
Title:

The Fire Resistance Performance
Of Timber/Mineral-Based Doorsets
And Steel Doorsets When Fitted
With Door Selectors.

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Foreword

This report has been commissioned by Selectrite Hardware Ltd and relates to the fire resistance of door selectors.

The report is for National Application and has been written in accordance with the general principles outlined in BS EN 15725: 2010; *Extended application reports on the fire performance of construction products and building elements*.

This report uses established empirical methods of extrapolation and experience of fire testing similar elements of construction, in order to extend the scope of application by determining the limits for the designs based on the tested constructions and performances obtained. The scope is an evaluation of the potential fire resistance performance, if the variation(s) specified herein were to be tested in accordance with BS EN 1634-1:2014 + A1:2018.

This scope document cannot be used as supporting documentation for either a CE marking application, nor can the conclusion be used to establish a formal classification against EN13501-2.

The scope presented in this report relates to the behaviour of the door hardware under the particular conditions of the test; they are not intended to be the sole criterion for considering the potential fire hazard of the assemblies in use.

This report has been prepared and checked by product assessors with the necessary competence, who subscribe to the principles outlined in the Passive Fire Protection Forum (PFPF) 'Guide to Undertaking Technical Assessments of the Fire Performance of Construction Products Based on Fire Test Evidence - 2021'. The aim of the PFPF guidelines is to give confidence to end-users that assessments that exist in the UK are of a satisfactory standard to be used for building control and other purposes.

This report has been written using appropriate test evidence generated at UKAS accredited laboratories, to the relevant test standard. The supporting test evidence has been deemed appropriate to support the stated design and is summarised in section 3.

Proposal

It is proposed to consider the fire resistance performance of predominantly steel-based door assemblies, when fitted with door selectors, for up to 240 minutes fire resistance integrity performance (and where appropriate insulation performance), if the door selectors were to be tested to the requirements of BS EN 1634-1:2014 + A1:2018.

It is further proposed to consider the fire resistance performance of timber/mineral-based door assemblies, when fitted with door selectors, for up to 120 minutes fire resistance integrity and insulation performance, if the door selectors and finger guards were to be tested to the requirements of BS EN 1634-1:2014 + A1:2018.

The field of application defined in this report is based on the fire resistance test evidence for the door selectors, which is summarised in section 3. Analysis of specific product details that require assessment are given within this report.

1.1 Assumptions

General

- It is assumed that the door hardware will be fitted to doorsets which have been previously shown to be capable of providing the required fire resistance performance when tested in accordance with BS EN 1634-1:2014 + A1:2018, in the proposed configuration i.e. single-action, single-leaf or double-leaf.
- It is also assumed that the doorsets will fully comply with any certification scope or assessed modifications, apart from the modifications specified in this report.
- An appraisal of the hardware variants detailed in this report is based upon product information supplied by the hardware manufacturer, which is retained in the confidential file relating to this report. Warringtonfire have not inspected the devices being appraised and cannot be held responsible for the accuracy of the information provided.

Supporting wall

- It is also assumed that the construction of the wall, which supports the proposed doorsets, will have been the subject of a separate test and the performance of the wall is such that it will not influence the performance of the doorset for the required period.

Clearance gaps

- Door leaf to frame clearance gaps can have a significant effect on the overall fire performance of a doorset. It is therefore assumed that the leaf to leaf and leaf to frame clearance gaps will not exceed those measured for the relevant fire tested/assessed doorset. In addition, it is assumed that the door leaves will be in the closed position.

Door selector installation

- Where double-leaf doors incorporate rebate meeting edges or astragals, it is assumed the door selector will be fitted to doorsets which have been previously shown to be capable of providing the required fire resistance performance when tested in accordance with BS EN 1634-1:2014 + A1:2018 with this meeting edge detail.

Test Data

The test evidence summarised below has been generated to support the fire resistance performance of the door selectors that are the subject of this field of application. The summary details are considered to be the key aspects of the doorset tested.

