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Testing. Advising. Assuring.

Title:

The Fire Resistance
Performance Of Timber/
Mineral-Based Insulated
Doorsets When Fitted With
'Imperial' 'Banham', 'Benton'
And 'Primera' Locksets

Report No:

169923 Issue 7

Prepared for:

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TABLE OF CONTENTS

SECTION	PAGE
Executive Summary	3
Introduction.....	4
Assumptions.....	4
Proposals	5
Basic Test Evidence.....	5
Assessed Performance	6
Conclusions	16
Validity	17
Summary of Primary Supporting Data	18
Declaration by Guardian Lock And Engineering Co. Ltd	21
Signatories.....	22
Annex A – Approved Locksets	23
Annex B – Approved Locksets	41
Annex C – Approved Locksets	45



Executive Summary

Objective This report presents an appraisal of the fire resistance performance of timber/mineral-based doorsets when fitted with 'Imperial', 'Banham', 'Benton' and 'Primera' locksets, if tested in accordance with BS EN 1634-1.

Report Sponsor **Guardian Lock and Engineering Co. Ltd.**

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Summary of Conclusions Should the recommendations given in this report be followed, it can be concluded that the 'Imperial', 'Benton' and 'Primera' locksets listed within the tables included in Annex A & B of this report may be fitted to previously tested or assessed (by Exova Warringtonfire, BM TRADA or Chiltern International Fire) insulated timber/mineral-based doorsets, to provide up to 60 minutes integrity performance if tested in accordance with BS EN 1634-1.

In addition should the recommendations given in this report be followed, it can be concluded that the Banham locks listed within the tables included in Annex C of this report may be fitted to previously tested or assessed (by Exova Warringtonfire, BM TRADA or Chiltern International Fire) insulated timber/mineral-based doorsets, to provide up to 60 minutes integrity performance if tested in accordance with BS EN 1634-1.

Valid until 30th June 2023

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Introduction

This report presents an appraisal of the fire resistance performance of single-acting (or sliding where appropriate) insulated doorsets when fitted with 'Imperial', 'Banham', 'Benton' and 'Primera' locksets. The doorset, onto which the proposed hardware is to be fitted, may be of single-leaf or double-leaf configuration.

The proposed doorsets are required to provide a fire resistance performance of up to 60 minutes integrity with respect to BS EN 1634-1.

FTSG

The data referred to in the supporting data section has been considered for the purpose of this appraisal which has been prepared in accordance with the Fire Test Study Group Resolution No. 82: 2001.

Assumptions

Doorset Specification

It is assumed that the lockset will be fitted to a doorset which has also been previously shown to be capable of providing the required fire resistance performance when tested in accordance with EN 1634-1 or BS 476: Part 22: 1987 in the proposed configuration i.e. single-leaf or double-leaf.

For all locks in Annex A & B the door leaf shall be a minimum of 44 mm thick for 30 minute doorsets and 54 mm thick for 60 minute doorsets

For all locks in Annex C (Banham locks), the door leaf shall be a minimum of 44 mm thick for 30 minute doorsets and 52 mm thick for 60 minute doorsets. Additionally, the leaf construction of 60 minute doorsets shall include sub-facings comprising a minimum of 3 mm thick non-combustible board.

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.

Latching

Where a lock considered by this report does not incorporate a self-latching mechanism e.g. deadlocks, then either the lock must be engaged or the doorsets must have been proven for the required period without the restraint of a latch/lock.

Where a lock considered by this report incorporates a roller bolt latching function, the doorsets must have been proven for the required period without the restraint of a latch/lock.

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.

Installation

It is assumed that the doorsets will be installed in a similar manner to that of the previously tested assembly by competent installers.

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 doorset. In addition, it is assumed that the door leaves will be in the closed position, and latched where applicable.

Proposals

It is proposed that the 'Imperial', 'Banham', 'Benton' and 'Primera' locksets may be fitted into a previously tested (in accordance with BS EN 1634-1) insulated (timber or mineral composite) doorset which has been shown to be capable of providing up to 60 minutes integrity and insulation in the same configuration as that proposed i.e. single-leaf or double-leaf.

Basic Test Evidence

WF Test Report No. 165592

The test referenced WF Test Report No. 165592 included two single-acting, single-leaf timber based doorsets referenced as Doorset A and Doorset B. Doorset A was of a 30 minute fire doorset construction and included a door leaf of nominal thickness 44 mm. Doorset B was of a 60 minute fire doorset construction and included a door leaf of nominal thickness 52 mm.

