

ASFP On-site guide to installing fire-stopping



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In this guide 'fire-stopping' includes cavity barriers, penetration seals for services and linear joint seals. The guidance given below is general best practice; however, some manufacturers' products may be able to cope with some situations better than others. Remember the manufacturer's information/instructions always take precedence.

Who can install fire-stopping?

Ideally, fire-stopping should only be carried out by 'competent persons' i.e. those working for a third party certificated contractor or those who have had their competency checked by a scheme run by a third party certification body. This is recommended in the Building Regulations in the UK and Ireland.

If you are not a 'competent person', the Association for Specialist Fire Protection (ASFP) recommends you join an appropriate scheme as this will demonstrate your expertise and assist in reducing any liability. If fire-stopping is only an ancillary function to your main profession e.g. plumber, electrician, dry-liner, then an acceptable alternative is to achieve an NVQ level 2 qualification in fire-stopping. Details on how to join a third party scheme and how to get an appropriate NVQ are contained within this document.

1. Health & Safety

Ensure that all works are planned and undertaken in line with current health & safety legislation, observing specific site conditions and any manufacturers' literature. This includes being in compliance with the principal contractor's health and safety work plan.

2. Site conditions

- ▶ Confirm the environment is right for installing fire-stopping (temperature, humidity). Check if there are any chemicals present that might affect fire-stopping materials and the substrates are clean and dust free.
- ▶ Do not use the penetration seal area and space around a duct or damper assembly for the passage of other building services as their presence may invalidate the tested penetration seal method.
- ▶ All penetrating services should be supported either side of the wall by fire tested supports to prevent collapse of the seal in a fire. The distance to the first support is particularly important. Check the manufacturer's information and ASFP Advisory Note 8. In the absence of any information, the first support should be no more than 300mm from the face of the seal.
- ▶ If the service is already installed (supports have already been fitted) ensure that the fire-stopping is installed with the supports at the correct distance from the faces of the seal.
- ▶ Dampers must be independently supported so that when activated they do not affect the stability of the surrounding fire-stop unless it is designed to support them and has been tested in the fire damper test EN 1366-2. This should be clarified with the damper manufacturer.
- ▶ Fire dampers should be situated within the thickness of the fire separating element and be securely fixed. It is also necessary to ensure that, in a fire, expansion of the ductwork does not push the fire damper through the structure. In all cases, check with the fire damper manufacturer's EN1366-2 fire tested installation methods.

3. Pre-installation checks

Ensure that the fire-stopping system you are installing is correct:

- ▶ Check the fire resistance time provided by the seal. Are you trying to protect a 60 minute wall with a 30 minute seal? Refer to the manufacturer's information and site drawings
- ▶ Is the seal suitable for the type and size of penetrating service and the size and orientation of the service being sealed? Is the seal too small or too large for the penetrating pipe? Are you using a system designed for walls in a floor?
- ▶ Is the wall or floor the seal is to be installed in constructed correctly? Is the aperture suitable e.g. correct size and in good condition? A full check on the surrounding construction may not be possible, but if you have some doubts, you should raise them with the main contractor.

The ASFP would like to thank the following organisations for the supply of images and photographs used in this publication:

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4. General dos and don'ts

Dos

- ▶ Do check the product's fire test and other evidence to ensure it adequately supports the end use application being used e.g. products tested only as linear gap seals should not be used in a penetration seal application. See ASFP Advisory Note: **Using polyurethane foams**.
- ▶ Do use a loadbearing fire seal for all floor penetrations where there is ANY risk of any person standing on it. ASFP Advisory Note 1 provides further details. Some mortar systems will require steel reinforcement over certain spans; it is important to understand the specific limitations of the system you are using.
- ▶ Do ensure that where penetration seals are to be installed around fire dampers or ducts, that the seal used is approved for use and is compatible with the damper/duct in question.
- ▶ Do use a tested system when installing a flexible cavity barrier which requires services to pass through it. Many penetration sealing systems used for masonry and partition walls cannot be used with large cavity barriers unless proven by test.

