 to 90 Cat 5 Ethernet cables, each ≤ 6mm diameter, within a ≤ 100mmx100mmx1mm steel trunking	120	120	✓	✓	✓	✓	✓	✓	✓	2 layers of FP333 Trunking Infill 97x29x333mm one side only (either side) or central, 50mm minimum extension into seal
91 to 158 Cat 5 Ethernet cables, each ≤ 6mm diameter, within a ≤ 100mmx100mmx1mm steel trunking	120	120	✓	✓	✓	✓	✓	✓	✓	1 layer of FP333 Trunking Infill 97x29x333mm one side only (either side) or central, 50mm minimum extension into seal
≤ 24 Cat 5 Ethernet cables, each ≤ 6mm diameter, ≤ 150mmx100mmx1mm steel trunking	120	120	✓	✓	✓	✓	✓	✓	✓	3 layers of FP333 Trunking Infill 147x29x333mm one side only (either side) or central, 50mm minimum extension into seal

Service	Integrity	Integrity & Insulation	Rigid Wall thickness (mm)					Flexible Wall thickness (mm)		Additional requirements (both sides)
	E (mins)	EI (mins)	≥ 215	≥ 150	≥ 130	≥ 110	≥ 100	≥ 130	≥ 100	
25 to 90 Cat 5 Ethernet cables, each ≤ 6mm diameter, within a ≤ 150mmx100mmx1mm steel trunking	120	120	✓	✓	✓	✓	✓	✓	✓	2 layers of FP333 Trunking Infill 147x29x333mm one side only (either side) or central, 50mm minimum extension into seal
91 to 158 Cat 5 Ethernet cables, each ≤ 6mm diameter, within a ≤ 150mmx100mmx1mm steel trunking	120	120	✓	✓	✓	✓	✓	✓	✓	1 layer of FP333 Trunking Infill 147x29x333mm one side only (either side) or central, 50mm minimum extension into seal
≤ 24 Cat 5 Ethernet cables, each ≤ 6mm diameter, within a ≤ 150mmx100mmx1mm steel trunking	120	120	✓	✓	✓	✓	✓	✓	✓	3 layers of FP333 Trunking Infill 147x29x333mm one side only (either side) or central, 50mm minimum extension into seal
≤ 2 G2 cables, each ≤ 20mm diameter, within a ≤ 41mmx41mmx2.5mm steel trunking with PVC lid	120	120	✓	✓	✓	✓	✓	✓	✓	1 layer of FP333 Trunking Infill 47x29x333mm one side only (either side) or central, 50mm minimum extension into seal
1 Fibre optic cable, ≤ 12mm diameter	120	120	✓	✓	✓	✓	✓	✓	✓	1 layer of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
1 Ethernet Cat 5 cable ≤ 6mm diameter	120	120	✓	✓	✓	✓	✓	✓	✓	1 layer of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
Bundle of ≤ 20 Ethernet Cat 5 cables, each ≤ 6mm diameter	120	120	✓	✓	✓	✓	✓	✓	✓	1 layer of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
Bundle of ≤ 10 Communication cables, each ≤ 7mm diameter	120	120	✓	✓	✓	✓	✓	✓	✓	-
Bundle of ≤ 4 Twin & earth cables, each ≤ 17mm	120	120	✓	✓	✓	✓	✓	✓	✓	-
1 TV coaxial cable, ≤ 10mm diameter	120	120	✓	✓	✓	✓	✓	✓	✓	Cone (60mm circumference, 60mm along the cable) of FS702 Intumastic to outside of FB750 Intubatt seal
Bundle of ≤ 20 Cat 5 Ethernet cables, each ≤ 6mm diameter within a Ribbed Nylon Copex combustible conduit ≤ 55mm x (0.5 or 1.2mm)	120	120	✓	✓	✓	✓	✓	✓	✓	1 layer of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
1 Ethernet Cat 5 cable, ≤ 6mm diameter, within a PEX multilayer conduit ≤ 28mm x 2.6mm	120	120	✓	✓	✓	✓	✓	✓	✓	1 layer of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
25 to 90 Cat 5 Ethernet cables, each ≤ 6mm diameter, within a ≤ 150mmx100mmx1mm steel trunking	120	120	✓	✓	✓	✓	✓	✓	✓	2 layers of FP333 Trunking Infill 147x29x333mm one side only (either side) or central, 50mm minimum extension into seal

Service	Integrity	Integrity & Insulation	Rigid Wall thickness (mm)					Flexible Wall thickness (mm)		Additional requirements (both sides)
	E (mins)	EI (mins)	≥ 215	≥ 150	≥ 130	≥ 110	≥ 100	≥ 130	≥ 100	
1 Ethernet Cat 5 cable ≤ 6mm diameter, 1 TV coaxial cable ≤ 10mm diameter, 1 fibre optic cable ≤ 12mm diameter within a PEX multilayer conduit ≤ 28mm x 2.6mm	120	120	✓	✓	✓	✓	✓	✓	✓	1 layer of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
1 Fibre optic cable, ≤ 12mm diameter within a PEX multilayer conduit ≤ 28mm x 2.6mm	120	120	✓	✓	✓	✓	✓	✓	✓	1 layer of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
1 TV coaxial cable ≤ 10mm diameter within a PEX multilayer conduit ≤ 28mm x 2.6mm	120	120	✓	✓	✓	✓	✓	✓	✓	1 layer of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
Bundle of ≤ 10 A1 cables, each ≤ 12mm	120	120	✓	✓	✓			✓		200mm extension of 1 layer of FI025 Intuflex, taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
Bundle of ≤ 10 A2 cables, each ≤ 12mm	120	120	✓	✓	✓			✓		200mm extension of 1 layer of FI025 Intuflex, taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
Bundle of ≤ 10 A3 cables, each ≤ 12mm diameter	120	120	✓	✓	✓			✓		200mm extension of 1 layer of FI025 Intuflex, taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
≤ 2 type B cables, each ≤ 19mm diameter	120	120	✓	✓	✓			✓		200mm extension of 1 layer of FI025 Intuflex, taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
1 type C1 cable ≤ 41mm diameter	120	120	✓	✓	✓			✓		200mm extension of 1 layer of FI025 Intuflex, taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
1 type C2 cable ≤ 50mm diameter	120	120	✓	✓	✓			✓		200mm extension of 1 layer of FI025 Intuflex, taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
1 type C2 cable ≤ 50mm diameter	120	120	✓	✓	✓			✓		200mm extension of 1 layer of FI025 Intuflex, taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
1 type C3 cable ≤ 37mm diameter	120	120	✓	✓	✓			✓		200mm extension of 1 layer of FI025 Intuflex, taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
1 type D1 cable ≤ 55mm diameter	120	120	✓	✓	✓			✓		200mm extension of 1 layer of FI025 Intuflex, taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
1 type D2 cable ≤ 65mm diameter	120	120	✓	✓	✓			✓		200mm extension of 1 layer of FI025 Intuflex, taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
1 type D3 cable ≤ 52.5mm diameter	120	120	✓	✓	✓			✓		200mm extension of 1 layer of FI025 Intuflex, taped with aluminium foil (min 30 micron), abutting FB750 Intubatt

Service	Integrity	Integrity & Insulation	Rigid Wall thickness (mm)					Flexible Wall thickness (mm)		Additional requirements (both sides)
	E (mins)	EI (mins)	≥ 215	≥ 150	≥ 130	≥ 110	≥ 100	≥ 130	≥ 100	
≤ 2 type E cables, each ≤ 25mm diameter	120	120	✓	✓	✓			✓		200mm extension of 1 layer of FI025 Intuflex, taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
Bundle of ≤ 100mm diameter type F cables, each ≤ 13mm diameter	120	120	✓	✓	✓			✓		200mm extension of 1 layer of FI025 Intuflex, taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
1 type D3 cable ≤ 52.5mm diameter	120	120	✓	✓	✓			✓		-
1 type G1 cable ≤ 15mm diameter	120	120	✓	✓	✓			✓		200mm extension of 1 layer of FI025 Intuflex, taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
1 type G2 cable ≤ 20mm diameter	120	120	✓	✓	✓			✓		200mm extension of 1 layer of FI025 Intuflex, taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
Bundle of ≤ 12 twin & earth cables - each ≤ 17mm diameter	120	120	✓	✓	✓	✓	✓			Cone (60mm circumference, 60mm along the cable) of FS702 Intumastic to outside of FB750 Intubatt seal
Bundle of ≤ 3 fire alarm (gold) cables, each ≤ 8mm diameter	120	120	✓	✓	✓	✓	✓			Cone (60mm circumference, 60mm along the cable) of FS702 Intumastic to outside of FB750 Intubatt seal
1 TV coaxial cable ≤ 10mm diameter	120	120	✓	✓	✓	✓	✓			Cone (60mm circumference, 60mm along the cable) of FS702 Intumastic to outside of FB750 Intubatt seal
Bundle of ≤ 8 TV Coaxial cables, each ≤ 10mm diameter, in a ≤ 55mm x 3.2mm ABS Conduit	120	120	✓	✓						2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
Bundle of ≤ 3 Fire alarm cables, each ≤ 10mm diameter, in a ≤ 55mm x 3.2mm ABS Conduit	120	120	✓	✓						2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
Bundle of ≤ 12 Fibre optic cables, each ≤ 8mm diameter, in a ≤ 55mm x 3.2mm ABS Conduit	120	120	✓	✓						1 layer of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
Bundle of ≤ 20 Audiovisual cables, each ≤ 10mm diameter within an ≤ 80mm x 3.2mm PVC Conduit	120	120	✓	✓						2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
Bundle of ≤ 65 different cables within an ≤ 80mm x 3.2mm PVC Conduit : ≤ 20 Audiovisual cables, each ≤ 10mm diameter ≤ 17 Ethernet Cat 5 cables, each ≤ 6mm diameter ≤ 17 Telecoms cables, each ≤ 5mm diameter ≤ 7 Fibre optic cables, each ≤ 12mm diameter ≤ 4 twin & earth cables, each ≤ 17mm diameter	120	120	✓	✓						2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic

Service	Integrity	Integrity & Insulation	Rigid Wall thickness (mm)					Flexible Wall thickness (mm)		Additional requirements (both sides)
	E (mins)	EI (mins)	≥ 215	≥ 150	≥ 130	≥ 110	≥ 100	≥ 130	≥ 100	
Bundle of ≤ 17 Ethernet Cat5 cables, each ≤ 6mm diameter within an ≤ 80mm x 3.2mm PVC Conduit	120	120	✓	✓						2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
Bundle of ≤ 7 Fibre optic cables, each ≤ 12mm diameter within an ≤ 80mm x 3.2mm PVC Conduit	120	120	✓	✓						2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
Bundle of ≤ 17 telecom cables cables, each ≤ 5mm diameter within an ≤ 80mm x 3.2mm PVC Conduit	120	120	✓	✓						2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
Bundle of ≤ 4 twin and earth cables, each ≤ 17mm diameter within an ≤ 80mm x 3.2mm PVC Conduit	120	120	✓	✓						2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
Bundle of ≤ 7 Fibre optic cables, each ≤ 12mm diameter	120	120	✓	✓						2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
Bundle of ≤ 12 Fibre optic cables, each ≤ 8mm diameter	120	120	✓	✓						1 layer of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
Bundle of ≤ 17 Ethernet Cat 5 cables, each ≤ 6mm diameter	120	120	✓	✓						2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
Bundle of ≤ 20 Audiovisual cables, each ≤ 10mm diameter	120	120	✓	✓						2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
Bundle of ≤ 17 Telecom cables, each ≤ 5mm diameter	120	120	✓	✓						2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
Bundle of ≤ 100mm Diameter A1 cable, each ≤ 12mm diameter	120	120	✓	✓						≤ 85mm high FS709 HP Intumescent Sealant, 50mm depth
1 type C2 cable ≤ 50mm diameter	120	120	✓	✓						≤ 85mm high FS709 HP Intumescent Sealant, 50mm depth
1 type D2 cable ≤ 65mm diameter	120	120	✓	✓						≤ 85mm high FS709 HP Intumescent Sealant, 50mm depth
Bundle of ≤ 4 Twin & earth cables, each 17mm diameter	120	120	✓	✓						2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
Bundle of ≤ 3 Fire alarm cables, each ≤ 10mm diameter	120	120	✓	✓						2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic

Service	Integrity	Integrity & Insulation	Rigid Wall thickness (mm)					Flexible Wall thickness (mm)		Additional requirements (both sides)
	E (mins)	EI (mins)	≥ 215	≥ 150	≥ 130	≥ 110	≥ 100	≥ 130	≥ 100	
Bundle of ≤ 3 Fire alarm cables, each ≤ 10mm diameter	120	120	✓	✓						≤ 85mm high FS709 HP Intumescent Sealant, 50mm depth
Bundle of ≤ 3 TV Coaxial cables, each ≤ 12mm	120	120	✓	✓						25mm annulus of FS709 HP Intumescent Sealant, 25mm depth (using FB750 as backer)
Bundle of ≤ 9 TV Coaxial cables, each ≤ 12mm diameter	120	120	✓	✓						2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
1 type G2 cable ≤ 20mm diameter	120	90	✓	✓	✓	✓	✓			Cone (100mm circumference, 60mm along the cable) of FS702 Intumastic to outside of FB750 Intubatt seal
Bundle of ≤ 40mm diameter type F cables, each ≤ 13mm diameter	90	90	✓	✓	✓					-
Bundle of ≤ 100mm diameter A1 cables, each ≤ 12mm diameter	60	60	✓	✓						-
≤ 4 type B cables, each ≤ 19mm diameter	60	60	✓	✓						-
1 type C2 cable ≤ 50mm diameter	60	60	✓	✓						-
1 type D2 cable ≤ 65mm diameter	60	60	✓	✓						-
1 type G1 cable ≤ 15mm diameter	60	60	✓	✓						-
Bundle of ≤ 7 twin & earth cables, each ≤ 17mm diameter	60	60	✓	✓						1 layer of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
Bundle of ≤ 6 twin & earth cables, each ≤ 17mm diameter	60	60	✓	✓						25mm annulus of FS709 HP Intumescent Sealant, 25mm depth (using FB750 as backer)
Bundle of ≤ 40mm diameter twin & earth cables, each ≤ 17mm diameter	60	60	✓	✓						-
Bundle of ≤ 35mm diameter fire alarm cables, each ≤ 12mm diameter	60	60	✓	✓						-
Bundle of ≤ 6 Fire alarm cables, each ≤ 12mm diameter	60	60	✓	✓						2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic

Service	Integrity	Integrity & Insulation	Rigid Wall thickness (mm)					Flexible Wall thickness (mm)		Additional requirements (both sides)
	E (mins)		EI (mins)	≥ 215	≥ 150	≥ 130	≥ 110	≥ 100	≥ 130	
Bundle of ≤ 30mm diameter TV coaxial cables, each ≤ 10mm diameter	60	60	✓	✓						-
Bundle of ≤ 8 TV coaxial cable, each ≤ 10mm diameter	60	60	✓	✓						2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
Bundle of ≤ 7 twin and earth cables, each ≤ 17mm diameter, in a ≤ 55mm x 3.2mm ABS Conduit	60	60	✓	✓						1 layer of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
Bundle of ≤ 6 twin and earth cables, each ≤ 17mm diameter, in a ≤ 55mm x 3.2mm ABS Conduit	60	60	✓	✓						25mm annulus of FS709 HP Intumescent Sealant, 25mm depth (using FB750 as backer)
1 type D2 Cable ≤ 65mm diameter	120	60	✓							-
≤ 2 type A2 cables, each ≤ 12mm diameter	120	60	✓							-
1 type A2 cable ≤ 12mm diameter	120	60	✓							-

Cable diameters can be increased up to 25%, and cable bundle diameters can be increased up to 10%

A2. CABLES & CABLE CARRIERS - DOUBLE BATT COMPRESSION

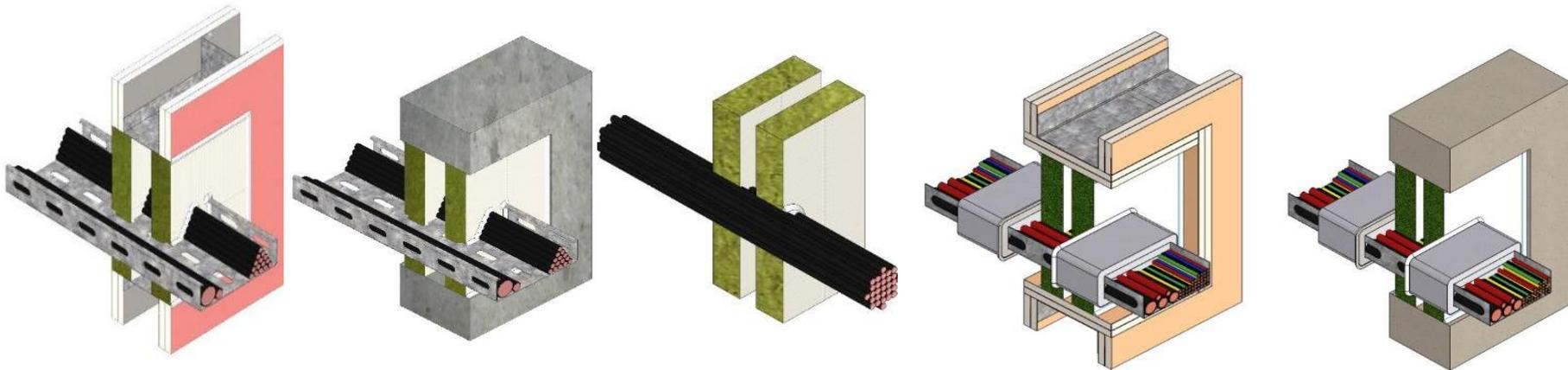
Cables, Metal Cable Trays, Trunking, Baskets and Ladders passing through Flexible and Rigid Walls as identified below, protected by double compressed FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.

Wall Details: Flexible or Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2.
Flexible Walls constructed from steel or timber faced studs with a minimum of 2x12.5mm EN 520 type F boards on each side of studs.

Maximum Opening size: 1100mm by 1100mm. In Flexible Walls openings should be created using a steel frame. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.

Installation Instructions: Double Layer board, compressed and bonded into the aperture outer face flush with the face of the supporting construction. FB750 Intubatt should be installed in as few cut pieces as possible and tightly compressed to two opposite sides. This is achieved by the addition of 2mm to the required cut dimension. Compression may be applied - FB750 Intubatt to FB750 Intubatt, FB750 Intubatt to non combustible service, or FB750 Intubatt to Substrate. Compression must be achieved over a minimum 60% of the FB750 Intubatt compressed edge. If compression is achieved Top to bottom of FB750 Intubatt, left/right is not required to be compressed and vice versa (the non compressed seal should be fully abutted and bonded). All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS.
(Imperfections in cut on a compressed edge may not exceed 40% of the area available to receive compression)

The results below are also applicable when using multiple layers of FB750 Intubatt, including 1 layer (or more) surface mounted on both sides of the wall.



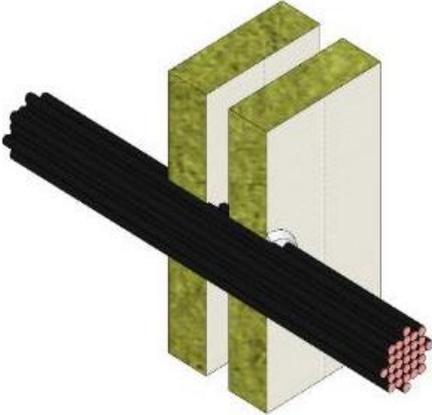
Service	Integrity	Integrity & Insulation	Rigid Wall thickness (mm)				Flexible Wall thickness (mm)		Additional requirements (both sides)
	E (mins)	EI (mins)	≥ 215	≥ 150	≥ 130	≥ 100	≥ 130	≥ 100	
Metal Cable Trays, Trunking, Baskets and Ladder ≤ 450mm width	120	120	✓	✓	✓		✓		200mm extension of 1 layer of FI025 Intuflex,taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
Metal Cable Trays, Trunking, Baskets and Ladder ≤ 450mm width	120	120	✓	✓					≤ 85mm high FS709 HP Intumescent Sealant above cable tray, 50mm depth
Bundle of ≤ 37 twin & earth cables, each ≤ 17mm diameter	240	240	✓	✓					200mm extension of 1 layer of FI025 Intuflex,taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
Bundle of ≤ 20 Ethernet Cat 5 cables, each ≤ 6mm	120	120	✓	✓	✓	✓	✓	✓	1 layer of FP302 Intustrap (central to the seal), sealed with FS702 Intumastic
Bundle of ≤ 20 Cat 5 Ethernet cables, each ≤ 6mm diameter in ≤ 55mm x (0.5 or 1.2mm) Ribbed Nylon Copex combustible conduit	120	120	✓	✓	✓	✓	✓	✓	1 layer of FP302 Intustrap (central to the seal), sealed with FS702 Intumastic
Bundle of ≤ 100mm diameter type F cables, each ≤ 13mm diameter	120	120	✓	✓	✓		✓		200mm extension of 1 layer of FI025 Intuflex,taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
Bundle of ≤ 10 A1 cables, each ≤ 12mm	120	120	✓	✓	✓		✓		200mm extension of 1 layer of FI025 Intuflex,taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
Bundle of ≤ 10 A3 cables, each ≤ 12mm diameter	120	120	✓	✓	✓		✓		200mm extension of 1 layer of FI025 Intuflex,taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
≤ 2 type B cables, each ≤ 19mm diameter	120	120	✓	✓	✓		✓		200mm extension of 1 layer of FI025 Intuflex,taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
1 type C1 cable ≤ 41mm diameter	120	120	✓	✓	✓		✓		200mm extension of 1 layer of FI025 Intuflex,taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
1 type C2 cable ≤ 50mm diameter	120	120	✓	✓	✓		✓		200mm extension of 1 layer of FI025 Intuflex,taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
1 type D1 cable ≤ 55mm diameter	120	120	✓	✓	✓		✓		200mm extension of 1 layer of FI025 Intuflex,taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
1 type D3 cable ≤ 52.5mm diameter	120	120	✓	✓	✓		✓		200mm extension of 1 layer of FI025 Intuflex,taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
≤ 2 type E cables, each ≤ 25mm diameter	120	120	✓	✓	✓		✓		200mm extension of 1 layer of FI025 Intuflex,taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
1 type G1 cable ≤ 15mm diameter	120	120	✓	✓	✓		✓		200mm extension of 1 layer of FI025 Intuflex,taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
1 type G2 cable ≤ 20mm diameter	120	120	✓	✓	✓		✓		200mm extension of 1 layer of FI025 Intuflex,taped with aluminium foil (min 30 micron), abutting FB750 Intubatt

Service	Integrity	Integrity & Insulation	Rigid Wall thickness (mm)				Flexible Wall thickness (mm)		Additional requirements (both sides)
	E (mins)	EI (mins)	≥ 215	≥ 150	≥ 130	≥ 100	≥ 130	≥ 100	
1 type D2 cable ≤ 65mm diameter	120	120	✓	✓	✓		✓		200mm extension of 1 layer of FI025 Intuflex, taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
Bundle of ≤ 12 twin & earth cables - each ≤ 17mm diameter	120	120	✓	✓					Cone (60mm circumference, 60mm along the cable) of FS702 Intumastic to outside of FB750 Intubatt seal
Bundle of ≤ 100mm Diameter A1 cable, each ≤ 12mm diameter	120	120	✓	✓					≤ 85mm high FS709 HP Intumescent Sealant, 50mm depth
Bundle of ≤ 3 Fire alarm cables, each ≤ 10mm diameter	120	120	✓	✓					2 layers of FP302 Intustrap (central to the seal) sealed with FS702 Intumastic
Bundle of ≤ 3 fire alarm (gold) cables, each ≤ 8mm diameter	120	120	✓	✓					Cone (60mm circumference, 60mm along the cable) of FS702 Intumastic to outside of FB750 Intubatt seal
Bundle of ≤ 9 TV Coaxial cables, each ≤ 12mm, in a ≤ 55mm x 3.2mm ABS Conduit	120	120	✓	✓					2 layers of FP302 Intustrap (central to the seal) sealed with FS702 Intumastic
Bundle of ≤ 3 Fire alarm cables, each ≤ 10mm, in a ≤ 55mm x 3.2mm ABS Conduit	120	120	✓	✓					2 layers of FP302 Intustrap (central to the seal) sealed with FS702 Intumastic
Bundle of ≤ 12 Fibre optic cables, each ≤ 8mm, in a ≤ 55mm x 3.2mm ABS Conduit	120	120	✓	✓					1 layer of FP302 Intustrap (central to the seal) sealed with FS702 Intumastic
1 type C2 cable ≤ 50mm diameter	120	120	✓	✓					≤ 85mm high FS709 HP Intumescent Sealant, 50mm depth
1 type D2 cable ≤ 65mm diameter	120	120	✓	✓					≤ 85mm high FS709 HP Intumescent Sealant, 50mm depth
1 TV coaxial cable ≤ 10mm diameter	120	120	✓	✓					Cone (60mm circumference, 60mm along the cable) of FS702 Intumastic to outside of FB750 Intubatt seal
1 type G2 cable ≤ 20mm diameter	120	90	✓	✓					Cone (100mm circumference, 60mm along the cable) of FS702 Intumastic to outside of FB750 Intubatt seal
Bundle of ≤ 40mm diameter type F cables, each ≤ 13mm diameter	90	90	✓	✓	✓				-
Bundle of ≤ 7 twin and earth cables, each ≤ 17mm, in a ≤ 55mm x 3.2mm ABS Conduit	60	60	✓	✓					1 layer of FP302 Intustrap (central to the seal) sealed with FS702 Intumastic
Bundle of ≤ 6 twin and earth cables, each ≤ 17mm, in a ≤ 55mm x 3.2mm ABS Conduit	60	60	✓	✓					25mm annulus of FS709 HP Intumescent Sealant, 25mm depth (using FB750 as backer)
Bundle of ≤ 7 twin & earth cables, each ≤ 17mm diameter	60	60	✓	✓					1 layer of FP302 Intustrap (central to the seal) sealed with FS702 Intumastic

Service	Integrity	Integrity & Insulation	Rigid Wall thickness (mm)				Flexible Wall thickness (mm)		Additional requirements (both sides)
	E (mins)	EI (mins)	≥ 215	≥ 150	≥ 130	≥ 100	≥ 130	≥ 100	
Bundle of ≤ 6 twin & earth cables, each ≤ 17mm diameter	60	60	✓	✓					25mm annulus of FS709 HP Intumescent Sealant, 25mm depth (using FB750 as backer)
Bundle of ≤ 40mm diameter twin & earth cables, each ≤ 17mm diameter	60	60	✓	✓					-
Bundle of ≤ 100mm Diameter A1 cables, each ≤ 12mm diameter	60	60	✓	✓					-
Bundle of ≤ 30mm diameter Fire alarm cables, each ≤ 12mm	60	60	✓	✓					-
Bundle of ≤ 6 Fire alarm cables, each ≤ 12mm	60	60	✓	✓					2 layers of FP302 Intustrap (central to the seal) sealed with FS702 Intumastic
Bundle of ≤ 30mm diameter TV coaxial cables, each ≤ 10mm diameter	60	60	✓	✓					-
Bundle of ≤ 8 TV coaxial cable, each ≤ 10mm diameter	60	60	✓	✓					2 layers of FP302 Intustrap (central to the seal) sealed with FS702 Intumastic
1 type C2 cable ≤ 50mm diameter	60	60	✓	✓					-
1 type D2 cable ≤ 65mm diameter	60	60	✓	✓					-
1 type C3 cable ≤ 37mm diameter	90	30	✓	✓	✓				-
1 type D2 Cable ≤ 65mm diameter	120	60	✓						-
≤ 2 type A2 cables, each ≤ 12mm diameter	120	60	✓						-
≤ 2 type E Cables - each ≤ 25mm diameter	120	30	✓						-
Bundle of ≤ 6 type A2 cables, each ≤ 12mm diameter	120	30	✓						-

Cable diameters can be increased up to 25%, and cable bundle diameters can be increased up to 10%

A3. CABLES & CABLE CARRIERS - DOUBLE BATT COMPRESSION (ASYMMETRIC)

<p>Cables, Metal Cable Trays, Trunking, Baskets and Ladders passing through Rigid Walls as identified below, protected by double compressed asymmetric FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.</p>
<p>Wall Details: Rigid Walls of minimum thickness as identified below and with performance classified to EN13501-2 .</p>
<p>Maximum Opening size: 1100mm by 450mm. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.</p>
<p>Installation Instructions: Double Layer board, compressed and bonded together in the aperture with the outer face flush with the face of the supporting construction on the opposite side to the fire. FB750 Intubatt should be installed in as few cut pieces as possible and tightly compressed to two opposite sides. This is achieved by the addition of 2mm to the required cut dimension. Compression may be applied - FB750 Intubatt to FB750 Intubatt, FB750 Intubatt to non combustible service, or FB750 Intubatt to Substrate. Compression must be achieved over a minimum 60% of the FB750 Intubatt compressed edge. If compression is achieved Top to bottom of FB750 Intubatt, left/right is not required to be compressed and vice versa (the non compressed seal could be fully abutted and bonded). All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS. (Imperfections in cut on a compressed edge may not exceed 40% of the area available to receive compression)</p>
<p>The results below are also applicable when using multiple layers of FB750 Intubatt, including 2 layers (or more) surface mounted. Results could also be used in both directions with the addition of FB750 Intubatt to fully fill the opening.</p>


Service	Integrity	Integrity & Insulation	Rigid Wall thickness (mm)	Additional requirements (both sides)
	E (mins)	EI (mins)	≥ 150	
Metal Cable Trays, Trunking, Baskets and Ladders ≤ 500mm width	240	180	✓	200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
Metal Cable Trays, Trunking, Baskets and Ladders ≤ 300mm width	180	180	✓	-
Metal Cable Trays, Trunking, Baskets and Ladders ≤ 340mm width	240	60	✓	-
Bundle of ≤ 10 A1 cables, each ≤ 12mm	240	180	✓	200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
Bundle of ≤ 5 A2 cables, each ≤ 12mm	240	180	✓	200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
Bundle of ≤ 100mm diameter type F cables, each ≤ 13mm diameter	240	180	✓	200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
Bundle of ≤ 5 A3 cables, each ≤ 12mm	240	180	✓	200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
≤ 3 type G1 cables, each ≤ 15mm diameter	240	180	✓	200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
≤ 2 type G2 cables, each ≤ 20mm diameter	240	180	✓	200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
Bundle of ≤ 10 A1 cables, each ≤ 12mm	180	180	✓	
Bundle of ≤ 5 A2 cables, each ≤ 12mm	240	60	✓	-
Bundle of ≤ 5 A3 cables, each ≤ 12mm	240	60	✓	-
≤ 3 type G1 cables, each ≤ 15mm diameter	240	60	✓	-

Cable diameters can be increased up to 25%, and cable bundle diameters can be increased up to 10%

A4. CABLES & CABLE CARRIERS - SINGLE BATT COMPRESSION

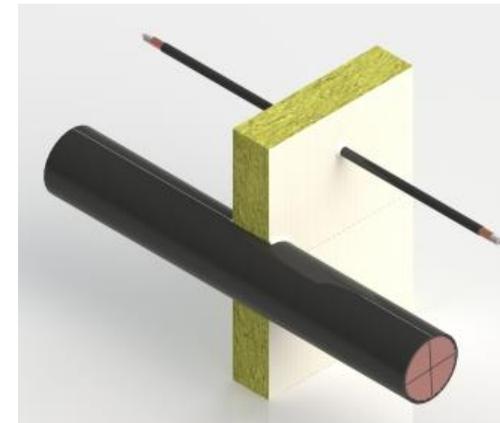
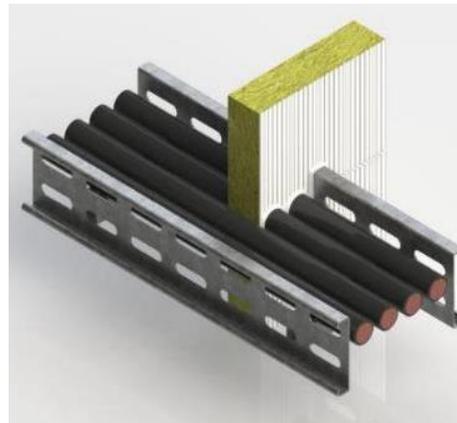
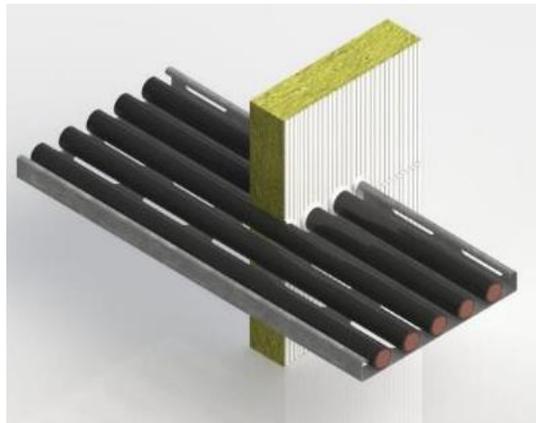
Cables, Metal Cable Trays, Trunking, Baskets and Ladders passing through Flexible and Rigid Walls as identified below, protected by single compressed FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.

Wall Details: Flexible or Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2.
Flexible Walls constructed from steel or timber faced studs with a minimum of 2x12.5mm EN 520 type F boards on each side of studs.

Maximum Opening size: 1100mm by 1100mm. In Flexible Walls openings should be created using a steel frame with a plasterboard lining. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.

Installation Instructions: Single Layer board, compressed and bonded into the aperture at mid depth of the wall. FB750 Intubatt should be installed in as few cut pieces as possible and tightly compressed to two opposite sides. This is achieved by the addition of 2mm to the required cut dimension. Compression may be applied - FB750 Intubatt to FB750 Intubatt, FB750 Intubatt to non combustible service, or FB750 Intubatt to Substrate. Compression must be achieved over a minimum 60% of the FB750 Intubatt Compressed edge. If compression is achieved Top to bottom of FB750 Intubatt, left/right is not required to be compressed and vice versa (the non compressed seal could be fully abutted and bonded). All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS. (Imperfections in cut on a compressed edge may not exceed 40% of the area available to receive compression)

The results below are also applicable when using multiple layers of FB750 Intubatt, including 1 layer (or more) surface mounted on both sides of the wall.



