

BRE Global Assessment Report

An assessment of the fire performance of a timber-faced double-leaf pivoted access panel

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1 Introduction

The timber-faced double-leaf pivoted access panel described in this assessment report is designed to provide up to 60 minutes fire resistance with respect to the integrity criteria of BS 476: Part 22: 1987, for fire exposure from the opening side.



2 Scope

This assessment report considers the fire resistance of a timber-faced double-leaf pivoted access panel installed in a plasterboard partition against the integrity criteria of BS 476: Part 22: 1987, for fire exposures of up to 60 minutes from the opening side only.



3 Supporting data

This assessment is partly based on supporting test data which is more than five years old. This supporting data has therefore been reviewed against current test procedures.

3.1 BRE test report no. 225286A

A double-leaf access panel installed in a steel-framed plasterboard partition was subjected to a fire resistance test in accordance with BS 476: Part 22: 1987 on 28 September 2005, for a duration of 66 minutes.

The access panel frame had an internal aperture nominally 1800mm wide x 2000mm high and was constructed of 1.5mm-thick polyester powder coated Zintec steel. The frame was a Z-section, nominally 25mm x 100mm x 25mm.

The access panel comprised two leaves, each nominally 900mm wide x 2000mm high, consisting of a 1.5mm-thick polyester powder coated Zintec steel skin on one side and 12.5mm Megadeco plasterboard on the other. Six pre-formed 1.5mm-thick Z-section stiffeners were spot-welded horizontally to the rear of the steel skin and the plasterboard was fixed to them. The steel skin was further reinforced on the outside by steel box section stiffeners which were welded in position.

The leaves were each fitted with top and bottom pivots, the active leaf with a three-point locking mechanism and the passive leaf with a two-point locking mechanism.

The specimen was tested opening towards the furnace and in this orientation achieved the following performance:

Integrity:	66 minutes
Insulation:	23 minutes

For full details see BRE test report no. 225286A.

3.2 BRE test report no. 248908

A double-leaf access panel installed in a steel-framed plasterboard partition was subjected to a fire resistance test in accordance with BS 476: Part 22: 1987 on 28 September 2005, for a duration of 132 minutes.

The access panel frame was constructed of 1.2mm-thick polyester powder coated Zintec steel. The frame was a Z-section, nominally 25mm x 68mm x 50mm, with the 25mm face on the closing, unexposed side of the specimen.

The access panel comprised two leaves, each nominally 895mm wide x 2385mm high, consisting of a 1.0mm-thick polyester powder coated Zintec steel skin on one side and 15mm Lafarge GTEC plasterboard on the other. Four pre-formed 1.5mm-thick top-hat stiffeners, two horizontal and two vertical, were spot-welded to the rear of the steel skin and the plasterboard was fixed to them.

The leaves were each fitted with continuous hinges, the active leaf with a three-point locking mechanism and the passive leaf with a two-point locking mechanism.

Envirograph self-adhesive intumescent strips, ref. G10/10, nominally 10mm wide x 2mm thick, were fitted around the inside edge of the frame and the rear edge of the door tray. In addition, strips of self-adhesive Lorient Neoprene Seal were also fitted around the inside edge of the frame.



The specimen was tested opening towards the furnace and in this orientation achieved the following performance:

Integrity: 132 minutes

Insulation: 18 minutes

For full details see BRE test report no. 248908.

3.3 BRE test report no. 232237

A single-leaf access panel installed in a steel-framed plasterboard partition was subjected to a fire resistance test in accordance with BS 476: Part 22: 1987 on 26 September 2006 for a duration of 120 minutes.

The access panel frame was constructed of 1.2mm-thick polyester powder coated Zintec steel. The frame was a Z-section, nominally 25mm x 68mm x 50mm, with the 25mm face on the closing, unexposed side of the specimen.

The access panel leaf, nominally 596mm wide x 893mm high, comprised a 1.0mm-thick polyester powder coated Zintec steel skin on one side and 12.5mm Megadeco plasterboard on the other. Two pre-formed 1.0mm-thick vertical top-hat stiffeners were spot-welded to the rear of the steel skin and the plasterboard was fixed to them. The voids between the stiffeners were filled with 50mm-thick E-Coustiquilt membrane.