Both doorsets were fitted with the same locksets referenced "G72-7000" Euro-profile Cylinder Sashlock, "G9062" Lever roller bolt fire escape deadlatch and "G4060" Tubular latch.

In all instances the lock cases were bedded on 1 mm thick Interdens intumescent on all faces.

The doorsets achieved in excess of their intended 30 and 60 minutes integrity performances, eventually being deemed to have achieved 37 minutes and 65 minutes integrity performances, respectively. The test was discontinued after 73 minutes with integrity in the vicinity of the locksets of the 60 minute doorset still intact.

WF Test Report No. 177153 issue 2

The test referenced WF Test Report No. 165592 included two single-acting, single-leaf timber based doorsets referenced as Doorset A and Doorset B. Doorset A was of a 30 minute fire doorset construction and included a door leaf of nominal thickness 44 mm. Doorset B was of a 60 minute fire doorset construction and included a door leaf of nominal thickness 53 mm.

Doorset A was fitted with a Security double cylinder rim lock (deadbolt version) with 10" box striker referenced "Banham L2000 (Mark II)" which was engaged for the test duration and a Hook bolt double cylinder security mortise deadlock with 10" box striker referenced "Banham M2002" which was disengaged for the test duration.

Doorset B was fitted with a Security single/outside cylinder rim lock (standard latch version) with 10" electric release box striker referenced "Banham EL4000" which was engaged for the test duration and a Hook bolt double cylinder security mortise deadlock with 10" box striker referenced "Banham M2002" which was disengaged for the test duration.

**WF Report No.
397291**

An investigation of two timber-based doorsets, which utilised the general principles of BS EN 1634-1:2014.

For the purposes of the test, the doorsets were referenced Doorset A and Doorset B.

Doorset A achieved 36 minutes integrity performance, at which point the doorset was blanked off to allow the testing of Doorset B to continue. Doorset B achieved 68 minutes integrity performance, at which point the test was discontinued without failure.

Assessed Performance

**Asymmetry of
installation**

As the installation of the locks is asymmetrical the tested arrangements, where the timber-based doorsets opened towards the heating conditions of the test, this is considered to have demonstrated the performance of the locks in the most onerous opening direction. The contribution of the locks to the performance of doorsets opening in the opposite direction to that tested is therefore considered to be at least equal to that of the tested arrangement.

General

It is proposed that previously fire tested (or assessed by Exova Warringtonfire, BM TRADA or Chiltern International Fire) timber or mineral composite based insulated doorsets may be fitted with the 'Imperial', 'Banham', 'Benton' and 'Primera' locksets without detracting from the performance of the doorset.

**Imperial Locksets
(Annex A)**

The performances of the respective doorsets during the test referenced WF No. 165592 are cited to display the ability of the 'Imperial' locksets to contribute towards the required fire resistance performance.

The test included insulated (timber based) door leaves and upon examination of the test report it can be seen that there were no modes of integrity failure, which were either attributable to or co-incident with the performance or presence of the proposed items.

Critical aspects to the performance of a lockset within a doorset are the amount of leaf material which is required to be removed for fitment and also the affect of heat transfer through the steel based lockset, both of these factors can affect charring and burn through performance. The tested locksets were chosen to be representative of the range of locks considered by this appraisal in terms of overall sizes and were judged to reflect the most onerous lock options.

The proposed locksets are of the same basic construction as those tested comprising steel cases with brass or steel latchbolts and/or deadbolts. The nominal dimensions of all the locks considered by this report fall within the range of dimensions of the tested locks in terms of forend and case dimensions. The range listed within Table 1 of Annex A is deemed acceptable.

The integrity performances of the doorsets were recorded as 35 and 65 minutes for the 30 minute and 60 minute doorsets respectively. On reviewing the observations from the test report it is clear that neither of these integrity failures was contributed to the inclusion of any of the locksets. Therefore, the locksets fitted to the 30 minute doorset continued to perform satisfactorily until the doorset was sealed off at 37 minutes. The locksets fitted to the 60 minute doorset continued to perform satisfactorily until the termination of the test at 75 minutes.

The tested G72-7000 Euro-profile cylinder mortice sashlock has an overall case size of 165 mm high by 101 mm wide by 14 mm thick, with a forend height of 228 mm. The case dimensions of this lock are the largest of any of the locks considered, although the forend height is slightly less than the maximum, which at 235 mm, is 7 mm longer than tested. The overrun of performance of the locksets in both doorsets provides sufficient confidence to consider that the slightly taller forend will still be capable of achieving the required periods of fire resistance performance.