Service	Integrity	Integrity & Insulation	Rigid Wall thickness (mm)		Flexible Wall thickness (mm)	Additional requirements (both sides)
	E (mins)	EI (mins)	≥ 215	≥ 130	≥ 130	
Metal Cable Trays, Trunking, Baskets and Ladders ≤ 500mm width & minimum 1mm thickness	120	90	✓	✓	✓	200mm extension of 1 layer of FI025 Intuflex,taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
Metal Cable Trays, Trunking, Baskets and Ladders ≤ 600mm width & minimum 3mm thickness	120	60	✓			-
Bundle of ≤ 100mm diameter type F data cables - each cable ≤ 13mm diameter	120	120	✓	✓	✓	200mm extension of 1 layer of FI025 Intuflex,taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
Bundle of ≤ 10 type A1 cables, each cable ≤ 12mm diameter	120	90	✓	✓	✓	200mm extension of 1 layer of FI025 Intuflex,taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
Bundle of ≤ 10 type A2 cables, each cable ≤ 12mm diameter	120	90	✓	✓	✓	200mm extension of 1 layer of FI025 Intuflex,taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
Bundle of ≤ 10 type A3 cables, each cable ≤ 12mm diameter	120	90	✓	✓	✓	200mm extension of 1 layer of FI025 Intuflex,taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
≤ 2 type B cables, each cable ≤ 19mm diameter	120	90	✓	✓	✓	200mm extension of 1 layer of FI025 Intuflex,taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
1 type C1 cable ≤ 41mm diameter	120	90	✓	✓	✓	200mm extension of 1 layer of FI025 Intuflex,taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
1 type C2 cable ≤ 50mm diameter	120	90	✓	✓	✓	200mm extension of 1 layer of FI025 Intuflex,taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
1 type C3 cable ≤ 37mm diameter	120	90	✓	✓	✓	200mm extension of 1 layer of FI025 Intuflex,taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
1 type D1 cable ≤ 55mm diameter	120	90	✓	✓	✓	200mm extension of 1 layer of FI025 Intuflex,taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
1 type D2 cable ≤ 52.5mm diameter	120	90	✓	✓	✓	200mm extension of 1 layer of FI025 Intuflex,taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
1 type D3 cable ≤ 52.5mm diameter	120	90	✓	✓	✓	200mm extension of 1 layer of FI025 Intuflex,taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
≤ 2 type E cables, each cable ≤ 25mm diameter	120	90	✓	✓	✓	200mm extension of 1 layer of FI025 Intuflex,taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
1 type G1 cable ≤ 15mm diameter	120	90	✓	✓	✓	200mm extension of 1 layer of FI025 Intuflex,taped with aluminium foil (min 30 micron), abutting FB750 Intubatt
1 type G2 cable ≤ 20mm diameter	120	90	✓	✓	✓	200mm extension of 1 layer of FI025 Intuflex,taped with aluminium foil (min 30 micron), abutting FB750 Intubatt

Service	Integrity	Integrity & Insulation	Rigid Wall thickness (mm)		Flexible Wall thickness (mm)	Additional requirements (both sides)
	E (mins)	EI (mins)	≥ 215	≥ 130	≥ 130	
1 type A2 cable ≤ 12mm diameter	120	60	✓			-
1 type D2 cable ≤ 65mm diameter	120	60	✓			-
≤ 2 type A2 cables, each cable ≤ 12mm diameter	120	60	✓			-
1 type E cable ≤ 25mm diameter	120	30	✓			-
Bundle of ≤ 6 type A2 cables, each cable ≤ 12mm diameter	120	30	✓			-
≤ 2 type E cables, each cable ≤ 25mm diameter	120	30	✓			-
Bundle of ≤ 7 type F data cables, each cable ≤ 13mm diameter	90	30	✓			-

Cable diameters can be increased up to 25%, and cable bundle diameters can be increased up to 10%

A5. CABLES & CABLE CARRIERS - DOUBLE BATT PATRESS BATT BOX

Cables, Metal Cable Trays, Trunking, Baskets and Ladders insulated within a batt box passing through Flexible and Rigid Walls as identified below, protected by double pattress (surface mounted) FB750 Intubatt seal, sealed with FS702 Intumastic.

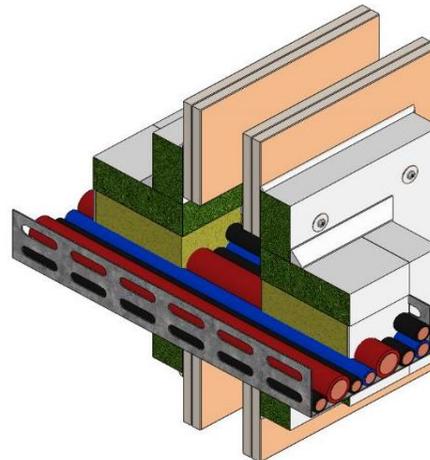
Wall Details: Flexible or Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2.
Flexible Walls constructed from steel or timber faced studs with a minimum of 2x12.5mm EN 520 type F boards on each side of studs.

Maximum Opening size: 1600mm by 1000mm. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.

Installation Instructions: Cut FB750 Intubatt to form batt box detail around cable tray(s) as per detail drawing below. Position the batt box around the penetration flush with the wall face on both faces of the compartment, extending 150mm away from the compartment wall. Cut FB750 Intubatt to the required size and shape, ensuring it will be a tight fit to all edges of the aperture. Cut the FB750 Intubatt to tightly fit around the batt box detail, using a single layer board to each side, pattress requirements explained below. The remaining aperture within the batt box should be completely filled with FI064 Soft Joint Filler, and coated to each side with 3mm WFT FS702 Intumastic. Cut the FB750 Intubatt across the shortest dimension aligning both to the midpoint of the batt box, to enable the FB750 Intubatt to be fitted in to the aperture. Apply FS702 Intumastic to all edges of the FB750 Intubatt, ensuring that an even cover is achieved over the entire exposed thickness of the FB750 Intubatt, this should include the outer edges of the FB750 Intubatt and the cut across to allow installation in the aperture.

Boards surface mounted on both sides of the wall with a minimum 75mm overlap around the opening. (Overlap on the lowest edge can be reduced to 30mm in the event of an obstruction preventing the 75mm overlap). The overlap should be bonded with a 10mm bead of FS702 Intumastic placed 20-60mm from the board edges, and additionally mechanically restrained using 75mm steel screws with a 25mm washer at maximum 300mm centres, 10-65mm from the board perimeter and no more than 50mm from a board joint. A low torque setting should be used to ensure that the embedment of fixing into the board does not exceed 15mm. The fixings may be left exposed or covered using FS702 Intumastic. The FB750 Intubatt should be installed in as few cut pieces as possible. All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. External sides of the Board may be required to be coated for aesthetic reasons or to prevent fibre migration. (In situations where the required overlap cannot be achieved due to a perpendicular fire resisting wall / soffit, it is possible to reduce the overlap, down to as low as 0mm, provided the board edge is bonded to the adjoining compartment using a 10mm bead of FS702 Intumastic, and subsequently pointed to all mated edges). Batt Box is only required to be installed round cables, trays (perforated or non-perforated), ladders, baskets and trunking. If included within a mixed penetration seal, the rest of the seal should be completed as per the normal surface mounted batt requirement.

The results below are also applicable when using multiple layers of surface mounted FB750 Intubatt. For multiple layers of FB750 Intubatt so a single (or both) face, identically sized boards should be used, ideally with staggered joints where possible. Closing devices should be located in or on the outmost board. Board to board abutment should be bonded with 10mm bead of FS702 Intumastic and mechanically restrained using a 75mm spiral screw to the first and secured layer. Spiral fixings should be at max 200mm centres and no more than 50mm from any joint.

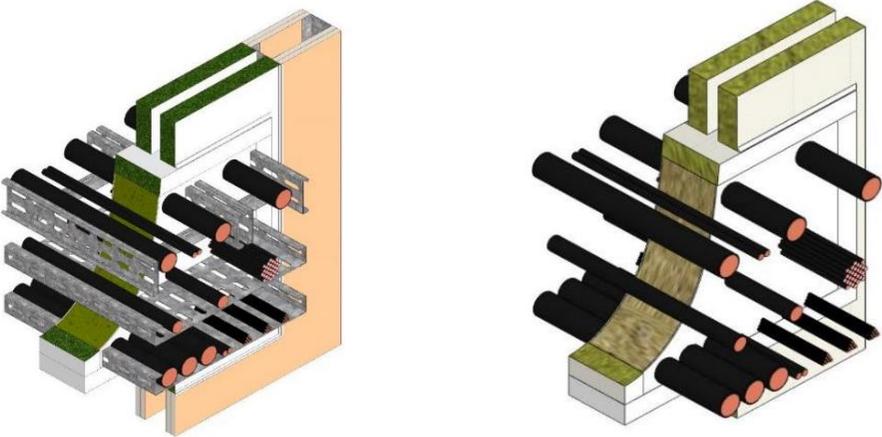


Service	Integrity	Integrity & Insulation	Rigid Wall thickness (mm)		Flexible Wall thickness (mm)	
	E (mins)	EI (mins)	≥ 130	≥ 100	≥ 130	≥ 100
Metal Cable Trays, Trunking, Baskets and Ladder ≤ 500mm width	120	120	✓	✓	✓	✓
Bundle of ≤ 10 type A1 cables, each cable ≤ 12mm diameter	120	120	✓	✓	✓	✓
Bundle of ≤ 10 type A2 cables, each cable ≤ 12mm diameter	120	120	✓	✓	✓	✓
Bundle of ≤ 10 type A3 cables, each cable ≤ 12mm diameter	120	120	✓	✓	✓	✓
1 type D2 cable ≤ 65mm diameter	120	120	✓	✓	✓	✓
1 type C2 cable ≤ 50mm diameter	120	120	✓	✓	✓	✓
Bundle of ≤ 100mm diameter type F data cables, each cable ≤ 13mm diameter	120	120	✓		✓	
≤ 2 type B cables, each cable ≤ 19mm diameter	120	120	✓		✓	
1 type C1 cable ≤ 41mm diameter	120	120	✓		✓	
1 type C2 cable ≤ 50mm diameter	120	120	✓		✓	
1 type C3 cable ≤ 37mm diameter	120	120	✓		✓	
1 type D1 cable ≤ 55mm diameter	120	120	✓		✓	
1 type D2 cable ≤ 65mm diameter	120	120	✓		✓	
1 type D3 cable ≤ 52.5mm diameter	120	120	✓		✓	
≤ 2 type E Cables ≤ 25mm diameter	120	120	✓		✓	

Service	Integrity	Integrity & Insulation	Rigid Wall thickness (mm)		Flexible Wall thickness (mm)	
	E (mins)	EI (mins)	≥ 130	≥ 100	≥ 130	≥ 100
1 type G1 cable ≤ 15mm diameter	120	120	✓		✓	
1 type G2 cable ≤ 20mm diameter	120	120	✓		✓	
Bundle of ≤ 9 type A1 Cables, each ≤ 12mm diameter, within a ≤ 340mm x 140mm steel trunking 300mm in length, filled with FI064 Backer (64kg/m ³ RF), and coated using 3mm WFT FS702 Intumastic to both faces	120	120	✓		✓	
Bundle of ≤ 9 type A2 Cables, each ≤ 12mm diameter, within a ≤ 340mm x 140mm steel trunking 300mm in length, filled with FI064 Backer (64kg/m ³ RF), and coated using 3mm WFT FS702 Intumastic to both faces	120	120	✓		✓	
≤ 2 type E Cables ≤ 25mm diameter, within a ≤ 340mm x 140mm steel trunking 300mm in length, filled with FI064 Backer (64kg/m ³ RF), and coated using 3mm WFT FS702 Intumastic to both faces	120	120	✓		✓	
Bundle of ≤ 100mm diameter type F data cables, each cable ≤ 13mm diameter	120	90	✓	✓	✓	✓
1 type G1 cable ≤ 15mm diameter	120	90	✓	✓	✓	✓
1 type G2 cable ≤ 20mm diameter	120	90	✓	✓	✓	✓
1 type C1 cable ≤ 41mm diameter	120	90	✓	✓	✓	✓
1 type C3 cable ≤ 37mm diameter	120	90	✓	✓	✓	✓
1 type D1 cable ≤ 55mm diameter	120	90	✓	✓	✓	✓
1 type D3 cable ≤ 52.5mm diameter	120	60	✓	✓	✓	✓
≤ 2 type B cables, each cable ≤ 19mm diameter	120	60	✓	✓	✓	✓
2 type E cables ≤ 25mm diameter	120	60	✓	✓	✓	✓
1 type G2 cable ≤ 20mm diameter, within a ≤ 340mm x 140mm steel trunking 300mm in length, filled with FI064 Backer (64kg/m ³ RF), and coated using 3mm WFT FS702 Intumastic to both faces	120	90	✓		✓	

Cable diameters can be increased up to 25%, and cable bundle diameters can be increased up to 10%

A6. CABLES & CABLE CARRIERS - DOUBLE BATT COMPRESSION BATT BOX

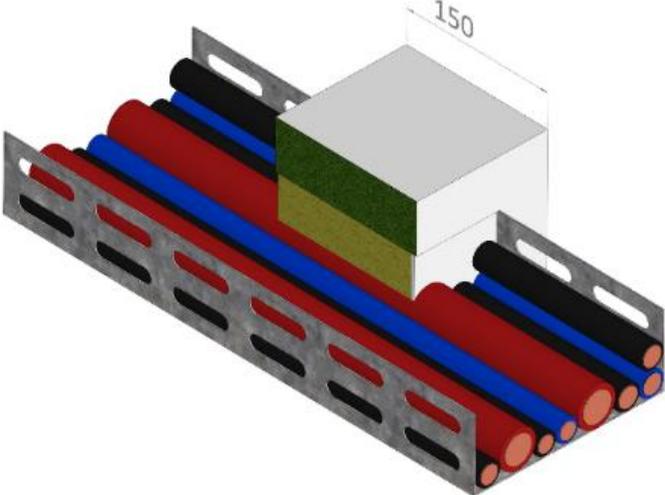
<p>Cables, Metal Cable Trays, Trunking, Baskets and Ladders insulated within a batt box passing through Flexible and Rigid Walls as identified below, protected by double compressed FB750 Intubatt seal, sealed with FS702 Intumastic.</p>
<p>Wall Details: Flexible or Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2. Flexible Walls constructed from steel or timber faced studs with a minimum of 2x12.5mm EN 520 type F boards on each side of studs.</p>
<p>Maximum Opening size: 1800mm by 1200mm. In Flexible Walls openings should be created using a steel frame. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.</p>
<p>Installation Instructions: Cut FB750 Intubatt to form batt box detail around cable tray(s) as per detail drawing below. Position the batt box around the penetration and position the centre of the batt box inline with the centre of the proposed FB750 Intubatt seal. Cut FB750 Intubatt to the required size and shape, ensuring it will be a tight fit to all edges of the aperture. Cut the FB750 Intubatt to tightly fit around the batt box detail, using a double Layer board, compressed and bonded into the aperture at mid depth of the wall. FS702 Intumastic or FS712 Intucoat is to be used to bond and form a seal between the batt box and the abutment of the wall and board to board joints. The remaining aperture within the batt box should be completely filled with FI064 Soft Joint Filler, and coated to each side with 3mm WFT FS702 Intumastic. Cut the FB750 Intubatt across the shortest dimension aligning both to the midpoint of the batt box, to enable the FB750 Intubatt to be fitted in to the aperture. Apply FS702 Intumastic to all edges of the FB750 Intubatt, ensuring than an even cover is achieved over the entire exposed thickness of the FB750 Intubatt, this should include the outer edges of the FB750 Intubatt and the cut across to allow installation in the aperture. Insert the FB750 Intubatt in the opening. Apply a bead of FS702 Intumastic to approximately 6mm by 6mm wide to the perimeter and 20mm by 20mm around the batt box detail, where the FB750 Intubatt meets the aperture and penetration. Ensure that all gaps between the FB750 Intubatt and the surrounding edges are fully filled. Repair any damages to the coating which may have occurred during installation using FS702 Intumastic or FS712 Intucoat. Repeat FS702 / FS712 seal to the opposite side of wall. Batt Box is only required to be installed round cables, trays (perforated or non-perforated), ladders, baskets and trunking. If included within a mixed penetration seal, the rest of the seal should be completed as per the normal double batt requirement.</p>
<p>The results below are also applicable when using multiple layers of FB750 Intubatt, including 1 layer (or more) surface mounted on both sides of the wall.</p>


Service	Integrity	Integrity & Insulation	Rigid Wall thickness (mm)		Flexible Wall thickness (mm)	
	E (mins)	EI (mins)	≥ 130	≥ 100	≥ 130	≥ 100
Metal Cable Trays, Trunking, Baskets and Ladders ≤ 500mm width	120	120	✓	✓	✓	✓
Bundle of ≤ 10 type A1 cables, each cable ≤ 12mm diameter	120	120	✓	✓	✓	✓
Bundle of ≤ 10 type A2 cables, each cable ≤ 12mm diameter	120	120	✓	✓	✓	✓
Bundle of ≤ 10 type A3 cables, each cable ≤ 12mm diameter	120	120	✓	✓	✓	✓
1 type C2 cable ≤ 50mm diameter	120	120	✓	✓	✓	✓
1 type D2 cable ≤ 65mm diameter	120	120	✓	✓	✓	✓
≤ 2 type B cables, each cable ≤ 19mm diameter	120	120	✓		✓	
Bundle of ≤ 9 type A1 Cables, each ≤ 12mm diameter, within a ≤ 340mm x 140mm steel trunking 300mm in length, filled with FI064 Backer (64kg/m ³ RF), and coated using 3mm WFT FS702 Intumastic to both faces	120	120	✓		✓	
Bundle of ≤ 9 type A2 Cables, each ≤ 12mm diameter, within a ≤ 340mm x 140mm steel trunking 300mm in length, filled with FI064 Backer (64kg/m ³ RF), and coated using 3mm WFT FS702 Intumastic to both faces	120	120	✓		✓	
≤ 2 type E Cables ≤ 25mm diameter, within a ≤ 340mm x 140mm steel trunking 300mm in length, filled with FI064 Backer (64kg/m ³ RF), and coated using 3mm WFT FS702 Intumastic to both faces	120	120	✓		✓	
1 type C1 cable ≤ 41mm diameter	120	120	✓		✓	
1 type C3 cable ≤ 37mm diameter	120	120	✓		✓	
1 type D1 cable ≤ 55mm diameter	120	120	✓		✓	
1 type D3 cable ≤ 52.5mm diameter	120	120	✓		✓	
≤ 2 type E cables ≤ 25mm diameter	120	120	✓		✓	
Bundle of ≤ 100mm diameter type F data cables, each cable ≤ 13mm diameter	120	120	✓		✓	

Service	Integrity	Integrity & Insulation	Rigid Wall thickness (mm)		Flexible Wall thickness (mm)	
	E (mins)	EI (mins)	≥ 130	≥ 100	≥ 130	≥ 100
1 type G1 cable ≤ 15mm diameter	120	120	✓		✓	
1 type G2 cable ≤ 20mm diameter	120	120	✓		✓	
Bundle of ≤ 100mm diameter type F data cables, each cable ≤ 13mm diameter	120	90	✓	✓	✓	✓
1 type G1 cable ≤ 15mm diameter	120	90	✓	✓	✓	✓
1 type G2 cable ≤ 20mm diameter	120	90	✓	✓	✓	✓
1 type C1 cable ≤ 41mm diameter	120	90	✓	✓	✓	✓
1 type C3 cable ≤ 37mm diameter	120	90	✓	✓	✓	✓
1 type D1 cable ≤ 55mm diameter	120	90	✓	✓	✓	✓
1 type G2 cable ≤ 20mm diameter, within a ≤ 340mm x 140mm steel trunking 300mm in length, filled with FI064 Backer (64kg/m ³ RF), and coated using 3mm WFT FS702 Intumastic to both faces	120	90	✓		✓	
1 type D3 cable ≤ 52.5mm diameter	120	60	✓	✓	✓	✓
≤ 2 type E cables ≤ 25mm diameter	120	60	✓	✓	✓	✓
≤ 2 type B cables, each cable ≤ 19mm diameter	120	60	✓	✓	✓	✓

Cable diameters can be increased up to 25%, and cable bundle diameters can be increased up to 10%

A7. CABLES & CABLE CARRIERS - SINGLE BATT COMPRESSION BATT BOX

<p>Cables, Metal Cable Trays, Trunking, Baskets and Ladders insulated within a batt box passing through Flexible and Rigid Walls as identified below, protected by single compressed FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.</p>
<p>Wall Details: Flexible or Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2. Flexible Walls constructed from steel or timber faced studs with a minimum of 2x12.5mm EN 520 type F boards on each side of studs.</p>
<p>Maximum Opening size: 1800mm by 1200mm. In Flexible Walls openings should be created using a steel frame with a plasterboard lining. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.</p>
<p>Installation Instructions: Cut FB750 Intubatt to form batt box detail around cable tray(s) as per detail drawing below. Position the batt box around the penetration and position the centre of the batt box inline with the centre of the proposed FB750 Intubatt seal. Cut FB750 Intubatt to the required size and shape, ensuring it will be a tight fit to all edges of the aperture. Cut the FB750 Intubatt to tightly fit around the batt box detail, using a single Layer board, compressed and bonded into the aperture at mid depth of the wall. FS702 Intumastic or FS712 Intucoat is to be used to bond and form a seal between the batt box and the abutment of the wall and board to board joints. The remaining aperture within the batt box should be completely filled with FI064 Soft Joint Filler, and coated to each side with 3mm WFT FS702 Intumastic. Cut the FB750 Intubatt across the shortest dimension aligning to the midpoint of the batt box, to enable the FB750 Intubatt to be fitted in to the aperture. Apply FS702 Intumastic to all edges of the FB750 Intubatt, ensuring than an even cover is achieved over the entire exposed thickness of the FB750 Intubatt, this should include the outer edges of the FB750 Intubatt and the cut across to allow installation in the aperture. Insert the FB750 Intubatt in the opening. Apply a bead of FS702 Intumastic to approximately 6mm by 6mm wide to the perimeter and 20mm by 20mm around the batt box detail, where the FB750 Intubatt meets the aperture and penetration. Ensure that all gaps between the FB750 Intubatt and the surrounding edges are fully filled. Repair any damages to the coating which may have occurred during installation using FS702 Intumastic or FS712 Intucoat. Repeat FS702 / FS712 seal to the opposite side of wall.</p>
<p>The results below are also applicable when using multiple layers of FB750 Intubatt, including 1 layer (or more) surface mounted on both sides of the wall.</p>


Service	Integrity	Integrity & Insulation	Rigid Wall thickness (mm)	Flexible Wall thickness (mm)
	E (mins)	EI (mins)	≥ 100	≥ 100
Metal Cable Trays, Trunking, Baskets and Ladders ≤ 500mm width	120	120	✓	✓
Bundle of ≤ 10 type A1 cables, each cable ≤ 12mm diameter	120	120	✓	✓
Bundle of ≤ 10 type A2 cables, each cable ≤ 12mm diameter	120	120	✓	✓
Bundle of ≤ 10 type A3 cables, each cable ≤ 12mm diameter	120	120	✓	✓
1 type D2 cable ≤ 65mm diameter	120	120	✓	✓
1 type C2 cable ≤ 50mm diameter	120	120	✓	✓
1 type C1 cable ≤ 41mm diameter	120	90	✓	✓
Bundle of ≤ 100mm diameter type F data cables, each cable ≤ 13mm diameter	120	90	✓	✓
1 type G1 cable ≤ 15mm diameter	120	90	✓	✓
1 type G2 cable ≤ 20mm diameter	120	90	✓	✓
1 type C3 cable ≤ 37mm diameter	120	90	✓	✓
1 type D1 cable ≤ 55mm diameter	120	90	✓	✓
1 type D3 cable ≤ 52.5mm diameter	120	60	✓	✓
≤ 2 type E cables ≤ 25mm diameter	120	60	✓	✓
≤ 2 type B cables, each cable ≤ 19mm diameter	120	60	✓	✓

Cable diameters can be increased up to 25%, and cable bundle diameters can be increased up to 10%

A8. COMBUSTIBLE PIPES - DOUBLE BATT PATTRISS – FS709/FP302

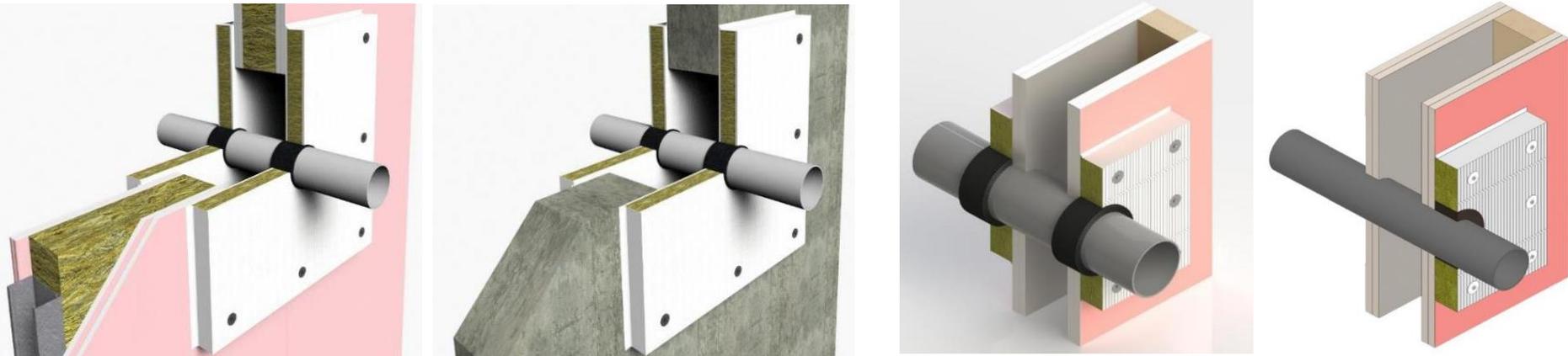
Combustible Pipes Insulated with No insulation passing through Flexible and Rigid Walls as identified below, protected by double pattress (surface mounted) FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.

Wall Details: Flexible or Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2.
Flexible Walls constructed from steel or timber faced studs with a minimum of 2x12.5mm EN 520 type F boards on each side of studs.

Maximum Opening size: 900mm by 550mm. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.

Installation Instructions: Boards surface mounted (pattress fit) on both sides of the wall with a minimum 75mm overlap around the opening. (Overlap on the lowest edge can be reduced to 30mm in the event of an obstruction preventing the 75mm overlap). The overlap should be bonded with a 10mm bead of FS702 Intumastic placed 20-60mm from the board edges, and additionally mechanically restrained using 75mm steel screws with a 25mm washer at maximum 300mm centres, 10-65mm from the board perimeter and no more than 50mm from a board joint. A low torque setting should be used to ensure that the embedment of fixing into the board does not exceed 15mm. The fixings may be left exposed or covered using FS702 Intumastic. The FB750 Intubatt should be installed in as few cut pieces as possible. All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS. External sides of the Board may be required to be coated for aesthetic reasons or to prevent fibre migration. (In situations where the required overlap cannot be achieved due to a perpendicular fire resisting wall / soffit, it is possible to reduce the overlap, down to as low as 0mm, provided the board edge is bonded to the adjoining compartment using a 10mm bead of FS702 Intumastic, and subsequently pointed to all mated edges)

The results below are also applicable when using multiple layers of surface mounted FB750 Intubatt. For multiple layers of FB750 Intubatt so a single (or both) face, identically sized boards should be used, ideally with staggered joints where possible. Closing devices should be located in or on the outmost board. Board to board abutment should be bonded with 10mm bead of FS702 Intumastic and mechanically restrained using a 75mm spiral screw to the first and secured layer. Spiral fixings should be at max 200mm centres and no more than 50mm from any joint.

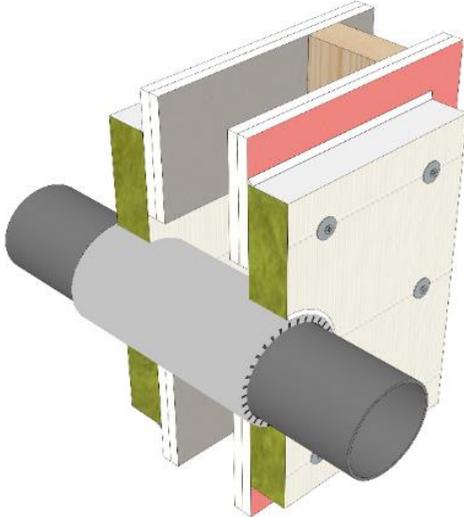


Service	Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity	Integrity & Insulation	Rigid Wall thickness (mm)				Flexible Wall thickness (mm)			Additional requirements (both sides)
	(mm)	(mm)	C/C	U/C	E (mins)	EI (mins)	≥ 145	≥ 130	≥ 100	≥ 90	≥ 130	≥ 100	≥ 90	
HDPE pipe	≤ 110	10,0	✓	✓	120	120	✓	✓	✓	✓	✓	✓	✓	2 layers of FP302 Intustrap central to the seal of both batts and sealed with FS702 Intumastic
PVC-U pipe (+ PVC-C)	≤ 160	3.2	✓	✓	120	120	✓	✓	✓		✓	✓		4 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
PVC-U pipe (+ PVC-C)	≤ 110	6.6	✓	✓	120	120	✓	✓			✓			3 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
PVC-U pipe (+ PVC-C)	≤ 110	3.2	✓	✓	120	120	✓	✓						3 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
PVC-U pipe (+ PVC-C)	≤ 82	3.2	✓	✓	120	120	✓							2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
PVC-U pipe (+ PVC-C)	≤ 55	2	✓	✓	120	120	✓	✓	✓					1 layer of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
PVC-U pipe (+ PVC-C)	≤ 110	4.2	✓	✓	90	90	✓	✓	✓		✓	✓		3 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
PVC-U pipe (+ PVC-C)	≤ 110	3.2	✓	✓	90	90	✓	✓	✓		✓	✓		3 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
PVC-U pipe (+ PVC-C)	≤ 36	1.8	✓	✓	90	90	✓	✓	✓		✓	✓		1 layer of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
PVC-U pipe (+ PVC-C)	(#) ≤ 110	3.2	✓	✓	60	60	✓							3 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
PEX multilayer pipe	≤ 69	8,0	✓	✓	120	120	✓	✓	✓	✓	✓	✓	✓	2 layers of FP302 Intustrap central to the seal of both batts and sealed with FS702 Intumastic
PEX multilayer pipe	≤ 111	10,0	✓	✓	120	120	✓	✓	✓	✓	✓	✓	✓	2 layers of FP302 Intustrap central to the seal of both batts and sealed with FS702 Intumastic
PEX multilayer pipe	(*) ≤ 64	12	✓	✓	120	120	✓	✓	✓		✓	✓		20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
PEX multilayer pipe	(*) ≤ 111	12	✓	✓	120	120	✓	✓	✓		✓	✓		20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
PEX multilayer pipe	≤ 28	2.6	✓	✓	120	120	✓	✓	✓		✓	✓		1 layer of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
PEX multilayer pipe	≤ 40	4.2	✓	✓	120	120	✓	✓	✓		✓	✓		25mm annulus of FS709 HP Intumescent Sealant, 25mm depth (using FB750 as backer)

Service	Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity E (mins)	Integrity & Insulation EI (mins)	Rigid Wall thickness (mm)				Flexible Wall thickness (mm)			Additional requirements (both sides)	
	(mm)	(mm)	C/C	U/C			≥ 145	≥ 130	≥ 100	≥ 90	≥ 130	≥ 100	≥ 90		
PEX multilayer pipe		≤ 26	3	✓	✓	120	120	✓	✓	✓		✓	✓		25mm annulus of FS709 HP Intumescent Sealant, 25mm depth (using FB750 as backer)
PEX multilayer pipe		≤ 21	2.8	✓	✓	120	120	✓	✓	✓		✓	✓		25mm annulus of FS709 HP Intumescent Sealant, 25mm depth (using FB750 as backer)
PEX multilayer pipe		≤ 18	2.8	✓	✓	120	120	✓	✓	✓		✓	✓		25mm annulus of FS709 HP Intumescent Sealant, 25mm depth (using FB750 as backer)
PEX multilayer pipe		≤ 28	2.6	✓	✓	120	120	✓	✓	✓		✓	✓		25mm annulus of FS709 HP Intumescent Sealant, 25mm depth (using FB750 as backer)
≤ 2 banks of 6 PEX multilayer pipes		≤ 28	2.6	✓	✓	120	120	✓	✓	✓		✓	✓		1 layer of FP302 Intustrap around the entire perimeter (not individual pipes), sealed within FB750 Intubatt with FS702 Intumastic
1 stack of 10 PEX multilayer pipes		≤ 28	2.6	✓	✓	120	120	✓	✓	✓		✓	✓		1 layer of FP302 Intustrap around the entire perimeter (not individual pipes), sealed within FB750 Intubatt with FS702 Intumastic
1 bank of 6 PEX multilayer pipes		≤ 28	2.6	✓	✓	60	60	✓	✓	✓		✓	✓		25mm annulus of FS709 HP Intumescent Sealant, 25mm depth (using FB750 as backer)
Ribbed Nylon Copex pipe		≤ 55	0.5 - 1.2	✓	✓	120	120	✓	✓	✓		✓	✓		1 layer of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
PPR multilayer pipe		≤ 75	10	✓	✓	120	120	✓	✓	✓		✓	✓		2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
CPVC Lubrizol Pipe		≤ 90 (\$)	7.2	✓	✓	120	120	✓	✓	✓		✓	✓		3 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
CPVC Lubrizol Pipe	(#)	≤ 34 (\$)	3	✓	✓	60	60	✓							1 layer of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
CPVC Lubrizol Pipe	(#)	≤ 34 (\$)	3	✓	✓	60	60	✓							25mm annulus of FS709 HP Intumescent Sealant, 25mm depth (using FB750 as backer)
PE pipe (+ HDPE, ABS, San+ PVC, PVC-U & PVC-C)		≤ 110	3.4	✓	✓	90	90	✓	✓	✓		✓	✓		3 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
PP pipe (+ HDPE, PVC-U & PVC-C)		≤ 110	3.4	✓	✓	90	90	✓	✓	✓		✓	✓		3 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic

(*) Includes horizontal pipes from 90° to 45° to supporting construction
 (#) Overlap can be reduced from 75mm to 50mm
 (\$) External measurements manually taken from US units specified pipes

