Firetherm™

Passive Fire Protection

Pre-Application Guidance Note

CPG UK passive fire protection solutions offers a unique combination of products and services.

Nullifire intumescent coatings and Firetherm fire stopping products provide specifiers, developers, builders, contractors and installers with a complete solution to all passive fire stopping requirements at all stages of the construction progamme.

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Introduction

By bringing together two industry-leading brands in Nullifire and Firetherm, CPG UK has created an industry first. Specifiers, designers, facilities managers, contractors and installers can now access both support and products covering intumescent coatings and fire stopping from one source.

We are specialists, with one focus that has not and will not change – to protect people and buildings from fire. Passive fire protection is highly complex but crucially important, especially as buildings become more sophisticated. We understand the need to have confidence in fire protection so, we provide integrated systems that perform when they are called upon.

Alongside our market leading Nullifire intumescent coatings for the protection of steel structures, Firetherm fire stopping products, provide outstanding passive fire protection solutions to service penetrations, movement joints and linear gaps along with unique interfacing solutions.

With a knowledgeable team of technical experts, everything is focused on providing what our customers need at every stage of their project – smart protection.

Document Aim

Guidance Prior to Application

Introduction:

It is a requirement within UK building regulations, for fire compartments to be utilised as a means of preventing the spread of fire and smoke within a building.

Fire compartmentalisation is achieved by constructing walls and floors of known and tested fire resistance performance.

Fire compartments are often breached to accommodate various services. It is the role of fire stopping products to reinstate the fire resistance of the now breached compartment, to a performance outlined by the fire strategy.

Aim:

The aim of this document is to provide guidance prior to application, related to the configurations of both the openings (which have been deemed as compartment breaches) and the services which pass through.

This document is purely for guidance and should be read in conjunction with Firetherm and/or Nullifire details suited to the site conditions.

CDM and Approved Document B should be utilised at all times

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Site Conditions

Assess the Site Conditions:

Wall/Floor Construction & Performance – Passive Fire Protection products are required to "reinstate the performance of a compartment wall or floor space ". The wall or floor must be compliant to its classification (CE) and meet an equal or greater fire performance than what's required from the fire seal. The required level of performance should be defined by the Fire Strategy, specific to each site. If the compartment performance is non-compliant to its classification, fire seals may not perform as intended.

We need to know, as a minimum, the following related to substrates:

1. Wall/Floor type: E.g. Flexible (Plasterboard), Rigid (Blockwork/AAC or Concrete Floors), Timber Stud, Timber Joisted floor/ Ceiling etc.
2. Overall width of substrate.
3. Cavity or Non Cavity Walls, including ceiling voids, raised access floors and hollow wall slabs.
4. Any other substrate type: CLT, white wall panels, cladding etc.
5. The Compartment requirements: - Fire ratings (EI), acoustic, air pressure, movement, environmental conditions etc.

Compartment Terminology (EI)

"EI" is the value which is applied to both a compartment and the reinstatement product, typically defined by the Fire Strategy.

E = Fire Integrity - A products physical ability to stop flames and hot gasses passing through a compartment.

I = Fire Insulation – A products ability to prevent heat transfer through a compartment, maintaining temperatures below the test requirement.

The commonly used, FR = Integrity ONLY. This will be interpreted by us as an Integrity only requirement.

A fire compartment line is also limited to the lowest performing element: e.g. 60-minute wall with a 30-minute door = a 30-minute compartment line.

Site Conditions Cont.

Access:

It is important to ascertain if the service types and site conditions permit the correct application of Firetherm and/or Nullifire products.

Is access possible to create the required seal?

Whilst we provide guidance on tested distances between services and substrates, do the actual site conditions permit you to suitably install? If not, we recommend a request is sent to the building owner or main contractor. This is in order to ensure either suitable access is made available or site sequencing is controlled in a manner that enables correct installation.

How is the opening formed?

Always consider how a wall or floor opening has been formed (e.g. framed & lined, framed & unlined or unframed & unlined for plasterboard walls). Cavities within timber joisted or hollow pot concrete floors etc. should also be considered. All cavities must be closed to prevent fire spread within a substrate or cavity.

If there is a risk of fire from both sides, the created seal should typically be symmetrical.

Service Configuration

Service Configuration Explained:

- Single items

A single service from the BS-EN 1366-3 testing standard, through a single opening in a compartment.

- Multiple items

Multiple numbers of a single service type from the BSEN 1366-3 testing standard, through a single opening in a compartment.