Don'ts

- ▶ Don't mix one manufacturer's product with another's in a single seal e.g. batts and mastics from different manufacturers or pipe collars and batts from different manufacturers. This is not proven by test evidence and therefore cannot be assumed to work. Consult the manufacturer's literature and ASFP Advisory Note 6: **Use of fire-stopping components from different manufacturers/systems**.
- ▶ Don't omit 'framing out' unless test or assessment evidence from the manufacturer of the seal or the partition shows it is not required. Partition manufacturers' literature often states that when installing penetrations the hole must generally be framed within the stud work and then lined with the appropriate board (framing out).
- ▶ Don't install intumescent wraps or collars in non-loadbearing barriers such as coated stone wool (batt and mastic systems) unless proven by a fire test or assessment.
- ▶ Don't use batt and mastic systems in floors where there may be a requirement to support foot traffic without separate mechanical protection e.g. a steel grid fixed above the seal.

5. Workmanship dos and don'ts

Dos

- ▶ Do use the manufacturers' recommended coating/mastic for 'buttering' batt to batt, batt to wall and batt to penetration joints.
 - ▶ Do use the correct number of pours for mortars as sometimes it is required for the effective depth of mortar to be applied in only one or two pours. Consult manufacturer's instructions.
 - ▶ Do install pipe wraps within the fire-stop mortar such that they finish flush with the seal soffit.
 - ▶ Do check and if required carry out repairs to any damaged/defective fire-stopping or penetration seal using manufacturer-approved methods. If you have installed the seal you can repair it. If others have installed it and it is damaged and you don't know what it is; it should be removed and replaced.
- ▶ Do ensure that no glass wool or combustible materials have been used around penetrations and in joints unless they have been successfully tested for the particular application.
- ▶ Do ensure compartment walls have been taken up to the underside of compartment floors (above suspended ceilings) and that a suitable deflection head is fitted if the wall is non-load bearing.
- ▶ Do ensure that fire-stopping reaches the edge of floor slabs e.g. for curtain walling: see ASFP Advisory Note 7.
- ▶ Do ensure all possible routes for smoke, gases and flame have been sealed. This is the main reason for installing fire-stopping.

Don'ts

- ▶ Don't leave stone wool packed around services without any fire-stopping material covering it.
- ▶ Don't use plastic plugs for installing supports or collars as these may melt in a fire and fall out.

6. After installation

Dos

- ▶ Do ensure a complete record is made of all installations and referred to in the labelling. This will be needed for the certificate of completion and as part of the inspection process. See ASFP TGD 17 **Code of practice for the installation and inspection of fire-stopping**.
- ▶ Do apply labels as part of the certification process and for traceability for future remedial work.
- ▶ Do take photographs of the completed installation to assist verification of the work.

7. Relevant ASFP publications

ASFP Red Book Fire-stopping and penetration seals for the construction industry (Red Book) <http://is.gd/tfg8YP>

ASFP TGD 17 Code of Practice for the installation and inspection of fire-stopping systems in buildings <http://is.gd/FCjaV1>

ASFP Advisory Notes <http://is.gd/I31BOH>

ASFP Advisory Note: Using polyurethane foams

ASFP Advisory Note 1: Horizontal loadbearing fire-stopping

ASFP Advisory Note 2: Combustible 40 mm pipes

ASFP Advisory Note 6: Use of fire-stopping components from different manufacturers/systems

ASFP Advisory Note 7: Horizontal linear gap seals used in curtain wall systems

ASFP Advisory Note 8: Issues surrounding service support centres

All publications are available for free download from:

www.asfp.org.uk

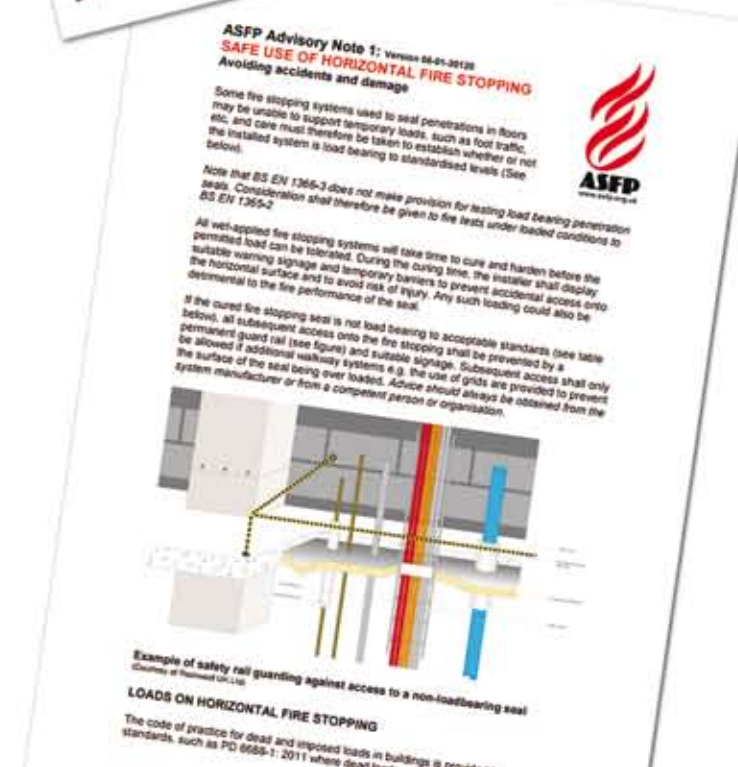
8. ASFP recognised certification bodies operating 3rd party installer schemes