The tested G72-7000 Euro-profile cylinder mortice sashlock incorporated a 71 mm double-cylinder. The range of alternative cylinders proposed are all of the same basic construction and material differing only in shape and overall length.

It can be seen that the tested locks achieved well in excess of the required classification period (37 minutes and 75 minutes without failure associated with or coincident to the locks or cylinders). This overrun, combined with the use of a 1mm intumescent sheet material over the entire lockcase, is seen as sufficient justification to permit the required changes in cylinder shape. Furthermore, as the reason for the different cylinder lengths is primarily to suit the thickness of the door into which the lockset is installed, it is reasonable to consider that the alternative cylinders will perform in a similar manner to the tested model.

The proposed ranges include single cylinders, double cylinders and cylinder/thumbturn options. The tested products were double cylinders, this configuration is considered to represent the most onerous application, requiring the body of the cylinder to pass completely through the entire door thickness and lock case, therefore this provides a high degree of confidence that the single cylinders, double cylinders and cylinder/thumbturns will perform for the required periods of fire resistance.

Benton Locksets (Annex A)

The Benton range of locksets included in Table 2 of Annex A are a range of locks based on the Imperial locks previously tested and discussed in this report.

The locks all share the same materials of construction as the previously tested models, with the exception of instances where they include components manufactured from materials of a higher melting point, and their dimensions fall within acceptable limits of those models previously tested and assessed.

It can therefore be reasonably concluded that a positive assessment of the range of Benton locksets given in Table 3 of Annex A can be made.

Use of this range of locksets is subject to the same requirements and limitations as the Imperial range of locksets.

**Primera Locksets
(Annex A)**

The Primera range of locks has again been considered in terms of the similarities of the individual models with the previously tested range of locksets. The range of locks is detailed in Table 4 in Annex A.

Some of the models have previously been included under alternative Imperial product codes, however, all models included in the table have been re-examined and it has been concluded that they are all suitable for inclusion based on comparison with the previously tested locksets.

**Issue 7 –
Additional locks
Annex B**

It is proposed that additional locks as identified below be considered for use with 30 minute and 60 minute timber/mineral-based doorsets, based on the original test data and technical justification:

- Guardian 72mm Series DIN Standard Back Set Sashlock/Deadlock/Latch Range
- Guardian 72mm Centre Sashlock/Deadlock Range
- Guardian G72-7088 Duel Profile Night
- Guardian Push & Pull DIN Standard Back Set Sashlock Range
- Guardian 130mm Backset Horizontal Range
- Guardian Tubular Latch/Deadbolt Range

Full details of the range can be found in Annex B

The Locks/latches identified in Annex B are produced at the same manufacturing location, and are derived from existing products within the assessed range. Furthermore the client has confirmed that all materials used and lock functions in the products are the same as in the derivative lock range.

The additional locks are therefore considered sufficiently similar to the previously tested/assessed locks/latches, as justified above, with the some supplementary comments below.

Previously the G72-7000 Euro-profile cylinder mortice sashlock required the widest lockcase from the range with has an overall case size of 165 mm high by 101 mm wide by 14 mm thick. However, the new range proposed incorporates a series of horizontal locks with a backset of 130 mm and a case width of 152 mm.

This lock does represent a significant increase in recess depth from that currently approved, however, in reality the critical factor is the amount of material in thickness removed between the two faces of the door leaf, and the increased depth into the edge of the door is unlikely to have a deleterious effect on the performance as the amount of material either side of the case remains unchanged.

The inclusion of the Guardian 130mm Backset Horizontal Range of locks is therefore approved for use with both 30 minute and 60 minute applications.

WF Test report No. 397291 relates to additional small-scale fire testing incorporating a PRCASEGA11 Primera anti-ligature roller bolt deadlock and the Benton B0172PP pull roller bolt deadlock. The purpose of the testing was to prove the use of the larger strikeplates associated with these lock ranges, and permit the use of a more traditional multi-layered chipboard door leaf for 60 minute applications.

Doorset A included in test WF Report No. 397291 was a simulated single acting, single leaf doorset with a 44 mm thick graduated density chipboard core and 8 mm thick hardwood lippings. The leaf was hung within a softwood frame. The doorset was fitted with PRCASEGA11 in one edge and the B0172PP. The latchbolts were engaged for the test duration. 1 mm thick Interdens Mono ammonium Phosphate intumescent sheet was wrapped around the lockcase and the same material incorporated behind the forend and strikeplate.