A9. COMBUSTIBLE PIPES - DOUBLE BATT PATTRISS – FP170/FP220

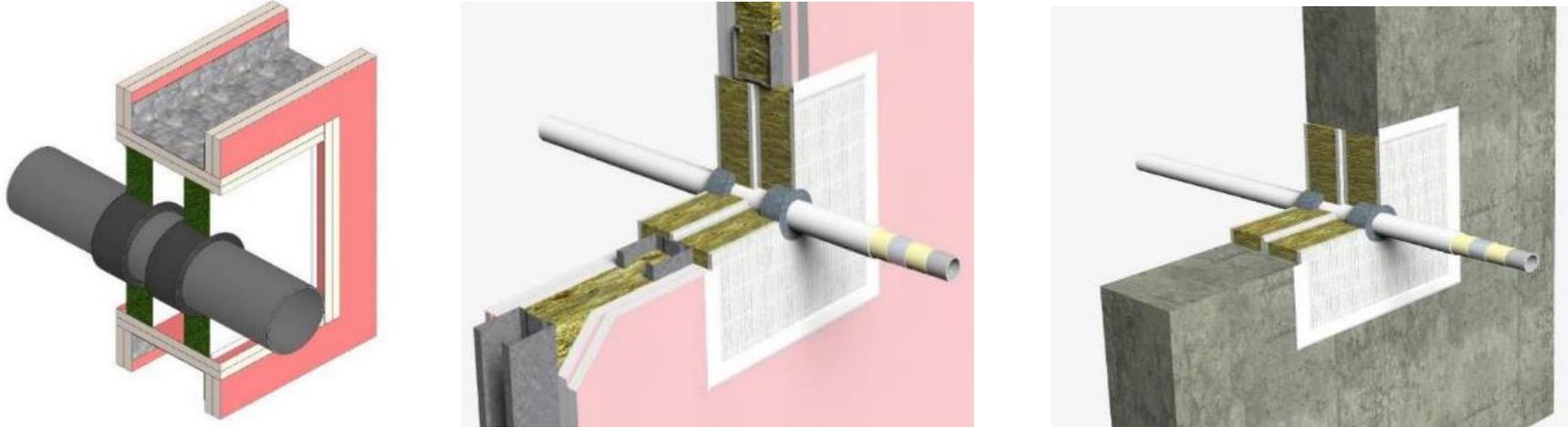
<p>Combustible Pipes Insulated with No insulation passing through Flexible and Rigid Walls as identified below, protected by double pattress (surface mounted) FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.</p>
<p>Wall Details: Flexible or Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2. Flexible Walls constructed from steel or timber faced studs with a minimum of 2x12.5mm EN 520 type F boards on each side of studs.</p>
<p>Maximum Opening size: 800mm by 550mm. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.</p> <p>Installation Instructions: Boards surface mounted (pattress fit) on both sides of the wall with a minimum 75mm overlap around the opening. (Overlap on the lowest edge can be reduced to 30mm in the event of an obstruction preventing the 75mm overlap). The overlap should be bonded with a 10mm bead of FS702 Intumastic placed 20-60mm from the board edges, and additionally mechanically restrained using 75mm steel screws with a 25mm washer at maximum 300mm centres, 10-65mm from the board perimeter and no more than 50mm from a board joint. A low torque setting should be used to ensure that the embedment of fixing into the board does not exceed 15mm. The fixings may be left exposed or covered using FS702 Intumastic. The FB750 Intubatt should be installed in as few cut pieces as possible. All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS. External sides of the Board may be required to be coated for aesthetic reasons or to prevent fibre migration. (In situations where the required overlap cannot be achieved due to a perpendicular fire resisting wall / soffit, it is possible to reduce the overlap, down to as low as 0mm, provided the board edge is bonded to the adjoining compartment using a 10mm bead of FS702 Intumastic, and subsequently pointed to all mated edges)</p>
<p>The results below are also applicable when using multiple layers of surface mounted FB750 Intubatt. For multiple layers of FB750 Intubatt so a single (or both) face, identically sized boards should be used, ideally with staggered joints where possible. Closing devices should be located in or on the outmost board. Board to board abutment should be bonded with 10mm bead of FS702 Intumastic and mechanically restrained using a 75mm spiral screw to the first and secured layer. Spiral fixings should be at max 200mm centres and no more than 50mm from any joint.</p>


Service	Pipe diameter	Pipe wall thickness	Pipe end configuration				Integrity	Integrity & Insulation	Rigid Wall thickness (mm)	Flexible Wall thickness (mm)	Additional requirements (both sides)
	(mm)	(mm)	C/C	U/C	C/U	U/U	E (mins)	EI (mins)	≥ 100	≥ 100	
PP-MD pipe (+ HDPE, PVC-U & PVC-C)	(*) ≤ 50	2	✓	✓	✓	✓	120	120	✓	✓	FP220 Service Sleeve Ø55 x 220mm (central to the seal) within the FB750 Intubatt, sealed with 3mm deep FS709 HP Intumastic Sealant
PP-MD pipe (+ HDPE, PVC-U & PVC-C)	≤ 50	2	✓	✓	✓	✓	120	120	✓	✓	FP170 Intucollar Ø55mm, sealed with FS702 Intumastic
PP pipe (+ HDPE, PVC-U & PVC-C)	≤ 160	14.6	✓	✓	✓	✓	120	120	✓	✓	FP220 Service Sleeve Ø192 x 220mm (central to the seal) within the FB750 Intubatt, sealed with FS702 Intumastic
PP pipe (+ HDPE, PVC-U & PVC-C)	≤ 75	7.6	✓	✓	✓	✓	120	120	✓	✓	FP220 Service Sleeve Ø87 x 220mm (central to the seal) within the FB750 Intubatt, sealed with FS702 Intumastic
PP pipe (+ HDPE, PVC-U & PVC-C)	≤ 50	2.2	✓	✓	✓	✓	120	120	✓	✓	FP220 Service Sleeve Ø62 x 220mm (central to the seal) within the FB750 Intubatt, sealed with FS702 Intumastic
PP pipe (+ HDPE, PVC-U & PVC-C)	≤ 110	3.4	✓	✓	✓	✓	120	120	✓	✓	FP220 Service Sleeve Ø130 x 220mm (central to the seal) within the FB750 Intubatt, sealed with FS702 Intumastic
PP pipe (+ HDPE, PVC-U & PVC-C)	≤ 75	7.1	✓	✓	✓	✓	120	120	✓	✓	FP220 Service Sleeve Ø94 x 220mm (central to the seal) within the FB750 Intubatt, sealed with FS702 Intumastic
PP pipe (+ HDPE, PVC-U & PVC-C)	≤ 110	2.4	✓	✓	✓	✓	120	120	✓	✓	FP170 Intucollar Ø110mm, sealed with FS702 Intumastic
PP pipe (+ HDPE, PVC-U & PVC-C)	≤ 75	7.2	✓	✓	✓	✓	120	30	✓	✓	FP170 Intucollar Ø82mm, sealed with FS702 Intumastic
PE pipe (+ ABS, San+ PVC, PVC-U & PVC-C)	≤ 160	5.4	✓	✓	✓	✓	120	120	✓	✓	FP220 Service Sleeve Ø192 x 220mm (central to the seal) within the FB750 Intubatt, sealed with FS702 Intumastic
PE pipe (+ ABS, San+ PVC, PVC-U & PVC-C)	≤ 110	4.2	✓	✓	✓	✓	120	120	✓	✓	FP220 Service Sleeve Ø130 x 220mm (central to the seal) within the FB750 Intubatt, sealed with FS702 Intumastic
PE pipe (+ ABS, San+ PVC, PVC-U & PVC-C)	≤ 110	11	✓	✓	✓	✓	120	120	✓	✓	FP220 Service Sleeve Ø130 x 220mm (central to the seal) within the FB750 Intubatt, sealed with FS702 Intumastic

Service	Pipe diameter	Pipe wall thickness	Pipe end configuration				Integrity	Integrity & Insulation	Rigid Wall thickness (mm)	Flexible Wall thickness (mm)	Additional requirements (both sides)
	(mm)	(mm)	C/C	U/C	C/U	U/U	E (mins)	EI (mins)	≥ 100	≥ 100	
PVC-U pipe (+ PVC-C)	≤ 82	3.1	✓	✓	✓	✓	120	120	✓	✓	FP220 Service Sleeve Ø94 x 220mm (central to the seal) within the FB750 Intubatt, sealed with FS702 Intumastic
PVC-U pipe (+ PVC-C)	≤ 80	10.6	✓	✓	✓	✓	120	120	✓	✓	FP220 Service Sleeve Ø94 x 220mm (central to the seal) within the FB750 Intubatt, sealed with FS702 Intumastic
PVC-U pipe (+ PVC-C)	≤ 50	2.4	✓	✓	✓	✓	120	120	✓	✓	FP220 Service Sleeve Ø62 x 220mm (central to the seal) within the FB750 Intubatt, sealed with FS702 Intumastic
PVC-U pipe (+ PVC-C)	≤ 50	2.6	✓	✓	✓	✓	120	120	✓	✓	FP170 Intucollar Ø55mm, sealed with FS702 Intumastic
PVC-U pipe (+ PVC-C)	(*) ≤ 110	2.4	✓	✓	✓	✓	90	60	✓	✓	FP220 Service Sleeve Ø130 x 220mm (central to the seal) within the FB750 Intubatt, sealed with FS702 Intumastic
PVC-U pipe (+ PVC-C)	≤ 82	3.2	✓	✓	✓	✓	60	60	✓	✓	FP220 Service Sleeve Ø94 x 220mm (central to the seal) within the FB750 Intubatt, sealed with FS702 Intumastic
PVC-U pipe (+ PVC-C)	≤ 82	3.2	✓	✓	✓	✓	60	60	✓	✓	FP170 Intucollar Ø82mm, sealed with FS702 Intumastic
PVC rectangular pipe	220x90	1.5	✓	✓	✓	✓	120	120	✓	✓	FP220 Service Sleeve 220x90x220mm (central to the seal) within the FB750 Intubatt, sealed with FS702 Intumastic
PVC rectangular pipe	204x60	1.5	✓	✓	✓	✓	90	90	✓	✓	FP220 Service Sleeve 204x60x220mm (central to the seal) within the FB750 Intubatt, sealed with FS702 Intumastic
PE-RT multilayer pipe	(*) ≤ 40	4	✓	✓			120	15	✓	✓	FP220 Service Sleeve Ø55 x 220mm (central to the seal) within the FB750 Intubatt, sealed with 3mm deep FS709 HP Intumastic Sealant

(*) Includes horizontal pipes from 90° to 45° to supporting construction

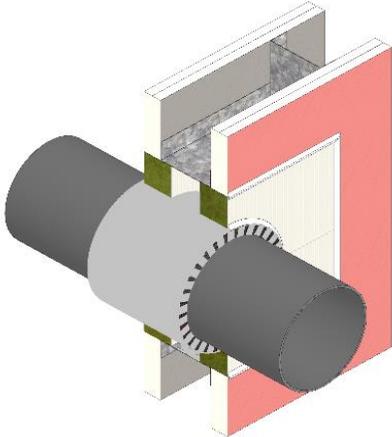
A10. COMBUSTIBLE PIPES - DOUBLE BATT COMPRESSION - FS709/FP302

<p>Uninsulated Combustible Pipes passing through Flexible and Rigid Walls as identified below, protected by double compressed FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.</p>
<p>Wall Details: Flexible or Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2. Flexible Walls constructed from steel or timber faced studs with a minimum of 2x12.5mm EN 520 type F boards on each side of studs.</p>
<p>Maximum Opening size: 800mm by 550mm. In Flexible Walls openings should be created using a steel frame. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.</p>
<p>Installation Instructions: Double Layer board, compressed and bonded into the aperture outer face flush with the face of the supporting construction. FB750 Intubatt should be installed in as few cut pieces as possible and tightly compressed to two opposite sides. This is achieved by the addition of 2mm to the required cut dimension. Compression may be applied - FB750 Intubatt to FB750 Intubatt, FB750 Intubatt to non combustible service, or FB750 Intubatt to Substrate. Compression must be achieved over a minimum 60% of the FB750 Intubatt compressed edge. If compression is achieved Top to bottom of FB750 Intubatt, left/right is not required to be compressed and vice versa (the non compressed seal could be fully abutted and bonded). All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS. (Imperfections in cut on a compressed edge may not exceed 40% of the area available to receive compression)</p>
<p>The results below are also applicable when using multiple layers of FB750 Intubatt, including 1 layer (or more) surface mounted on both sides of the wall.</p>


Service	Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity	Integrity & Insulation	Rigid Wall thickness (mm)		Flexible Wall thickness (mm)	Additional requirements (both sides)
	(mm)	(mm)	C/C	U/C	E (mins)	EI (mins)	≥ 145	≥ 100	≥ 100	
CPVC Lubrizol pipe	≤ 90	7.2	✓	✓	120	120	✓	✓	✓	3 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
Ribbed Nylon Copex pipe	≤ 55	0.5 to 1.2	✓	✓	120	120	✓	✓	✓	1 layer of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
PVC-U pipe (+ PVC-C)	≤ 160	3.2	✓	✓	120	120	✓	✓	✓	4 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
PVC-U pipe (+ PVC-C)	≤ 55	2	✓	✓	120	120	✓	✓		1 layer of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
PVC-U pipe (+ PVC-C)	≤ 110	3.2	✓	✓	120	120	✓			3 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
PVC-U pipe (+ PVC-C)	≤ 110	4.2	✓	✓	90	90	✓	✓	✓	3 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
PPR multilayer pipe	≤ 75	10	✓	✓	120	120	✓	✓	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
PEX multilayer pipe	(*) ≤ 64	12	✓	✓	120	120	✓	✓	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
PEX multilayer pipe	(*) ≤ 111	12	✓	✓	120	120	✓	✓	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
PEX multilayer pipe	≤ 28	2.6	✓	✓	90	90	✓	✓	✓	25mm annulus of FS709 HP Intumescent Sealant, 25mm depth (using FB750 as backer)
1 bank of 6 PEX multilayer pipes	≤ 28	2.6	✓	✓	60	60	✓	✓	✓	25mm annulus of FS709 HP Intumescent Sealant, 25mm depth (using FB750 as backer)
PE pipe (+ ABS, San+ PVC, PVC-U & PVC-C)	≤ 110	3.4	✓	✓	90	90	✓	✓	✓	3 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
PP pipe (+ HDPE, PVC-U & PVC-C)	≤ 110	3.4	✓	✓	90	90	✓	✓	✓	3 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic

(*) Includes horizontal pipes from 90° to 45° to supporting construction

A11. COMBUSTIBLE PIPES DOUBLE BATT COMPRESSION - FP170/FP220

<p>Uninsulated Combustible Pipes passing through Flexible and Rigid Walls as identified below, protected by double compressed FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.</p>
<p>Wall Details: Flexible or Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2. Flexible Walls constructed from steel or timber faced studs with a minimum of 2x12.5mm EN 520 type F boards on each side of studs.</p>
<p>Maximum Opening size: 800mm by 550mm. In Flexible Walls openings should be created using a steel frame. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.</p>
<p>Installation Instructions: Double Layer board, compressed and bonded into the aperture outer face flush with the face of the supporting construction. FB750 Intubatt should be installed in as few cut pieces as possible and tightly compressed to two opposite sides. This is achieved by the addition of 2mm to the required cut dimension. Compression may be applied - FB750 Intubatt to FB750 Intubatt, FB750 Intubatt to non combustible service, or FB750 Intubatt to Substrate. Compression must be achieved over a minimum 60% of the FB750 Intubatt compressed edge. If compression is achieved Top to bottom of FB750 Intubatt, left/right is not required to be compressed and vice versa (the non compressed seal should be fully abutted and bonded). All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS. (Imperfections in cut on a compressed edge may not exceed 40% of the area available to receive compression)</p>
<p>The results below are also applicable when using multiple layers of FB750 Intubatt, including 1 layer (or more) surface mounted on both sides of the wall.</p>


Service	Pipe diameter (mm)	Pipe wall thickness (mm)	Pipe end configuration				Integrity E (mins)	Integrity & Insulation EI (mins)	Rigid Wall thickness (mm) ≥ 100	Flexible Wall thickness (mm) ≥ 100	Additional requirements (both sides)
			C/C	U/C	C/U	U/U					
PP-MD pipe (+ HDPE, PVC-U & PVC-C)	(*) ≤ 50	2	✓	✓	✓	✓	120	120	✓	✓	FP220 Service Sleeve Ø≤ 55 x 220mm (central to the seal) within the FB750 Intubatt, sealed with 3mm deep FS709 HP Intumastic Sealant
PP-MD pipe (+ HDPE, PVC-U & PVC-C)	≤ 50	2	✓	✓	✓	✓	120	120	✓	✓	FP170 Intucollar Ø≤ 55mm, sealed with FS702 Intumastic
PE pipe (+ HDPE, ABS, San+ PVC, PVC-U & PVC-C)	≤ 160	5	✓	✓	✓	✓	120	120	✓	✓	FP220 Service Sleeve Ø192 x 220mm (central to the seal) within the FB750 Intubatt, sealed with FS702 Intumastic
PE pipe (+ HDPE, ABS, San+ PVC, PVC-U & PVC-C)	≤ 110	4	✓	✓	✓	✓	120	120	✓	✓	FP220 Service Sleeve Ø130 x 220mm (central to the seal) within the FB750 Intubatt, sealed with FS702 Intumastic
PVC-U pipe (+ PVC-C)	≤ 82	3	✓	✓	✓	✓	120	120	✓	✓	FP220 Service Sleeve Ø94 x 220mm (central to the seal) within the FB750 Intubatt, sealed with FS702 Intumastic
PVC-U pipe (+ PVC-C)	≤ 50	2	✓	✓	✓	✓	120	120	✓	✓	FP220 Service Sleeve Ø62 x 220mm (central to the seal) within the FB750 Intubatt, sealed with FS702 Intumastic
PVC-U pipe (+ PVC-C)	≤ 50	3	✓	✓	✓	✓	120	120	✓	✓	FP170 Intucollar Ø≤ 55mm, sealed with FS702 Intumastic
PVC-U pipe (+ PVC-C)	(*) ≤ 110	2	✓	✓	✓	✓	90	60	✓	✓	FP220 Service Sleeve Ø130 x 220mm (central to the seal) within the FB750 Intubatt, sealed with FS702 Intumastic
PVC-U pipe (+ PVC-C)	≤ 82	3.2	✓	✓	✓	✓	60	60	✓	✓	FP220 Service Sleeve Ø94 x 220mm (central to the seal) within the FB750 Intubatt, sealed with FS702 Intumastic
PVC-U pipe (+ PVC-C)	≤ 82	3.2	✓	✓	✓	✓	60	60	✓	✓	FP170 Intucollar Ø82mm, sealed with FS702 Intumastic
PP pipe (+ HDPE, PVC-U & PVC-C)	≤ 160	15	✓	✓	✓	✓	120	120	✓	✓	FP220 Service Sleeve Ø192 x 220mm (central to the seal) within the FB750 Intubatt, sealed with FS702 Intumastic
PP pipe (+ HDPE, PVC-U & PVC-C)	≤ 75	8	✓	✓	✓	✓	120	120	✓	✓	FP220 Service Sleeve Ø87 x 220mm (central to the seal) within the FB750 Intubatt, sealed with FS702 Intumastic
PP pipe (+ HDPE, PVC-U & PVC-C)	≤ 110	2	✓	✓	✓	✓	120	120	✓	✓	FP170 Intucollar Ø≤ 110mm, sealed with FS702 Intumastic
PP pipe (+ HDPE, PVC-U & PVC-C)	≤ 75	7	✓	✓	✓	✓	120	30	✓	✓	FP170 Intucollar Ø82mm, sealed with FS702 Intumastic
PVC rectangular pipe	204x60	2	✓	✓	✓	✓	90	90	✓	✓	FP220 Service Sleeve Ø92 x 236mm (central to the seal) within the FB750 Intubatt, sealed with FS702 Intumastic
PE-RT multilayer pipe	(*) ≤ 40	4	✓	✓			120	15	✓	✓	FP220 Service Sleeve Ø≤ 55 x 220mm (central to the seal) within the FB750 Intubatt, sealed with 3mm deep FS709 HP Intumastic Sealant

(*) Includes horizontal pipes from 90° to 45° to supporting construction

A12. COMBUSTIBLE PIPES - SINGLE BATT PATTRESS

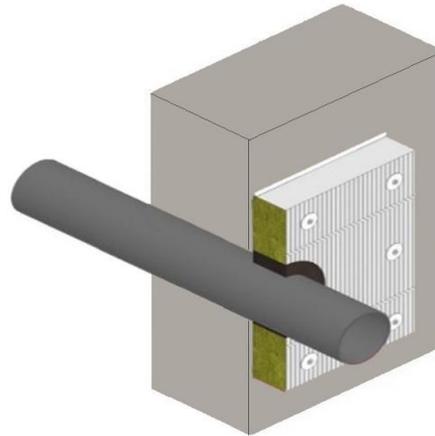
Uninsulated Combustible Pipes passing through Rigid Walls as Identified below, protected by single FB750 Intubatt seal, pattress fitted to one side, sealed with FS702 Intumastic or FS712 Intucoat.

Wall Details: Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2.

Maximum Opening size: 300mm by 300mm. In Rigid Walls, no cavity may be evident or the cavity should be fully closed prior to application. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.

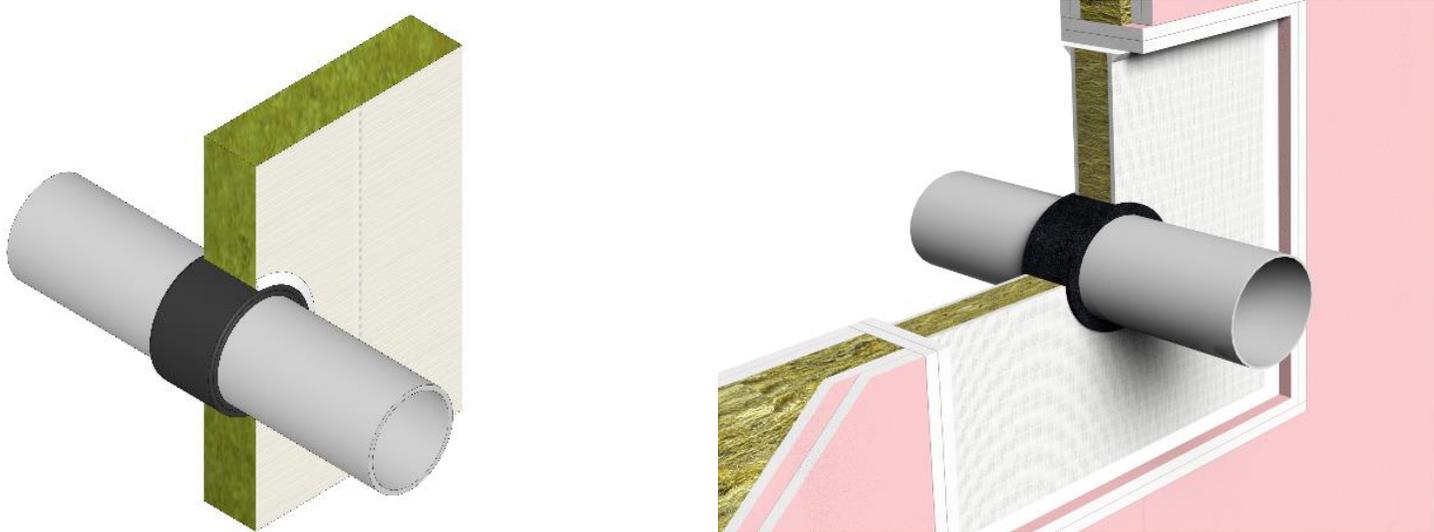
Installation Instructions: Single Layer board, surface mounted (pattress fit) with 75mm overlap beyond the aperture on the opposite side of the wall to the fire. FB750 Intubatt should be installed in as few cut pieces as possible. All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from the services.

Results could also be used in both directions with 1 layer (or more) of surface mounted FB750 Intubatt on both sides of the opening.



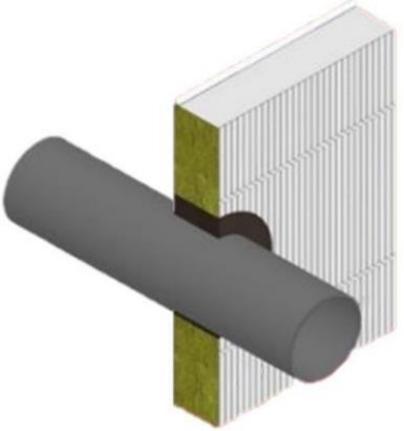
Service	Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity	Integrity & Insulation	Rigid Wall thickness (mm)	Additional requirements
	(mm)	(mm)	C/C	U/C	E (mins)	EI (mins)	≥ 130	
HDPE pipe	≤ 32	1.5	✓	✓	120	120	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
HDPE pipe	≤ 40	4	✓	✓	120	120	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth

A13. COMBUSTIBLE PIPES - SINGLE BATT COMPRESSION

<p>Uninsulated Combustible Pipes passing through Flexible and Rigid Walls as identified below, protected by single compressed FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.</p>
<p>Wall Details: Flexible or Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2. Flexible Walls constructed from steel or timber faced studs with a minimum of 2x12.5mm EN 520 type F boards on each side of studs.</p>
<p>Maximum Opening size: 500mm by 550mm. In Flexible Walls openings should be created using a steel frame with a plasterboard lining. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.</p>
<p>Installation Instructions: Single Layer board, compressed and bonded into the aperture at mid depth of the wall. FB750 Intubatt should be installed in as few cut pieces as possible and tightly compressed to two opposite sides. This is achieved by the addition of 2mm to the required cut dimension. Compression may be applied - FB750 Intubatt to FB750 Intubatt, FB750 Intubatt to non combustible service, or FB750 Intubatt to Substrate. Compression must be achieved over a minimum 60% of the FB750 Intubatt Compressed edge. If compression is achieved Top to bottom of FB750 Intubatt, left/right is not required to be compressed and vice versa (the non compressed seal could be fully abutted and bonded). All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullfire product, if the service type is combustible or insulated CS or LS. (Imperfections in cut on a compressed edge may not exceed 40% of the area available to receive compression)</p>
<p>The results below are also applicable when using multiple layers of FB750 Intubatt, including 1 layer (or more) surface mounted on both sides of the wall.</p>


Service	Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity	Integrity & Insulation	Rigid Wall thickness (mm)	Flexible Wall thickness (mm)	Additional requirements
	(mm)	(mm)	C/C	U/C	E (mins)	EI (mins)	≥ 100	≥ 100	
PVC-U pipe (+ PVC-C)	≤ 110	4.2	✓	✓	90	60	✓		3 layers of FP302 Intustrap (central to the seal), sealed on both sides of FB750 Intubatt with FS702 Intumastic
PVC-U pipe (+ PVC-C)	≤ 110	3.5	✓	✓	90	30	✓	✓	3 layers of FP302 Intustrap (central to the seal), sealed on both sides of FB750 Intubatt with FS702 Intumastic

A14. COMBUSTIBLE PIPES - SINGLE BATT COMPRESSION (ASYMMETRIC)

Uninsulated Combustible Pipes passing through Flexible and Rigid Walls as identified below, protected by single compressed asymmetric FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.										
Wall Details: Flexible or Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2. Flexible Walls constructed from steel or timber faced studs with a minimum of 2x12.5mm EN 520 type F boards on each side of studs.										
Maximum Opening size: 500mm by 550mm. In Flexible Walls openings should be created using a steel frame with a plasterboard lining. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.										
Installation Instructions: Single Layer board, compressed and bonded into the aperture on the opposite side of the wall to fire. FB750 Intubatt should be installed in as few cut pieces as possible and tightly compressed to two opposite sides. This is achieved by the addition of 2mm to the required cut dimension. Compression may be applied - FB750 Intubatt to FB750 Intubatt, FB750 Intubatt to non combustible service, or FB750 Intubatt to Substrate. Compression must be achieved over a minimum 60% of the FB750 Intubatt compressed edge. If compression is achieved Top to bottom of FB750 Intubatt, left/right is not required to be compressed and vice versa (the non compressed seal could be fully abutted and bonded). All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS. (Imperfections in cut on a compressed edge may not exceed 40% of the area available to receive compression)										
The results below are also applicable when using multiple layers of FB750 Intubatt, including one layer or more of surface mounted FB750 Intubatt.										
										
Service		Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity	Integrity & Insulation	Rigid Wall thickness (mm)	Flexible Wall thickness (mm)	Additional requirements
		(mm)	(mm)	C/C	U/C	E (mins)	EI (mins)	≥ 100	≥ 100	
PEX multilayer pipe	(*)	≤ 111	12	✓	✓	60	60	✓	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth

A15. COMBUSTIBLE PIPES IN SHAFTS - DOUBLE BATT PATTRESS & COMPRESSION

Combustible Pipes through Flexible and Rigid Shaft Walls as identified below, protected by double FB750 Intubatt seal, requiring access from one side only to construct. The first batt is installed flush with the surface furthest from the installation side. The second batt is surface mounted on the installation side, sealed with FS702 Intumastic or FS712 Intucoat. Results apply for fire in either direction.

Wall Details: Flexible or Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2.

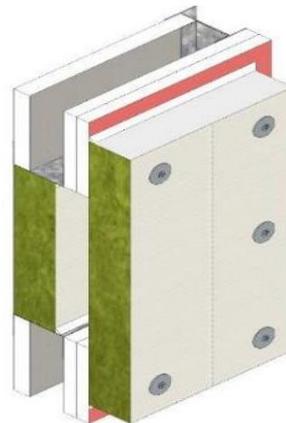
Flexible Walls constructed from steel or studs with a minimum of 1x19mm EN 520 type F board on the far side, and 2x15mm EN 520 type F boards on the installation side of the studs.

Maximum Opening size: 2010mm by 1000mm. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.

Installation Instructions: A 10mm bead of FS702 should be applied to the perimeter of the opening at the furthest point. The first board is then compressed, bonded and located onto the perimeter bead, within the opening. This FB750 Intubatt should be installed in as few cut pieces as possible and tightly compressed to two opposite sides. This is achieved by the addition of 2mm to the required cut dimension. Compression may be applied - FB750 Intubatt to FB750 Intubatt, FB750 Intubatt to non combustible service, or FB750 Intubatt to Substrate.

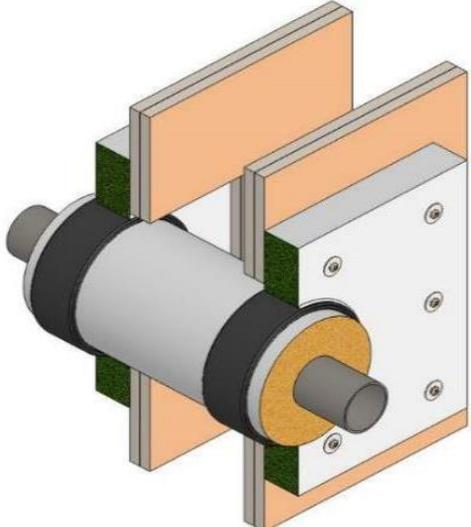
Compression must be achieved over a minimum 60% of the FB750 Intubatt Compressed edge. If compression of FB750 Intubatt is achieved between two opposite sides, the perpendicular sides are not required to be compressed (the non compressed seal should be fully abutted and bonded). All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. The second board is surface mounted on installation side of the wall with a minimum 75mm overlap around the opening. (Overlap on the lowest edge can be reduced to 30mm in the event of an obstruction preventing the 75mm overlap). The overlap should be bonded with a 10mm bead of FS702 Intumastic placed 20-60mm from the board edges, and additionally mechanically restrained using 75mm steel screws with a 25mm washer at maximum 300mm centres, 10-65mm from the board perimeter and no more than 50mm from a board joint. A low torque setting should be used to ensure that the embedment of fixing into the board does not exceed 15mm. The fixings may be left exposed or covered using FS702 Intumastic. This FB750 Intubatt should also be installed in as few cut pieces as possible. All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS. External sides of the Board may be required to be coated for aesthetic reasons or to prevent fibre migration. (In situations where the required overlap cannot be achieved due to a perpendicular fire resisting wall / soffit, it is possible to reduce the overlap, down to as low as 0mm, provided the board edge is bonded to the adjoining compartment using a 10mm bead of FS702 Intumastic, and subsequently pointed to all mated edges)

The results below are also applicable when using multiple layers of surface mounted FB750 Intubatt. For multiple layers of FB750 Intubatt so a single (or both) face, identically sized boards should be used, ideally with staggered joints where possible. Closing devices should be located in or on the outmost board. Board to board abutment should be bonded with 10mm bead of FS702 Intumastic and mechanically restrained using a 75mm spiral screw to the first and secured layer. Spiral fixings should be at max 200mm centres and no more than 50mm from any joint.