- Mixed Penetrations

Different services types from the BS-EN 1366-3 testing standard, through a single opening in a compartment.

- Combined Penetrations

Different services types from multiple BS-EN testing standards, through a single opening in a compartment. E.g. Duct, Damper and Cable Tray with a single service opening.

- Partial Penetrations

Services form the BS-EN 1366-3 testing standard which fail to penetrate the entire substrate. (Turning and passing into a cavity).

Service Configuration

Service Support Requirements:

Services should be supported in line with the installer/service manufacturers recommendations. Any deviation from this may result in warranty and liability changes, and also may result in prosecution.

It is generally assumed that services should be supported as per fire test, typically between 200mm and 500mm away from the compartment. We do not support this opinion as many service support systems are designed to accommodate thermal expansion, movement, acoustic enhancements etc. Additionally, we are not qualified to interfere with a service manufacturers specific design.

We have tested services with both combustible and non-combustible service support systems, however services have always been cut as required by the standard (BS EN 1366-3) and capped accordingly. This is a test requirement and is never replicated on site.

The responsibility of correct installation of service supports lies with the building owner, main contractor and installing company. Requirements may also be determined by other building codes.

Material Interfaces and CPG UK Products:

It is the responsibility of the installing contractor to read and adhere to all data sheet requirements relating to corrosivity and thermal expansion of service materials/types. If unsure of requirement, contact technical.

Service Configuration Explained:

Combined penetrations will utilise products from many different testing standards: this is currently not permissible and will result in an engineered solution. The industry acknowledges the need for a combined penetration seal standard. An extended application is currently being developed within CEN, "pr-EN 15882-5 Combined Penetration Seal EXAP".

Partial Penetrations: Currently fall outside of any test standard: We apply knowledge from the service type in a traditional configuration, however this still results in only an engineered solution being available.

Firetherm & Nullifire will only issue ad hoc / engineered solutions when tested details cannot be installed or where site refuse to adjust site conditions to allow tested details from being applied. Ad Hoc / Engineered Solutions are issued for acceptance to the building owner/main contractor. Supporting evidence for Ad Hoc / Engineering details will only be issued to companies that hold an NDA (non-disclosure agreement) with us. Currently this includes Warrington Fire, BRE, IFC, UL and ARUP Fire. Firetherm/Nullifire do not assume design liability as site conditions and location of services are beyond our control.

Engineering Judgements will only be issued by Firetherm or Nullifire when the tested criteria cannot be met.

Consideration of Service Penetrations

Importance of Considering All Service Penetrations:

- Non-Combustible Services

Single Cables, Cable Bundles, Cable Trays, Steel Pipes, Copper Pipes, Metal Trunking, Metal Conduits, Dampers – Can be sealed with non-expansive products (Intubatt, Intumastic) to their tested limitations. Non-combustible services readily allow heat transfer and will limit the insulation performance of the seal if not appropriately treated with Intuflex (a thermal defence wrap) or appropriate lagging

- Combustible Services

All plastics & All lagging types (unless proven by test to not melt, degrade, shrink or burn away under resistance to fire testing) will require a closing device.

Primary Seals:

We consider Intubatt & Intucompound to be Primary Sealing products. The correct number of layers of Intubatt required can be determined by knowing:

1. Fire rating. Typically, a single layer of Intubatt offers up to EI60, double offers up to EI240.

2. Opening configuration. Refer to Firetherm/Nullifire details PS001, PS002 or PS003 for correct application of product or opening type.

3. Acoustic requirement. Product configuartion changes may be required to achieve the acoustic performance required.

Intucompound should be installed at a depth of 100mm and following the requirements of PS004, to ensure its load bearing performance is achieved.

Both Intubatt and Intucompound may be used in walls and floors, however, we recommend a max 300mm x 300mm limitation on an Intubatt floor seal if there is any risk of foot traffic. Intubatt is not a load capable product.

Intubatt may not be installed dry fitted.

Intucom]ound may not be installed against a non-load capable substrate or across a movement joint.

Secondary Seals:

We consider closing devices to be Secondary Sealing Products (Intustrap, Intucollar, Intusleeve & Intumastic HP). Some standalone products may be considered primary seals (Intumastic and Intumastic HP & Collars), however the primary seal can be defined as the substrate.

Refer to the relevant tested/PS detail or 3rd party certificate (Certifire / ETA) to determine correct install detail.