1.2 Primary Test Evidence

1.2.1 WF Test Report 520208/R

Date of Test:	1 st August 2022	
Identification of Test Body:	Warringtonfire UKAS No. 0249	
Sponsor:	Selectrite Hardware Ltd	
Summary of Tested Specimen:	The doorset had overall nominal dimensions of 2300 mm high by 2390 mm wide, incorporating two leaves, each with nominal dimension of 2242 mm high by 1167 mm wide by 44 mm thick. The door leaves were hung within a 1.2 mm thick, galvanized steel frame on eight (four each side) stainless steel hinges, such that the leaves opened away from the heating conditions. The door leaves were formed from a steel subframe with Alucrown honeycomb infill and 1.2 mm thick galvanized steel skins adhered to each face. The active door leaf incorporated an astragal on the non-exposed face along meeting edge accompanied by lever handle which was unlocked and latched for the purpose of the test. The passive door leaf incorporated an astragal on the exposed face along the meeting edge and top and bottom flush bolts which were engaged for the test duration. Each door leaf embodied a surface mounted closer installed on exposed face, a Selectrite MK2 gravity door selector fitted to both the exposed and unexposed face.	
Tested Orientation:	For the purpose of the test the doorset was installed so that they opened away from the heating conditions.	
Test Standard:	BS EN 1634-1:2014 + A1:2018	
Performance:	Sustained flaming	264 minutes
	Gap gauge	264 minutes
	Cotton pad	52 minutes
	Insulation (I¹)	6 minutes
	*Test was discontinued after a period of 264 minutes.	

Description of Products to be Assessed

1.3 Door selectors

It is proposed that in addition to the 240 minute steel-based doorsets tested, the scope be extended to include timber/mineral-based doorsets of up to 120 minutes integrity/insulation if the door selectors were to be tested to the requirements of BS EN 1634-1:2014 + A1:2018.

Additionally, it is proposed full range of door selectors identified below are considered for use on both steel and timber/mineral-based doorsets:

Ref.	Description
MK2 102STD	Selector with standard surface rebate catch and 102 mm arm
MK2 152STD	Selector with standard surface rebate catch and 152 mm arm
MK2 202STD	Selector with standard surface rebate catch and 202 mm arm
MK2 102EXT	Selector with extended surface rebate catch and 102 mm arm
MK2 152EXT	Selector with extended surface rebate catch and 152 mm arm
MK2 202EXT	Selector with extended surface rebate catch and 202 mm arm

Door Selectors

1.4 General

The main function of the door selector is to ensure that doors that incorporate either surface-mounted astragals or rebated meeting edges close in the correct sequence. Once closed, the selector is not required to remain in position for the test duration and offers no additional restraint to the doors under tested.

Where these items are incorporated on the non-fire exposed face of an uninsulated steel-based doorset it must also prove that it does not present an additional risk to the integrity performance of the doorset whereby the selectors components must demonstrate that they are not ignited by the high levels of heat transfer through the steel doorset. This issue is not relevant on doorsets that are fully insulated for the required classification period as defined by BS EN 1634-1:2014 + A1:2018.

1.5 Steel-Based Doorsets

It is proposed to consider the fire resistance performance of predominantly steel-based door assemblies, when fitted with MK2 102STD door selectors for up to 240 minutes fire resistance integrity performance (and where appropriate insulation performance), if the door selectors were to be tested to the requirements of BS EN 1634-1:2014 + A1:2018.

The doorset within WF Test Report 520208/R had overall nominal dimensions of 2300 mm high by 2390 mm wide, incorporating two door leaves with overall dimensions of 2242 mm high by 1167 mm wide by 44 mm thick typical 240 minute uninsulated steel doorset construction, including a paper honeycomb filled steel door leaf hung on single-action hinges within a hollow steel frame. Integral astragals were incorporated on both sides.

The door selector tested under the reference WF Test Reports 520208/R was the standard MK2 102STD aluminium unit; with an active variant on the exposed face and inactive unit on the unexposed face; both were fixed to the frame head with M5 rivet nuts (main body and lift arm) and drilled and tapped to door leaf (rebate catch).

For the purpose of the test the doorset was installed so that they opened away from the heating conditions.

Observations contained within the test report indicate that during the test period of 264 minutes no failure associated with or coincident to the MK2 102STD door selectors and therefore positively contributed to the 264 minutes integrity performance achieved.

When considering this test data, it is noted that EN 13501-2: 2016, states cotton pad failures are to be disregarded when classifying for integrity performance only.

As the doorsets within this appraisal report are considered with regards to integrity performance only, it is therefore considered appropriate to disregard the cotton pad failure, which occurred at 52 minutes, such that the doorsets tested within WF Test Reports 520208/R achieved an integrity performance of 264 minutes in accordance with EN 13501-2: 2016.

The use of MK2 102STD door selectors is positively appraised for use on either side of predominately steel-based door assemblies from both directions, of up to 240 minutes integrity (and insulation where relevant) with respect to BS EN 1634-1:2014 + A1:2018.