Service	Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity	Integrity & Insulation	Flexible Asymmetric Shaft Wall thickness (mm)	Additional requirements
	(mm)	(mm)	C/C	U/C	E (mins)	EI (mins)	≥ 90	
HDPE pipe	≤ 110	10,0	✓	✓	120	120	✓	2 layers of FP302 Intustrap central to the seal of both batts and sealed with FS702 Intumastic
PEX multilayer pipe	≤ 69	8,0	✓	✓	120	120	✓	2 layers of FP302 Intustrap central to the seal of both batts and sealed with FS702 Intumastic
PEX multilayer pipe	≤ 111	10,0	✓	✓	120	120	✓	2 layers of FP302 Intustrap central to the seal of both batts and sealed with FS702 Intumastic

A16. COMBUSTIBLE PIPES INSULATED CS - DOUBLE BATT PATTRISS

<p>Combustible Pipes Insulated with Continuous Sustained insulation passing through Flexible and Rigid Walls as identified below, protected by double pattress (surface mounted) FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.</p>
<p>Wall Details: Flexible or Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2. Flexible Walls constructed from steel or timber faced studs with a minimum of 2x12.5mm EN 520 type F boards on each side of studs.</p>
<p>Maximum Opening size: 900mm by 550mm. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.</p> <p>Installation Instructions: Boards surface mounted (pattress fit) on both sides of the wall with a minimum 75mm overlap around the opening. (Overlap on the lowest edge can be reduced to 30mm in the event of an obstruction preventing the 75mm overlap). The overlap should be bonded with a 10mm bead of FS702 Intumastic placed 20-60mm from the board edges, and additionally mechanically restrained using 75mm steel screws with a 25mm washer at maximum 300mm centres, 10-65mm from the board perimeter and no more than 50mm from a board joint. A low torque setting should be used to ensure that the embedment of fixing into the board does not exceed 15mm. The fixings may be left exposed or covered using FS702 Intumastic. The FB750 Intubatt should be installed in as few cut pieces as possible. All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS. External sides of the Board may be required to be coated for aesthetic reasons or to prevent fibre migration. (In situations where the required overlap cannot be achieved due to a perpendicular fire resisting wall / soffit, it is possible to reduce the overlap, down to as low as 0mm, provided the board edge is bonded to the adjoining compartment using a 10mm bead of FS702 Intumastic, and subsequently pointed to all mated edges)</p>
<p>The results below are also applicable when using multiple layers of surface mounted FB750 Intubatt. For multiple layers of FB750 Intubatt so a single (or both) face, identically sized boards should be used, ideally with staggered joints where possible. Closing devices should be located in or on the outmost board. Board to board abutment should be bonded with 10mm bead of FS702 Intumastic and mechanically restrained using a 75mm spiral screw to the first and secured layer. Spiral fixings should be at max 200mm centres and no more than 50mm from any joint.</p>


Service	CS Pipe Insulation (Continuous Sustained)		Pipe diameter (mm)	Pipe wall thickness (mm)	Pipe end configuration		Integrity E (mins)	Integrity & Insulation EI (mins)	Rigid Wall thickness (mm) ≥ 100	Flexible Wall thickness (mm) ≥ 100	Additional requirements (both sides)
	Material	Thickness (mm)			C/C	U/C					
PE pipe (+ ABS, San+ PVC, PVC-U & PVC-C)	Nitrile (Elastomeric)	19	≤ 40	≥ 2.4	✓	✓	90	90	✓	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
PE pipe (+ ABS, San+ PVC, PVC-U & PVC-C)	Nitrile (Elastomeric)	19	≤ 40	≥ 3.7	✓	✓	90	90	✓	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
PP pipe (+ HDPE, PVC-U & PVC-C)	Nitrile (Elastomeric)	19	≤ 40	≥ 1.8	✓	✓	90	90	✓	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
PP pipe (+ HDPE, PVC-U & PVC-C)	Nitrile (Elastomeric)	19	≤ 40	≥ 5.5	✓	✓	90	90	✓	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
PVC-U pipe (+ PVC-C)	Nitrile (Elastomeric)	19	≤ 40	≥ 3	✓	✓	90	90	✓	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
PVC-U pipe (+ PVC-C)	Nitrile (Elastomeric)	19	≤ 40	≥ 1.9	✓	✓	90	90	✓	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
PVC-U pipe (+ PVC-C)	Glass Fibre	≥ 50	≤ 20	≥ 1.5	✓	✓	120	30	✓		2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic

A17. COMBUSTIBLE PIPES INSULATED CS - DOUBLE BATT COMPRESSION

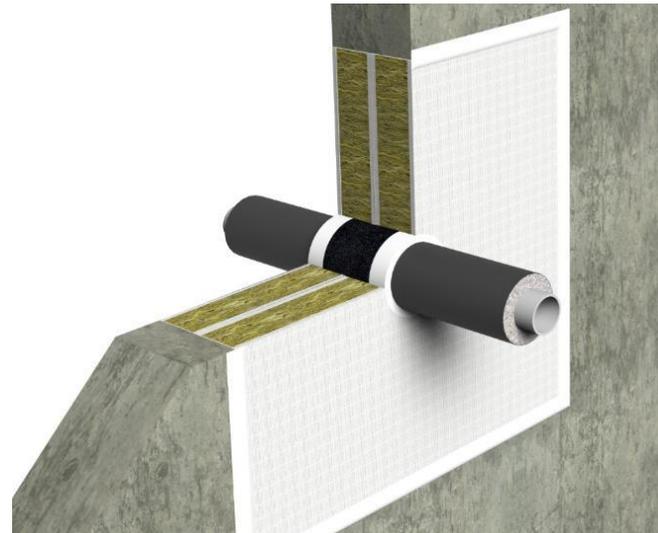
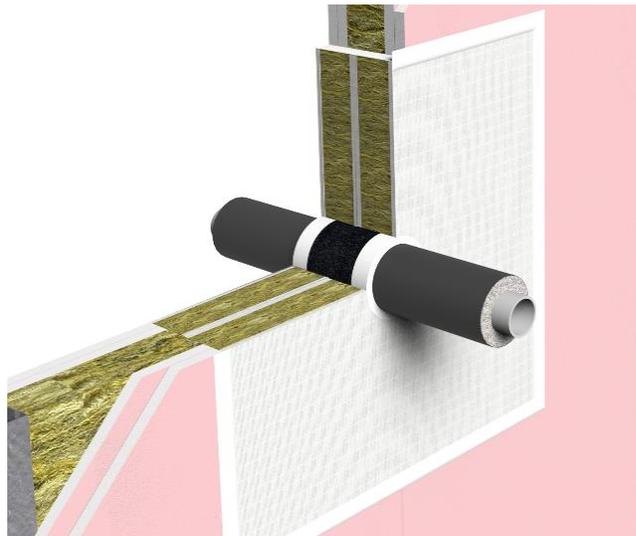
Combustible Pipes Insulated with Continuous Sustained insulation passing through Flexible and Rigid Walls as identified below, protected by double compressed FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.

Wall Details: Flexible or Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2.
Flexible Walls constructed from steel or timber faced studs with a minimum of 2x12.5mm EN 520 type F boards on each side of studs.

Maximum Opening size: 900mm by 550mm. In Flexible Walls openings should be created using a steel frame. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.

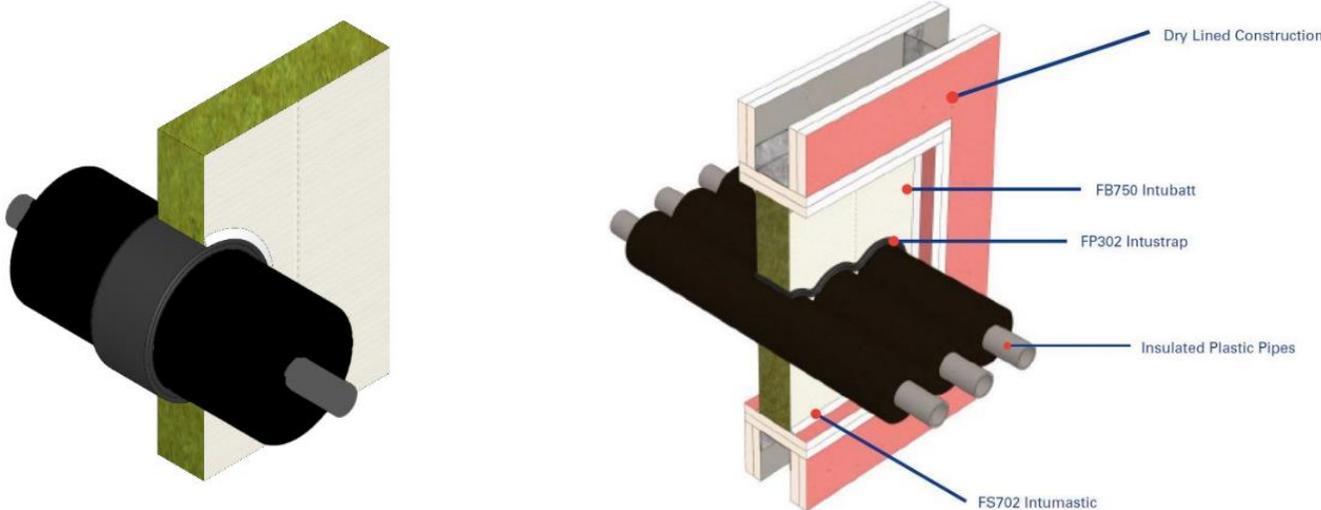
Installation Instructions: Double Layer board, compressed and bonded into the aperture outer face flush with the face of the supporting construction. FB750 Intubatt should be installed in as few cut pieces as possible and tightly compressed to two opposite sides. This is achieved by the addition of 2mm to the required cut dimension. Compression may be applied - FB750 Intubatt to FB750 Intubatt, FB750 Intubatt to non combustible service, or FB750 Intubatt to Substrate. Compression must be achieved over a minimum 60% of the FB750 Intubatt compressed edge. If compression is achieved Top to bottom of FB750 Intubatt, left/right is not required to be compressed and vice versa (the non compressed seal should be fully abutted and bonded). All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS. (Imperfections in cut on a compressed edge may not exceed 40% of the area available to receive compression)

The results below are also applicable when using multiple layers of FB750 Intubatt, including 1 layer (or more) surface mounted on both sides of the wall.



Service	CS Pipe Insulation (Continuous Sustained)		Pipe diameter (mm)	Pipe wall thickness (mm)	Pipe end configuration		Integrity E (mins)	Integrity & Insulation EI (mins)	Rigid Wall thickness (mm) ≥ 100	Flexible Wall thickness (mm) ≥ 100	Additional requirements
	Material	Thickness (mm)			C/C	U/C					
PVC-U pipe (+ PVC-C)	Nitrile (Elastomeric)	19	≤ 40	≥ 3	✓	✓	90	90	✓	✓	2 layers of FP302 Intustrap (central to the seal), sealed on both sides of FB750 Intubatt with FS702 Intumastic
PVC-U pipe (+ PVC-C)	Nitrile (Elastomeric)	19	≤ 40	≥ 1.9	✓	✓	90	90	✓	✓	2 layers of FP302 Intustrap (central to the seal), sealed on both sides of FB750 Intubatt with FS702 Intumastic
PVC-U pipe (+ PVC-C)	Glass Fibre	≥ 50	≤ 20	≥ 1.5	✓	✓	120	30	✓		2 layers of FP302 Intustrap (central to the seal), sealed on both sides of FB750 Intubatt with FS702 Intumastic
PP pipe (+ HDPE, PVC-U & PVC-C)	Nitrile (Elastomeric)	19	≤ 40	≥ 1.8	✓	✓	90	60	✓	✓	2 layers of FP302 Intustrap (central to the seal), sealed on both sides of FB750 Intubatt with FS702 Intumastic
PP pipe (+ HDPE, PVC-U & PVC-C)	Nitrile (Elastomeric)	19	≤ 40	≥ 5.5	✓	✓	60	60	✓	✓	2 layers of FP302 Intustrap (central to the seal), sealed on both sides of FB750 Intubatt with FS702 Intumastic
PE pipe (+ ABS, San+ PVC, PVC-U & PVC-C)	Nitrile (Elastomeric)	19	≤ 40	≥ 3.7	✓	✓	60	60	✓	✓	2 layers of FP302 Intustrap (central to the seal), sealed on both sides of FB750 Intubatt with FS702 Intumastic
PE pipe (+ ABS, San+ PVC, PVC-U & PVC-C)	Nitrile (Elastomeric)	19	≤ 40	≥ 2.4	✓	✓	60	60	✓	✓	2 layers of FP302 Intustrap (central to the seal), sealed on both sides of FB750 Intubatt with FS702 Intumastic

A18. COMBUSTIBLE PIPES INSULATED CS - SINGLE BATT COMPRESSION

<p>Combustible Pipes Insulated with Continuous Sustained insulation passing through Flexible and Rigid Walls as identified below, protected by single compressed FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.</p>
<p>Wall Details: Flexible or Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2. Flexible Walls constructed from steel or timber faced studs with a minimum of 2x12.5mm EN 520 type F boards on each side of studs.</p>
<p>Maximum Opening size: 900mm by 550mm. In Flexible Walls openings should be created using a steel frame with a plasterboard lining. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.</p>
<p>Installation Instructions: Single Layer board, compressed and bonded into the aperture at mid depth of the wall. FB750 Intubatt should be installed in as few cut pieces as possible and tightly compressed to two opposite sides. This is achieved by the addition of 2mm to the required cut dimension. Compression may be applied - FB750 Intubatt to FB750 Intubatt, FB750 Intubatt to non combustible service, or FB750 Intubatt to Substrate. Compression must be achieved over a minimum 60% of the FB750 Intubatt Compressed edge. If compression is achieved Top to bottom of FB750 Intubatt, left/right is not required to be compressed and vice versa (the non compressed seal could be fully abutted and bonded). All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullfire product, if the service type is combustible or insulated CS or LS. (Imperfections in cut on a compressed edge may not exceed 40% of the area available to receive compression)</p>
<p>The results below are also applicable when using multiple layers of FB750 Intubatt, including 1 layer (or more) surface mounted on both sides of the wall.</p>


Service	CS Pipe Insulation (Continuous Sustained)		Pipe diameter (mm)	Pipe wall thickness (mm)	Pipe end configuration		Integrity	Integrity & Insulation	Rigid Wall thickness (mm)	Flexible Wall thickness (mm)	Additional requirements
	Material	Thickness (mm)			C/C	U/C					
PP pipe (+ HDPE, PVC-U & PVC-C)	Nitrile (Elastomeric)	19	≤ 40	≥ 1.8	✓	✓	90	60	✓	✓	2 layers of FP302 Intustrap (central to the seal), sealed on both sides of FB750 Intubatt with FS702 Intumastic
PE pipe (+ HDPE, ABS, San+ PVC, PVC-U & PVC-C)	Nitrile (Elastomeric)	19	≤ 40	≥ 2.4	✓	✓	90	30	✓	✓	2 layers of FP302 Intustrap (central to the seal), sealed on both sides of FB750 Intubatt with FS702 Intumastic
PVC-U pipe (+ PVC-C)	Glass Fibre	≥ 50	≤ 20	≥ 1.5	✓	✓	90	30	✓		2 layers of FP302 Intustrap (central to the seal), sealed on both sides of FB750 Intubatt with FS702 Intumastic
PVC-U pipe (+ PVC-C)	Nitrile (Elastomeric)	19	≤ 40	≥ 3	✓	✓	60	30	✓	✓	2 layers of FP302 Intustrap (central to the seal), sealed on both sides of FB750 Intubatt with FS702 Intumastic
PVC-U pipe (+ PVC-C)	Nitrile (Elastomeric)	19	≤ 40	≥ 1.9	✓	✓	60	30	✓	✓	2 layers of FP302 Intustrap (central to the seal), sealed on both sides of FB750 Intubatt with FS702 Intumastic

A19. NON COMBUSTIBLE PIPES - DOUBLE BATT PATTRESS

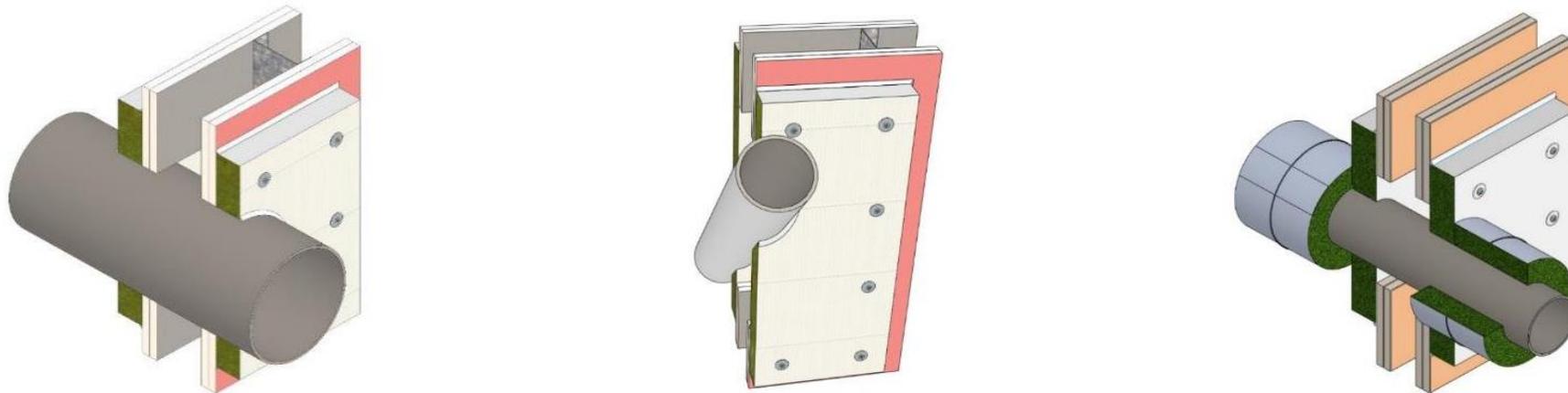
Non Combustible Pipes through Flexible and Rigid Walls as identified below, protected by double pattress (surface mounted) FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.

Wall Details: Flexible or Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2.
Flexible Walls constructed from steel or timber faced studs with a minimum of 2x12.5mm EN 520 type F boards on each side of studs.

Maximum Opening size: 1200mm by 500mm. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.

Installation Instructions: Boards surface mounted (pattress fit) on both sides of the wall with a minimum 75mm overlap around the opening. (Overlap on the lowest edge can be reduced to 30mm in the event of an obstruction preventing the 75mm overlap). The overlap should be bonded with a 10mm bead of FS702 Intumastic placed 20-60mm from the board edges, and additionally mechanically restrained using 75mm steel screws with a 25mm washer at maximum 300mm centres, 10-65mm from the board perimeter and no more than 50mm from a board joint. A low torque setting should be used to ensure that the embedment of fixing into the board does not exceed 15mm. The fixings may be left exposed or covered using FS702 Intumastic. The FB750 Intubatt should be installed in as few cut pieces as possible. All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS. External sides of the Board may be required to be coated for aesthetic reasons or to prevent fibre migration. (In situations where the required overlap cannot be achieved due to a perpendicular fire resisting wall / soffit, it is possible to reduce the overlap, down to as low as 0mm, provided the board edge is bonded to the adjoining compartment using a 10mm bead of FS702 Intumastic, and subsequently pointed to all mated edges)

The results below are also applicable when using multiple layers of surface mounted FB750 Intubatt. For multiple layers of FB750 Intubatt so a single (or both) face, identically sized boards should be used, ideally with staggered joints where possible. Closing devices should be located in or on the outmost board. Board to board abutment should be bonded with 10mm bead of FS702 Intumastic and mechanically restrained using a 75mm spiral screw to the first and secured layer. Spiral fixings should be at max 200mm centres and no more than 50mm from any joint.

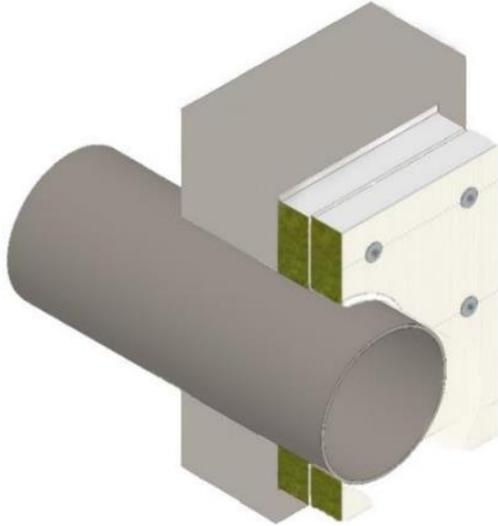


Service				Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity	Integrity & Insulation	Rigid Wall thickness (mm)				Flexible Wall thickness (mm)			Additional requirements (both sides)
Cast Iron	Steel	Copper	-	(mm)	(mm)	C/C	C/U	E (mins)	EI (mins)	≥ 150	≥ 130	≥ 100	≥ 90	≥ 130	≥ 100	≥ 90	
✓	✓	✓		≤ 42	≥ 1	✓	✓	240	120	✓							200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
✓	✓	✓	(*)	≤ 14	≥ 1.2	✓	✓	120	120	✓	✓	✓	✓	✓	✓	✓	200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
✓	✓	✓	(*)	≤ 28	≥ 1.2	✓	✓	120	120	✓	✓	✓	✓	✓	✓	✓	200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
✓	✓	✓		≤ 14	≥ 1	✓	✓	120	120	✓	✓	✓		✓	✓		200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
✓	✓	✓		≤ 28	≥ 1	✓	✓	120	120	✓	✓	✓		✓	✓		200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
✓	✓	✓		≤ 42	≥ 1	✓	✓	120	120	✓	✓	✓		✓	✓		200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
✓	✓	✓		≤ 160	≥ 2	✓	✓	120	120	✓	✓			✓			500mm extension of 2 layers of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
✓	✓	✓		≤ 159	≥ 2	✓	✓	120	120	✓	✓			✓			-
✓	✓	✓	(*)	≤ 42	≥ 1.2	✓	✓	120	90	✓	✓	✓	✓	✓	✓	✓	200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
✓	✓	✓		≤ 15	≥ 0.8	✓	✓	120	90	✓	✓			✓			-
✓	✓	✓		≤ 35	≥ 1.2	✓	✓	120	60	✓	✓	✓		✓	✓		-
✓	✓	✓		≤ 15	≥ 0.7	✓	✓	90	90	✓	✓	✓		✓	✓		-
✓	✓	✓	(*)	≤ 28	≥ 1	✓	✓	60	60	✓	✓	✓		✓	✓		200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
✓	✓	✓		≤ 160	≥ 1.2	✓	✓	120	30	✓	✓	✓	✓	✓	✓	✓	500mm extension of 2 layers of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
✓	✓	✓		≤ 14	≥ 1.2	✓	✓	120	30	✓	✓	✓	✓	✓	✓	✓	-
✓	✓	✓	(*)	≤ 14	≥ 1.2	✓	✓	120	30	✓	✓			✓			-

Service				Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity	Integrity & Insulation	Rigid Wall thickness (mm)				Flexible Wall thickness (mm)			Additional requirements (both sides)
Cast Iron	Steel	Copper	-	(mm)	(mm)	C/C	C/U	E (mins)	EI (mins)	≥ 150	≥ 130	≥ 100	≥ 90	≥ 130	≥ 100	≥ 90	
✓	✓	✓		≤ 22	≥ 1	✓	✓	120	30	✓	✓	✓		✓	✓		200mm coatback of FS712 Intucoat 2mm WFT
✓	✓	✓		≤ 28	≥ 1	✓	✓	60	30	✓	✓	✓		✓	✓		-
✓	✓	✓	(*)	≤ 42	≥ 1	✓	✓	60	30	✓	✓	✓		✓	✓		200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
✓	✓	✓		≤ 28	≥ 1.2	✓	✓	30	30	✓	✓	✓	✓	✓	✓	✓	-
✓	✓	✓	(*)	≤ 42	≥ 1.2	✓	✓	120	15	✓	✓	✓		✓	✓		-
✓	✓			≤ 76	≥ 2	✓	✓	240	120	✓							200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
✓	✓			≤ 20	≥ 1.5	✓	✓	120	120	✓	✓						-
✓	✓			≤ 60	≥ 3.3	✓	✓	120	90	✓	✓						-
✓	✓			≤ 220	≥ 8.5	✓	✓	120	60	✓	✓			✓			-
✓	✓			≤ 10	≥ 1.8	✓	✓	90	60	✓	✓	✓		✓	✓		200mm coatback of FS712 Intucoat 2mm WFT
✓	✓			≤ 87	≥ 4	✓	✓	60	45	✓	✓						-
✓	✓			≤ 220	≥ 6	✓	✓	120	30	✓	✓	✓		✓	✓		200mm coatback of FS712 Intucoat 2mm WFT
✓	✓			≤ 64	≥ 3	✓	✓	120	30	✓	✓	✓		✓	✓		200mm coatback of FS712 Intucoat 2mm WFT
✓	✓			≤ 76	≥ 3.4	✓	✓	240	15	✓							-
✓	✓			≤ 90	≥ 3	✓	✓	120	15	✓	✓	✓		✓	✓		200mm coatback of FS712 Intucoat 2mm WFT

*) Includes horizontal pipes from 90° to 45° to supporting construction

A20. NON COMBUSTIBLE PIPES - DOUBLE BATT PATTRESS (ASYMMETRIC)

Non Combustible Pipes through Rigid Walls as identified below, protected by double pattress (surface mounted) asymmetric FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.
Wall Details: Rigid Walls of minimum thickness as identified below and with performance classified to EN13501-2 .
Maximum Opening size: 1100mm by 450mm. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.
Installation Instructions: Double layer board surface mounted (pattress fit) together on the opposite side of the wall to the fire, with a minimum 75mm overlap around the opening. (Overlap on the lowest edge can be reduced to 30mm in the event of an obstruction preventing the 75mm overlap). The overlap should be bonded with a 10mm bead of FS702 Intumastic placed 20-60mm from the board edges, and additionally mechanically restrained using 75mm steel screws with a 25mm washer at maximum 300mm centres, 10-65mm from the board perimeter and no more than 50mm from a board joint. A low torque setting should be used to ensure that the embedment of fixing into the board does not exceed 15mm. The fixings may be left exposed or covered using FS702 Intumastic. The FB750 Intubatt should be installed in as few cut pieces as possible. All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS. External sides of the Board may be required to be coated for aesthetic reasons or to prevent fibre migration. (In situations where the required overlap cannot be achieved due to a perpendicular fire resisting wall / soffit, it is possible to reduce the overlap, down to as low as 0mm, provided the board edge is bonded to the adjoining compartment using a 10mm bead of FS702 Intumastic, and subsequently pointed to all mated edges)
The results below are also applicable when using multiple layers of surface mounted FB750 Intubatt. Results could also be used in both directions with double layer surface mounted of FB750 Intubatt on both sides of the opening.


Service			Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity	Integrity & Insulation	Rigid Wall thickness (mm)	Additional requirements (both sides)
Cast Iron	Steel	Copper	(mm)	(mm)	C/C	C/U	E (mins)	EI (mins)	≥ 150	
✓	✓		≤ 40	≥ 2	✓	✓	240	120	✓	200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
✓	✓		≤ 40	≥ 1.7	✓	✓	240	120	✓	-
✓	✓		≤ 110	≥ 2.2	✓	✓	240	30	✓	200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
✓	✓	✓	≤ 40	≥ 1.5	✓	✓	240	60	✓	200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
✓	✓	✓	≤ 110	≥ 2.7	✓	✓	240	15	✓	200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic

A21. NON COMBUSTIBLE PIPES - DOUBLE BATT COMPRESSION

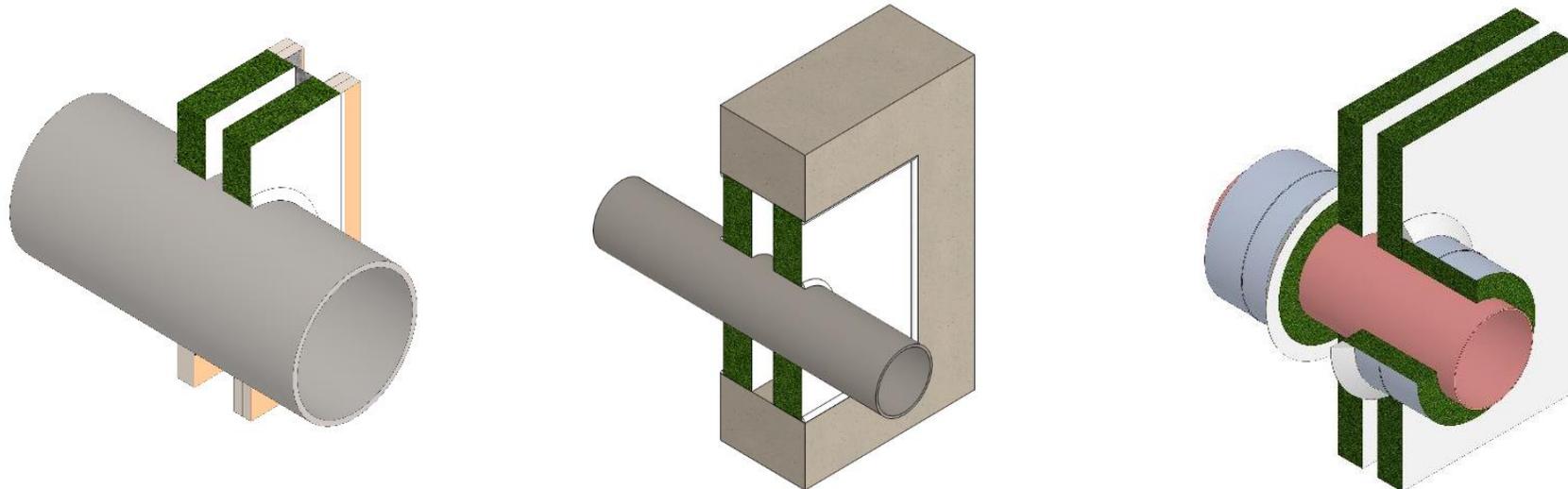
Uninsulated Non Combustible Pipes through Flexible and Rigid Walls as identified below, protected by double compressed FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.

Wall Details: Flexible or Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2.
Flexible Walls constructed from steel or timber faced studs with a minimum of 2x12.5mm EN 520 type F boards on each side of studs.

Maximum Opening size: 2000mm by \leq 1100mm. In Flexible Walls openings should be created using a steel frame. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.

Installation Instructions: Double Layer board, compressed and bonded into the aperture outer face flush with the face of the supporting construction. FB750 Intubatt should be installed in as few cut pieces as possible and tightly compressed to two opposite sides. This is achieved by the addition of 2mm to the required cut dimension. Compression may be applied - FB750 Intubatt to FB750 Intubatt, FB750 Intubatt to non combustible service, or FB750 Intubatt to Substrate. Compression must be achieved over a minimum 60% of the FB750 Intubatt compressed edge. If compression is achieved Top to bottom of FB750 Intubatt, left/right is not required to be compressed and vice versa (the non compressed seal could be fully abutted and bonded). All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS. (Imperfections in cut on a compressed edge may not exceed 40% of the area available to receive compression)

The results below are also applicable when using multiple layers of FB750 Intubatt, including 1 layer (or more) surface mounted on both sides of the wall.



Service				Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity	Integrity & Insulation	Rigid Wall thickness (mm)			Flexible Wall thickness (mm)		Additional requirements (both sides)
Cast Iron	Steel	Copper	-	(mm)	(mm)	C/C	C/U	E (mins)	EI (mins)	≥ 150	≥ 130	≥ 100	≥ 130	≥ 100	
✓	✓	✓		≤ 42	≥ 1	✓	✓	240	120	✓					200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
✓	✓	✓		≤ 42	≥ 1	✓	✓	120	120	✓	✓	✓	✓	✓	200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
✓	✓	✓		≤ 160	≥ 2	✓	✓	120	120	✓	✓		✓		500mm extension of 2 layers of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
✓	✓	✓		≤ 15	≥ 0.8	✓	✓	120	90	✓	✓		✓		-
✓	✓	✓	(*)	≤ 28	≥ 1	✓	✓	60	60	✓	✓	✓	✓	✓	200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
✓	✓	✓	(*)	≤ 14	≥ 1.2	✓	✓	120	30	✓	✓	✓	✓	✓	-
✓	✓	✓	(*)	≤ 42	≥ 1.2	✓	✓	120	15	✓	✓	✓	✓	✓	-
✓	✓	✓		≤ 22	≥ 1	✓	✓	120	15	✓	✓	✓	✓	✓	200mm coatback of FS712 Intucoat 2mm WFT
✓	✓			≤ 76	≥ 2	✓	✓	240	120	✓					200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
✓	✓			≤ 220	≥ 8.5	✓	✓	120	60	✓	✓		✓		-
✓	✓			≤ 22	≥ 1	✓	✓	120	30	✓	✓	✓	✓	✓	200mm coatback of FS712 Intucoat 2mm WFT
✓	✓			≤ 220	≥ 6	✓	✓	120	30	✓	✓	✓	✓	✓	200mm coatback of FS712 Intucoat 2mm WFT
✓	✓			≤ 64	≥ 3	✓	✓	120	30	✓	✓	✓	✓	✓	200mm coatback of FS712 Intucoat 2mm WFT
✓	✓			≤ 65	≥ 3.2	✓	✓	90	30	✓	✓	✓	✓	✓	200mm coatback of FS712 Intucoat 2mm WFT
✓	✓			≤ 76	≥ 3.4	✓	✓	240	15	✓					-
✓	✓			≤ 90	≥ 3	✓	✓	120	15	✓	✓	✓	✓	✓	200mm coatback of FS712 Intucoat 2mm WFT

(*) Includes horizontal pipes from 90° to 45° to supporting construction

A22. NON COMBUSTIBLE PIPES - DOUBLE BATT COMPRESSION (ASYMMETRIC)

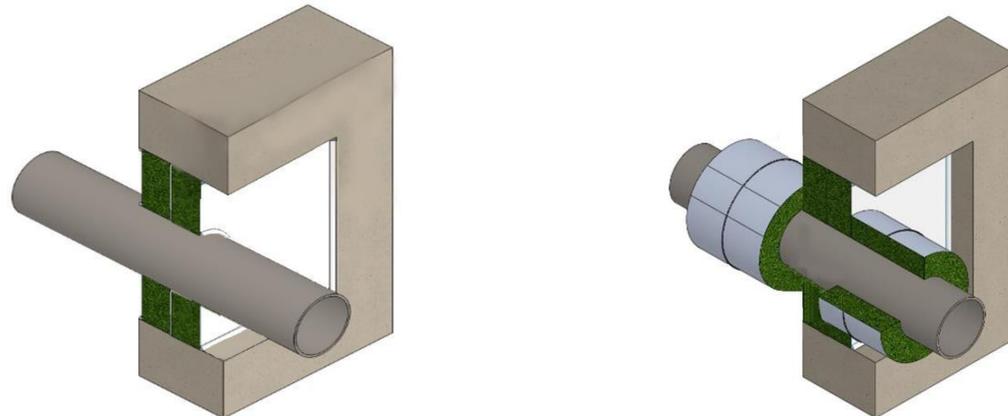
Uninsulated Non Combustible Pipes through Rigid Walls as identified below, protected by double compressed asymmetric FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.

Wall Details: Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2.

Maximum Opening size: $\leq 1100\text{mm}$ by 450mm . Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.