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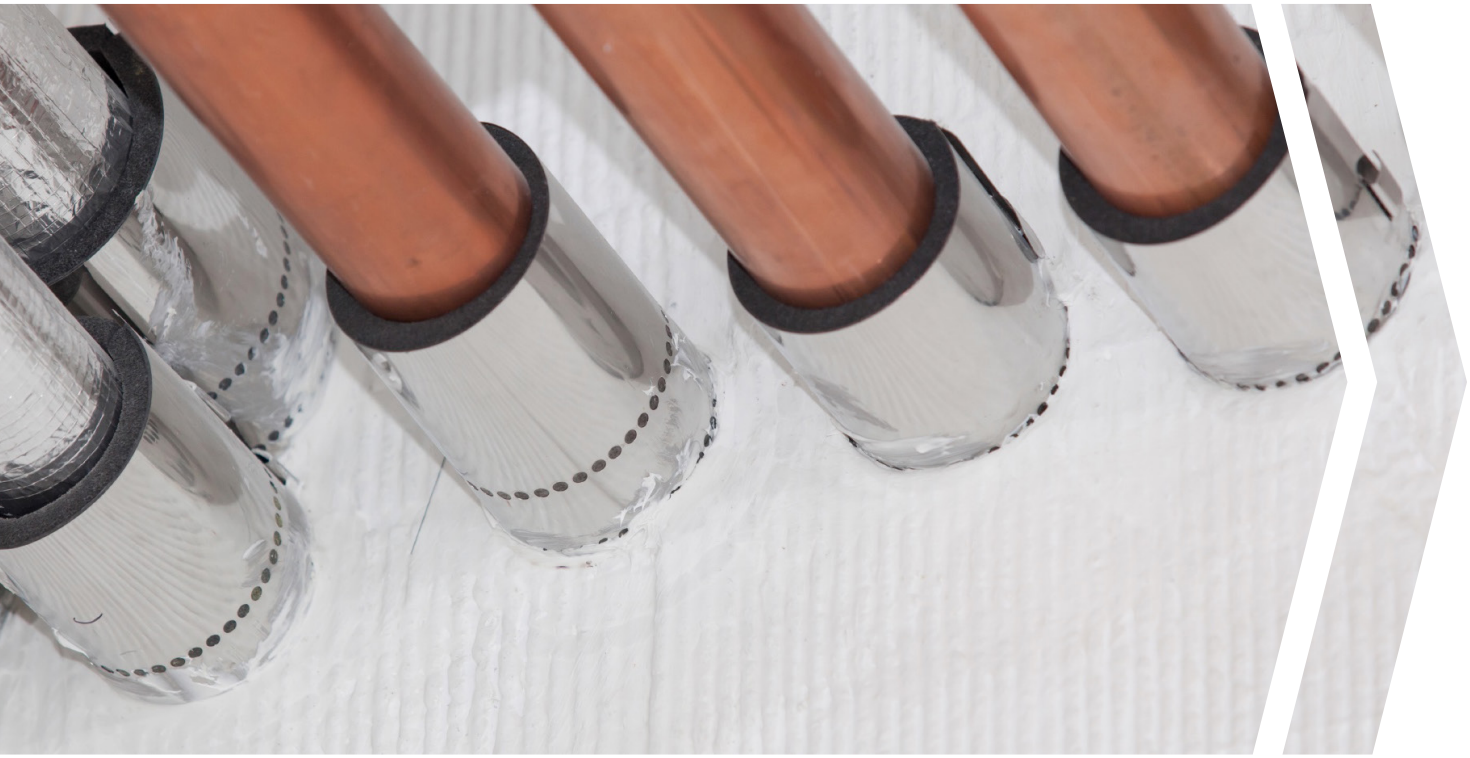

Types of Service Penetrations

Combustible Pipes:

All combustible pipes require a suitable tested closer device, regardless of size. All combustible conduits also require a suitable closer device, this is regardless of size. For compliance to Firetherm methodologies, a closer device must be used in conjunction with a tested primary seal. Available Firetherm Closer devices:

- Diameter 5-125mm – Intumastic HP.
- Diameter 5-160mm – Intustrap (Limited to 110mm pipes in walls, 160mm pipes in floors).
- Diameter 50-200mm – Intusleeve.
- Diameter 40-400mm – Intucollar.

Refer to the relevant PS detail or certification to determine correct install detail.

Non-Combustible Pipes:

Generally sealed with non-expansive products such as Intumastic, Intusil or Intubatt.

Refer to the relevant PS/Tested detail or certification to determine correct install detail.

