

ASFP Advisory Note 26

ASFP Position on Combined Penetration Seals

Introduction

Building Regulations require that measures be taken to limit the spread of fire within a building. Sub-division of the building using fire resisting construction, commonly referred to as compartmentation is the principal method of achieving this. Compartmentation is achieved by building walls and floors with a known fire resistance performance. Wherever penetrations (holes/openings) and services pass through a wall or floor, fire stopping is used to reinstate the required fire resistance performance of that compartment.

Combined penetration seals are when cables and/or pipes are installed in the same penetration through a support construction, compartment wall and/or floor, as ducts or dampers. This advice does not cover situations where ducts and dampers are passed through the same penetration. New build projects should, ideally, be designed to avoid the need for combined penetrations by keeping ducts and dampers in their own penetration separate from pipes and cables.

This ASFP document is designed to offer advice for the use of Combined Penetration Seals. It is not practical to test every possible configuration found in practice, therefore this guidance document has been produced to clarify the rules provided within the BS EN suite of test standards that allow products to be tested so that they conform and comply to Building Regulations. The suite would comprise of various parts of BS EN 1366, BS EN 13501 & BS EN 15882.

The advisory note covers current regulatory requirements, a list of definitions, combined penetration seal standard, an interim guidance, and requirements to assist.

Regulatory Requirements for New Projects

Test standards, as detailed in this document have been developed to consider standard configurations from which the performance of a wide scope of applications can be determined. This will then cover the installation, in practice, of a penetration sealing system for either blank, single, mixed, multiple, or combined penetrating service seals. The definitions of the different penetration seals are explained overleaf in table1. The test standards include guidance indicating typical permitted and prohibited solutions that can be determined from the testing.

Penetration Type	Definition
Blank penetration seal	Aperture in the separating element without services passing through which is sealed or closed by the specified seal
Single service penetration seal	Penetration seal intended for penetrations with only one service (e.g. a single duct, damper, pipe or cable) passing through
Multiple service penetration seal	Penetration seal intended for penetrations where more than one service of the same type (e.g., multiple ducts, dampers, cables or pipes) pass through
Mixed penetration seal	Penetration seal intended for penetrations where more than one type of service pass through. (e.g., from the list of services covered in testing to BS EN1366-3, cables, plastic pipes and metal pipes). Ducts and/or dampers are not included in a mixed penetration seal.
Combined penetration seal	Mixed penetration seal with the addition of either fire resisting ducts or fire resisting dampers passing through. This does not cover ducts and dampers within the same penetration seal.

Table 1 – Definition of the different types of penetration

prEN 15882-5 Combined Penetration Seal EXAP

The newly developed (October 2020) prEN 15882-5 combined penetration seal extended application (EXAP) standard provides the principles and guidance for combined penetration seals to be tested. This standard requires that system components be previously tested in accordance with BS EN 1366-3 (pipes and cables) in combination with BS EN 1366-1 (ducts) or BS EN 1366-3 in combination with EN 1366-2 (Dampers). The field of the extended application document is additional to the direct field of application given within BS EN 1366-1, BS EN1366-2 and BS EN 1366-3 and can be applied on a number of tests from each standard, which provide the relevant information for the formulation of an extended application. This EXAP is intended to allow the penetration sealing of more than one service (e.g., Cables, Pipes, Conduits) and either four-sided fire resisting ducts (Ventilation Ducts) or fire resisting dampers in the same penetration.

ASFP guidance is that should a project require to have cables and/or pipes, together with ducts or dampers passing through the same penetration, the rules in accordance with prEN 15882-5 shall be adhered to. It is clear that not all test sponsors will be in a position to test to this new standard immediately or have that data available for use. Further historical and current ongoing projects cannot always be practically adjusted to accommodate such changes. Therefore, ASFP have provided the following interim guidance.

Interim Guidance

It is a reasonable, until such time that wide scale testing has been completed to sensibly permit the service penetrations from the various parts of BS EN 1366 to be included within a one penetration to form a combined penetration seal through the adoption of a technical evaluation. ASFP would expect the wide scale testing to be completed within 24 months.

1. The AHJ (Authority Having Jurisdiction) must consult with the manufacturer of the service penetration seal system, the manufacturer of the damper or duct system and the owner of the flexible wall system to ensure that all individual testing has been conducted for the technical evaluation to be written.

2. The AHJ must be satisfied that the organisation writing the technical evaluation has the appropriate personnel with the competency and experience to undertake this process. Guidance on this can be found in ASFP's Advisory note 17 and the Passive Fire protection Forum (PFPF) document entitled:-
"Guide to undertaking technical assessments of the fire performance of construction products based on fire test evidence".
3. The organisation shall have the management system approach to review the requirements and establish, utilize, and maintain controlled processes in the development and creation of technical evaluations for systems involving service penetrations.
4. All technical personnel involved in developing a technical evaluation must demonstrate an acceptable level of competency prior to engaging in the evaluation preparation or oversight of this activity. An appropriate degree of competency shall consist of theoretical knowledge derived from educational exposure and/or direct experience with fire testing.
5. To adopt this approach the wall/floor must be tested for the relevant fire resistance in accordance with BS EN1364-1 and subsequently classified in accordance with BS EN13501-2. The construction of the compartment should be correctly adjusted to position penetration services within individual penetration (hole) suited to the requirement of both the compartment and services. A minimum 100mm of compartment separation is recommended.
6. To adopt this approach, penetration seal systems used must be tested in accordance with BS EN 1366-3, and then classified according to BS EN13501-2. The penetration seal chosen must be able to be shown to be tested to suit the requirements of all other penetration service types to be included within the proposed combined penetration seal.
7. To adopt this approach, ducts must be tested in accordance with BS EN 1366-1, then classified to BS EN 13501-3. Ducts tested in rigid supporting constructions may not be used within a flexible supporting construction.
8. To adopt this approach, dampers must be tested in accordance with BS EN 1366-2, then classified to BS EN 13501-3. Damper tested in rigid supporting constructions may not be used within a flexible supporting construction. The damper must be tested for the location and orientation intended.

The main contractor/building owner should be made aware of the necessity to use the guidance offered within this advisory note, prior to commencement of installation. They may also choose to disregard this advice and submit the proposed fire seal for assessment by a specialist fire engineer or assessment body.

This advisory note does not consider flexible (timber joisted) floors or composite panels.

ASFP further recommends that any fire stopping products be 3rd Party certificated as fit for purpose and installed by third party certificated installers operating under a UKAS accredited third party certification scheme for contractors.

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