Quality Alert

MORGAN SINDALL CONSTRUCTION

Fire stopping in blockwork walls

In practice, most tested fire-stopping systems are developed and tested around standard plasterboard partition constructions but are often used in masonry/blockwork walls provided the supporting construction offers at least the same fire performance and the fire-stop manufacturer permit the application. The field of application of the fire test allows for this and is covered in BS EN BS EN 1366.

Key issue is
A typical fire-rated plasterboard partition may be specified as 100 mm overall width and can be built accurately to this dimension
A blockwork wall may be nominally described by the manufacturer as 100 mm thick, but actual thickness can vary due to manufacturing tolerances, mortar joints, uneven surfaces and local construction deviations.
Many blockwork manufacturers work to a tolerance group D1. BS EN 771-3 gives 4 tolerance classes (D1, D2, D3 and D4). Class D1 (+3, -5mm on all dimensions) is the most appropriate for common block applications. In practice blockwork can vary in thickness from 95 to 103mm.

Fire-stop details are usually tested within a specific range of opening sizes and wall thicknesses. If the substrate differs significantly from the tested arrangement, the fire-stopping may fall outside the assessment.
Responses on the question of tolerances in blockwork, nominally designed as 100mm, from Quelfire and Tremco follow:

> ***Nearly all our testing is completed within a plasterboard wall 100mm thick and therefore can be applicable to a block wall however the wall cannot be smaller in thickness.***

The fire-stopping performance is generally governed by:

- The fire resistance of the wall.
- The size of the penetration/opening.
- The fire-stop product.
- The depth of seal available.

If a firestop is tested in a 100 mm plasterboard wall and the assessment report also permits use in masonry constructions, then the masonry wall can usually be adopted provided:

- The wall has equal or greater fire resistance.
- The opening dimensions remain within the tested limits.
- The minimum seal depth is maintained.
- Any annular gaps remain within the tested range.

Fire stopping systems must be third-party certificated and installed in accordance with the manufacturer's tested and assessed details. Systems tested in 100 mm plasterboard partitions may be installed within masonry or blockwork walls of equivalent or greater fire resistance, provided the fire-stop manufacturer's assessment confirms suitability. Wall thicknesses must not be not less than those required by the tested or assessed detail and all annular gaps and opening sizes shall remain within the certified performance range.

Any deviations must be supported by a project-specific assessment from the fire-stop manufacturer.

Key Lesson

Fire-stopping products must have valid UKAS-accredited test evidence and third-party certification. Systems shall be suitable for the substrate into which they are installed. Where tested details are based upon 100 mm plasterboard partitions, equivalent systems may be used in blockwork walls possessing equal or greater fire resistance, subject to confirmation by the fire-stop manufacturer. The designer must coordinate opening dimensions and construction tolerances to ensure compliance with the tested or assessed system. Where tolerances exceed tested parameters, a project-specific engineering assessment must be obtained prior to installation.