BRE GLOBAL (LPCB)
www.redbooklive.com
Tel: 01923 664000

EXOVA BM TRADA
www.exovabmtrada.com
Tel: 01494 569700

IFC CERTIFICATION LTD
www.ifccertification.com
Tel: 01844 275500

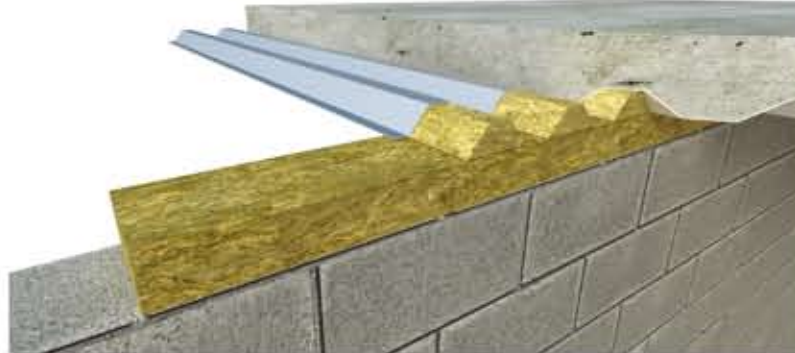
WARRINGTON CERTIFICATION LTD (FIRAS)
www.warringtoncertification.com
Tel: 01925 646666



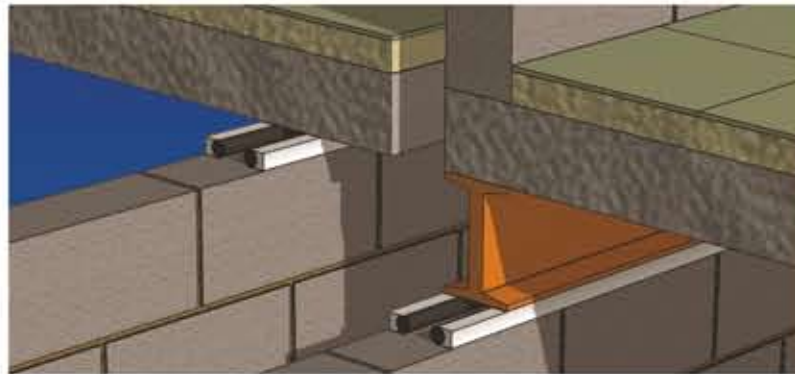
Walls & Floors - Head of wall



- ▶ If movement is expected, an appropriate system that can accommodate movement should be used.



- ▶ Ensure there are no gaps e.g. in profiled decks.



- ▶ If services penetrate the head of the wall joint they need to be sealed with an appropriate fire-stopping material or product.

Walls & Floors - Wall/floor joint

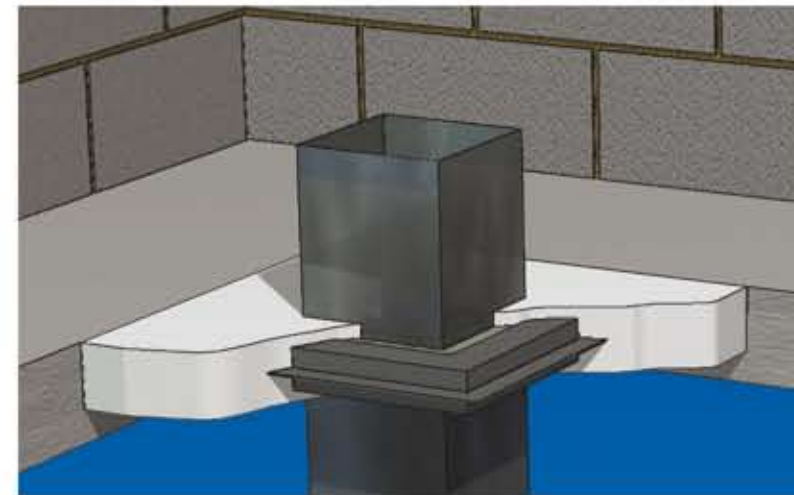


- ▶ If movement is expected, an appropriate system that can accommodate movement should be used.