The leaf was fitted with a continuous hinge and an EMKA three-point locking system.

Envirograph self-adhesive intumescent strips, ref. G10/10, nominally 10mm wide x 2mm thick, were fitted around the inside edge of the frame and the rear edge of the door tray. In addition, strips of self-adhesive closed cell silicone seal were also fitted around the inside edge of the frame.

The specimen was tested opening towards the furnace and in this orientation achieved the following performance:

Integrity: 120 minutes

Insulation: 22 minutes

For full details see BRE test report no. 232237.



4 Description of the proposed access panel

4.1 Access panel frame

The access panel frame is constructed from a 1.5mm-thick polyester powder coated Zintec steel profile, as shown in figure 1. The frame is fixed back to the supporting partition using suitable screws at nominal 450mm centres. The aperture in the partition into which the frame is fixed must be lined with the same type, thickness, and number of layers of board as are used to clad the faces of the partition.

4.2 Access panel leaves

The access panel leaves comprise a polyester powder coated Zintec steel sheet, 1.5mm thick, with three vertical stiffeners, each nominally 90mm wide x 40mm deep, welded to the outer side at the centre and 25mm from each edge of the leaf. Additional horizontal stiffeners, each nominally 90mm wide x 40mm deep, are welded to the top and bottom of the outer side of the steel sheet, nominally 25mm from the edge of the leaf. Six horizontal Z-section stiffeners, also used as brackets for fixing the Megadeco plasterboard, are spot welded to the internal side of the steel skin at nominally 350mm centres. The top, bottom and lock side of both leaves incorporate a return, 25mm deep, on the opening side. This is used to retain the single layer of plasterboard, which is inserted from the hinge edge during production along with a sheet of 1mm-thick Zintec steel. The plasterboard is fixed to the horizontal Z-section stiffeners with 25mm-long self-drilling, self-tapping screws at nominal 300mm centres. A 25mm-wide Zintec steel U-channel capping is screw fixed at nominal 400mm centres to the hinge side of each leaf to retain the plasterboard and steel sheet. A sheet of timber, 20mm thick, is fixed over the top using concealed hanging brackets, which are screwed to the 1mm-thick Zintec steel sheet.

4.3 Pivots and latches

The door is hinged on pivots at the top and bottom. These comprise an 8mm-diameter steel hinge pin and block fixed to the closing side of the leaf skin. The pin hinge and block are covered with a 1mm-thick steel top-hat section which extends to the full height of the leaf and is spot welded in position. A steel roller ball castor, which is designed to support the hinge, is welded to the top and bottom of the outermost stiffener on each leaf, adjacent to the hinge pin.

The active leaf incorporates a three-point locking mechanism comprising 8mm-diameter rods which extend to and engage in the frame at the top and bottom by a minimum of 12mm, and a central latch which engages at mid-height into a locking angle welded to the passive leaf. The 8mm-diameter rods are retained on the closing side of the leaf using 20mm-long steel tubes welded at nominal 400mm centres to the steel skin. The mechanism can only be operated from the opening side with a square-ended T-section key.

The passive leaf incorporates a two-point locking system comprising 8mm-diameter rods which extend to and engage in the frame at the top and bottom by a minimum of 12mm.



5 Assessment

The double-leaf access panel tested in BRE report no. 225286A satisfied the integrity criteria for the duration of the test, 66 minutes. During the test, there was no indication that the gaps around the perimeter of the leaves were increasing in width and no evidence of any differential bowing between the hinge edge of the leaves and the frame.

The proposed access panel differs in four respects to that tested:

- a) The opening side of the leaf incorporates a sheet of 20mm-thick timber over the Megadeco plasterboard.
- b) A sheet of 1mm-thick steel has been added to the opening side of the door tray between the Megadeco plasterboard and the timber.
- c) A pair of Envirograph self-adhesive intumescent strips, ref. G10/10, each nominally 10mm wide x 2mm thick, have been added to the frame adjacent to the hinge edge of the door leaves; the strips are positioned side-by-side. A single strip has also been added to the locking angle on the passive leaf where it overlaps the edge of the active leaf.
- d) The frame has been changed from a Z-section to the profiled steel section shown in figure 1.