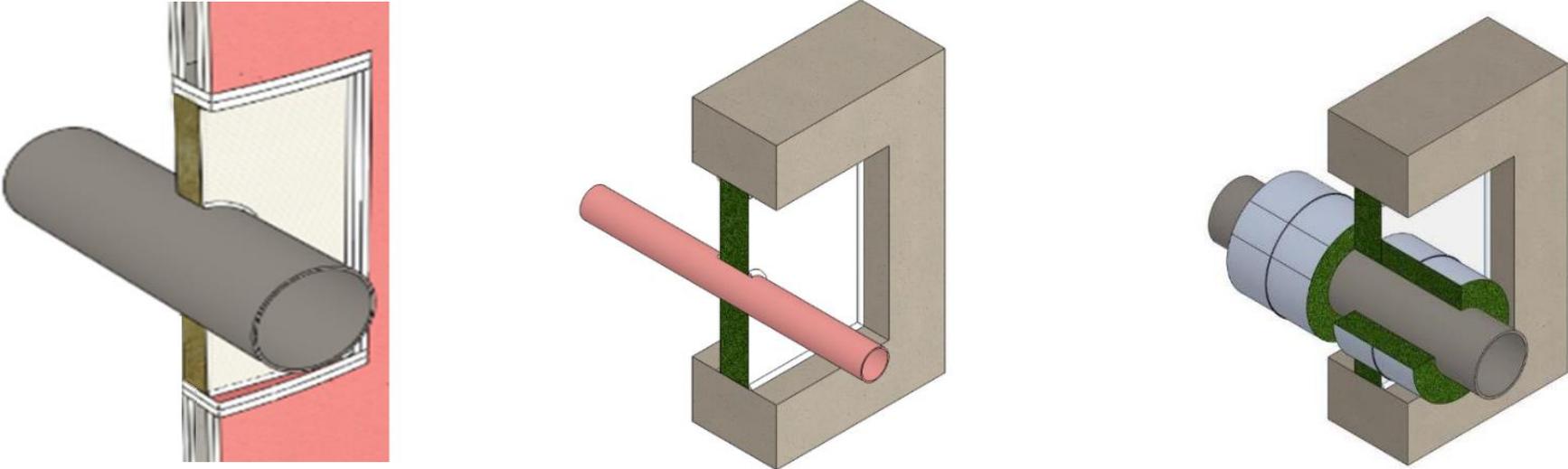
Installation Instructions: Double Layer board, compressed and bonded together into the aperture outer face flush with the face of the supporting construction on the opposite side to the fire. FB750 Intubatt should be installed in as few cut pieces as possible and tightly compressed to two opposite sides. This is achieved by the addition of 2mm to the required cut dimension. Compression may be applied - FB750 Intubatt to FB750 Intubatt, FB750 Intubatt to non combustible service, or FB750 Intubatt to Substrate. Compression must be achieved over a minimum 60% of the FB750 Intubatt compressed edge. If compression is achieved Top to bottom of FB750 Intubatt, left/right is not required to be compressed and vice versa (the non compressed seal should be fully abutted and bonded). All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS. (Imperfections in cut on a compressed edge may not exceed 40% of the area available to receive compression)

The results below are also applicable when using multiple layers of FB750 Intubatt, including 2 layers (or more) of surface mounted FB750 Intubatt. Results could also be used in both directions with the addition of FB750 Intubatt to fully fill the opening.



Service			Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity	Integrity & Insulation	Rigid Wall thickness (mm)	Additional requirements (both sides)
Cast Iron	Steel	Copper	(mm)	(mm)	C/C	C/U	E (mins)	EI (mins)	≥ 150	
✓	✓		≤ 40	≥ 2	✓	✓	240	120	✓	200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
✓	✓		≤ 40	≥ 1.7	✓	✓	240	120	✓	-
✓	✓		≤ 110	≥ 2.2	✓	✓	240	30	✓	200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
✓	✓	✓	≤ 40	≥ 1.5	✓	✓	240	60	✓	200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic

A23. NON COMBUSTIBLE PIPES - SINGLE BATT COMPRESSION

<p>Uninsulated Non Combustible Pipes through Flexible and Rigid Walls as identified below, protected by single compressed FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.</p>
<p>Wall Details: Flexible or Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2. Flexible Walls constructed from steel or timber faced studs with a minimum of 2x12.5mm EN 520 type F boards on each side of studs.</p>
<p>Maximum Opening size: 1800mm by 1200mm. In Flexible Walls openings should be created using a steel frame with a plasterboard lining. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.</p>
<p>Installation Instructions: Single Layer board, compressed and bonded into the aperture at mid depth of the wall. FB750 Intubatt should be installed in as few cut pieces as possible and tightly compressed to two opposite sides. This is achieved by the addition of 2mm to the required cut dimension. Compression may be applied - FB750 Intubatt to FB750 Intubatt, FB750 Intubatt to non combustible service, or FB750 Intubatt to Substrate. Compression must be achieved over a minimum 60% of the FB750 Intubatt Compressed edge. If compression is achieved Top to bottom of FB750 Intubatt, left/right is not required to be compressed and vice versa (the non compressed seal should be fully abutted and bonded). All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS. (Imperfections in cut on a compressed edge may not exceed 40% of the area available to receive compression)</p>
<p>The results below are also applicable when using multiple layers of FB750 Intubatt, including 1 layer (or more) surface mounted on both sides of the wall.</p>


Service			Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity	Integrity & Insulation	Rigid Wall thickness (mm)			Flexible Wall thickness (mm)		Additional requirements (both sides)
Cast Iron	Steel	Copper	(mm)	(mm)	C/C	C/U	E (mins)	EI (mins)	≥ 150	≥ 130	≥ 100	≥ 130	≥ 100	
✓	✓		≤ 160	≥ 5	✓	✓	120	60	✓					500mm extension (2 rows) of 2 layers of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
✓	✓		≤ 10	≥ 1.8	✓	✓	90	60	✓	✓	✓	✓	✓	200mm coatback of FS712 Intucoat 2mm WFT
✓	✓		≤ 22	≥ 1	✓	✓	120	30	✓	✓	✓	✓	✓	200mm coatback of FS712 Intucoat 2mm WFT
✓	✓		≤ 220	≥ 6	✓	✓	120	30	✓	✓	✓	✓	✓	200mm coatback of FS712 Intucoat 2mm WFT
✓	✓		≤ 64	≥ 3	✓	✓	120	30	✓	✓	✓	✓	✓	200mm coatback of FS712 Intucoat 2mm WFT
✓	✓		≤ 65	≥ 3.2	✓	✓	90	30	✓	✓	✓	✓	✓	200mm coatback of FS712 Intucoat 2mm WFT
✓	✓		≤ 76	≥ 3.4	✓	✓	240	15	✓					-
✓	✓		≤ 90	≥ 3	✓	✓	120	15	✓	✓	✓	✓	✓	200mm coatback of FS712 Intucoat 2mm WFT
✓	✓	✓	≤ 159	≥ 2	✓	✓	60	60	✓	✓		✓		500mm extension (2 rows) of 2 layers of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
✓	✓	✓	≤ 22	≥ 1	✓	✓	120	15	✓	✓	✓	✓	✓	200mm coatback of FS712 Intucoat 2mm WFT

A24. NON COMBUSTIBLE PIPES - SINGLE BATT COMPRESSION (ASYMMETRIC)

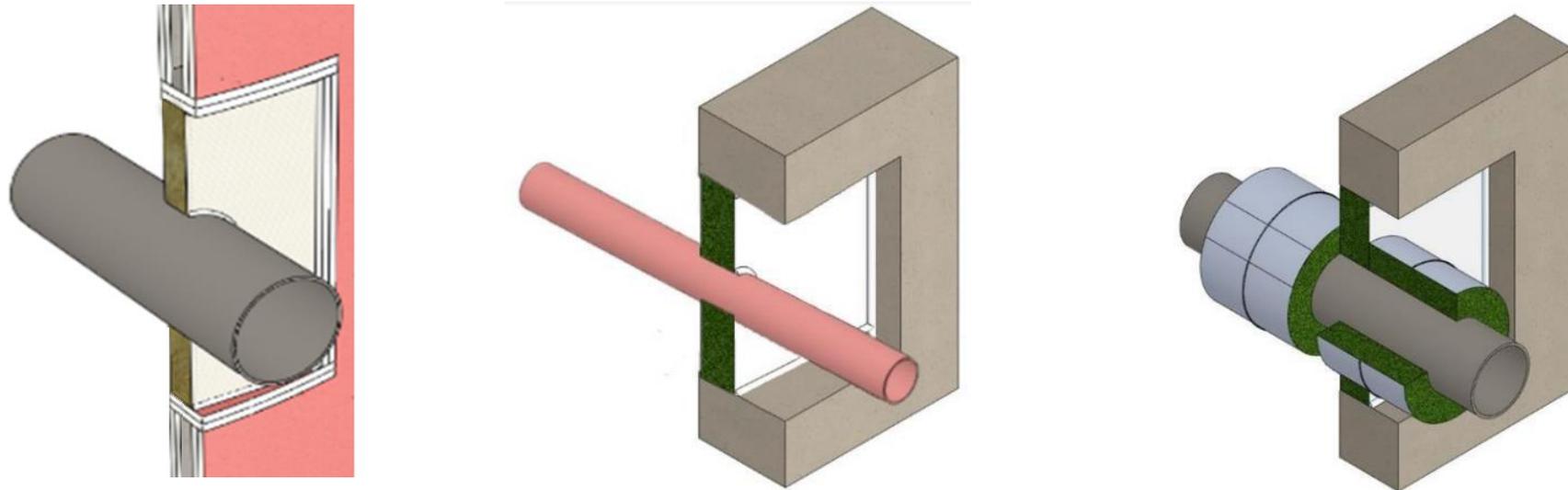
Uninsulated Non Combustible Pipes through Flexible and Rigid Walls as identified below, protected by single compressed asymmetric FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.

Wall Details: Flexible or Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2.
Flexible Walls constructed from steel or timber faced studs with a minimum of 2x12.5mm EN 520 type F boards on each side of studs.

Maximum Opening size: 400mm by 400mm. In Flexible Walls openings should be created using a steel frame with a plasterboard lining. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.

Installation Instructions: Single Layer board, compressed and bonded into the aperture on the opposite side of the wall to the fire. FB750 Intubatt should be installed in as few cut pieces as possible and tightly compressed to two opposite sides. This is achieved by the addition of 2mm to the required cut dimension. Compression may be applied - FB750 Intubatt to FB750 Intubatt, FB750 Intubatt to non combustible service, or FB750 Intubatt to Substrate. Compression must be achieved over a minimum 60% of the FB750 Intubatt length. If compression is achieved Top to bottom of FB750 Intubatt, left/right is not required to be compressed and vice versa (the non compressed seal could be fully abutted and bonded). All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullfire product, if the service type is combustible or insulated CS or LS. (Imperfections in cut on a compressed edge may not exceed 40% of the area available to receive compression)

The results below are also applicable when using multiple layers of FB750 Intubatt, including 1 layer (or more) of surface mounted FB750 Intubatt.



Service				Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity	Integrity & Insulation	Rigid Wall thickness (mm)	Flexible Wall thickness (mm)	Additional requirements (both sides)
Cast Iron	Steel	Copper	-	(mm)	(mm)	C/C	C/U	E (mins)	EI (mins)	≥ 100	≥ 100	
✓	✓	✓	(*)	≤ 28	≥ 1	✓	✓	60	60	✓	✓	200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
✓	✓	✓	(*)	≤ 42	≥ 1	✓	✓	60	30	✓	✓	200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
✓	✓	✓		≤ 28	≥ 1	✓	✓	60	30	✓	✓	-
✓	✓	✓		≤ 160	≥ 1	✓	✓	60	15	✓	✓	220mm extension of 2 layers of FI025 Intuflex, sealed within FB750 Intubatt with FS702 Intumastic

(*) Includes horizontal pipes from 90° to 45° to supporting construction

A25. NON COMBUSTIBLE PIPES IN SHAFTS - DOUBLE BATT PATRESS & COMPRESSION

Non Combustible Pipes through Flexible and Rigid Shaft Walls as identified below, protected by double FB750 Intubatt seal, requiring access from one side only to construct. The first batt is installed flush with the surface furthest from the installation side. The second batt is surface mounted on the installation side, sealed with FS702 Intumastic or FS712 Intucoat.

Results apply for fire in either direction.

Wall Details: Flexible or Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2.

Flexible Walls constructed from steel or studs with a minimum of 1 x 19mm EN 520 type F board on the far side, and 2x15mm EN 520 type F boards on the installation side of the studs.

Maximum Opening size: 2010mm by 1000mm. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.

Installation Instructions: A 10mm bead of FS702 should be applied to the perimeter of the opening at the furthest point. The first board is then compressed, bonded and located on the perimeter bead, within the opening. This FB750 Intubatt should be installed in as few cut pieces as possible and tightly compressed to two opposite sides. This is achieved by the addition of 2mm to the required cut dimension. Compression may be applied - FB750 Intubatt to FB750 Intubatt, FB750 Intubatt to non combustible service, or FB750 Intubatt to Substrate. Compression must be achieved over a minimum 60% of the FB750 Intubatt Compressed edge. If compression of FB750 Intubatt is achieved between two opposite sides, the perpendicular sides are not required to be compressed (the non compressed seal should be fully abutted and bonded). All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. The second board is surface mounted on installation side of the wall with a minimum 75mm overlap around the opening. (Overlap on the lowest edge can be reduced to 30mm in the event of an obstruction preventing the 75mm overlap). The overlap should be bonded with a 10mm bead of FS702 Intumastic placed 20-60mm from the board edges, and additionally mechanically restrained using 75mm steel screws with a 25mm washer at maximum 300mm centres, 10-65mm from the board perimeter and no more than 50mm from a board joint. A low torque setting should be used to ensure that the embedment of fixing into the board does not exceed 15mm. The fixings may be left exposed or covered using FS702 Intumastic. This FB750 Intubatt should also be installed in as few cut pieces as possible. All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS. External sides of the Board may be required to be coated for aesthetic reasons or to prevent fibre migration. (In situations where the required overlap cannot be achieved due to a perpendicular fire resisting wall / soffit, it is possible to reduce the overlap, down to as low as 0mm, provided the board edge is bonded to the adjoining compartment using a 10mm bead of FS702 Intumastic, and subsequently pointed to all mated edges)

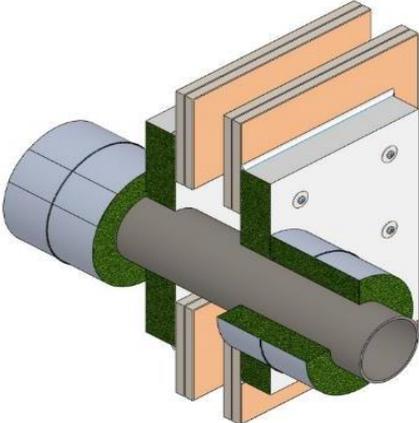
The results below are also applicable when using multiple layers of surface mounted FB750 Intubatt. For multiple layers of FB750 Intubatt so a single (or both) face, identically sized boards should be used, ideally with staggered joints where possible. Closing devices should be located in or on the outmost board. Board to board abutment should be bonded with 10mm bead of FS702 Intumastic and mechanically restrained using a 75mm spiral screw to the first and secured layer. Spiral fixings should be at max 200mm centres and no more than 50mm from any joint.



Service				Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity	Integrity & Insulation	Flexible Asymmetric Shaft Wall thickness (mm)	Additional requirements
Cast Iron	Steel	Copper	-	(mm)	(mm)	C/C	C/U	E (mins)	EI (mins)	≥ 90	
✓	✓	✓	(*)	≤ 14	≥ 1.2	✓	✓	120	120	✓	200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
✓	✓	✓	(*)	≤ 28	≥ 1.2	✓	✓	120	120	✓	200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
✓	✓	✓	(*)	≤ 42	≥ 1.2	✓	✓	120	90 (120*)	✓	200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
✓	✓	✓		≤ 160	≥ 1.2	✓	✓	120	30 (60*)	✓	500mm extension of 2 layers of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
✓	✓	✓		≤ 14	≥ 1.2	✓	✓	120	30	✓	-
✓	✓	✓		≤ 28	≥ 1.2	✓	✓	30 (120**)	30	✓	-

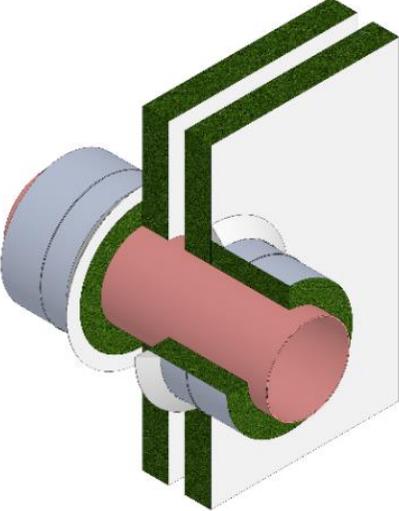
(*) Includes horizontal pipes from 90° to 45° to supporting construction
All results apply for fire in either direction.
 (60*) Result can be increased to EI60 for fire case into shaft
 (120*) Result can be increased to EI120 for fire case into shaft
 (120**) Result can be increased to E120 for fire case from shaft into room

A26. NON COMBUSTIBLE PIPES INSULATED CI - DOUBLE BATT PATTRISS

<p>Non Combustible Pipes Insulated with Continuous Interrupted Insulation passing through Flexible and Rigid Walls as identified below, protected by double pattress (surface mounted) FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.</p>
<p>Wall Details: Flexible or Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2. Flexible Walls constructed from steel or timber faced studs with a minimum of 2x12.5mm EN 520 type F boards on each side of studs.</p>
<p>Maximum Opening size: 1000mm by 1000mm. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.</p>
<p>Installation Instructions: Boards surface mounted (pattress fit) on both sides of the wall with a minimum 75mm overlap around the opening. (Overlap on the lowest edge can be reduced to 30mm in the event of an obstruction preventing the 75mm overlap). The overlap should be bonded with a 10mm bead of FS702 Intumastic placed 20-60mm from the board edges, and additionally mechanically restrained using 75mm steel screws with a 25mm washer at maximum 300mm centres, 10-65mm from the board perimeter and no more than 50mm from a board joint. A low torque setting should be used to ensure that the embedment of fixing into the board does not exceed 15mm. The fixings may be left exposed or covered using FS702 Intumastic. The FB750 Intubatt should be installed in as few cut pieces as possible. All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS. External sides of the Board may be required to be coated for aesthetic reasons or to prevent fibre migration. (In situations where the required overlap cannot be achieved due to a perpendicular fire resisting wall / soffit, it is possible to reduce the overlap, down to as low as 0mm, provided the board edge is bonded to the adjoining compartment using a 10mm bead of FS702 Intumastic, and subsequently pointed to all mated edges)</p>
<p>The results below are also applicable when using multiple layers of surface mounted FB750 Intubatt. For multiple layers of FB750 Intubatt so a single (or both) face, identically sized boards should be used, ideally with staggered joints where possible. Closing devices should be located in or on the outmost board. Board to board abutment should be bonded with 10mm bead of FS702 Intumastic and mechanically restrained using a 75mm spiral screw to the first and secured layer. Spiral fixings should be at max 200mm centres and no more than 50mm from any joint.</p>


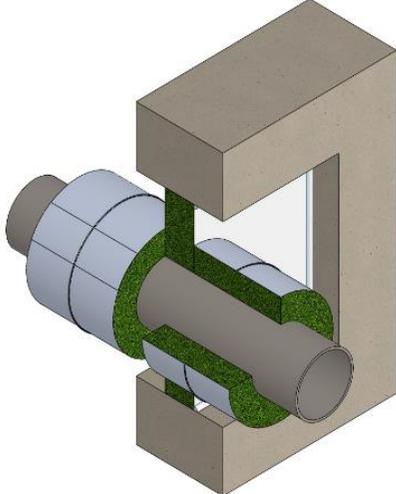
Service			CI Pipe Insulation (Continuous Interrupted)		Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity	Integrity & Insulation	Rigid Wall thickness (mm)		Flexible Wall thickness (mm)		Additional requirements
Cast Iron	Steel	Copper	Material	Thickness (mm)	(mm)	(mm)	C/C	C/U	E (mins)	EI (mins)	≥ 130	≥ 100	≥ 130	≥ 100	
✓	✓	✓	Rock Fibre	≥ 30	≤ 159	≥ 2	✓	✓	120	120	✓		✓		-
✓	✓	✓	Rock Fibre	≥ 30	≤ 22	≥ 0.9	✓	✓	120	90	✓		✓		-
✓	✓	✓	Rock Fibre	≥ 30	≤ 15	≥ 0.7	✓	✓	120	90	✓		✓		-
✓	✓	✓	PIR / Phenolic	25	≤ 22	≥ 1	✓	✓	120	60	✓	✓	✓	✓	-
✓	✓	✓	Glass Fibre / Rock Fibre	≥ 40	≤ 22	≥ 1	✓	✓	120	60	✓	✓	✓	✓	-
✓	✓		Rock Fibre	≥ 40	≤ 200	≥ 7.5	✓	✓	120	120	✓		✓		-
✓	✓		Rock Fibre	≥ 30	≤ 60	≥ 7	✓	✓	120	120	✓		✓		-
✓	✓		Nitrile (Elastomeric)	20	≤ 90	≥ 3	✓	✓	120	30	✓	✓	✓	✓	-

A27. NON COMBUSTIBLE PIPES INSULATED CI - DOUBLE BATT COMPRESSION

<p>Non Combustible Pipes Insulated with Continuous Interrupted Insulation passing through Flexible and Rigid Walls as identified below, protected by double compressed FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.</p>
<p>Wall Details: Flexible or Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2. Flexible Walls constructed from steel or timber faced studs with a minimum of 2x12.5mm EN 520 type F boards on each side of studs.</p>
<p>Maximum Opening size: 1200mm by 1200mm. In Flexible Walls openings should be created using a steel frame. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.</p>
<p>Installation Instructions: Double Layer board, compressed and bonded into the aperture outer face flush with the face of the supporting construction. FB750 Intubatt should be installed in as few cut pieces as possible and tightly compressed to two opposite sides. This is achieved by the addition of 2mm to the required cut dimension. Compression may be applied - FB750 Intubatt to FB750 Intubatt, FB750 Intubatt to non combustible service, or FB750 Intubatt to Substrate. Compression must be achieved over a minimum 60% of the FB750 Intubatt compressed edge. If compression is achieved Top to bottom of FB750 Intubatt, left/right is not required to be compressed and vice versa (the non compressed seal could be fully abutted and bonded). All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS. (Imperfections in cut on a compressed edge may not exceed 40% of the area available to receive compression)</p>
<p>The results below are also applicable when using multiple layers of FB750 Intubatt, including 1 layer (or more) surface mounted on both sides of the wall.</p>


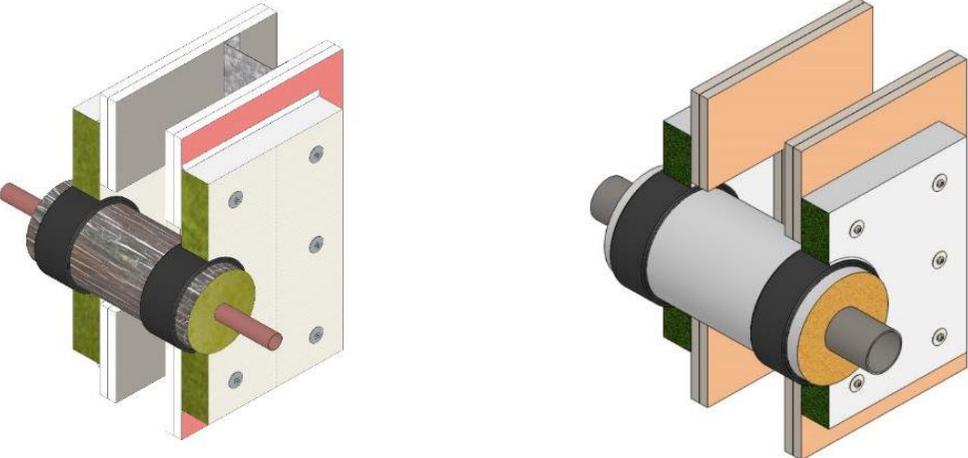
Service			CI Pipe Insulation (Continuous Interrupted)		Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity	Integrity & Insulation	Rigid Wall thickness (mm)		Flexible Wall thickness (mm)		Additional requirements
Cast Iron	Steel	Copper	Material	Thickness (mm)	(mm)	(mm)	C/C	C/U	E (mins)	EI (mins)	≥ 130	≥ 100	≥ 130	≥ 100	
✓	✓		Rock Fibre	≥ 40	≤ 200	≥ 7.5	✓	✓	120	120	✓		✓		-
✓	✓		Rock Fibre	≥ 30	≤ 60	≥ 7	✓	✓	120	120	✓		✓		-
✓	✓		Nitrile (Elastomeric)	20	≤ 90	≥ 3	✓	✓	120	30	✓	✓	✓	✓	-
✓	✓	✓	Rock Fibre	≥ 30	≤ 22	≥ 0.9	✓	✓	120	90	✓		✓		-
✓	✓	✓	Rock Fibre	≥ 30	≤ 15	≥ 0.7	✓	✓	120	90	✓		✓		-
✓	✓	✓	PIR / Phenolic	25	≤ 22	≥ 1	✓	✓	120	60	✓	✓	✓	✓	-
✓	✓	✓	Glass Fibre / Rock Fibre	≥ 40	≤ 22	≥ 1	✓	✓	120	60	✓	✓	✓	✓	-
✓	✓	✓	Rock Fibre	≥ 30	≤ 159	≥ 2	✓	✓	60	60	✓		✓		-

A28. NON COMBUSTIBLE PIPES INSULATED CI - SINGLE BATT COMPRESSION

<p>Non Combustible Pipes Insulated with Continuous Interrupted Insulation passing through Flexible and Rigid Walls as identified below, protected by single compressed FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.</p>
<p>Wall Details: Flexible or Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2. Flexible Walls constructed from steel or timber faced studs with a minimum of 2x12.5mm EN 520 type F boards on each side of studs.</p>
<p>Maximum Opening size: 1800mm by 1200mm. In Flexible Walls openings should be created using a steel frame with a plasterboard lining. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.</p>
<p>Installation Instructions: Single Layer board, compressed and bonded into the aperture at mid depth of the wall. FB750 Intubatt should be installed in as few cut pieces as possible and tightly compressed to two opposite sides. This is achieved by the addition of 2mm to the required cut dimension. Compression may be applied - FB750 Intubatt to FB750 Intubatt, FB750 Intubatt to non combustible service, or FB750 Intubatt to Substrate. Compression must be achieved over a minimum 60% of the FB750 Intubatt Compressed edge. If compression is achieved Top to bottom of FB750 Intubatt, left/right is not required to be compressed and vice versa (the non compressed seal should be fully abutted and bonded). All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS. (Imperfections in cut on a compressed edge may not exceed 40% of the area available to receive compression)</p>
<p>The results below are also applicable when using multiple layers of FB750 Intubatt, including 1 layer (or more) surface mounted on both sides of the wall.</p>
 <p>The diagram illustrates a 3D cutaway view of a pipe passing through a wall. The pipe is surrounded by a green, compressed sealant (FB750 Intubatt) that is bonded to the wall structure. The wall is shown as a concrete or masonry block with a rectangular opening. The sealant is compressed into the gap between the pipe and the wall, ensuring a tight fit. The diagram shows the internal structure of the wall and the pipe, highlighting the placement and compression of the sealant.</p>

Service			CI Pipe Insulation (Continuous Interrupted)		Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity	Integrity & Insulation	Rigid Wall thickness (mm)		Flexible Wall thickness (mm)		Additional requirements
Cast Iron	Steel	Copper	Material	Thickness (mm)	(mm)	(mm)	C/C	C/U	E (mins)	EI (mins)	≥ 130	≥ 100	≥ 130	≥ 100	
✓	✓	✓	Rock Fibre	≥ 40	≤ 15	≥ 1	✓	✓	120	90	✓		✓		-
✓	✓	✓	PIR / Phenolic	25	≤ 22	≥ 1	✓	✓	120	60	✓	✓	✓	✓	-
✓	✓	✓	Glass Fibre / Rock Fibre	≥ 40	≤ 22	≥ 1	✓	✓	120	60	✓	✓	✓	✓	-
✓	✓	✓	Rock Fibre	≥ 30	≤ 159	≥ 2	✓	✓	60	60	✓		✓		-
✓	✓		Nitrile (Elastomeric)	20	≤ 90	≥ 3	✓	✓	120	30	✓	✓	✓	✓	-

A29. NON COMBUSTIBLE PIPES INSULATED CS - DOUBLE BATT PATTRISS

<p>Non Combustible Pipes Insulated with Continuous Sustained Insulation passing through Flexible and Rigid Walls as identified below, protected by double pattress (surface mounted) FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.</p>
<p>Wall Details: Flexible or Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2. Flexible Walls constructed from steel or timber faced studs with a minimum of 2x12.5mm EN 520 type F boards on each side of studs.</p>
<p>Maximum Opening size: 2000mm by 1100mm. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.</p>
<p>Installation Instructions: Boards surface mounted (pattress fit) on both sides of the wall with a minimum 75mm overlap around the opening. (Overlap on the lowest edge can be reduced to 30mm in the event of an obstruction preventing the 75mm overlap). The overlap should be bonded with a 10mm bead of FS702 Intumastic placed 20-60mm from the board edges, and additionally mechanically restrained using 75mm steel screws with a 25mm washer at maximum 300mm centres, 10-65mm from the board perimeter and no more than 50mm from a board joint. A low torque setting should be used to ensure that the embedment of fixing into the board does not exceed 15mm. The fixings may be left exposed or covered using FS702 Intumastic. The FB750 Intubatt should be installed in as few cut pieces as possible. All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullfire product, if the service type is combustible or insulated CS or LS. External sides of the Board may be required to be coated for aesthetic reasons or to prevent fibre migration. (In situations where the required overlap cannot be achieved due to a perpendicular fire resisting wall / soffit, it is possible to reduce the overlap, down to as low as 0mm, provided the board edge is bonded to the adjoining compartment using a 10mm bead of FS702 Intumastic, and subsequently pointed to all mated edges)</p>
<p>The results below are also applicable when using multiple layers of surface mounted FB750 Intubatt. For multiple layers of FB750 Intubatt so a single (or both) face, identically sized boards should be used, ideally with staggered joints where possible. Closing devices should be located in or on the outmost board. Board to board abutment should be bonded with 10mm bead of FS702 Intumastic and mechanically restrained using a 75mm spiral screw to the first and secured layer. Spiral fixings should be at max 200mm centres and no more than 50mm from any joint.</p>


Service				CS Pipe Insulation (Continuous Sustained)		Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity	Integrity & Insulation	Rigid Wall thickness (mm)				Flexible Wall thickness (mm)		Additional requirements (both sides)
Cast Iron	Steel	Copper	-	Material	Thickness (mm)	(mm)	(mm)	C/C	C/U	E (mins)	EI (mins)	≥ 145	≥ 130	≥ 100	≥ 90	≥ 130	≥ 100	
✓	✓	✓		PIR / Phenolic	20	≤ 14	≥ 1.2	✓	✓	120	120	✓	✓	✓		✓	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓	✓	(*)	PIR / Phenolic	50	≤ 28	≥ 1.2	✓	✓	120	120	✓	✓	✓		✓	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
✓	✓	✓	(*)	PIR / Phenolic	20	≤ 14	≥ 1.2	✓	✓	120	120	✓	✓	✓		✓	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
✓	✓	✓		PIR / Phenolic	30	≤ 22	≥ 1.2	✓	✓	120	120	✓	✓	✓				25mm annulus of FS709 HP Intumescent Sealant, 25mm depth, with a central rock fibre backing
✓	✓	✓		PIR / Phenolic	20	≤ 22	≥ 0.7	✓	✓	120	120	✓	✓	✓		✓	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓	✓		Glass fibre	≥ 50	≤ 15	≥ 1	✓	✓	120	120	✓	✓			✓		2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓	✓		Glass fibre	≥ 25	≤ 22	≥ 0.7	✓	✓	120	120	✓	✓	✓		✓	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓	✓		Nitrile (Elastomeric)	35	≤ 15	≥ 1	✓	✓	120	120	✓	✓			✓		2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓	✓		Nitrile (Elastomeric)	15	≤ 22	≥ 0.7	✓	✓	120	120	✓	✓	✓		✓	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓	✓		PIR / Phenolic	50	≤ 28	≥ 1.2	✓	✓	120	90	✓	✓	✓		✓	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓	✓		PIR / Phenolic	20	≤ 28	≥ 1.2	✓	✓	120	90	✓	✓	✓		✓	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓	✓		PIR / Phenolic	20	≤ 28	≥ 1.2	✓	✓	120	90	✓	✓	✓		✓	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
✓	✓	✓	(*)	PIR / Phenolic	20	≤ 48	≥ 1.2	✓	✓	120	90	✓	✓	✓		✓	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
✓	✓	✓		PIR / Phenolic	50	≤ 42	≥ 1.2	✓	✓	120	30	✓	✓	✓		✓	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓	✓		PIR / Phenolic	20	≤ 42	≥ 1.2	✓	✓	120	30	✓	✓	✓		✓	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic

Service				CS Pipe Insulation (Continuous Sustained)		Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity	Integrity & Insulation	Rigid Wall thickness (mm)				Flexible Wall thickness (mm)		Additional requirements (both sides)
Cast Iron	Steel	Copper	-	Material	Thickness (mm)	(mm)	(mm)	C/C	C/U	E (mins)	EI (mins)	≥ 145	≥ 130	≥ 100	≥ 90	≥ 130	≥ 100	
✓	✓	✓		Rock Fibre	≥ 40	≤ 15	≥ 0.7	✓	✓	90	90	✓	✓	✓		✓	✓	-
✓	✓	✓		Rock Fibre	≥ 40	≤ 159	≥ 2	✓	✓	90	90	✓	✓	✓		✓	✓	-
✓	✓	✓		Rock Fibre	≥ 30	≤ 159	≥ 2	✓	✓	90	60	✓	✓	✓		✓	✓	-
✓	✓	✓		Glass fibre	≥ 50	≤ 22	≥ 0.9	✓	✓	90	30	✓	✓	✓	✓			2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓	✓		PIR / Phenolic	30	≤ 22	≥ 0.9	✓	✓	90	30	✓	✓	✓	✓			2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓	✓		PIR / Phenolic	30	≤ 22	≥ 0.9	✓	✓	90	30	✓	✓	✓	✓			2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓	✓	(*)	PIR / Phenolic	50	≤ 42	≥ 1.2	✓	✓	60	30	✓	✓	✓		✓	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
✓	✓			Glass Fibre	≥ 25	≤ 60	≥ 3.3	✓	✓	120	120	✓	✓					2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓			Glass Fibre	≥ 50	≤ 60	≥ 6	✓	✓	120	120	✓	✓					1 layer of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓			Glass Fibre	≥ 50	≤ 220	≥ 6	✓	✓	120	90	✓						2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓			PIR / Phenolic	30	≤ 22	≥ 1.8	✓	✓	90	90	✓	✓	✓		✓	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓			Nitrile (Elastomeric)	38	≤ 220	≥ 6	✓	✓	120	60	✓						2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓			Nitrile (Elastomeric)	25	≤ 22	≥ 1.8	✓	✓	90	30	✓	✓	✓		✓	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic

(*) Includes horizontal pipes from 90° to 45° to supporting construction

A30. NON COMBUSTIBLE PIPES INSULATED CS - DOUBLE BATT COMPRESSION

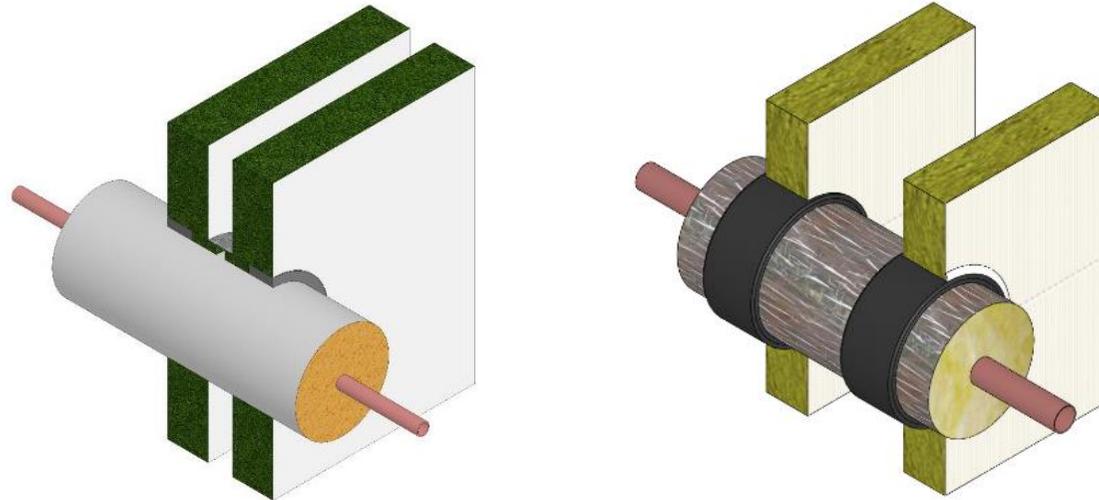
Non Combustible Pipes Insulated with Continuous Sustained Insulation passing through Flexible and Rigid Walls as identified below, protected by double compressed FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.