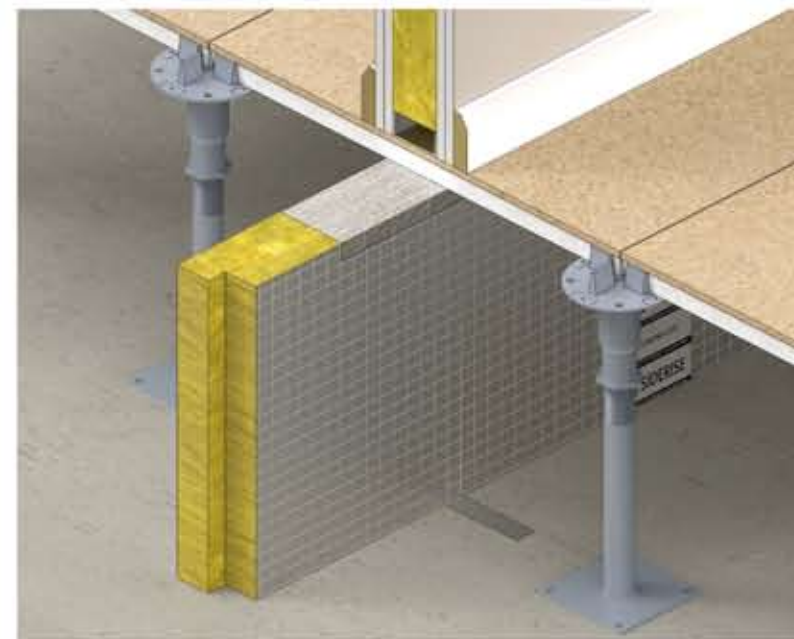
- ▶ Facade movement must be accommodated by a flexible seal that must be adhered or mechanically fixed to the slab according to the manufacturer's guidelines.

Walls & Floors - Risers



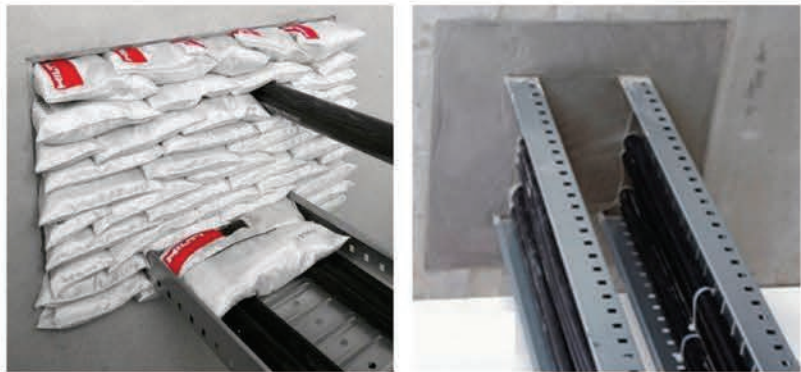
- ▶ It is strongly advised that floor openings for service shafts should be sealed with a loadbearing fire seal.
- ▶ Plastic pipes must have pipe collars fitted to the underside of the floor or incorporated into the seal if shown by test.
- ▶ Any plastic/rubber in the fire-stop must not degrade the plastic pipe by plasticiser migration.
- ▶ The fire-stop should allow the pipe to move in the penetration to allow for expansion and contraction whilst maintaining a smoke seal during its normal service life.
- ▶ Insulated pipes may be sealed with a pressure exerting intumescent product or intumescent sleeve to cope with shrinking insulation, or sleeved with fire-rated insulation.
- ▶ HVAC dampers should be mechanically fixed to an expansion frame back to the structure. Always check with the fire damper manufacturer's fire tested/approved installation methods.