The Envirograph intumescent strips, ref. G10/10, have been subjected to two fire resistance tests on other access panels. The installation in BRE report nos. 248908 and 232237 was slightly different in that the door frame incorporated a stop to which the seal was attached and against which the leaves closed. However, the access panel leaf in report no. 232237 distorted quite significantly resulting in a gap of up to 27mm developing between it and the stop. The Envirograph intumescent strips sealed this gap for the duration of the 120-minute test and helped to prevent a failure of integrity. The situation with the proposed access panel is quite different in that the strips are only required to seal relatively small gaps of up to 2mm between the leaves and between the leaves and the frame, and they are only required to maintain the integrity of the perimeter of the leaves for 60 minutes. On the basis of the evidence, we therefore consider them suitable for this application.

The inclusion of the 1mm-thick steel plate to the opening side of the access panel, between the plasterboard and the timber, should not have any significant impact on the fire performance. The access panel has a robust construction, incorporating numerous stiffeners and a sheet of 20mm-thick timber, and the addition of this steel sheet is therefore unlikely to have any significant impact on the severity of the bowing of the access panel leaves.

The addition of the timber to the opening face of the leaves of the access panel could conceivably cause a failure against the integrity criteria. The timber will ignite in the early stages of a fire and there is a possibility that flames could then issue around the perimeter of the leaves. However, the gaps at this location are relatively small (2mm or less) and they are sealed by the Envirograph intumescent strips. The performance of these strips in BRE report nos. 248908 and 232237 suggests that they will intumesce and seal any gaps through which the flames may have exited.



6 Conclusion

Therefore, it is our opinion that the timber-faced double-leaf pivoted access panel, as described in section 4 of this report, is suitable for applications where a fire resistance of 60 minutes is required with respect to the integrity criteria of BS 476: Part 22: 1987, for fire exposure from the opening side.