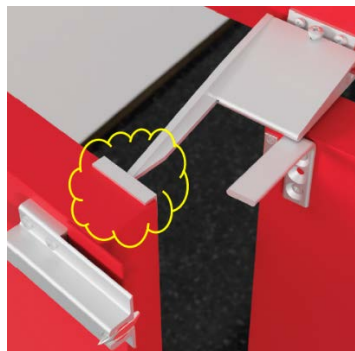
1.6 Timber/Mineral-Based Doorsets

It is proposed to consider the fire resistance performance of timber/mineral-based door assemblies, when fitted with MK2 102STD door selectors, for up to 120 minutes fire resistance integrity and insulation performance, if the door selectors were to be tested to the requirements of BS EN 1634-1:2014 + A1:2018.

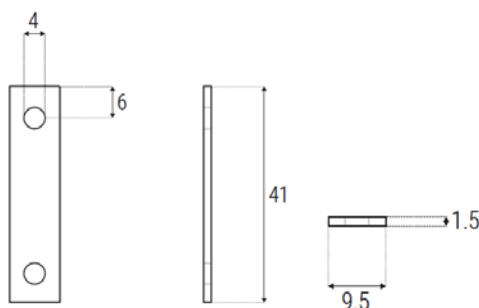
As the elements are wholly surface mounted, offer no form of restraint are only be fitted to fully insulated timber/mineral-based doors, the use of this hardware is not expected to have a deleterious effect on the performance as selectors mounted on the exposed face will be consumed/detached early within the test and the selectors on the unexposed face will not be subject to any direct heat beyond 180°C or flames.

Therefore, WF Test Reports 520208/R is considered sufficient justification to permit the use of these items on fully insulated timber-based or mineral-based doorsets with up to 120 minutes integrity and insulation performance.

However, the standard selector design incorporates an impact angle plate in the top of the primary leaf, with one leg returning into the door/frame gap. In a fire test will likely conduct heat into the timber in a very vulnerable area (top meeting edge), potentially leading to increased erosion and possible flaming.



To overcome this potential issue the impact plate has been modified to a flat plate where this is fitted to timber/mineral-based doorsets, consequently no element of the door co-ordinator will enter the door to frame gap:



The use of door MK2 102STD door selectors with the flat impact plate is positively appraised for use on either side of timber/mineral-based door assemblies, of up to 120 minutes integrity and insulation from both directions, with respect to BS EN 1634-1:2014 + A1:2018.

1.7 Additional selector variants

It is proposed that the full range of door selectors identified below are considered for use on both steel and timber/mineral-based doorsets:

Ref.	Description
<i>MK2 102STD</i>	Selector with standard surface rebate catch and 102 mm arm
<i>MK2 152STD</i>	Selector with standard surface rebate catch and 152 mm arm
<i>MK2 202STD</i>	Selector with standard surface rebate catch and 202 mm arm
<i>MK2 102EXT</i>	Selector with extended surface rebate catch and 102 mm arm
<i>MK2 152EXT</i>	Selector with extended surface rebate catch and 152 mm arm
<i>MK2 202EXT</i>	Selector with extended surface rebate catch and 202 mm arm

The proposed range are identical in design, materials, and fixing specification, with only the lift arms and rebate catches increasing in size.

This increase in size is not considered detrimental to the fire resistance performance and consequently the test with the MK2 102STD model is considered suitable justification to support the full range proposed.

The use of the range of door selectors is positively appraised for use on either side of timber/mineral-based door assemblies, of up to 120 minutes integrity and insulation, and predominantly steel-based door assemblies for up to 240 minutes fire resistance integrity performance (and where appropriate insulation performance) from both directions, with respect to BS EN 1634-1:2014 + A1:2018.

Alternative doorsets

To enable the use of the door selectors on a range of doorsets, it is necessary to address the available information on the proposed doorset. As this appraisal is intended to be used on a general basis and not restricted to any particular manufacturer of fire resisting doorsets, the following points are given to enable the units to be used safely:

- For timber doorsets applications, the doorset, including the door frame and associated ironmongery should have achieved up to 120 minutes integrity and insulation performance, when tested by a UKAS approved laboratory (or assessed by Warringtonfire).

- b) For predominantly steel- doorsets applications, the doorset, including the door frame and associated ironmongery should have achieved up to 240 minutes integrity (and insulation performance where relevant), when tested by a UKAS approved laboratory (or assessed by Warringtonfire).
- c) If the proposed doorset is to be used in double-leaf configurations, the test or assessment evidence should be applicable to double-leaf configurations.
- d) Likewise, if the proposed doorset is to be used in unlatched configurations then the available test evidence should be applicable to unlatched doorsets.
- e) Where double-leaf doors incorporate rebate meeting edges or astragals, it is assumed the doorsets shall have been shown to be capable of providing the required fire resistance performance when tested in accordance with BS EN 1634-1:2014 + A1:2018 with this meeting edge detail.