Non combustible or combustible pipes, should not be cast directly in Intucompound if they are susceptible to thermal expansion (expand and contract during service life, which can lead to cracking if cast in a rigid firestopping mortar).

Intuflex may be required to reinstate fire insulation performance.

Refer to the relevant PS/tested detail to determine correct install detail.

Conduits

Smoke transfer should always be considered when fire stopping conduits. Conduits should be smoke sealed at all exit points. Combustible conduits sealed with suitable closing device at compartment line. Non combustibles conduits sealed as per steel/ copper pipes.

Lagged Non-Combustible Pipes

Unless proven by our testing to not burn, melt, shrink or degrade, lagging materials should be treated with a closing device.

Refer to the relevant PS/Tested detail to determine secondary seal. Firetherm/Nullifire will never request pipe insulation to be removed. Insulation should not be removed without a written instruction from site, justifying the requirement & accepting associated labilities.

Cables

Typically sealed with Intubatt & Intumastic or Intucompound.

- Max tested cable bundle = 100mm Diameter.
- Max tested cable tray = 500mm Wide.
- Max individual cable diameter = 80mm.
- Cable baskets, ladder, perforated & non perforated trays all proven by test.

The Full EN cable set has been shown to offer EI60 sealed with single layer of Intubatt + Intuflex or Intubatt Box. The Full EN cable set has been shown to offer EI120 sealed with double layer of Intubatt + Intuflex or Intubatt Box. EI240 solutions available. Please contact technical.

Refer to the relevant PS/tested detail to determine correct install detail.

Flat Chanel Ducting (Combustible)

Only suitable for Intusleeve Duct. Can be installed direct to substrate or within Intubatt / Intucompound. Tested within the BS EN 1366-3 standard.

Trunking (Non-Combustible)

Trunking should be sealed around with either Intubatt or Intucompound. A suitably qualified person should ensure firestopping is present within trunking and it meets the requirement. Intupillow pro can be used within trunking if installed by a qualified person(s).

Types of Service Penetrations

Ducts / Dampers

First action should be to contact the duct/damper manufacturers, as their tested solutions would supersede our advice (as they test to a different standard – BS EN 1366-1/2).

In the absence of this, or if a combined seal is evident, we can offer ad hoc details only.

Dampers should all be independently mechanically fixed in line with manufacturer recommendations unless otherwise proven by test.

All combined seals will be considered as integrity only if the damper manufacturer cannot provide testing to show insulation capability.

Doors

Doors are independently tested by the manufacturer and any fire stopping solutions they can offer would supersede our advice. We have testing to BS EN 1634-1 & BS EN 1366-4 to justify the linear seal between the frame and to wall. Either with FF197 or Intumastic (FS702) with backing material.

If there is a requirement for a smoke seal when using FF-197 in linear joints around the doors, a 3mm skin of Intumastic may be applied.

The gap between the external frame and the compartment, in our opinion, is covered by or better suited to, the EN1366-4 standard for linear seals.

Lifts & Drop Shutters

Lift doors and drop shutters are independently tested by the manufacturer and any fire stopping solutions the manufacturer offers would supersede our advice. Ad hoc guidance can only be offered by us in the absence of guidance from the product manufacturer.

Service Separation:

At design stage – 100mm covers all testing.

On site – Please refer to minimum distance document (Firetherm Document 711a). Please note these tested minimums were installed under laboratory conditions. We have far more access compared to actual site conditions and the correct application is considerably more important than the closest tested distance.

Ductwork and Dampers should be separated into their own openings away from other service types to avoid combination seals.

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Types of Service Penetrations

Acoustics (Tested Examples):

2 layers of Intubatt (140 Kg/m3) = 57 dB.

2 layers of Intubatt (180 Kg/m3) = 59 dB.

1 layer of Intubatt (140 Kg/m3) = 36 dB.

The largest acoustic performing element would be the compartment substrates and could limit performance of the primary seal.

Acoustic seals may not be dry fitted. Intumastic can add up to 18 dB on raw rock fibre and is required to seal all critter holes through which sound may travel.

Test data can be issued to an acoustician to be included within a site assessment without a singed NDA.

Building Movement:

Head of Wall – Linear seals at head of walls will require movement capable products. Firetherm offer Intumastic, Intusil, Intumastic/Intusil Soft Joint & Intuspan.

- Intumastic - +/- 15%
- Intusil - +/- 25%
- Intumastic Soft Joint - +/-15%
- Intusil Soft Joint = +/- 25%
- Intuspan = 50% Compression and Return

If services are mechanically fixed to a moving soffit, they will also require movement details. Please consult technical. There is no test to assess service movement and all recommendations will be engineering judgements based on linear seal movement testing in fire conditions.