Wall Details: Flexible or Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2.
Flexible Walls constructed from steel or timber faced studs with a minimum of 2x12.5mm EN 520 type F boards on each side of studs.

Maximum Opening size: 2000mm by 1100mm. In Flexible Walls openings should be created using a steel frame. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.

Installation Instructions: Double Layer board, compressed and bonded into the aperture outer face flush with the face of the supporting construction. FB750 Intubatt should be installed in as few cut pieces as possible and tightly compressed to two opposite sides. This is achieved by the addition of 2mm to the required cut dimension. Compression may be applied - FB750 Intubatt to FB750 Intubatt, FB750 Intubatt to non combustible service, or FB750 Intubatt to Substrate. Compression must be achieved over a minimum 60% of the FB750 Intubatt compressed edge. If compression is achieved Top to bottom of FB750 Intubatt, left/right is not required to be compressed and vice versa (the non compressed seal could be fully abutted and bonded). All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS. (Imperfections in cut on a compressed edge may not exceed 40% of the area available to receive compression)

The results below are also applicable when using multiple layers of FB750 Intubatt, including 1 layer (or more) surface mounted on both sides of the wall.



Service				CS Pipe Insulation (Continuous Sustained)		Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity	Integrity & Insulation	Rigid Wall thickness (mm)		Flexible Wall thickness (mm)		Additional requirements (both sides)
Cast Iron	Steel	Copper	-	Material	Thickness (mm)	(mm)	(mm)	C/C	C/U	E (mins)	EI (mins)	≥ 130	≥ 100	≥ 130	≥ 100	
✓	✓	✓		PIR / Phenolic	20	≤ 14	≥ 1	✓	✓	120	120	✓	✓	✓	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓	✓	(*)	PIR / Phenolic	50	≤ 28	≥ 1	✓	✓	120	120	✓	✓	✓	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
✓	✓	✓	(*)	PIR / Phenolic	20	≤ 14	≥ 1	✓	✓	120	120	✓	✓	✓	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
✓	✓	✓		PIR / Phenolic	30	≤ 22	≥ 1	✓	✓	120	120	✓	✓			25mm annulus of FS709 HP Intumescent Sealant, 25mm depth, with a central 50mm rock fibre backing
✓	✓	✓		Glass fibre	≥ 50	≤ 15	≥ 1	✓	✓	120	120	✓		✓		2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓	✓		Nitrile (Elastomeric)	35	≤ 15	≥ 1	✓	✓	120	120	✓		✓		2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓	✓		PIR / Phenolic	50	≤ 28	≥ 1	✓	✓	120	90	✓	✓	✓	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓	✓		PIR / Phenolic	20	≤ 28	≥ 1	✓	✓	120	90	✓	✓	✓	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓	✓	(*)	PIR / Phenolic	20	≤ 48	≥ 1	✓	✓	120	90	✓	✓	✓	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth

Service				CS Pipe Insulation (Continuous Sustained)		Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity	Integrity & Insulation	Rigid Wall thickness (mm)		Flexible Wall thickness (mm)		Additional requirements (both sides)
Cast Iron	Steel	Copper	-	Material	Thickness (mm)	(mm)	(mm)	C/C	C/U	E (mins)	EI (mins)	≥ 130	≥ 100	≥ 130	≥ 100	
✓	✓	✓		Rock Fibre	≥ 40	≤ 15	≥ 0.7	✓	✓	90	90	✓	✓	✓	✓	-
✓	✓	✓		Rock Fibre	≥ 40	≤ 159	≥ 2	✓	✓	90	90	✓	✓	✓	✓	-
✓	✓	✓		Rock Fibre	≥ 30	≤ 159	≥ 2	✓	✓	90	60	✓	✓	✓	✓	-
✓	✓	✓		PIR / Phenolic	50	≤ 42	≥ 1	✓	✓	120	30	✓	✓	✓	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓	✓		PIR / Phenolic	20	≤ 42	≥ 1	✓	✓	120	30	✓	✓	✓	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓	✓		Nitrile (Elastomeric)	25	≤ 22	≥ 0.9	✓	✓	120	30	✓	✓			2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓	✓		Glass fibre	≥ 50	≤ 22	≥ 0.9	✓	✓	90	30	✓	✓			2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓	✓		PIR / Phenolic	30	≤ 22	≥ 0.9	✓	✓	90	30	✓	✓			2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓	✓	(*)	PIR / Phenolic	50	≤ 42	≥ 1	✓	✓	60	30	✓	✓	✓	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
✓	✓			PIR / Phenolic	30	≤ 22	≥ 1.8	✓	✓	90	90	✓	✓	✓	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓			Nitrile (Elastomeric)	25	≤ 22	≥ 1.8	✓	✓	90	30	✓	✓	✓	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓			Glass fibre	≥ 30	≤ 22	≥ 1.8	✓	✓	90	30	✓	✓	✓	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic

(*) Includes horizontal pipes from 90° to 45° to supporting construction

A31. NON COMBUSTIBLE PIPES INSULATED CS - SINGLE BATT COMPRESSION

<p>Non Combustible Pipes Insulated with Continuous Sustained Insulation passing through Flexible and Rigid Walls as identified below, protected by single compressed FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.</p>
<p>Wall Details: Flexible or Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2. Flexible Walls constructed from steel or timber faced studs with a minimum of 2x12.5mm EN 520 type F boards on each side of studs.</p>
<p>Maximum Opening size: 1100mm by 630mm. In Flexible Walls openings should be created using a steel frame with a plasterboard lining. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.</p>
<p>Installation Instructions: Single Layer board, compressed and bonded into the aperture at mid depth of the wall. FB750 Intubatt should be installed in as few cut pieces as possible and tightly compressed to two opposite sides. This is achieved by the addition of 2mm to the required cut dimension. Compression may be applied - FB750 Intubatt to FB750 Intubatt, FB750 Intubatt to non combustible service, or FB750 Intubatt to Substrate. Compression must be achieved over a minimum 60% of the FB750 Intubatt Compressed edge. If compression is achieved Top to bottom of FB750 Intubatt, left/right is not required to be compressed and vice versa (the non compressed seal could be fully abutted and bonded). All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullfire product, if the service type is combustible or insulated CS or LS. (Imperfections in cut on a compressed edge may not exceed 40% of the area available to receive compression)</p>
<p>The results below are also applicable when using multiple layers of FB750 Intubatt, including 1 layer (or more) surface mounted on both sides of the wall.</p>

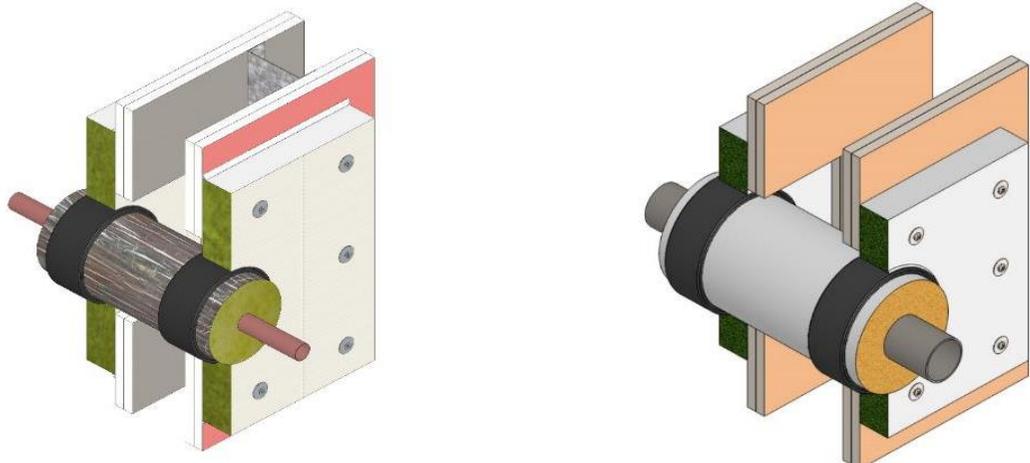

Service			CS Pipe Insulation (Continuous Sustained)		Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity	Integrity & Insulation	Rigid Wall thickness (mm)	Flexible Wall thickness (mm)	Additional requirements
Cast Iron	Steel	Copper	Material	Thickness (mm)	(mm)	(mm)	C/C	C/U	E (mins)	EI (mins)	≥ 100	≥ 100	
✓	✓		PIR / Phenolic	30	≤ 22	≥ 1.8	✓	✓	90	90	✓	✓	2 layers of FP302 Intustrap (central to the seal). sealed on both sides of FB750 Intubatt with FS702 Intumastic
✓	✓		Glass Fibre	≥ 30	≤ 22	≥ 1.8	✓	✓	90	30	✓	✓	2 layers of FP302 Intustrap (central to the seal). sealed on both sides of FB750 Intubatt with FS702 Intumastic
✓	✓	✓	Rock Fibre	≥ 30	≤ 159	≥ 2	✓	✓	90	60	✓	✓	-
✓	✓	✓	Nitrile (Elastomeric)	25	≤ 22	≥ 0.9	✓	✓	120	30	✓		2 layers of FP302 Intustrap (central to the seal). sealed on both sides of FB750 Intubatt with FS702 Intumastic
✓	✓	✓	Glass fibre	≥ 50	≤ 22	≥ 0.9	✓	✓	90	30	✓		2 layers of FP302 Intustrap (central to the seal). sealed on both sides of FB750 Intubatt with FS702 Intumastic

A32. NON COMBUSTIBLE PIPES INSULATED CS - SINGLE BATT COMPRESSION (ASYMMETRIC)

<p>Non Combustible Pipes Insulated with Continuous Sustained Insulation passing through Flexible and Rigid Walls as identified below, protected by single compressed asymmetric FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.</p>
<p>Wall Details: Flexible or Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2. Flexible Walls constructed from steel or timber faced studs with a minimum of 2x12.5mm EN 520 type F boards on each side of studs.</p>
<p>Maximum Opening size: 400mm by 400mm. In Flexible Walls openings should be created using a steel frame with a plasterboard lining. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.</p>
<p>Installation Instructions: Single Layer board, compressed and bonded into the aperture on the opposite side of the wall to fire. FB750 Intubatt should be installed in as few cut pieces as possible and tightly compressed to two opposite sides. This is achieved by the addition of 2mm to the required cut dimension. Compression may be applied - FB750 Intubatt to FB750 Intubatt, FB750 Intubatt to non combustible service, or FB750 Intubatt to Substrate. Compression must be achieved over a minimum 60% of the FB750 Intubatt compressed edge. If compression is achieved Top to bottom of FB750 Intubatt, left/right is not required to be compressed and vice versa (the non compressed seal could be fully abutted and bonded). All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS. (Imperfections in cut on a compressed edge may not exceed 40% of the area available to receive compression)</p>
<p>The results below are also applicable when using multiple layers of FB750 Intubatt, including 1 layer (or more) of surface mounted FB750 Intubatt.</p>


Service			CS Pipe Insulation (Continuous Sustained)		Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity	Integrity & Insulation	Rigid Wall thickness (mm)	Flexible Wall thickness (mm)	Additional requirements
Cast Iron	Steel	Copper	Material	Thickness (mm)	(mm)	(mm)	C/C	C/U	E (mins)	EI (mins)	≥ 100	≥ 100	
✓	✓	✓	PIR / Phenolic	50	≤ 28	≥ 1	✓	✓	60	60	✓	✓	2 layers of FP302 Intustrap (central to the seal), sealed on both sides of FB750 Intubatt with FS702 Intumastic
✓	✓	✓	PIR / Phenolic	20	≤ 28	≥ 1	✓	✓	60	60	✓	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
✓	✓	✓	PIR / Phenolic	50	≤ 42	≥ 1	✓	✓	60	30	✓	✓	2 layers of FP302 Intustrap (central to the seal), sealed on both sides of FB750 Intubatt with FS702 Intumastic
✓	✓	✓	PIR / Phenolic	20	≤ 48	≥ 1	✓	✓	60	30	✓	✓	2 layers of FP302 Intustrap (central to the seal), sealed on both sides of FB750 Intubatt with FS702 Intumastic
✓	✓	✓	PIR / Phenolic	20	≤ 48	≥ 1	✓	✓	60	15	✓	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth

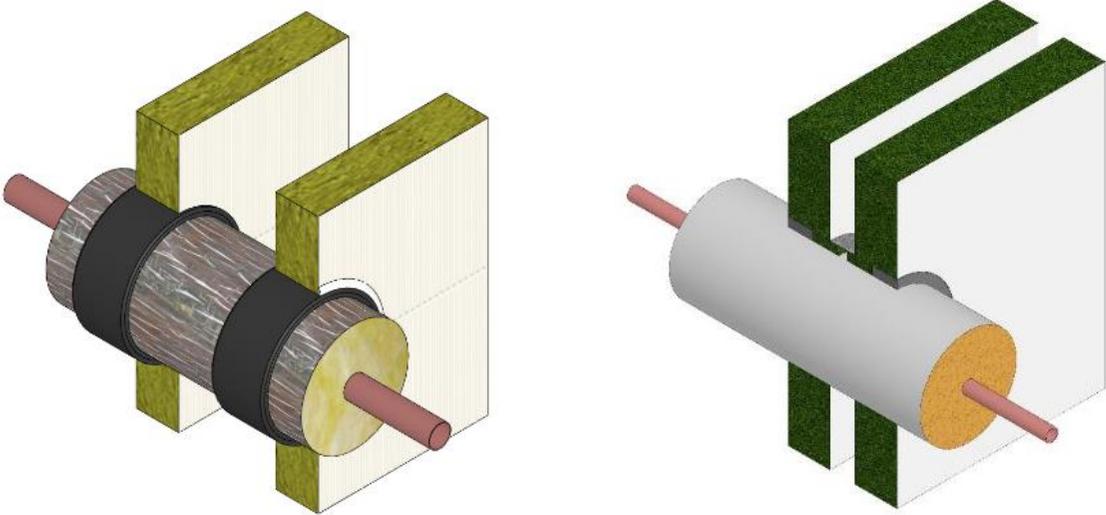
A33. NON COMBUSTIBLE PIPES INSULATED LS - DOUBLE BATT PATTRISS

Non Combustible Pipes Insulated with Local Sustained Insulation passing through Flexible and Rigid Walls as identified below, protected by double pattress (surface mounted) FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.
Wall Details: Flexible or Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2. Flexible Walls constructed from steel or timber faced studs with a minimum of 2x12.5mm EN 520 type F boards on each side of studs.
Maximum Opening size: 200mm by 200mm. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.
Installation Instructions: Boards surface mounted (pattress fit) on both sides of the wall with a minimum 75mm overlap around the opening. (Overlap on the lowest edge can be reduced to 30mm in the event of an obstruction preventing the 75mm overlap). The overlap should be bonded with a 10mm bead of FS702 Intumastic placed 20-60mm from the board edges, and additionally mechanically restrained using 75mm steel screws with a 25mm washer at maximum 300mm centres, 10-65mm from the board perimeter and no more than 50mm from a board joint. A low torque setting should be used to ensure that the embedment of fixing into the board does not exceed 15mm. The fixings may be left exposed or covered using FS702 Intumastic. The FB750 Intubatt should be installed in as few cut pieces as possible. All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS. External sides of the Board may be required to be coated for aesthetic reasons or to prevent fibre migration. (In situations where the required overlap cannot be achieved due to a perpendicular fire resisting wall / soffit, it is possible to reduce the overlap, down to as low as 0mm, provided the board edge is bonded to the adjoining compartment using a 10mm bead of FS702 Intumastic, and subsequently pointed to all mated edges)
The results below are also applicable when using multiple layers of surface mounted FB750 Intubatt. For multiple layers of FB750 Intubatt so a single (or both) face, identically sized boards should be used, ideally with staggered joints where possible. Closing devices should be located in or on the outmost board. Board to board abutment should be bonded with 10mm bead of FS702 Intumastic and mechanically restrained using a 75mm spiral screw to the first and secured layer. Spiral fixings should be at max 200mm centres and no more than 50mm from any joint.


Service				LS Insulation (Local Sustained)			Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity	Integrity & Insulation	Rigid Wall thickness (mm)	Flexible Wall thickness (mm)	Additional requirements (both sides)
Cast Iron	Steel	Copper	-	Material	Thickness (mm)	Length on both sides (mm)	(mm)	(mm)	C/C	C/U	E (mins)	EI (mins)	≥ 100	≥ 100	
✓	✓	✓		PIR / Phenolic	20	≥ 200	≤ 14	≥ 1.2	✓	✓	120	120	✓	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓	✓	(*)	PIR / Phenolic	50	≥ 200	≤ 28	≥ 1.2	✓	✓	120	120	✓	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
✓	✓	✓	(*)	PIR / Phenolic	20	≥ 200	≤ 14	≥ 1.2	✓	✓	120	120	✓	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
✓	✓	✓		PIR / Phenolic	50	≥ 200	≤ 28	≥ 1.2	✓	✓	120	90	✓	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓	✓		PIR / Phenolic	20	≥ 200	≤ 28	≥ 1.2	✓	✓	120	90	✓	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓	✓		PIR / Phenolic	20	≥ 200	≤ 28	≥ 1.2	✓	✓	120	90	✓	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
✓	✓	✓	(*)	PIR / Phenolic	20	≥ 200	≤ 48	≥ 1.2	✓	✓	120	90	✓	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
✓	✓	✓		PIR / Phenolic	50	≥ 200	≤ 42	≥ 1.2	✓	✓	120	30	✓	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓	✓		PIR / Phenolic	20	≥ 200	≤ 42	≥ 1.2	✓	✓	120	30	✓	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓	✓	(*)	PIR / Phenolic	50	≥ 200	≤ 42	≥ 1.2	✓	✓	60	30	✓	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth

(*) Includes horizontal pipes from 90° to 45° to supporting construction

A34. NON COMBUSTIBLE PIPES INSULATED LS - DOUBLE BATT COMPRESSION

<p>Non Combustible Pipes Insulated with Local Sustained Insulation passing through Flexible and Rigid Walls as identified below, protected by double compressed FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.</p>
<p>Wall Details: Flexible or Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2. Flexible Walls constructed from steel or timber faced studs with a minimum of 2x12.5mm EN 520 type F boards on each side of studs.</p>
<p>Maximum Opening size: 400mm by 400mm. In Flexible Walls openings should be created using a steel frame. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.</p>
<p>Installation Instructions: Double Layer board, compressed and bonded into the aperture outer face flush with the face of the supporting construction. FB750 Intubatt should be installed in as few cut pieces as possible and tightly compressed to two opposite sides. This is achieved by the addition of 2mm to the required cut dimension. Compression may be applied - FB750 Intubatt to FB750 Intubatt, FB750 Intubatt to non combustible service, or FB750 Intubatt to Substrate. Compression must be achieved over a minimum 60% of the FB750 Intubatt compressed edge. If compression is achieved Top to bottom of FB750 Intubatt, left/right is not required to be compressed and vice versa (the non compressed seal could be fully abutted and bonded). All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullfire product, if the service type is combustible or insulated CS or LS. (Imperfections in cut on a compressed edge may not exceed 40% of the area available to receive compression)</p>
<p>The results below are also applicable when using multiple layers of FB750 Intubatt, including 1 layer (or more) surface mounted on both sides of the wall.</p>


Service				LS Insulation (Local Sustained)			Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity	Integrity & Insulation	Rigid Wall thickness (mm)	Flexible Wall thickness (mm)	Additional requirements (both sides)
Cast Iron	Steel	Copper	-	Material	Thickness (mm)	Length on both sides (mm)	(mm)	(mm)	C/C	C/U	E (mins)	EI (mins)	≥ 100	≥ 100	
✓	✓	✓		PIR / Phenolic	20	≥ 200	≤ 14	≥ 1	✓	✓	120	120	✓	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓	✓	(*)	PIR / Phenolic	50	≥ 200	≤ 28	≥ 1	✓	✓	120	120	✓	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
✓	✓	✓	(*)	PIR / Phenolic	20	≥ 200	≤ 14	≥ 1	✓	✓	120	120	✓	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
✓	✓	✓		PIR / Phenolic	50	≥ 200	≤ 28	≥ 1	✓	✓	120	90	✓	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓	✓		PIR / Phenolic	20	≥ 200	≤ 28	≥ 1	✓	✓	120	90	✓	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓	✓	(*)	PIR / Phenolic	20	≥ 200	≤ 48	≥ 1	✓	✓	120	90	✓	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
✓	✓	✓		PIR / Phenolic	50	≥ 200	≤ 42	≥ 1	✓	✓	120	30	✓	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓	✓	(*)	PIR / Phenolic	50	≥ 200	≤ 42	≥ 1	✓	✓	60	30	✓	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth

(*) Includes horizontal pipes from 90° to 45° to supporting construction

A35. NON COMBUSTIBLE PIPES INSULATED LS - SINGLE BATT COMPRESSION (ASYMMETRIC)

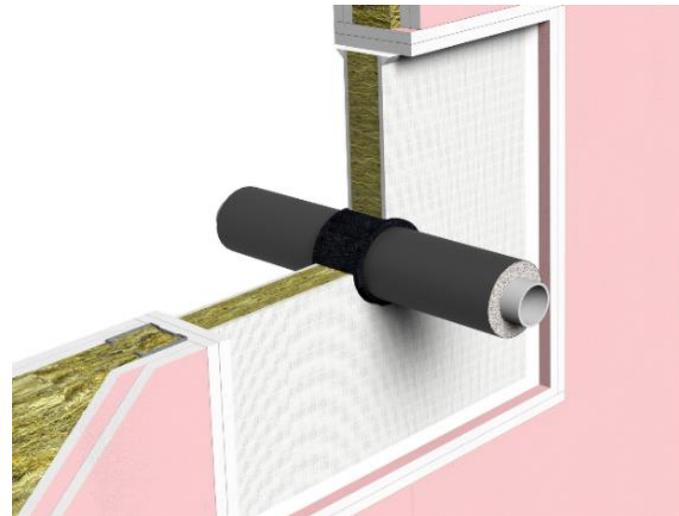
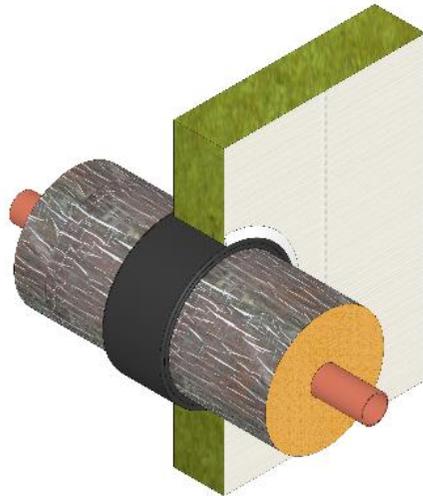
Non Combustible Pipes Insulated with Local Sustained Insulation passing through Flexible and Rigid Walls as identified below, protected by single compressed asymmetric FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.

Wall Details: Flexible or Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2.
Flexible Walls constructed from steel or timber faced studs with a minimum of 2x12.5mm EN 520 type F boards on each side of studs.

Maximum Opening size: 400mm by 400mm. In Flexible Walls openings should be created using a steel frame with a plasterboard lining. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.

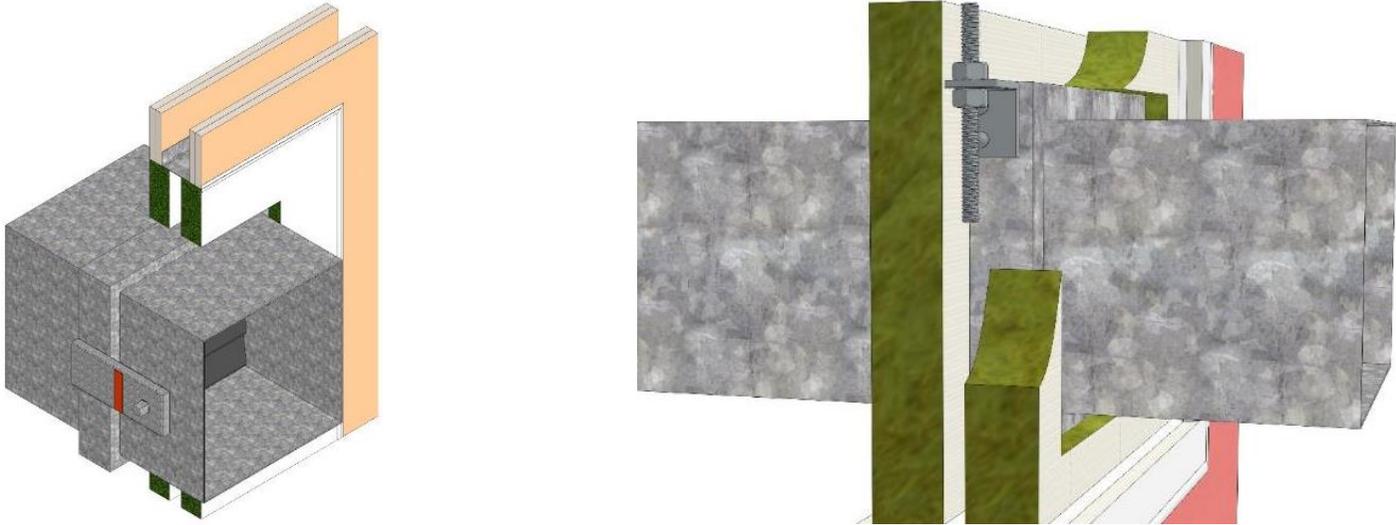
Installation Instructions: Single Layer board, compressed and bonded into the aperture on the opposite side of the wall to the fire. FB750 Intubatt should be installed in as few cut pieces as possible and tightly compressed to two opposite sides. This is achieved by the addition of 2mm to the required cut dimension. Compression may be applied - FB750 Intubatt to FB750 Intubatt, FB750 Intubatt to non combustible service, or FB750 Intubatt to Substrate. Compression must be achieved over a minimum 60% of the FB750 Intubatt compressed edge. If compression is achieved Top to bottom of FB750 Intubatt, left/right is not required to be compressed and vice versa (the non compressed seal could be fully abutted and bonded). All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullfire product, if the service type is combustible or insulated CS or LS. (Imperfections in cut on a compressed edge may not exceed 40% of the area available to receive compression)

The results below are also applicable when using multiple layers of FB750 Intubatt, including 1 layer (or more) of surface mounted FB750 Intubatt.



Service			LS Insulation (Local Sustained)			Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity	Integrity & Insulation	Rigid Wall thickness (mm)	Flexible Wall thickness (mm)	Additional requirements
Cast Iron	Steel	Copper	Material	Thickness (mm)	Length on both sides (mm)	(mm)	(mm)	C/C	C/U	E (mins)	EI (mins)	≥ 100	≥ 100	
✓	✓	✓	PIR / Phenolic	50	≥ 200	≤ 28	≥ 1	✓	✓	60	60	✓	✓	2 layers of FP302 Intustrap (central to the seal), sealed on both sides of FB750 Intubatt with FS702 Intumastic
✓	✓	✓	PIR / Phenolic	20	≥ 200	≤ 28	≥ 1	✓	✓	60	60	✓	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
✓	✓	✓	PIR / Phenolic	50	≥ 200	≤ 42	≥ 1	✓	✓	60	30	✓	✓	2 layers of FP302 Intustrap (central to the seal), sealed on both sides of FB750 Intubatt with FS702 Intumastic
✓	✓	✓	PIR / Phenolic	20	≥ 220	≤ 48	≥ 1	✓	✓	60	30	✓	✓	2 layers of FP302 Intustrap (central to the seal), sealed on both sides of FB750 Intubatt with FS702 Intumastic
✓	✓	✓	PIR / Phenolic	20	≥ 200	≤ 48	≥ 1	✓	✓	60	15	✓	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth

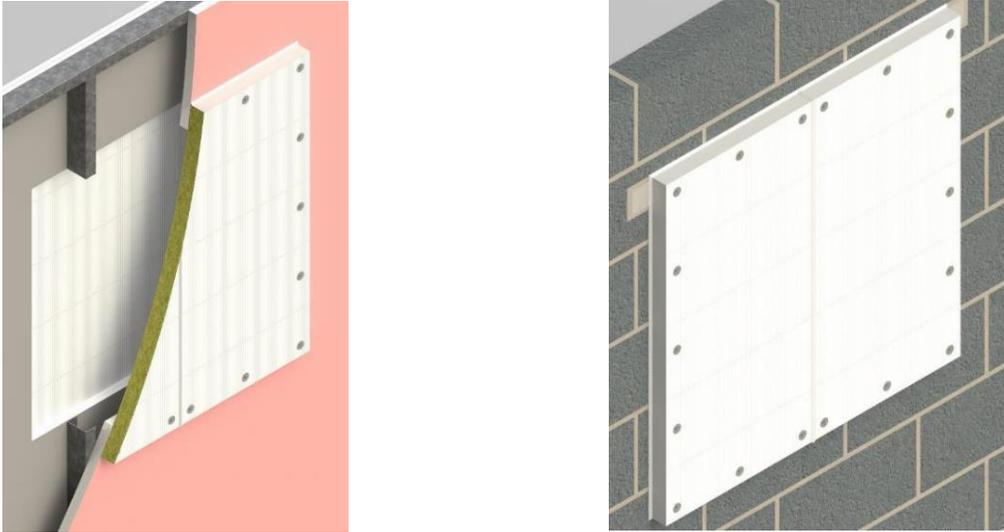
A36. DAMPERS - DOUBLE BATT COMPRESSION

<p>Steel damper through Flexible and Rigid Walls as identified below, protected by double compressed FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.</p>
<p>Wall Details: Flexible or Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2. Flexible Walls constructed from steel or timber faced studs with a minimum of 2x12.5mm EN 520 type F boards on each side of studs.</p>
<p>Maximum Opening size: 700mm by 1400mm. In Flexible Walls openings should be created using a steel frame. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.</p>
<p>Installation Instructions: Double Layer board, compressed and bonded into the aperture outer face flush with the face of the supporting construction. FB750 Intubatt should be installed in as few cut pieces as possible and tightly compressed to two opposite sides. This is achieved by the addition of 2mm to the required cut dimension. Compression may be applied - FB750 Intubatt to FB750 Intubatt, FB750 Intubatt to non combustible service, or FB750 Intubatt to Substrate. Compression must be achieved over a minimum 60% of the FB750 Intubatt compressed edge. If compression is achieved Top to bottom of FB750 Intubatt, left/right is not required to be compressed and vice versa (the non compressed seal could be fully abutted and bonded). All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS. (Imperfections in cut on a compressed edge may not exceed 40% of the area available to receive compression)</p>


Service	Damper dimensions	Integrity	Integrity & Insulation	Rigid Wall thickness (mm)	Flexible Wall thickness (mm)	Additional requirements
	(mm)	E (mins)	EI (mins)	≥ 130	≥ 130	
Steel damper	≤ 400x400x78	120	120	✓	✓	-

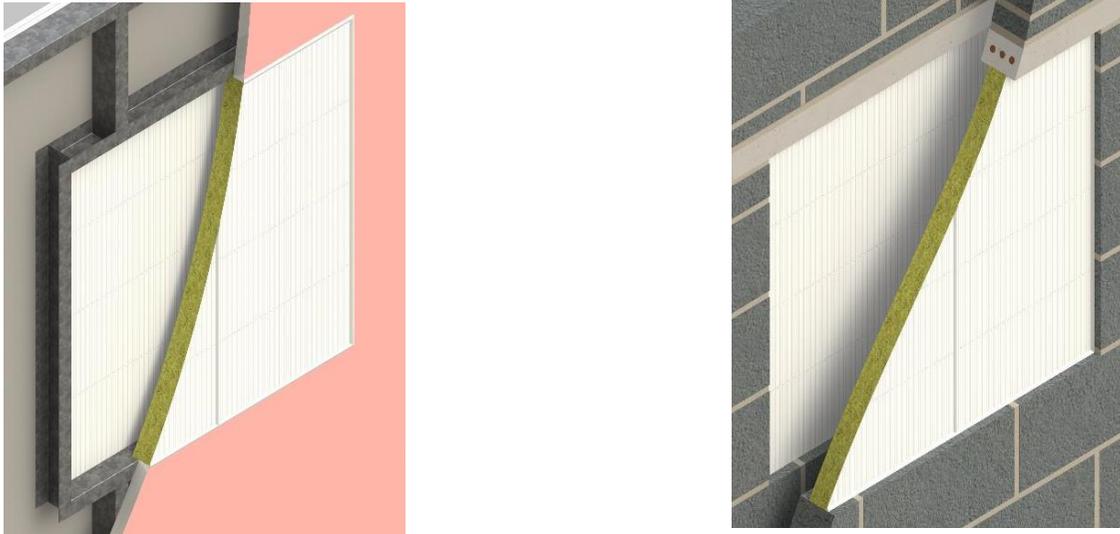
EI performance can only be claimed for the seal between the substrate and the damper ; the damper performance must be based on EN 1366-2 testing.

