

Architects / Specifiers Guide 01

Model specifications for intumescent sealing services penetrating fire resisting walls or floors



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Model Specification for Sealing Services Penetrating Fire Resisting Walls or Floors

(A) Plastic pipes passing through a fire resisting floor or wall:

All plastic pipes shall be fitted with an intumescent pipe collar, or pipe wrap manufactured/supplied by an IFSA Member (www.ifsa.org.uk) that has evidence of performance to substantiate that it is able to maintain the fire resistance of the element for the appropriate duration. This evidence shall be related to the pipe material, pipe diameter, wall thickness or floor depth and orientation and be appropriate to the construction of the wall/floor being penetrated.

(B) Sealing around non-plastic pipes, normally metal, with a melting/softening temperature in excess of 400°C, passing through fire resisting walls and floor:

Any nominally annular gap between a non-plastic (metal) pipe, or pipes, and the perimeter of any hole made to accommodate the pipe(s), shall be filled with an intumescent sealing material or system that is manufactured/supplied by an IFSA Member (www.ifsa.org.uk) and which has evidence of performance to substantiate that the seal is able to maintain the fire resistance of the element for the appropriate duration. This evidence shall be related to the pipe material, wall thickness or floor depth, pipe diameter, and orientation and be appropriate to the construction of the wall/floor being penetrated.

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(C) Sealing around 'plastic' insulated metal cored cables passing through a fire resisting wall or floor: (*)

Any nominally annular gap between a cable(s), including any tray/ladder/brackets supporting them, and the perimeter of any hole made to accommodate the cable(s) shall be filled with an intumescent material, or system that is manufactured/supplied by an IFSA Member (www.ifsa.org.uk) and which has evidence of performance to substantiate that the seal is able to maintain the fire resistance of the element for the appropriate duration. This evidence shall be related to the cable conductor materials and dimensions; the number of cables; the generic form of the insulation; the supporting mechanisms; the wall thickness or floor depth; orientation and be appropriate to the construction of the wall/floor being penetrated.

Additional specification notes to be used to supplement the above specifications:

- Evidence or performance should take the form of test or assessment evidence (to the appropriate standard), issued by suitably qualified body, or which is certified by an accredited 3rd party certification body
- The evidence should be expressed in terms of Integrity (E) and, if appropriate, Insulation (I) as measured against the conditions of test and criteria given in BS EN 1366-3, or in an ad-hoc test using the criteria and methodology described in BS476: Part 20: 1987
- The sealant/sealing system shall be installed strictly in accordance with the manufacturer's/supplier's instructions, preferably by an accredited installer.

* This specification is only suitable for ensuring that the fire resistance is maintained and does not ensure the ability of the cable to continue to carry current which is established by testing to other standards, i.e. EN1366: Part 11.

Model Specification for Sealing Linear Gaps

(A) Sealing linear gaps in wall/wall, wall/floor or floor/floor junctions with no expected movement:

All linear gaps shall be filled, to the prescribed depth, with an intumescent compound, plaster, flexible sealant, with an appropriate back material if it forms part of the approval, manufactured or supplied by an IFSA Member (www.ifsa.org.uk). The sealing material must have evidence of performance to substantiate that it is able to maintain the fire resistance of the element for the appropriate duration in the orientation in which it is to be installed. The evidence shall have been generated in an associated construction that has the same critical thermo-physical characteristics as the construction to be sealed.

(B) Sealing linear gap forming movement joints in wall/wall, wall/floor or floor/floor junctions:

All linear gap movement joints shall be filled, to the prescribed depth with an intumescent flexible sealant, with an appropriate backing material if it forms part of the approval, manufactured or supplied by an IFSA Member (www.ifsa.org.uk). The sealing material must have evidence of performance to substantiate that it is able to maintain the fire resistance of the element for the appropriate duration, after cycling for an appropriate number of cycles, in the orientation in which it is to be installed. The evidence shall have been generated in an associated construction that has the same critical thermo-physical characteristics as the construction to be sealed.

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Model Specification for Sealing the Perimeter Gap of Fire Door Assemblies

(A) Intumescent seals to be applied to a newly purchased certified fire door leaf and associated frame that is not required to be a smoke control door:

All seals to be applied to the leaf edges or door frame rebates of a new fire door assembly shall be those specified by the manufacturer of the door leaf and which form part of the company's test or assessment evidence, or which are written into any third party certification report in support of the door assembly. The seals shall preferably be from the same manufacturer as those approved or, at least, be of the same generic type of intumescent identical dimensions and fitted in the same position(s) in either the leaf edge, or the frame rebate, as appropriate to the leaf size and construction. Where the manufacturer of the approved seals is not known, then any alternative seals to be installed in practice shall be obtained from a manufacturer/supplier who is a member of IFSA (www.ifsa.org.uk).

(B) Intumescent seals to be applied to an existing fire resisting door (not smoke control) for the purpose of making it compliant with current legislation such as the Regulatory Reform (Fire Safety) Order:

For the reasons given below, IFSA declines to offer a specification for door seals for use on doors of unknown construction and fire resistant except for a restricted range of single action, single leaf, latched doors not exceeding 2150mm high by 950mm wide, fitted with a face fixed overhead closer, of either 30 minutes or 60 minutes fire resistance when determined in accordance with EN 1634-1 or BS476: Part 22: 1987^{*(2)}

There are many factors that influence the specification of a set of intumescent seals for fitting to a door of an unknown manufacturer in order for it to comply with current regulatory requirements such as; size, mode of operation (e.g. single or double action leaf), latched or unlatched, materials and methods of construction, nature and position (including opening or closing face) of any self-closing device, frame dimensions and materials, hardware specification, dimensions of leaf/frame gaps, the size and position of any panels/glazed openings.