Conclusion

Should the recommendations given in this report be followed, it can be concluded that single-acting predominantly steel-based door assemblies, which have previously been successfully fire tested by a UKAS accredited laboratory (or assessed by Warringtonfire), to have achieved up to 240 minutes integrity (and insulation performance where relevant) in accordance with BS EN 1634-1:2014 + A1:2018, as discussed in this report, may be fitted with door selectors, without detracting from the overall achieved performance of the doorset.

Additionally should the recommendations given in this report be followed, it can be concluded that single-acting timber/mineral-based door assemblies, which have previously been successfully fire tested by a UKAS accredited laboratory (or assessed by Warringtonfire), to have achieved up to 120 minutes integrity and insulation performance in accordance with BS EN 1634-1:2014 + A1:2018, as discussed in this report, may be fitted with door selectors, without detracting from the overall achieved performance of the doorset.

This report represents our opinion as to the performance likely to be demonstrated on a test in accordance with BS EN 1634-1:2014 + A1:2018, on the basis of the test evidence referred to in this report. We express no opinion as to whether that evidence, and/or this report would be regarded by any Building Control authorities or any other third parties as sufficient for that or any other purpose.

Declaration by the Applicant

- 1) We the undersigned confirm that we have read and comply with obligations placed on us by the Passive Fire Protection Forum (PFPF) Guide to undertaking technical assessments and engineering evaluations based on fire test evidence 2021 Industry Standard Procedure
- 2) We confirm that any changes to a component or element of structure which are the subject of this assessment have not to our knowledge been tested to the standard against which this assessment has been made.
- 3) We agree to withdraw this assessment from circulation should the component or element of structure, or any of its component parts be the subject of a failed fire resistance test to the standard against which this assessment is being made.
- 4) We understand that this assessment is based on test evidence and will be withdrawn should evidence become available that causes the conclusion to be questioned. In that case, we accept that new test evidence may be required.
- 5) We are not aware of any information that could affect the conclusions of this assessment. If we subsequently become aware of any such information, we agree to ask the assessing authority to withdraw the assessment.

(in accordance with the principles of FTSG Resolution No. 82: 2001)

Signed:

Name:

Position:

Date:

For and on behalf of: Selectrite
Hardware Ltd

Limitations

The following limitations apply to this assessment:

- 1) This report addresses itself solely to the elements and subjects discussed and do not cover any other criteria or modifications. All other details not specifically referred to should remain as tested or assessed.
- 2) This report is issued on the basis of test data and information to hand at the time of issue. If contradictory evidence becomes available to Warringtonfire, the assessment will be unconditionally withdrawn, and the applicant will be notified in writing. Similarly, the assessment evaluation is invalidated if the assessed construction is subsequently tested since actual test data is deemed to take precedence.
- 3) This field of application has been carried out in accordance with Fire Test Study Group Resolution No. 82: 2001.
- 4) Opinions and interpretation expressed herein are outside the scope of UKAS accreditation.
- 5) This field of application relates only to those aspects of design, materials and construction that influence the performance of the element(s) under fire resistance test conditions against the ISO 834 time/temperature curve that is stipulated in the standard this assessment concludes to. It does not purport to be a complete specification ensuring fitness for purpose and long-term serviceability. It is the responsibility of the client to ensure that the element conforms to recognised good practice in all other respects and that, with the incorporation of the guidance given in this field of application, the element is suitable for its intended purpose.
- 6) This report represents our opinion as to the performance likely to be demonstrated on a test in accordance with BS EN 1634-1:2014 + A1:2018, on the basis of the test evidence referred to in this report. We express no opinion as to whether that evidence, and/or this report would be regarded by any Building Control authorities or any other third parties as sufficient for that or any other purpose.
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- 8) The version/revision stated on the front of this report supersedes all previous versions/revisions and must be used to manufacture the assessed systems from the stated validity date on this front cover. Previous revisions of the report cannot be used once an updated report has been issued under a new revision.

Validity

- 1) The assessment is initially valid for five years after which time it is recommended to be submitted to Warringtonfire for re-appraisal.
- 2) This assessment report is not valid unless it incorporates the declaration given in Section 8 duly signed by the applicant.

Position:	Assessor	Reviewer
Signature:		
Name:	*Ray Anning	*Michelle Tolan
Title:	Principal Product Assessor	Senior Product Assessor

* For and on behalf of Warringtonfire

Appendix A: Revisions

Issue	WF Ref.	Date	Description
1	525698	23rd January 2023	New Assessment of door selectors