Walls & Floors - Access flooring



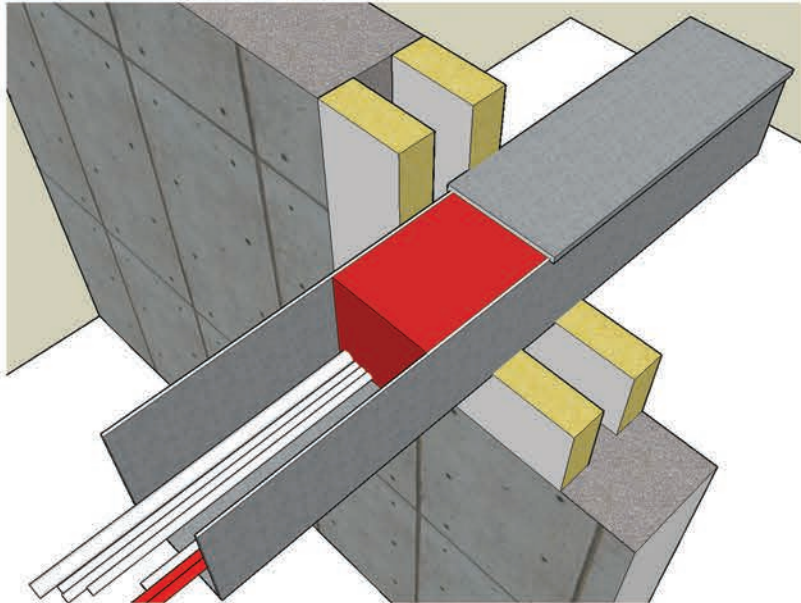
- ▶ Ensure that adequate fire barriers are in place beneath compartment walls and fire doors and at 20m maximum centres for cavity barriers
- ▶ Ensure that stone wool barriers are adequately supported and in line with fire rated partitions where applicable

Cable trays & baskets



- ▶ Any fire seal has to have been tested for the range of cable types on site (e.g. armoured, computer etc.) and the range of diameters used.
- ▶ If further cables are to be added in the future, then any fire stopping may be removable or modifiable.

Cable trunking



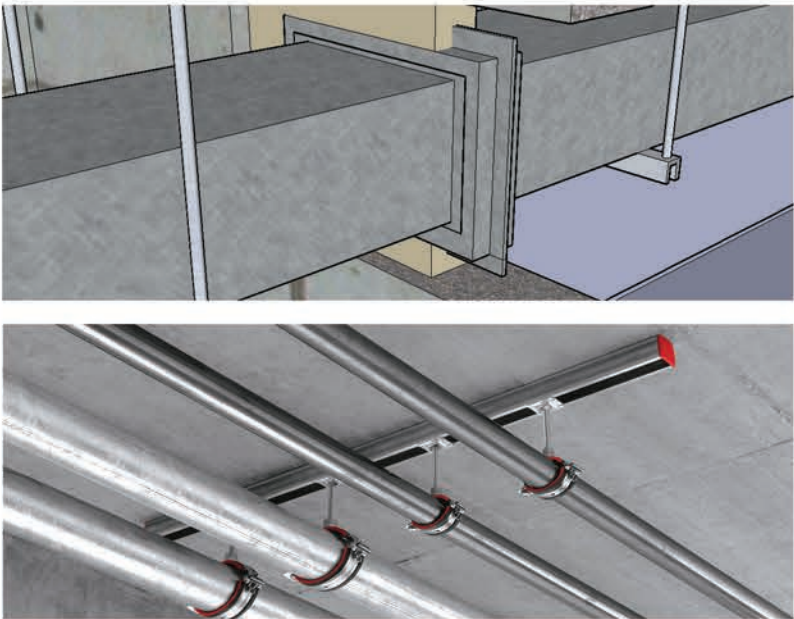
- ▶ The inside of any trunking must be fire-stopped at the location where the penetration passes through the barrier.
- ▶ A short length of trunking lid, protruding a short distance each side of the seal, should be secured in position in line with the separating element, prior to installation of the penetration sealing system.
- ▶ The periphery of the trunking should be fire-stopped appropriately.

Electrical sockets



- ▶ When electrical outlets (back-boxes) are fitted into partition stud walls they must be fire-stopped to prevent fire penetration through the plasterboard and into the cavity using an intumescent based pad.