Test Requirements

Wall and floor constructions are tested in accordance with BS EN1364-1 and then classified for fire resistance in accordance with BS EN13501-2.

Penetration seals are tested in accordance with BS EN 1366-3 and then classified in accordance with BS EN 13501-2.

Fire-resistant ventilation Ducts are tested in accordance with BS EN 1366-1 and then classified in accordance with BS EN 13501-3.

Fire Dampers, are tested in accordance with BS EN 1366-2 and then classified in accordance with BS EN 13501-3.

DEFINITIONS

NAME	DEFINITION
Single Service Penetration Seal	Penetration seal intended for penetrations with only one service passing through (e.g. cable or pipe, but not Ducts or Dampers)
Multiple Penetration Seal	Penetration seal intended for penetrations where more than one service of the same type pass through (e.g. cables or pipes, but not Ducts or Dampers)
Mixed Penetration Seal	Penetration seal intended for penetrations where more than one type of services pass through (e.g. cables and/or pipes, but not Ducts or Dampers)
Fire-Resistant Ventilation Duct	Device used for the distribution or extraction of air and designed to provide a degree of fire resistance, tested with a dedicated fire stopping penetration seal system
Fire Damper	Device for use in heating, ventilation and air conditioning (HVAC) systems at fire boundaries to maintain compartmentation and protect means of escape in case of fire, tested with a dedicated fire stopping penetration seal system
Combined Penetration Seal	Mixed penetration seal, with fire Ducts or fire Dampers passing through
Penetration	Opening or hole through a supporting construction that is formed to allow the passage of services (e.g. cable, pipe, conduit, waveguide, Duct, Damper)

NAME	DEFINITION
Penetration Service	Cables, pipes (plastic & metal), conduits, wave guides, busbars etc
Penetration Seal	Material used to seal the penetration
Firetherm / Nullifire Direct Equivalent Products	Firetherm Intubatt (140kg/m3) - Nullifire FB750 Firetherm Intumastic - Nullifire FS702 Firetherm Intucompound – Nullifire FR230 Firetherm Intustrap – Nullifire FP302 Firetherm Intuband – Nullifire FP302 Firetherm Intumastic HP - Nullifire FS709 Firetherm Intusleeve – Nullifire FP160 Firetherm Intucollar – Nullifire FP170 Firetherm Intupillow Pro – FO110 Firetherm Intuflex 45 – Nullifire FIO25 Firetherm Intuflex 90 – Nullifire FIO40

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Testing & Certification

CPG Europe Passive Fire Protection Solutions is able to assist with the selection of appropriate products, or mix of products, to meet the fire protection requirements of any building. This can be achieved by using 3rd party accredited installers in conjunction with our Technical team. On larger projects, we work with clients, contractors and specialist sub-contractors to ensure the best possible and most cost-effective solution, without ever compromising on quality or safety.

As the only manufacturer and supplier that specialises in both intumescent coatings and passive fire protection products we are uniquely placed to offer the full package to suit all project requirements. CPG Europe passive fire protection products combine together to give all parties peace of mind and ensure compliance with local building codes.

Our passive fire protection products undergo initial validation assessments at our in-house facilities prior to undergoing rigorous independent third party testing with leading UKAS test houses, resulting in the following accreditations,such as:

- BS476 Pt20, 21, 22, 25
- BSEN 1366-3/4
- EN13501-2:2007
- ETAG 026-2
- CE Marking
- Certifire
- UL EU Classification

CPG Europe is an active participant in BSI standards, CEN European working groups and the ASFP.

Tate Modern, London

CPG Europe manufactures high performance building materials in order to solve the complex challenges faced by today's construction industry. With over 1,400 employees across Europe, we are committed to shaping a world where buildings and structures save energy, last longer and exceed sustainability benchmarks.

Delivering World-Class Construction Product Solutions.

The product brands housed within CPG Europe cover a wide array of different construction needs and provide a wealth of complex services, support and systems that are rarely found together under one roof.

Window Insulation, Façade Construction, Exterior Insulation & EIFS, Structural & Inplant Glazing

Intumescent Coatings, Fire Stopping

Seamless Resin Flooring, Subfloor Preparation, Car Parking Structures

Civil Engineering, Potable& Waste Water Industry,Balconies, Terraces, Basements & Foundations

Liquid Applied Systems, Felt Systems, Vegetated Roofing

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