A37. BLANK SEALS - DOUBLE BATT PATRESS

<p>Blank Seals installed in Flexible Walls or Rigid Walls as Identified below, protected by double pattress (surface mounted) FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.</p>
<p>Wall Details: Flexible or Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2. Flexible Walls constructed from steel or timber faced studs with a minimum of 2x12.5mm EN 520 type F boards on each side of studs.</p>
<p>Maximum Opening size: See below. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.</p>
<p>Installation Instructions: Boards surface mounted (pattress fit) on both sides of the wall with a minimum 75mm overlap around the opening. (Overlap on the lowest edge can be reduced to 30mm in the event of an obstruction preventing the 75mm overlap). The overlap should be bonded with a 10mm bead of FS702 Intumastic placed 20-60mm from the board edges, and additionally mechanically restrained using 75mm steel screws with a 25mm washer at maximum 300mm centres, 10-65mm from the board perimeter and no more than 50mm from a board joint. A low torque setting should be used to ensure that the embedment of fixing into the board does not exceed 15mm. The fixings may be left exposed or covered using FS702 Intumastic. The FB750 Intubatt should be installed in as few cut pieces as possible. All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all substrate interfaces, to a minimum of a 6mm bead. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. External sides of the Board may be required to be coated for aesthetic reasons or to prevent fibre migration. (In situations where the required overlap cannot be achieved due to a perpendicular fire resisting wall / soffit, it is possible to reduce the overlap, down to as low as 0mm, provided the board edge is bonded to the adjoining compartment using a 10mm bead of FS702 Intumastic, and subsequently pointed to all mated edges)</p>
<p>The results below are also applicable when using multiple layers of surface mounted FB750 Intubatt. For multiple layers of FB750 Intubatt so a single (or both) face, identically sized boards should be used, ideally with staggered joints where possible. Closing devices should be located in or on the outmost board. Board to board abutment should be bonded with 10mm bead of FS702 Intumastic and mechanically restrained using a 75mm spiral screw to the first and secured layer. Spiral fixings should be at max 200mm centres and no more than 50mm from any joint.</p>


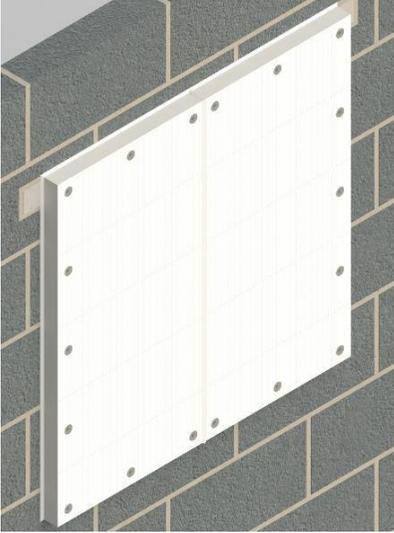
Opening size (mm)	Integrity	Integrity & Insulation	Rigid Wall thickness (mm)		Flexible Wall thickness (mm)	
	E (mins)	EI (mins)	≥ 130	≥ 100	≥ 130	≥ 100
≤ 1500x1500	240	240	✓	✓		
≤ 1500x450	120	120	✓	✓	✓	✓
≤ 1140x480	120	120	✓		✓	

A38. BLANK SEALS - DOUBLE BATT COMPRESSION

<p>Blank Seals installed in Flexible Walls or Rigid Walls as Identified below, protected by double compressed FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.</p>
<p>Wall Details: Flexible or Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2. Flexible Walls constructed from steel or timber faced studs with a minimum of 2x12.5mm EN 520 type F boards on each side of studs.</p>
<p>Maximum Opening size: See below. In Flexible Walls openings should be created using a steel frame. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.</p>
<p>Installation Instructions: Double Layer board, compressed and bonded into the aperture outer face flush with the face of the supporting construction. FB750 Intubatt should be installed in as few cut pieces as possible and tightly compressed to two opposite sides. This is achieved by the addition of 2mm to the required cut dimension. Compression may be applied - FB750 Intubatt to FB750 Intubatt, or FB750 Intubatt to Substrate. Compression must be achieved over a minimum 60% of the FB750 Intubatt compressed edge. If compression is achieved - Top to bottom of FB750 Intubatt, left/right is not required to be compressed and vice versa (the non compressed seal could be fully abutted and bonded). All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all substrate interfaces, to a minimum of a 6mm bead. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. (Imperfections in cut on a compressed edge may not exceed 40% of the area available to receive compression)</p>
<p>The results below are also applicable when using multiple layers of FB750 Intubatt, including 1 layer (or more) surface mounted on both sides of the wall.</p>


Opening size (mm)	Integrity	Integrity & Insulation	Rigid Wall thickness (mm)		Flexible Wall thickness (mm)	
	E (mins)	EI (mins)	≥ 130	≥ 100	≥ 130	≥ 100
≤ 1500x1500	240	240	✓	✓		
≤ 1500x450	120	120	✓	✓	✓	✓
≤ 1140x480	120	120	✓		✓	

A39. BLANK SEALS - SINGLE BATT PATTRESS

Blank Seals installed in Rigid Walls as Identified below, protected by single FB750 Intubatt seal, pattress fitted to one side, sealed with FS702 Intumastic or FS712 Intucoat.			
Wall Details: Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2.			
Maximum Opening size: See below. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.			
Installation Instructions: Single Layer board, surface mounted (pattress fit) with 75mm overlap beyond the aperture on the opposite side of the wall to the fire. FB750 Intubatt should be installed in as few cut pieces as possible All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all substrate interfaces, to a minimum of a 6mm bead. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt.			
The results below are also applicable when using multiple layers of surface mounted FB750 Intubatt.			
			
Opening size	Integrity	Integrity & Insulation	Rigid Wall thickness (mm)
	E (mins)	EI (mins)	≥ 130
≤ 400x400	120	60	✓

A40. BLANK SEALS - SINGLE BATT COMPRESSION

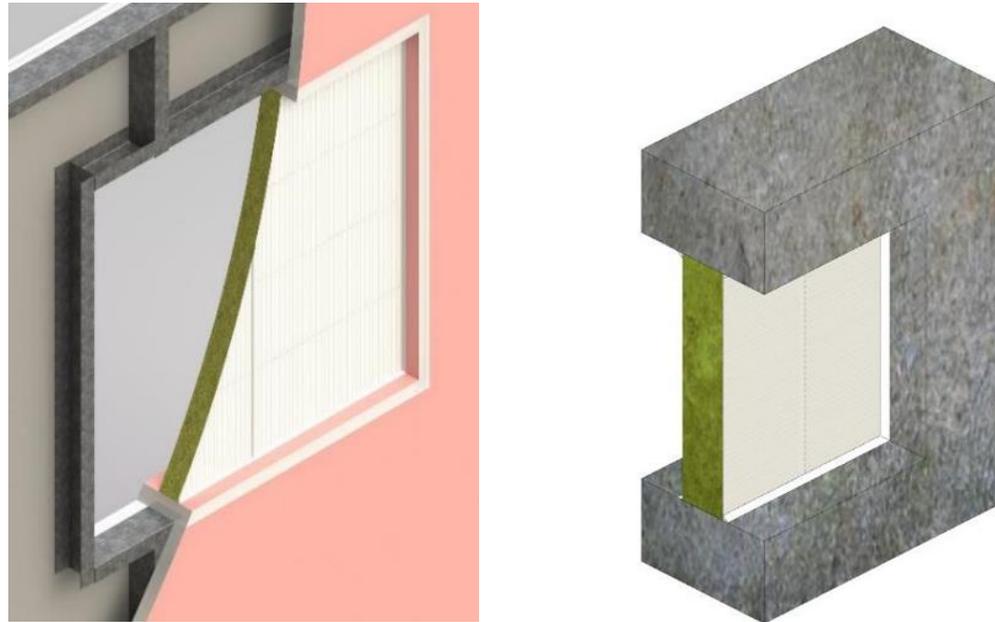
Blank Seals installed in Flexible Walls or Rigid Walls as Identified below, protected by single compressed FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.

Wall Details: Flexible or Rigid Walls of minimum thickness as identified below, and with performance classified to EN 13501-2.
Flexible Walls constructed from steel or timber faced studs with a minimum of 2x12.5mm EN 520 type F boards on each side of studs.

Maximum Opening size: See below. In Flexible Walls openings should be created using a steel frame with a plasterboard lining. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.

Installation Instructions: Single Layer board, compressed and bonded into the aperture at mid depth of the wall. FB750 Intubatt should be installed in as few cut pieces as possible and tightly compressed to two opposite sides. This is achieved by the addition of 2mm to the required cut dimension. Compression may be applied - FB750 Intubatt to FB750 Intubatt or FB750 Intubatt to Substrate. Compression must be achieved over a minimum 60% of the FB750 Intubatt compressed edge. If compression is achieved Top to bottom of FB750 Intubatt, left/right is not required to be compressed and vice versa (the non compressed seal could be fully abutted and bonded). All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. (Imperfections in cut on a compressed edge may not exceed 40% of the area available to receive compression)

The results below are also applicable when using multiple layers of FB750 Intubatt, including 1 layer (or more) surface mounted on both sides of the wall.



Opening size (mm)	Integrity	Integrity & Insulation	Rigid Wall thickness (mm)		Flexible Wall thickness (mm)	
	E (mins)	EI (mins)	≥ 130	≥ 100	≥ 130	≥ 100
≤ 300x300	120	120	✓		✓	
≤ 1800x1200	120	30	✓	✓	✓	✓

FLOORS

A41. CABLES & CABLE CARRIERS - DOUBLE BATT PATTTRESS

<p>Cables, Metal Cable Trays, Trunking, Baskets and Ladders passing through Rigid Floors as identified below, protected by double pattress (surface mounted) FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.</p>
<p>Floor Details: Rigid Floors of minimum thickness as identified below, and with performance classified to EN 13501-2.</p>
<p>Maximum Opening size: 1100mm by 450mm. Multiple apertures must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.</p>
<p>Installation Instructions: Double layer board, surface mounted (pattress fit) on under side of the floor with a minimum 75mm overlap around the opening. The overlap should be bonded with a 10mm bead of FS702 Intumastic placed 20-60mm from the board edges, and additionally mechanically restrained using 75mm steel screws with a 25mm washer at maximum 300mm centres, 10-65mm from the board perimeter and no more than 50mm from a board joint. A low torque setting should be used to ensure that the embedment of fixing into the board does not exceed 15mm. The fixings may be left exposed or covered using FS702 Intumastic. The FB750 Intubatt should be installed in as few cut pieces as possible. All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS. External sides of the Board may be required to be coated for aesthetic reasons or to prevent fibre migration.</p>
<p>The results below are also applicable when using multiple layers of surface mounted FB750 Intubatt to the under side of the floor, or double / multiple layers compressed and bonded within the floor, or double / multiple layers to the upper face of the floor.</p>
 <p>The diagram shows a vertical cable passing through a floor slab. The floor slab is composed of two layers of grey concrete. A white, L-shaped pattress (FB750 Intubatt) is mounted on the underside of the floor slab, creating a seal around the cable. The pattress is secured to the concrete with two screws. A black sealant (FS702 Intumastic) is applied to the joint between the pattress and the floor slab. The cable has a grey outer jacket and several copper conductors at the bottom.</p>

Service	Integrity	Integrity & Insulation	Rigid Floor thickness (mm)	Additional requirements
	E (mins)	EI (mins)	≥ 150	
Bundle of ≤ 42mm diameter, comprising ≤ 8 Twin & earth cables, each ≤ 17mm diameter within a ≤ 55mm x 3.2mm HDPE conduit	240	240	✓	1 layer of FP302 Intustrap, central to the seal, sealed within FB750 Intubatt with FS702 Intumastic
2 bundles of ≤ 20 Twin & earth cables, each ≤ 17mm diameter	240	240	✓	1 layer of FP302 Intustrap, central to the seal, sealed within FB750 Intubatt with FS702 Intumastic
Bundle of ≤ 10 Ethernet Cat 5 cables, each ≤ 6mm diameter	180	120	✓	-
Bundle of ≤ 5 Fibre optic cables, each ≤ 8mm diameter	180	120	✓	-
Bundle of ≤ 3 Fire alarm cables, each ≤ 13mm diameter	180	120	✓	-
Bundle of ≤ 6 lighting cables, each ≤ 10mm diameter	180	120	✓	-
Bundle of ≤ 25 Ethernet Cat 5 cable, each ≤ 6mm diameter	60	60	✓	-
Bundle of ≤ 8 Twin & earth cables, each ≤ 17mm diameter	60	60	✓	-

Cable diameters can be increased up to 25%, and cable bundle diameters can be increased up to 10%

A42. CABLES & CABLE CARRIERS - DOUBLE BATT COMPRESSION

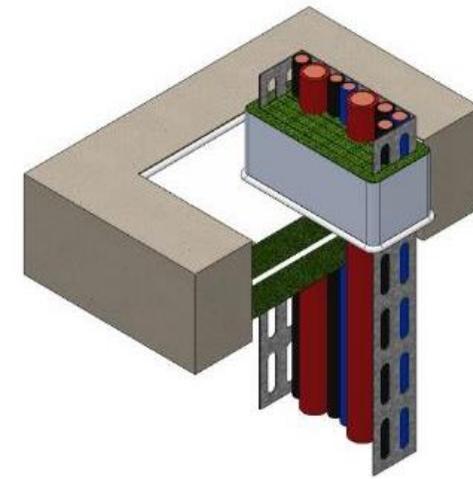
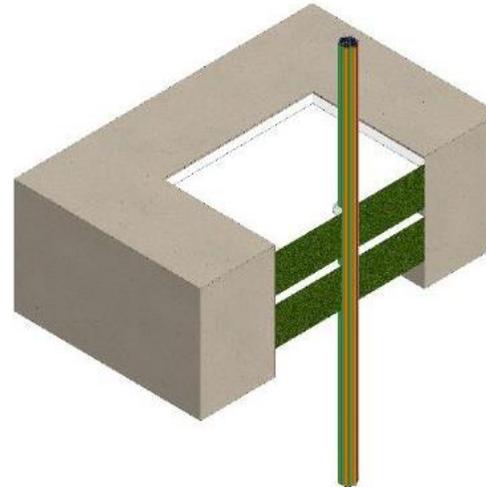
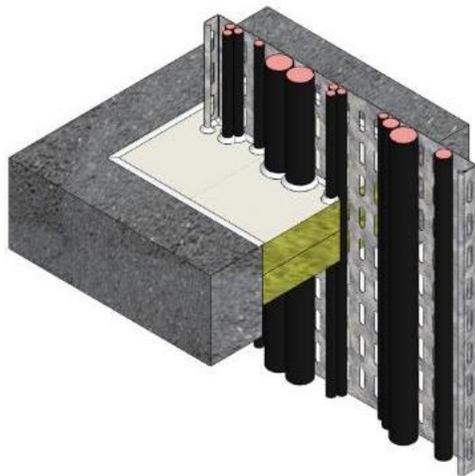
Cables, Metal Cable Trays, Trunking, Baskets and Ladders passing through Rigid Floors as identified below, protected by double compressed FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.

Floor Details: Rigid Floors of minimum thickness as identified below, and with performance classified to EN 13501-2.

Maximum Opening size: 1100mm by 450mm. Multiple apertures must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.

Installation Instructions: Double Layer board, compressed and bonded into the aperture within the floor. FB750 Intubatt should be installed in as few cut pieces as possible and tightly compressed to two opposite sides. This is achieved by the addition of 2mm to the required cut dimension. Compression may be applied - FB750 Intubatt to FB750 Intubatt, FB750 Intubatt to non combustible service, or FB750 Intubatt to Substrate. Compression must be achieved over a minimum 60% of the FB750 Intubatt Compressed edge. If compression is achieved between two opposite sides of FB750 Intubatt, the perpendicular sides are not required to be compressed (the non compressed seal could be fully abutted and bonded). All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS. (Imperfections in cut on a compressed edge may not exceed 40% of the area available to receive compression)

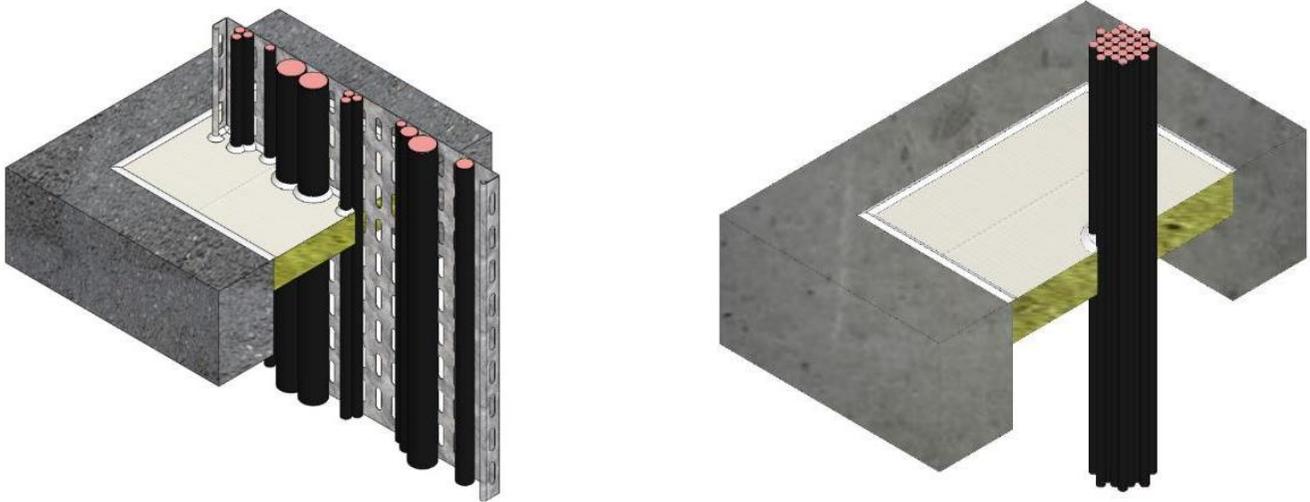
The results below are also applicable when using multiple layers of FB750 Intubatt compressed in the opening, including double/multiple layers of surface mounted FB750 Intubatt to the upper face.



Service		Integrity	Integrity & Insulation	Rigid Floor thickness (mm)	Additional requirements (top side only)
		E (mins)	EI (mins)	≥ 150	
Metal Cable Trays, Trunking, Baskets and Ladder ≤ 300mm width & minimum 1.3mm thickness	B	120	120	✓	200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
Metal Cable Trays, Trunking, Baskets and Ladder ≤ 500mm width & minimum 1mm thickness	C	120	60	✓	-
Bundle of ≤ 10 Fire alarm cables, each ≤ 10mm diameter	A	240	180	✓	1 layer of FP302 Intustrap, central to the seal, sealed within FB750 Intubatt with FS702 Intumastic
Bundle of ≤ 5 twin & earth cables, each ≤ 17mm diameter	A	240	180	✓	1 layer of FP302 Intustrap, central to the seal, sealed within FB750 Intubatt with FS702 Intumastic
Bundle of ≤ 10 A1 cables, each ≤ 12mm diameter	B	120	120		200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
Bundle of ≤ 10 A2 cables, each ≤ 12mm diameter	B	120	120	✓	200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
Bundle of ≤ 10 A3 cables, each ≤ 12mm diameter	B	120	120	✓	200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
≤ 2 type B cables, each ≤ 19mm diameter	B	120	120	✓	200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
1 type C1 cable ≤ 41mm diameter	B	120	120	✓	200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
1 type C2 cable ≤ 50mm diameter	B	120	120	✓	200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
1 type C3 cable ≤ 37mm diameter	B	120	120	✓	200mm extension of 1 layer of FI025 Intuflex, sealed to FB750 Intubatt with FS702 Intumastic
1 type C2 cable ≤ 50mm diameter	C	120	90	✓	-
≤ 2 type B cables, each ≤ 19mm diameter	C	120	60	✓	-
1 type C1 cable ≤ 41mm diameter	C	120	60	✓	-
1 type C3 cable ≤ 37mm diameter	C	120	60	✓	-
1 type G1 cable ≤ 15mm diameter	C	120	30	✓	-
1 type G2 cable ≤ 20mm diameter	C	120	30	✓	-

Cable diameters can be increased up to 25%, and cable bundle diameters can be increased up to 10%
 A : Batts fitted together, flush to lower surface. Data covers applications mid-depth or flush to upper surface.
 B : Batts fitted together mid-depth. Data covers flush to upper surface.
 C : Batts fitted together flush to upper surface.

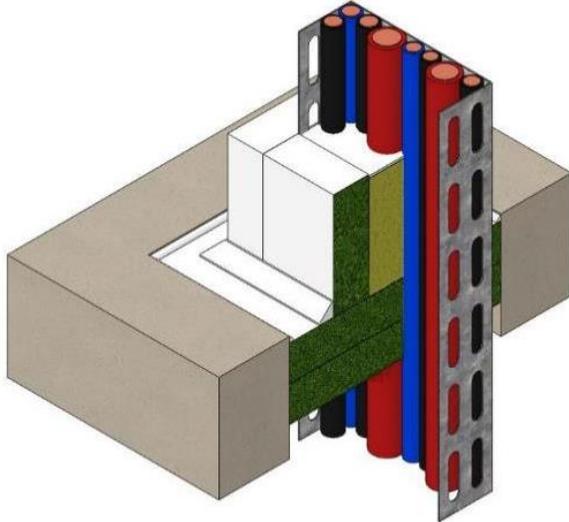
A43. CABLES & CABLE CARRIERS - SINGLE BATT COMPRESSION

<p>Cables, Metal Cable Trays, Trunking, Baskets and Ladders passing through Rigid Floors as identified below, protected by single compressed FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.</p>
<p>Floor Details: Rigid Floors of minimum thickness as identified below, and with performance classified to EN 13501-2.</p>
<p>Maximum Opening size: 350mm by 550mm. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.</p>
<p>Installation Instructions: Single Layer board, compressed and bonded into the aperture flush with upper surface of the floor. FB750 Intubatt should be installed in as few cut pieces as possible and tightly compressed to two opposite sides. This is achieved by the addition of 2mm to the required cut dimension. Compression may be applied - FB750 Intubatt to FB750 Intubatt, FB750 Intubatt to non combustible service, or FB750 Intubatt to Substrate. Compression must be achieved over a minimum 60% of the FB750 Intubatt Compressed edge. If compression is achieved between two opposite sides of FB750 Intubatt, the perpendicular sides are not required to be compressed (the non compressed seal could be fully abutted and bonded). All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS. (Imperfections in cut on a compressed edge may not exceed 40% of the area available to receive compression)</p>
<p>The results below are also applicable when using multiple layers of FB750 Intubatt compressed in the opening, and using single/ multiple layers of surface mounted FB750 Intubatt on the upper face.</p>


Service	Integrity	Integrity & Insulation	Rigid Floor thickness (mm)	Additional requirements
	E (mins)	EI (mins)	≥ 150	
Metal Cable Trays, Trunking, Baskets and Ladder ≤ 500mm width and ≥ 1mm thickness	60	30	✓	-
≤ 2 type B cables, each cable ≤ 19mm diameter	60	30	✓	-
1 type C1 cable ≤ 41mm diameter	60	30	✓	-
1 type C2 cable ≤ 50mm diameter	60	30	✓	-
1 type C3 cable ≤ 37mm diameter	60	30	✓	-
1 type G1 cable ≤ 15mm diameter	60	30	✓	-
1 type G2 cable ≤ 20mm diameter	60	30	✓	-

Cable diameters can be increased up to 25%, and cable bundle diameters can be increased up to 10%

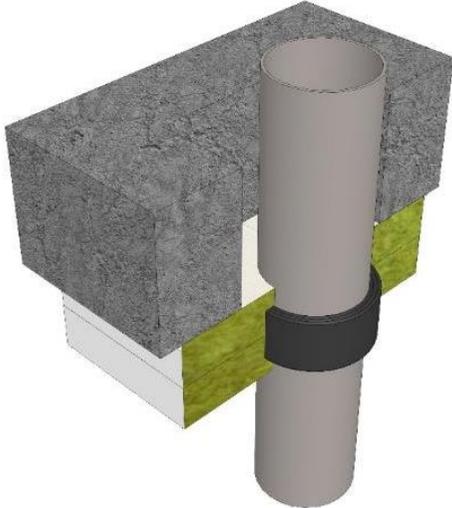
A44. CABLES & CABLE CARRIERS - DOUBLE BATT COMPRESSION BATT BOX

<p>Cables, Metal Cable Trays, Trunking, Baskets and Ladders insulated within a batt box passing through Rigid Floors as identified below, protected by double compressed FB750 Intubatt seal, sealed with FS702 Intumastic.</p>
<p>Floor Details: Rigid Floors of minimum thickness as identified below, and with performance classified to EN 13501-2.</p>
<p>Maximum Opening size: 1800mm by 600mm. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.</p>
<p>Installation Instructions: Double Layer board, compressed and bonded into the aperture within the floor. FB750 Intubatt should be installed in as few cut pieces as possible and tightly compressed to two opposite sides. This is achieved by the addition of 2mm to the required cut dimension. Compression may be applied - FB750 Intubatt to FB750 Intubatt, FB750 Intubatt to non combustible service, or FB750 Intubatt to Substrate. Compression must be achieved over a minimum 60% of the FB750 Intubatt Compressed edge. If compression is achieved between two opposite sides of FB750 Intubatt, the perpendicular sides are not required to be compressed (the non compressed seal could be fully abutted and bonded). All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. (Imperfections in cut on a compressed edge may not exceed 40% of the area available to receive compression). Cut FB750 Intubatt to form batt box detail around cable tray(s) as per detail drawing below. FS702 Intumastic or FS712 Intucoat is to be used to bond and form a seal between the batt box and the double batt seal and the abutment of the floor and board to board joints. Position the batt box around the penetration and position the centre of the batt box inline with the centre of the proposed FB750 Intubatt seal. The remaining aperture within the batt box should be completely filled with FI064 Soft Joint Filler, and coated to upper face with 3mm WFT FS702 Intumastic. Batt Box is only required to be installed round cables, trays (perforated or non-perforated), ladders, baskets and trunking. If included within a mixed penetration seal, the rest of the seal should be completed as per the normal double batt requirement.</p>
<p>The results below are also applicable when using multiple layers of FB750 Intubatt compressed in the opening, including double/multiple layers of surface mounted FB750 Intubatt to the upper face.</p>


Service	Integrity	Integrity & Insulation	Rigid Floor thickness (mm)
	E (mins)	EI (mins)	≥ 150
Metal Cable Trays, Trunking, Baskets and Ladders ≤ 500mm width	120	120	✓
Bundle of ≤ 10 type A1 cables, each cable ≤ 12mm diameter	120	120	✓
Bundle of ≤ 10 type A2 cables, each cable ≤ 12mm diameter	120	120	✓
Bundle of ≤ 10 type A3 cables, each cable ≤ 12mm diameter	120	120	✓
1 type C1 cable ≤ 41mm diameter	120	120	✓
1 type C2 cable ≤ 50mm diameter	120	120	✓
1 type C3 cable ≤ 37mm diameter	120	120	✓
1 type D1 cable ≤ 55mm diameter	120	120	✓
1 type D2 cable ≤ 65mm diameter	120	120	✓
1 type D3 cable ≤ 52.5mm diameter	120	120	✓
Bundle of ≤ 100mm diameter type F data cables, each cable ≤ 13mm diameter	120	120	✓
1 type G1 cable ≤ 15mm diameter	120	120	✓
1 type G2 cable ≤ 20mm diameter	120	120	✓
≤ 2 type B cables, each cable ≤ 19mm diameter	120	90	✓
≤ 2 type E cables ≤ 25mm diameter	120	90	✓

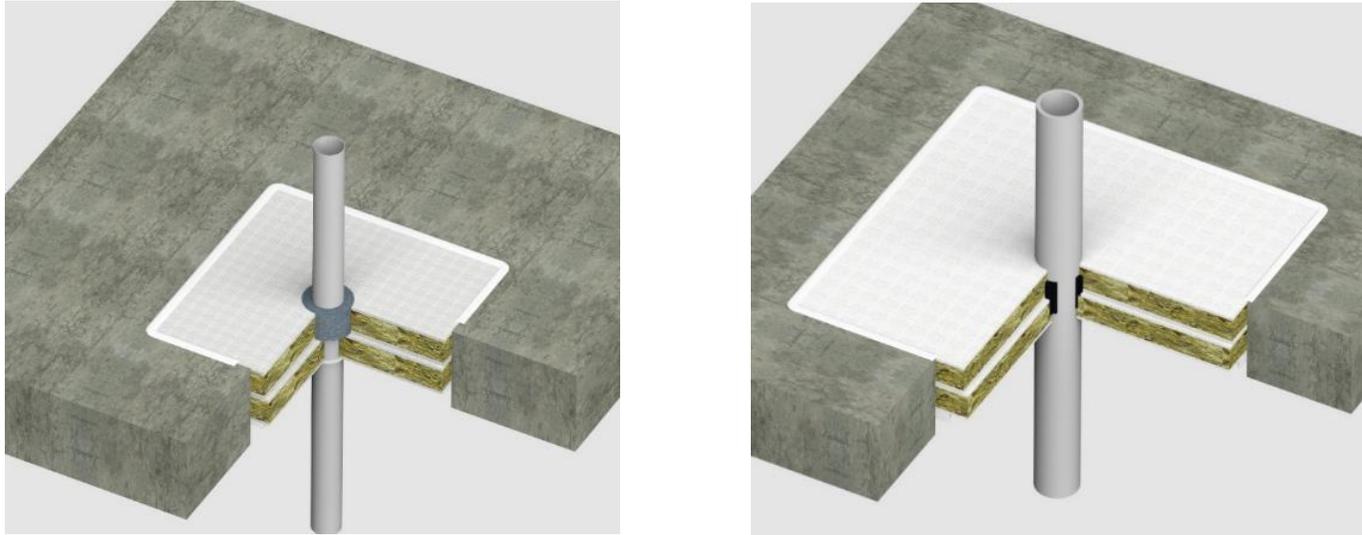
Cable diameters can be increased up to 25%, and cable bundle diameters can be increased up to 10%

A45. COMBUSTIBLE PIPES - DOUBLE BATT PATTTRESS

<p>Combustible Pipes Uninsulated passing through Rigid Floors as identified below, protected by double pattress (surface mounted) FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.</p>
<p>Floor Details: Rigid Floor of minimum thickness as identified below, and with performance classified to EN 13501-2.</p>
<p>Maximum Opening size: 400mm by 400mm. Multiple apertures must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.</p>
<p>Installation Instructions: Double layer board, surface mounted (pattress fit) on under side of the floor with a minimum 75mm overlap around the opening. The overlap should be bonded with a 10mm bead of FS702 Intumastic placed 20-60mm from the board edges, and additionally mechanically restrained using 75mm steel screws with a 25mm washer at maximum 300mm centres, 10-65mm from the board perimeter and no more than 50mm from a board joint. A low torque setting should be used to ensure that the embedment of fixing into the board does not exceed 15mm. The fixings may be left exposed or covered using FS702 Intumastic. The FB750 Intubatt should be installed in as few cut pieces as possible. All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS. External sides of the Board may be required to be coated for aesthetic reasons or to prevent fibre migration.</p>
<p>The results below are also applicable when using multiple layers of surface mounted FB750 Intubatt to the under side of the floor, or double / multiple layers compressed and bonded within the floor, or double / multiple layers to the upper face of the floor.</p>


Service	Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity	Integrity & Insulation	Rigid Floor thickness (mm)	Additional requirements
	(mm)	(mm)	C/C	U/C	E (mins)	EI (mins)	≥ 150	
PVC-U pipe (+ PVC-C)	≤ 55	3.2	✓	✓	240	240	✓	1 layer of FP302 Intustrap, central to the seal, sealed within FB750 Intubatt with FS702 Intumastic
PVC-U pipe (+ PVC-C)	≤ 110	3.2	✓	✓	240	120	✓	1 layer of FP302 Intustrap, central to the seal, sealed within FB750 Intubatt with FS702 Intumastic
HDPE pipe	≤ 55	3.2	✓	✓	60	60	✓	1 layer of FP302 Intustrap, central to the seal, sealed within FB750 Intubatt with FS702 Intumastic

A46. COMBUSTIBLE PIPES - DOUBLE BATT COMPRESSION

Combustible Pipes passing through Rigid Floors as identified below, protected by double compressed FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.
Floor Details: Rigid Floors of minimum thickness as identified below, and with performance classified to EN 13501-2.
Maximum Opening size: 1100mm by 1100mm. Multiple apertures must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.
Installation Instructions: Double Layer board, compressed and bonded into the aperture within the floor, unless otherwise stated. FB750 Intubatt should be installed in as few cut pieces as possible and tightly compressed to two opposite sides. This is achieved by the addition of 2mm to the required cut dimension. Compression may be applied - FB750 Intubatt to FB750 Intubatt, FB750 Intubatt to non combustible service, or FB750 Intubatt to Substrate. Compression must be achieved over a minimum 60% of the FB750 Intubatt Compressed edge. If compression of FB750 Intubatt is achieved between two opposite sides, the perpendicular sides are not required to be compressed (the non compressed seal should be fully abutted and bonded). All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS. (Imperfections in cut on a compressed edge may not exceed 40% of the area available to receive compression)
The results below are also applicable when using multiple layers of FB750 Intubatt compressed in the opening, including double/multiple layers of surface mounted FB750 Intubatt to the upper face.