Service supports - Fixings



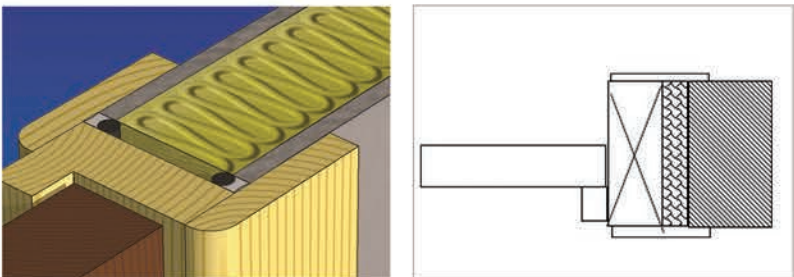
- ▶ The first supports for the penetrating service should be as close as possible to the seal face; and in the absence of any contrary specification positioned not more than 300mm away.
- ▶ The first supports for the penetrating service should use fire rated anchors, supports and other brackets able to carry the service load for the period of fire resistance.

Service supports - Fire curtains & cavity barriers



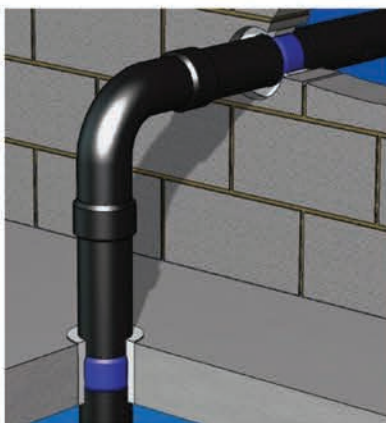
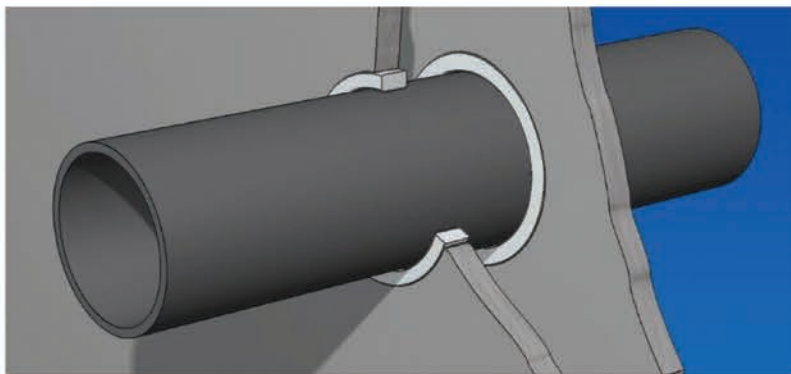
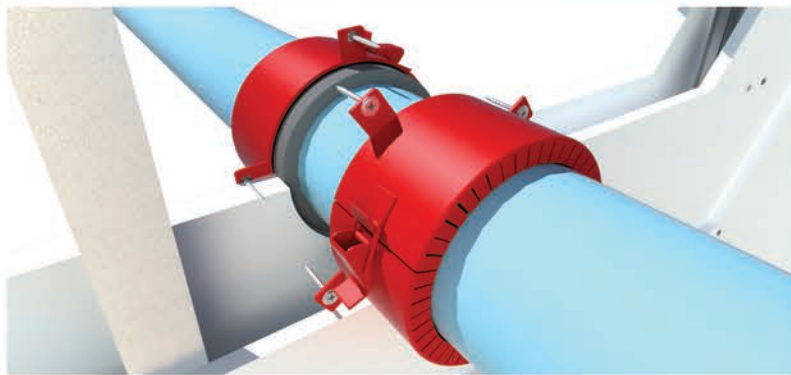
- ▶ Ensure that curtains are anchored to the soffit and according to manufacturer's instructions. Cavity barriers are generally not secured at their lower edge.
- ▶ Ensure that curtains are correctly wired/stitched or stapled together depending on the type of curtain used.
- ▶ Ensure that service penetrations are sleeved and that sleeves are wire stitched / stapled / glued to the curtain according to manufacturer's instructions.
- ▶ Ensure that cable trays are packed with recommended fire stop material when they are sleeved
- ▶ If penetrating services pass through the fire curtain, ensure that there is adequate fire test evidence to demonstrate that this is acceptable.

Fire door frames



- ▶ Gaps between frame and wall must be fire-stopped to the same rating as the door or as per BS 8214 using a suitable fire-stopping product.