(2) It is the Association's view that for FD30 (E30) doors a 15mm wide strip to the jambs and a 20mm to the head are appropriate and the FD60 (E60) doors, either 2 x 12mm, 2 x 15mm or 1 x 25mm fitted to the jambs and 2 x 15mm across the head to be used with continuous protection at hinges. If the performance of the door has to be quantified this should be achieved by assessment by a suitably qualified engineer.

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Model Specification for Sealing Glazed Openings in Timber Constructions

(A) Intumescent sealants or gaskets for use with wired glass, borosilicate based fire glass and clear ceramics:

An intumescent strip or a bead of intumescent sealant shall be applied to the inner face of the timber beads on both sides of the glass when forming a fire resisting glazed opening using one of the glasses listed above. The material, or strip, shall be supplied by an IFSA member (www.ifsa.org.uk) and shall be supported by evidence of performance generated in conjunction with timber beads fixed into a timber associated construction to form a glazed opening. The main parameters of the tested construction shall be reproduced in the final construction, i.e. bead profile, fixings (length, type and installation angle). Testing shall have been carried out in accordance with BS476: Part 22: 1987; BS EN 1363: Part 1; BS EN 1364: Part 1 or BS EN 1634: Part 1. The intumescent shall be not less than 10mm face width when compressed for 30 minute application.*^(a)

(B) Intumescent sealants or gaskets for use with clear, unwired, toughened edge controlled soda/lime composition glasses:

Only sealants and strips that have been shown by test in conjunction with a glass of the type described above shall be used for this purpose. The materials shall be supplied by an IFSA member (www.ifsa.org.uk) and all parameters, particularly the depth of edge cover shall be reproduced exactly as tested.*^(b) Timber is not a preferred system.

General

Further model specifications are in the course of preparation. If your intended application is not given in these examples, please contact IFSA to ascertain if other versions have been subsequently prepared.

(a) Timber glazing systems for durations in excess of 30 minutes are very specialist and only fully proven and documented glazing systems shall be used; bead material, profile dimensions, sealants, glazing media and fixings.

(b) Glasses of this type will fail between 3.0 and 8.0 minutes if subjected to an excessive temperature gradient on the face of the glass and they are more likely to be successfully glazed in metal glazing systems. However, where aesthetics dominate the specification, then very controlled timber systems may be used, but unless controlled, they are unlikely to be successful.

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Information about IFSA

The Intumescent Fire Seals Association (IFSA) is a trade association established in 1982 with the following objectives:

1. To promote the life safety benefit associated with the use of intumescent and smoke seals
2. To promote research and development into extending the areas where these benefits can be utilised
3. To participate in the development of test procedures for fire protection products in BSI, CEN and ISO which are fair, repeatable and reproducible.

At the time of its formation, IFSA recognised the need for a simple standard test to compare the performance of intumescent fire seals for use in fire door assemblies, which was free from the influence of other materials and constructional variations and yet subjected the intumescent material to the conditions which prevail in a full scale test.

It, therefore, sponsored the development of such a test and this is now embodied in BS476: Part 23 (1987). Whilst the results of the test have a limited field of application, only being usable on single leaf, single action, latched doors of limited size and distortion characteristics, it does allow the sealing capability of intumescent seals to be compared without any influence from the leaf.

There is now an ISO equivalent test, i.e. BS ISO 12472: 2003.

Due to its repeatability, the test method is being used successfully to evaluate the influence that real time ageing may have on the properties of intumescent fire seals produced by IFSA member companies. The programme planned to investigate 25 years exposure to a variety of controlled and uncontrolled environments. Findings showed no detectable visual decline.

A test programme undertaken in conjunction initially with DOE/BRE to produce standardise conditions for evaluating penetration seals formed the basis of the standard configuration incorporated in the CEN test procedure EN 1366-3 for evaluating seals for use with metal pipes. This configuration has been refined and incorporated in ISO/TR 10295-3: 2012 where a method of extrapolating the results of penetration sealing tests, using simple solid conductors, can be used to establish the field of application of intumescent sealants.

Fire stopping, service penetration sealing, fire doors and fire glass are all critical aspects of fire safe premises and under the new Regulatory Reform (Fire Safety) Order and the ongoing reliance on fire risk assessments, it is vital that risk assessors understand the role and function of these products. IFSA has produced a number of downloadable Good Practice Guides to help risk assessors know and understand when a particular intumescent application is right or wrong, or how a risk may be controlled by the use of the correctly specified sealing product.

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The move away from brickwork, blockwork and cast concrete forms of construction, towards a greater use of studwork and joisted walls, floors and ceilings, has left many of our fire separating constructions compromised by the fitting of electrical services (switches, plug sockets, concealed lighting, extract fans). IFSA has cooperated with the Electrical Safety Council (ESC), in the preparation of their guide, 'Electrical installations and their impact on the fire performance of buildings; Part 1, Domestic Premises'.

Intumescent materials can seriously reduce the impact that such installations may produce. Correctly fitted sealing systems make a greater contribution to life safety in a fire than almost any other measure. If you do nothing else to enhance life safety- at least seal up the building with fire and smoke seals, preferably from an IFSA Member because they take fire safety seriously.

Get in touch

Visit ifsa.org.uk for more information and expert technical guidance on fire door seals, smoke seals, glazing seals, and solutions for penetration and gap sealing.

Together, we're raising standards in fire safety - working to maximum safety and compliance across the fire protection industry.



Scan to meet our members

Visit the member showcase to discover how our community is shaping a fire-safe future.