Service		Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity	Integrity & Insulation	Rigid Floor thickness (mm)	Additional requirements
		(mm)	(mm)	C/C	U/C	E (mins)	EI (mins)	≥ 150	
ABS pipe	A	≤ 55	3.2	✓	✓	240	180	✓	1 layer of FP302 Intustrap, central to the seal, sealed within FB750 Intubatt with FS702 Intumastic
ABS pipe	B	≤ 110	7.3	✓	✓	60	60	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
ABS pipe	B	≤ 90	6,0	✓	✓	60	60	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
ABS pipe	B	≤ 110	11.2	✓	✓	60	60	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
ABS pipe	B	≤ 114	11.2	✓	✓	60	60	✓	3 layers of FP302 Intustrap, central to the seal, sealed within FB750 Intubatt with FS702 Intumastic
ABS pipe	B	≤ 114	7.3	✓	✓	60	60	✓	3 layers of FP302 Intustrap, central to the seal, sealed within FB750 Intubatt with FS702 Intumastic
ABS pipe	B	≤ 90	6,0	✓	✓	60	60	✓	2 layers of FP302 Intustrap, central to the seal, sealed within FB750 Intubatt with FS702 Intumastic
ABS pipe	B	≤ 40	2.7	✓	✓	60	60	✓	1 layer of FP302 Intustrap, central to the seal, sealed within FB750 Intubatt with FS702 Intumastic
ABS pipe	B	≤ 40	2.7	✓	✓	60	60	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
PVC-U pipe (+ PVC-C)	C	≤ 160	3.2	✓	✓	180	120	✓	4 layers of FP302 Intustrap, central to the seal, sealed within FB750 Intubatt with FS702 Intumastic
PVC-U pipe (+ PVC-C)	B	≤ 125	7.4	✓	✓	60	60	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
PVC-U pipe (+ PVC-C)	B	≤ 40	1.9	✓	✓	60	60	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
PVC-U pipe (+ PVC-C)	B	≤ 90	5.4	✓	✓	60	60	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
PVC-U pipe (+ PVC-C)	B	≤ 125	4.8	✓	✓	60	60	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
PVC-U pipe (+ PVC-C)	A	≤ 110	3.2	✓	✓	60	60	✓	2 layers of FP302 Intustrap, central to the seal, sealed within FB750 Intubatt with FS702 Intumastic
PVC-U pipe (+ PVC-C)	B	≤ 125	7.4	✓	✓	60	60	✓	3 layers of FP302 Intustrap, central to the seal, sealed within FB750 Intubatt with FS702 Intumastic
PVC-U pipe (+ PVC-C)	B	≤ 40	1.9	✓	✓	60	60	✓	1 layer of FP302 Intustrap, central to the seal, sealed within FB750 Intubatt with FS702 Intumastic
PVC-U pipe (+ PVC-C)	B	≤ 90	5.4	✓	✓	60	60	✓	3 layers of FP302 Intustrap, central to the seal, sealed within FB750 Intubatt with FS702 Intumastic
PVC-U pipe (+ PVC-C)	B	≤ 125	4.8	✓	✓	60	60	✓	4 layers of FP302 Intustrap, central to the seal, sealed within FB750 Intubatt with FS702 Intumastic

Service	Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity	Integrity & Insulation		Rigid Floor thickness (mm)	Additional requirements
			C/C	U/C		E (mins)	EI (mins)		
PE pipe (+ ABS, San+ PVC, PVC-U & PVC-C)	B	≤ 40	3.7	✓	✓	60	60	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
PE pipe (+ ABS, San+ PVC, PVC-U & PVC-C)	B	≤ 110	6.6	✓	✓	60	60	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
PE pipe (+ ABS, San+ PVC, PVC-U & PVC-C)	B	≤ 110	6.6	✓	✓	60	60	✓	2 layers of FP302 Intustrap, central to the seal, sealed within FB750 Intubatt with FS702 Intumastic
PE pipe (+ ABS, San+ PVC, PVC-U & PVC-C)	B	≤ 40	3.7	✓	✓	60	60	✓	1 layer of FP302 Intustrap, central to the seal, sealed within FB750 Intubatt with FS702 Intumastic
PE pipe (+ ABS, San+ PVC, PVC-U & PVC-C)	B	≤ 110	3.4	✓	✓	60	60	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
PE pipe (+ ABS, San+ PVC, PVC-U & PVC-C)	B	≤ 110	3.4	✓	✓	60	60	✓	3 layers of FP302 Intustrap, central to the seal, sealed within FB750 Intubatt with FS702 Intumastic
HDPE pipe	B	≤ 90	8.2	✓	✓	60	60	✓	1 layer of FP302 Intustrap, central to the seal, sealed within FB750 Intubatt with FS702 Intumastic
HDPE pipe	C	≤ 90	8.2	✓	✓	60	60	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
PP pipe (+ HDPE, PVC-U & PVC-C)	B	≤ 110	10,0	✓	✓	60	60	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
PP pipe (+ HDPE, PVC-U & PVC-C)	B	≤ 90	8.2	✓	✓	60	60	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
PP pipe (+ HDPE, PVC-U & PVC-C)	B	≤ 40	1.8	✓	✓	60	60	✓	20mm annulus of FS709 HP Intumescent Sealant, 50mm depth
PP pipe (+ HDPE, PVC-U & PVC-C)	B	≤ 90	8.2	✓	✓	60	60	✓	3 layers of FP302 Intustrap, central to the seal, sealed within FB750 Intubatt with FS702 Intumastic
PP pipe (+ HDPE, PVC-U & PVC-C)	B	≤ 110	10,0	✓	✓	60	60	✓	3 layers of FP302 Intustrap, central to the seal, sealed within FB750 Intubatt with FS702 Intumastic
PP pipe (+ HDPE, PVC-U & PVC-C)	B	≤ 40	1.8	✓	✓	60	60	✓	2 layers of FP302 Intustrap, central to the seal, sealed within FB750 Intubatt with FS702 Intumastic
PP pipe (+ HDPE, PVC-U & PVC-C)	B	≤ 110	2.7	✓	✓	60	60	✓	3 layers of FP302 Intustrap, central to the seal, sealed within FB750 Intubatt with FS702 Intumastic

A : Batts fitted together, flush to lower surface. Data covers applications mid-depth or flush to upper surface.

B : Batts fitted together flush to upper surface.

C : First Batt fitted flush with top surface in compression. Second Batt fitted on top of first batt surface with a minimum overlap of 75mm from service over batt only or substrate (as required).

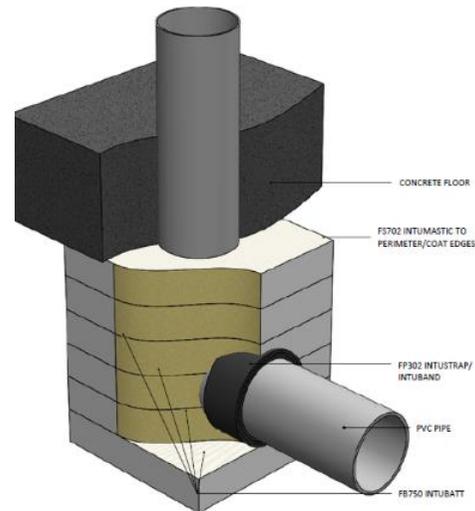
A47. COMBUSTIBLE PIPES – MULTIPLE BATT PATGRESS

Combustible Pipes Insulated with No insulation passing through Rigid Floors as identified below, protected by multiple pattress (surface mounted) FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.

Floor Details: Rigid Floors of minimum thickness as identified below, and with performance classified to EN 13501-2.

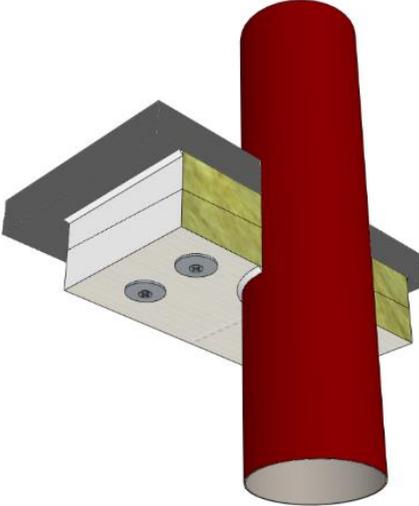
Maximum Opening size: Circular hole appropriate to the pipe in consideration. Multiple apertures must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.

Installation Instructions: Multiple layer board, surface mounted (pattress fit) on under side of the floor with a minimum 75mm overlap around the opening. The overlap should be bonded with a 10mm bead of FS702 Intumastic placed 20-60mm from the board edges, and additionally mechanically restrained using 75mm steel screws with a 25mm washer at maximum 300mm centres, 10-65mm from the board perimeter and no more than 50mm from a board joint. A low torque setting should be used to ensure that the embedment of fixing into the board does not exceed 15mm. The fixings may be left exposed or covered using FS702 Intumastic. The FB750 Intubatt should be installed in as few cut pieces as possible. All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS. External sides of the Board may be required to be coated for aesthetic reasons or to prevent fibre migration.



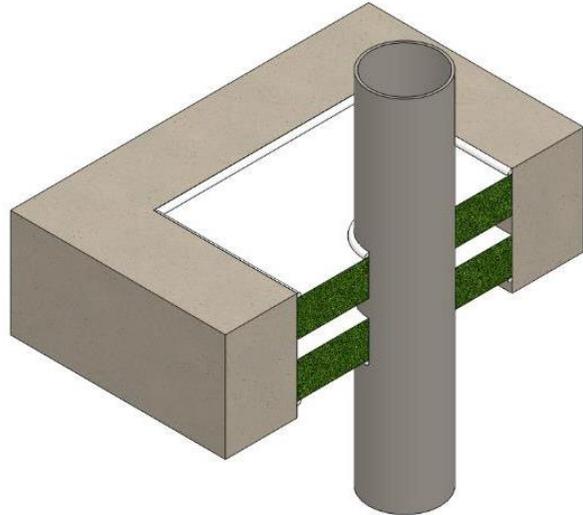
Service	Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity	Integrity & Insulation	Rigid Floor thickness (mm)	Additional requirements
	(mm)	(mm)	C/C	U/C	E (mins)	EI (mins)	≥ 150	
PVC-U pipe (+ PVC-C)	≤ 110	4,8	✓	✓	180	120	✓	7 layers of FB750 Intubatt (400mm x 350mm) placed around the elbow of the pipe + 3 layers of FP302 Intustrap, where the pipe exits the seal, sealed within FB750 Intubatt with FS702 Intumastic
PVC-U pipe (+ PVC-C)	≤ 50	2,0	✓	✓	240	240	✓	4 layers of FB750 Intubatt (400mm x 350mm) placed around the elbow of the pipe + 1 layer of FP302 Intustrap, where the pipe exits the seal, sealed within FB750 Intubatt with FS702 Intumastic

A48. NON COMBUSTIBLE PIPES - DOUBLE BATT PATTRESS

Non Combustible Pipes through Rigid Floors as identified below, protected by double pattress (surface mounted) FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.
Floor Details: Rigid Floors of minimum thickness as identified below, and with performance classified to EN 13501-2.
Maximum Opening size: 500mm by 500mm. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.
Installation Instructions: Double layer board, surface mounted (pattress fit) on under side of the floor with a minimum 75mm overlap around the opening. The overlap should be bonded with a 10mm bead of FS702 Intumastic placed 20-60mm from the board edges, and additionally mechanically restrained using 75mm steel screws with a 25mm washer at maximum 300mm centres, 10-65mm from the board perimeter and no more than 50mm from a board joint. A low torque setting should be used to ensure that the embedment of fixing into the board does not exceed 15mm. The fixings may be left exposed or covered using FS702 Intumastic. The FB750 Intubatt should be installed in as few cut pieces as possible. All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS. External sides of the Board may be required to be coated for aesthetic reasons or to prevent fibre migration.
The results below are also applicable when using multiple layers of surface mounted FB750 Intubatt to the under side of the floor, or double / multiple layers compressed and bonded within the floor, or double / multiple layers to the upper face of the floor.


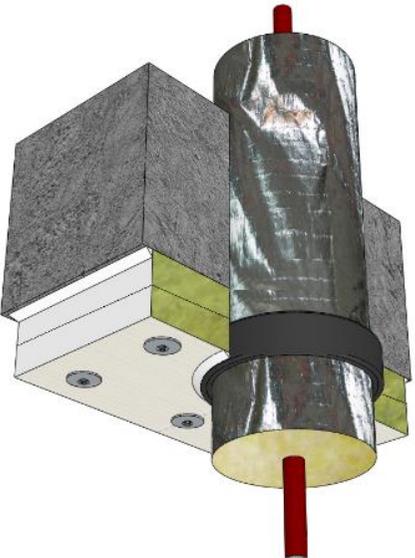
Service			Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity	Integrity & Insulation	Rigid Floor thickness (mm)	Additional requirements
Cast Iron	Steel	Copper	(mm)	(mm)	C/C	C/U	E (mins)	EI (mins)	≥ 150	
✓	✓		≤ 160	≥ 6	✓	✓	120	30	✓	-
✓	✓		≤ 220	≥ 6.9	✓	✓	60	15	✓	-

A49. NON COMBUSTIBLE PIPES – DOUBLE BATT COMPRESS

Non Combustible Pipes through Rigid Floors as identified below, protected by double compressed FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.
Floor Details: Rigid Floors of minimum thickness as identified below, and with performance classified to EN 13501-2.
Maximum Opening size: 1800mm by 600mm. Multiple apertures must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.
Installation Instructions: Double Layer board, compressed and bonded into the aperture flush with upper surface of the floor, unless otherwise stated. FB750 Intubatt should be installed in as few cut pieces as possible and tightly compressed to two opposite sides. This is achieved by the addition of 2mm to the required cut dimension. Compression may be applied - FB750 Intubatt to FB750 Intubatt, FB750 Intubatt to non combustible service, or FB750 Intubatt to Substrate. Compression must be achieved over a minimum 60% of the FB750 Intubatt Compressed edge. If compression of FB750 Intubatt is achieved between two opposite sides, the perpendicular sides are not required to be compressed (the non compressed seal should be fully abutted and bonded). All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS. (Imperfections in cut on a compressed edge may not exceed 40% of the area available to receive compression)
The results below are also applicable when using multiple layers of FB750 Intubat compressed in the opening, including double/multiple layers of surface mounted FB750 Intubatt to the upper face.


Service			Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity	Integrity & Insulation	Rigid Floor thickness (mm)	Additional requirements
Cast Iron	Steel	Copper	(mm)	(mm)	C/C	C/U	E (mins)	EI (mins)	≥ 150	
✓	✓		≤ 220	≥ 8.5	✓	✓	120	15	✓	-

A50. NON COMBUSTIBLE PIPES INSULATED CS – DOUBLE BATT PATTRISS

<p>Non Combustible Pipes Insulated with Continuous Sustained Insulation passing through Rigid Floors as identified below, protected by double pattress (surface mounted) FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.</p>
<p>Floor Details: Rigid Floors of minimum thickness as identified below, and with performance classified to EN 13501-2.</p>
<p>Maximum Opening size: 400mm by 400mm. Multiple apertures must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.</p>
<p>Installation Instructions: Double layer board, surface mounted (pattress fit) on under side of the floor with a minimum 75mm overlap around the aperture. (Overlap on the lowest edge can be reduced to 30mm in the event of an obstruction preventing the 75mm overlap). The overlap should be bonded with a 10mm bead of FS702 Intumastic placed 20-60mm from the board edges, and additionally mechanically restrained using 75mm steel screws with a 25mm washer at maximum 300mm centres, 10-65mm from the board perimeter and no more than 50mm from a board joint. A low torque setting should be used to ensure that the embedment of fixing into the board does not exceed 15mm. The fixings may be left exposed or covered using FS702 Intumastic. The FB750 Intubatt should be installed in as few cut pieces as possible. All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS. External sides of the Board may be required to be coated for aesthetic reasons or to prevent fibre migration.</p>
<p>The results below are also applicable when using multiple layers of surface mounted FB750 Intubatt to the under side of the floor, or double / multiple layers compressed and bonded within the floor, or double / multiple layers to the upper face of the floor.</p>


Service			CS Pipe Insulation (Continuous Sustained)		Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity	Integrity & Insulation	Rigid Floor thickness (mm)	Additional requirements
Cast Iron	Steel	Copper	Material	Thickness (mm)	(mm)	(mm)	C/C	C/U	E (mins)	EI (mins)	≥ 150	
✓	✓		Nitrile (Elastomeric)	40	≤ 220	≥ 6	✓	✓	240	30	✓	2 layers of FP302 Intustrap (Central to seal) sealed within FB750 Intubatt with FS702 Intumastic
✓	✓		Glass Fibre	≥ 50	≤ 220	≥ 6	✓	✓	90	30	✓	2 layers of FP302 Intustrap (Central to seal) sealed within FB750 Intubatt with FS702 Intumastic

A51. NON COMBUSTIBLE PIPE INSULATED CS – DOUBLE BATT COMPRESS

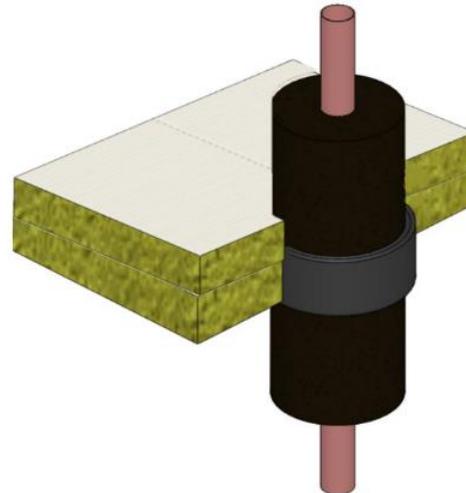
Non Combustible Pipes Insulated with Continuous Sustained Insulation passing through Rigid Floors as identified below, protected by double compressed FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.

Floor Details: Rigid Floors of minimum thickness as identified below, and with performance classified to EN 13501-2.

Maximum Opening size: 400mm by 400mm. Multiple apertures must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.

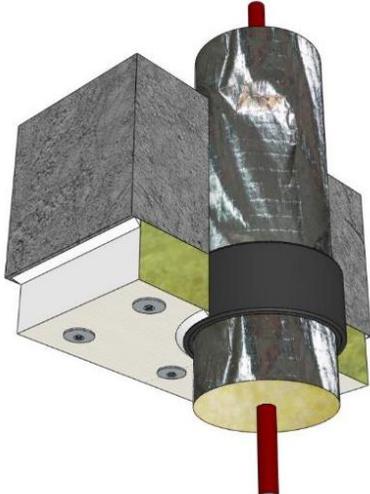
Installation Instructions: Double Layer board, compressed and bonded into the aperture flush with upper surface of the floor, unless otherwise stated. FB750 Intubatt should be installed in as few cut pieces as possible and tightly compressed to two opposite sides. This is achieved by the addition of 2mm to the required cut dimension. Compression may be applied - FB750 Intubatt to FB750 Intubatt, FB750 Intubatt to non combustible service, or FB750 Intubatt to Substrate. Compression must be achieved over a minimum 60% of the FB750 Intubatt Compressed edge. If compression of FB750 Intubatt is achieved between two opposite sides, the perpendicular sides are not required to be compressed (the non compressed seal should be fully abutted and bonded). All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS. (Imperfections in cut on a compressed edge may not exceed 40% of the area available to receive compression)

The results below are also applicable when using multiple layers of FB750 Intubatt compressed in the opening, including double/multiple layers of surface mounted FB750 Intubatt to the upper face.



Service			CS Pipe Insulation (Continuous Sustained)		Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity	Integrity & Insulation	Rigid Floor thickness (mm)	Additional requirements
Cast Iron	Steel	Copper	Material	Thickness (mm)	(mm)	(mm)	C/C	C/U	E (mins)	EI (mins)	≥ 150	
✓	✓	✓	Glass Fibre	≥ 50	≤ 22	≥ 0.8	✓	✓	120	120	✓	2 layers of FP302 Intustrap, flush with lower face of seal, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓	✓	Nitrile (Elastomeric)	35	≤ 22	≥ 0.8	✓	✓	120	120	✓	2 layers of FP302 Intustrap, flush with lower face of seal, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓		Glass Fibre	≥ 50	≤ 220	≥ 6	✓	✓	90	30	✓	2 layers of FP302 Intustrap, flush with lower face of seal, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓		Nitrile (Elastomeric)	38	≤ 220	≥ 6	✓	✓	30	30	✓	2 layers of FP302 Intustrap, flush with lower face of seal, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓		Nitrile (Elastomeric)	60	≤ 160	≥ 6.9	✓	✓	60	15	✓	4 layers of FP302 Intustrap, central to the seal, sealed within FB750 Intubatt with FS702 Intumastic

A52. NON COMBUSTIBLE PIPE INSULATED CS – SINGLE BATT PATTRESS

<p>Non Combustible Pipes Insulated with Continuous Sustained Insulation passing through Rigid Floors as identified below, protected by single pattress (surface mounted) FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.</p>
<p>Floor Details: Rigid Floor of minimum thickness as identified below , and with performance classified to EN 13501-2.</p>
<p>Maximum Opening size: 400mm by 400mm. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.</p>
<p>Installation Instructions: Single layer Board surface mounted (pattress fit) to underside of the floor with a minimum 75mm overlap around the aperture. (Overlap on the lowest edge can be reduced to 30mm in the event of an obstruction preventing the 75mm overlap). The overlap should be bonded with a 10mm bead of FS702 Intumastic placed 20-60mm from the board edges, and additionally mechanically restrained using 75mm steel screws with a 25mm washer at maximum 300mm centres, 10-65mm from the board perimeter and no more than 50mm from a board joint. A low torque setting should be used to ensure that the embedment of fixing into the board does not exceed 15mm. The fixings may be left exposed or covered using FS702 Intumastic. The FB750 Intubatt should be installed in as few cut pieces as possible. All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS. External sides of the Board may be required to be coated for aesthetic reasons or to prevent fibre migration. (In situations where the required overlap cannot be achieved due to a perpendicular fire resisting wall / soffit, it is possible to reduce the overlap, down to as low as 0mm, provided the board edge is bonded to the adjoining compartment using a 10mm bead of FS702 Intumastic, and subsequently pointed to all mated edges)</p>
<p>The results below are also applicable when using multiple layers of surface mounted FB750 Intubatt to the under side of the floor, or single / multiple layer(s) compressed and bonded within the floor, or single / multiple layer(s) to the upper face of the floor.</p>


Service			CS Pipe Insulation (Continuous Sustained)		Pipe diameter	Pipe wall thickness	Pipe end configuration		Integrity	Integrity & Insulation	Rigid Floor thickness (mm)	Additional requirements
Cast Iron	Steel	Copper	Material	Thickness (mm)	(mm)	(mm)	C/C	C/U	E (mins)	EI (mins)	≥ 150	
✓	✓		Glass Fibre	≥ 50	≤ 220	≥ 6	✓	✓	90	30	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic
✓	✓		Nitrile (Elastomeric)	38	≤ 220	≥ 6	✓	✓	30	30	✓	2 layers of FP302 Intustrap, sealed within FB750 Intubatt with FS702 Intumastic

A53. DAMPERS – DOUBLE BATT COMPRESS

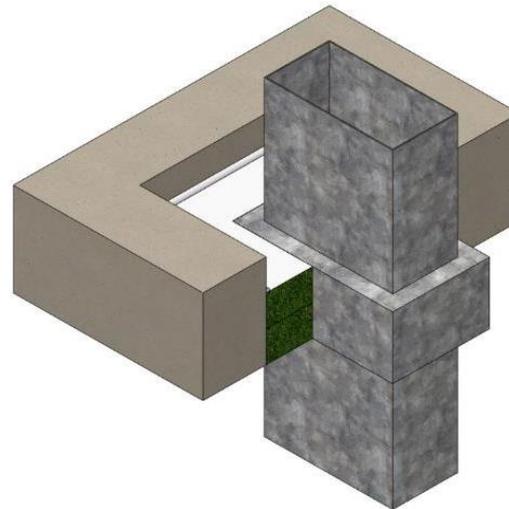
Dampers through Rigid Floors as identified below, protected by double FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.

Floor Details: Rigid Floors of minimum thickness as identified below, and with performance classified to EN 13501-2.

Maximum Opening size: 450mm by 450mm. Multiple apertures must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.

Installation Instructions: Double Layer board, compressed and bonded into the aperture flush with lower surface of the floor. FB750 Intubatt should be installed in as few cut pieces as possible and tightly compressed to two opposite sides. This is achieved by the addition of 2mm to the required cut dimension. Compression may be applied - FB750 Intubatt to FB750 Intubatt, FB750 Intubatt to non combustible service, or FB750 Intubatt to Substrate. Compression must be achieved over a minimum 60% of the FB750 Intubatt Compressed edge. If compression of FB750 Intubatt is achieved between two opposite sides, the perpendicular sides are not required to be compressed (the non compressed seal should be fully abutted and bonded). All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Apertures for penetrating services are to be tightly fitted and sealed. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. Service openings should be cut no more than 15mm away from non combustible services, and/or, openings should be cut to suit the requirements of any additional required Nullifire product, if the service type is combustible or insulated CS or LS. (Imperfections in cut on a compressed edge may not exceed 40% of the area available to receive compression)

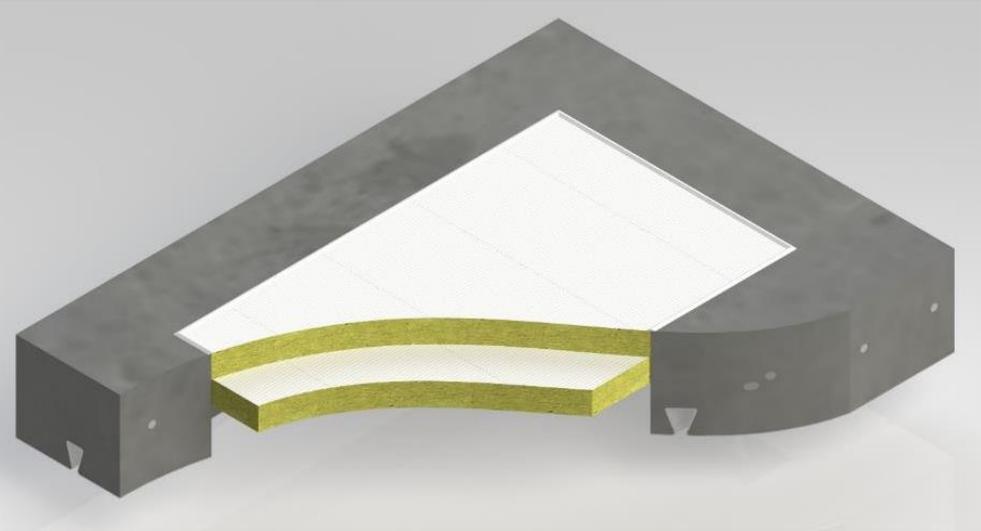
The results below are also applicable when using multiple layers of FB750 Intubatt compressed in the opening, including double/multiple layers of surface mounted FB750 Intubatt to the upper face.



Service	Damper dimensions	Integrity	Integrity & Insulation	Rigid Floor thickness (mm)	Additional requirements
	(mm)	E (mins)	EI (mins)	≥ 150	
Steel damper	≤ 375x375x78	120	120	✓	-

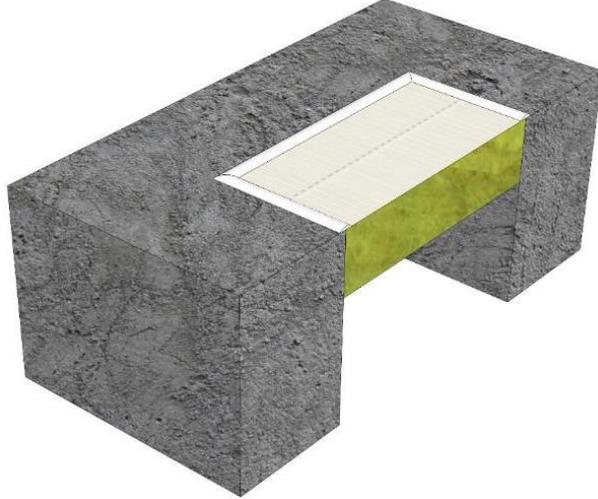
Batts fitted together, flush to lower surface. Data covers applications mid-depth or flush to upper surface.
 EI performance can only be claimed for the seal between the substrate and the damper ; the damper performance must be based on EN 1366-2 testing.

A54. BLANK SEALS - DOUBLE BATT COMPRESSION

Blank Seals installed in Rigid Floors as Identified below, protected by double compressed FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.
Floor Details: Rigid Floors of minimum thickness as identified below, and with performance classified to EN 13501-2.
Maximum Opening size: See below. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.
Installation Instructions: Double Layer board, compressed and bonded into the aperture flush with upper surface of floor. FB750 Intubatt should be installed in as few cut pieces as possible and tightly compressed to two opposite sides. This is achieved by the addition of 2mm to the required cut dimension. Compression may be applied - FB750 Intubatt to FB750 Intubatt or FB750 Intubatt to Substrate. Compression must be achieved over a minimum 60% of the FB750 Intubatt compressed edge. If compression is achieved between two opposite sides of FB750 Intubatt, perpendicular sides are not required to be compressed (the non compressed seal should be fully abutted and bonded). All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. (Imperfections in cut on a compressed edge may not exceed 40% of the area available to receive compression)
The results below are also applicable when using multiple layers of compressed and bonded FB750 Intubatt within the floor, or double / multiple layers to the upper face of the floor.
 A 3D cutaway diagram illustrating the installation of a double-batt seal in a floor opening. The diagram shows a dark grey concrete floor with a white double-layer board in the center. A yellow-green double-batt seal is installed around the perimeter of the board, compressed against the floor. The seal is shown in a cutaway view, revealing its internal structure and how it fits into the floor opening.

Opening size (mm)	Integrity	Integrity & Insulation	Rigid Floor thickness (mm)	Additional Requirements
	E (mins)	EI (mins)	≥ 150	
≤ 450x400	120	120	✓	Opening framed with 95mm x 45mm European Redwood Cedar battens. Battens and FB750 Intubatt subsequently coated with 0.4mm DFT of Nullifire SC803 Intumescent Coating
≤ 350x400	120	120	✓	First Batt Fitted flush with lower surface of opening. Second batt surface mounted below opening with 75mm overlap
≤ 500x500	120	60	✓	-

A55. BLANK SEALS - SINGLE BATT COMPRESSION

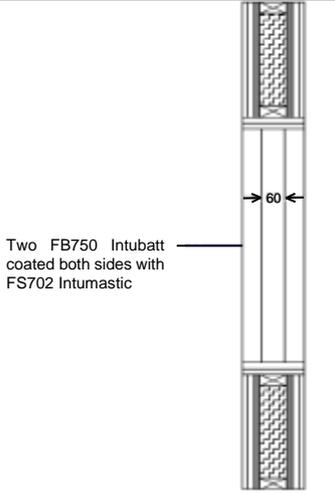
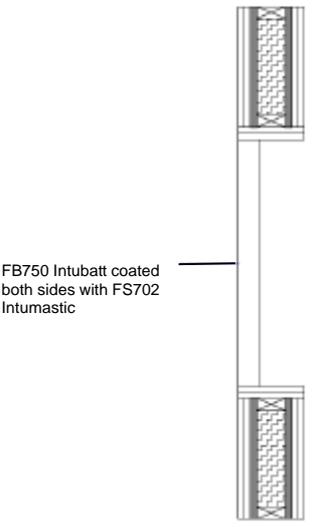
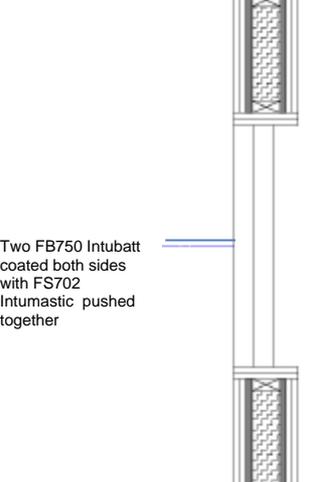
Blank Seals installed in Rigid Floors as Identified below, protected by single compressed FB750 Intubatt seal, sealed with FS702 Intumastic or FS712 Intucoat.
Floor Details: Rigid floors of minimum thickness as identified below, and with performance classified to EN 13501-2.
Maximum Opening size: See below. Multiple openings must be separated by a minimum of 200mm for fire resistance requirements. Check separation requirements with the system owner of the supporting construction.
Installation Instructions: Single Layer board, compressed and bonded into the aperture flush with upper surface of floor. FB750 Intubatt should be installed in as few cut pieces as possible and tightly compressed to two opposite sides. This is achieved by the addition of 2mm to the required cut dimension. Compression may be applied - FB750 Intubatt to FB750 Intubatt or FB750 Intubatt to Substrate. Compression must be achieved over a minimum 60% of the FB750 Intubatt compressed edge. If compression is achieved between two opposite sides of FB750 Intubatt, perpendicular sides are not required to be compressed (the non compressed seal should be fully abutted and bonded). All joints are to be bonded using FS712 Intucoat to full width of the FB750 Intubatt or FS702 Intumastic applied as a 10mm bead along the full length joint centre line. FS702 Intumastic should be used to point all service and substrate interfaces, to a minimum of a 6mm bead. Imperfections should be filled with FS702 Intumastic to the full depth of the FB750 Intubatt. (Imperfections in cut on a compressed edge may not exceed 40% of the area available to receive compression)
The results below are also applicable when using multiple layers of compressed and bonded FB750 Intubatt within the floor, or single / multiple layers to the upper face of the floor.


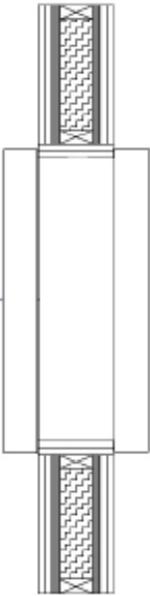
Opening size (mm)	Integrity	Integrity & Insulation	Rigid Floor thickness (mm)	Additional Requirements
	E (mins)	EI (mins)	≥ 150	
≤ 450x400	120	120	✓	Opening framed with 95mm x 45mm European Redwood Cedar battens. Battens and FB750 Intubatt subsequently coated with 0.4mm DFT of Nullifire SC803 Intumescent Coating
≤ 500x500	120	60	✓	-

Annex B: Air Permeability

Product tested : Nullifire FB750 Intubatt with perimeter sealed with Nullifire FS702 Intumastic			
	Pressure (Pa)	Leakage (m ³ /h)	Leakage (m ³ /m ² /h)
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
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

Annex C: Airborne sound insulation

Configuration	Performance
 <p>Two FB750 Intubatt coated both sides with FS702 Intumastic</p>	<p>Dnew - 53 (-1;-5) dB Rw (1.87m2) - 40 (-4;-7) dB Rw (14.2m2) - 49 (-4;-7) dB</p>
 <p>FB750 Intubatt coated both sides with FS702 Intumastic</p>	<p>Dnew - 31 (-1;-3) dB Rw (1.87m2) - 24 (-1;3) dB Rw (14.2m2) - 33 (-1;-3) dB</p>
 <p>Two FB750 Intubatt coated both sides with FS702 Intumastic pushed together</p>	<p>Dnew - 39 (-1;-4) dB Rw (1.87m2) - 32 (-2;-4) dB Rw (14.2m2) - 42 (-2;-4) dB</p>

 <p>Two FB750 Intubatt fixed on source and receive room</p>	<p>Dnew - 39 (-1;-4) dB Rw (1.87m²) - 32 (-2;-4) dB Rw (14.2m²) - 42 (-2;-4) dB</p>
 <p>15mm soundbloc plasterboard placed over test aperture</p> <p>FB750 Intubatt coated both sides with FS702 Intumastic</p>	<p>Dnew - 26 (0;-1) dB Rw (1.87m²) - 46 (-1;-6) dB Rw (14.2m²) - 55 (-1;-6) dB</p>
 <p>Two FB750 Intubatt coated both sides with FS702 Intumastic</p> <p>100</p>	<p>Dnew - 50 (-1;-5) dB Rw (wall area) - 51 (-2;-6) dB Rw (specimen area 0.6 m²) - 38 (-1;-5) dB</p> <hr/> <p>Dnew - 57 (-2;-9) dB Rw (wall area) - 58 (-1;-5) dB Rw (specimen area 0.3 m²) - 42 (-2;-9) dB</p>