Plastic pipes



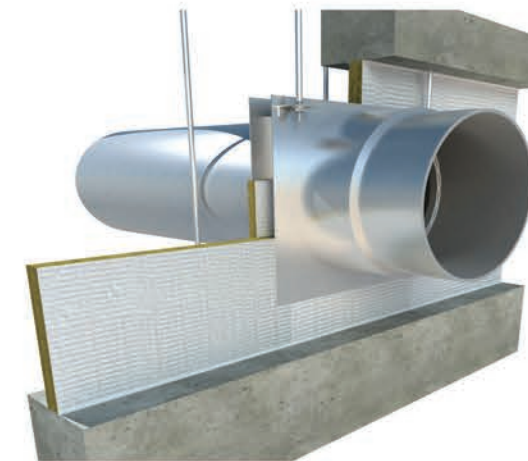
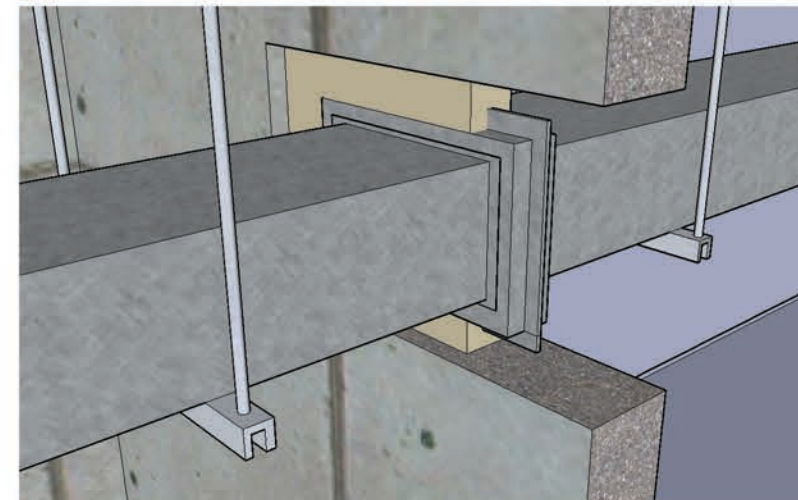
- ▶ Wall penetrations must have a closing device such as a high pressure exerting intumescent sealant, pipe wrap or pipe collar.
- ▶ Any plastic or rubber in the fire-stop must not degrade the plastic pipe by plasticiser migration.
- ▶ The fire-stop should allow the pipe to move in the penetration to allow for expansion and contraction whilst maintaining a smoke seal during its normal service life.
- ▶ Soil pipes must have a closing device installed; if it is a collar, it must be mechanically fixed to the soffit unless the manufacturer's test data supports another fixing method. Alternative products may be used provided they have been tested.
- ▶ All collars must be mechanically fixed firmly against the compartment element face, unless the manufacturer's test data supports another fixing method.
- ▶ All collars must be secured to the element with fire-rated anchors (no wood screws and plugs nor zinc-based anchors) using all fixing brackets.
- ▶ Pipe wraps must be backfilled with mortar compound to the recommended depth.
- ▶ Pipe wraps and collars must be suitable for pipe material (PVC, PE, PP, ABP etc.).
- ▶ Where pipe wraps are claimed to be capable of sealing pipes without backfilling, appropriate test evidence must be supplied.

Metal pipes



- ▶ Seals must be flexible to allow movement.
- ▶ If cement has been used it must be reinforced to prevent cracking in fire and be present for the full depth of the wall or floor.
- ▶ Insulated pipes may be sealed with a pressure exerting intumescent sealant or intumescent sleeve to cope with shrinking insulation, or sleeved with fire rated insulation.
- ▶ A pipe of lead, aluminium, aluminium alloy, fibre-cement or PVCu, with a maximum nominal internal diameter of 160mm may be used with a sleeve of non-combustible pipe (1m each side of the wall), fitted with no annulus to the pipe. Fire-stopping should be provided between the sleeve and the structure.

Fire dampers



- ▶ Fire dampers should be situated within the thickness of the fire separating element and be securely fixed. It is also necessary to ensure that, in a fire, expansion of the ductwork would not push the fire damper through the structure. In all cases, check with the fire damper manufacturer's EN1366-2 fire tested installation methods.
- ▶ Fire dampers can only be installed with the penetration seal used in the test of the fire damper to EN 1366-2.
- ▶ Fire-stops for solid walls and floors are usually fire resisting mortar compounds.
- ▶ Partition walls must have openings framed with metal studding and plasterboard before fitting of a damper unless test evidence to EN 1366-2 supports the use of an unframed opening.



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