7 Figures

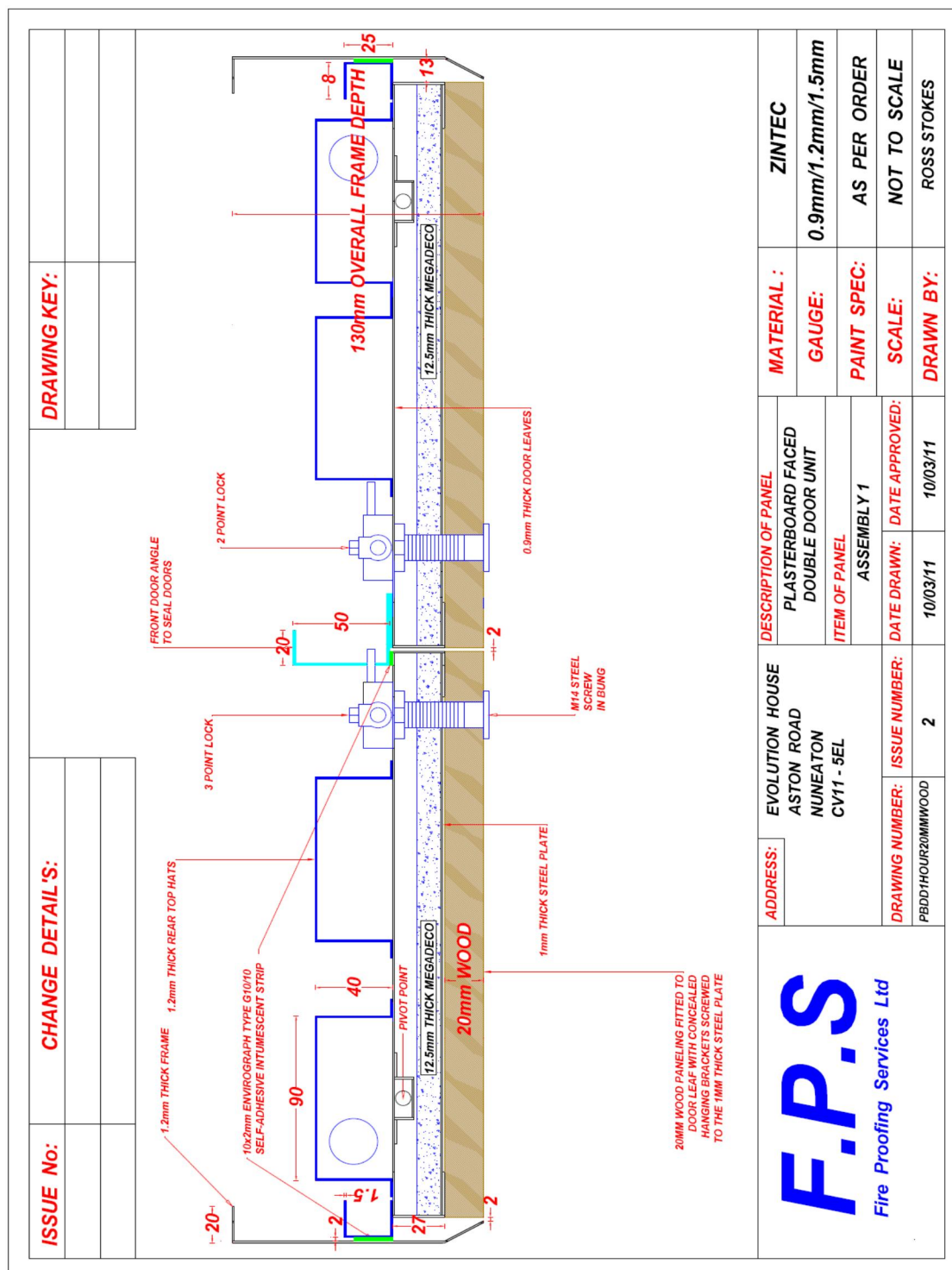


Figure 1



8 Validity of the assessment

8.1 Declaration by applicant

- We the undersigned confirm that we have read and complied with the obligations placed on us by the PFPF Guide to Undertaking Assessments in Lieu of Fire Tests.
- We confirm that the component or element of structure, which is the subject of this assessment, has not to our knowledge been subjected to a fire test to the Standard against which this assessment is being made.
- We agree to withdraw this assessment from circulation should the component or element of structure be the subject of a fire test to the Standard against which this assessment is being made.
- We are not aware of any information that could adversely affect the conclusions of this assessment.
- If we subsequently become aware of any such information we agree to cease using the assessment and ask BRE Global to withdraw the assessment.

Signed:

For and on behalf of:

8.2 BRE Global declaration

This assessment was reviewed on 20 March 2016. We have received written confirmation from Fire Proofing Services Limited that there have been no changes in the specification of their timber-faced double-leaf pivoted access panel since the original date of the assessment. There have been no changes in the fire test procedures or methods of assessment, which would adversely affect the fire performance of the access panel. We are therefore satisfied that the validity of this assessment may be extended for a further five years.

This assessment is based on test data, experience and the information supplied. If contradictory evidence becomes available to BRE Global the assessment will be unconditionally withdrawn and the applicant will be notified in writing. Similarly the assessment is invalidated if the assessed construction is subsequently tested since actual test data is deemed to take precedence over an expressed opinion. The assessment is valid for a period of five years after which it should be returned for review to consider any additional data, which has become available or any changes in the fire test procedures. Any changes in the specification of the product will invalidate this assessment.

This assessment has been carried out in accordance with Fire Test Study Group Resolution No. 82. It relates to the fire performance of the product and does not cover aspects of quality, durability, maintenance nor service requirements. This assessment relates only to the specimen(s) assessed and does not by itself infer that the product is approved under any Loss Prevention Certification Board approval or certification scheme or any other endorsements, approval or certification scheme.

Next review date: 30 March 2021