Doorset B included in test WF Report No. 397291 was a single acting, single leaf doorset with a 54 mm thick graduated density chipboard core and 8 mm thick hardwood lippings. The leaf was hung within a hardwood frame. The doorset was fitted with PRCASEGA11 in one edge and the B0172PP. The latchbolts were engaged for the test duration. 2 mm thick Interdens Mono ammonium Phosphate intumescent sheet was wrapped around the lockcase and the same material incorporated behind the forend and strikeplate. Additional the intumescent perimeter fire seals by-passed the strikeplate by 3.5 mm on each side (except for the latchbolt strike).

On reviewing the observations taken from the test report, there were no integrity failures associated with the locks fitted to Doorset A (E30), for a test duration of 36 minutes; the door was blanked off after 36 minutes to allow the testing of the Doorset B (E60) to continue.

There was no integrity failure of Doorset B (E60). The test was discontinued after 68 minutes.

The doorsets tested were not full size and therefore the locks were not subject to increased distortion associated with full size assemblies. However, as the lock case, forend, latchbolt and strikeplate are of steel these elements will not melt or deform excessively under the test conditions and therefore the ability of the locks to retain the doors in the closed position is not in doubt.

The originally tested locks incorporated the following associated strikeplates:

- G72-700 Euro-Profile Horizontal Sashlock
 - 154 x 41 mm (inc. full height latchbolt lip)
- G9062 Mortice Lever Roller Bolt Escape Deadlatch
 - 140 x 25.5 mm (with 89 x 13.5 mm latchbolt lip)
- G4060 Tubular Latch
 - 70 x 28 mm (with 38 x 18 mm latchbolt lip)
- B0172PP – Pull Roller Bolt Deadlock
 - 235 x 41 mm (inc. full height latchbolt lip)
- PRCASEGA11 – Primera Anti-Ligature Roller Bolt Deadlock
 - 235 x 40 mm (inc. full height latchbolt lip)

These strikeplates represent the largest variant available in each product series, consequently the use of smaller strikeplates are permitted.

Strikeplate with steel back boxes or plastic dust boxes are not permitted.

**Intumescent
Protection (All
locks in Annex A
& B)**

It is a requirement of this appraisal that the 'Imperial', 'Benton' and 'Primera' locksets must be installed within the 30 minute doorsets such that the case is bedded on 1 mm Interdens (Mono Ammonium Phosphate) intumescent to all faces and that a 1 mm thickness of the same material is provided behind the forend and behind the strikeplate.

It is also a requirement of this appraisal that the 'Imperial', 'Benton' and 'Primera' locksets must be installed within the 60 minute doorsets such that the case is bedded on 2 mm Interdens (Mono Ammonium Phosphate) intumescent to all faces and that a 2 mm thickness of the same material is provided behind the forend and behind the strikeplate.

Additional for 60 minute applications only, the intumescent perimeter fire seals shall by-passed the strikeplate by a minimum of 3.5 mm on each side (except for the latchbolt strike).

**Proposed
Doorsets (All
locks in Annex A
& B)**

As stated in this report, the doorset, in the required configuration, will be previously tested (or assessed by Exova Warringtonfire, BM TRADA or Chiltern International Fire) and its performance is therefore not in doubt.

To enable the use of the 'Imperial', 'Benton' and 'Primera' locksets 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 locksets to be used safely:

- a) The doorset shall carry valid certification or the doorset, including the door frame and associated ironmongery should have achieved 30 or 60 minutes integrity and where applicable insulation, when tested by a UKAS approved laboratory (or assessed by Exova Warringtonfire, BM TRADA or Chiltern International Fire) to EN 1634-1.
- b) If the proposed doorset is to be used in double-leaf configuration the test or assessment evidence should be applicable to double-leaf configuration (square meeting edges only).
- c) The leaves of the proposed doorset shall be of a minimum thickness of 44 mm for 30 minute doorsets and 54 mm for 60 minute doorsets.
- d) The leaves should incorporate hardwood lippings of a minimum thickness of 6 mm and minimum density 640kg/m³.
- e) Door frame density - 450 kg/m³ for 30 minute doorsets and 640 kg/m³ for 60 minute doorsets.

- f) In the case of roller bolt latch models, these shall only be fitted to previously proven for the required period without the restraint of a latch/lock.
- g) In the case all deadlocks, these shall only be fitted to previously proven unlatched doorsets or must always be locked.

Additionally, the amount of interruption to the intumescent seal specification at the door leaf to frame perimeter clearance gaps should be replicated, or less than that that originally specified for the tested doorset.

Based on the above discussion the lock ranges listed within the tables of Annex A & B are deemed acceptable.

Banham Locksets (Annex C)

The range of Banham locks and associated components is detailed in Table 11 of Annex C.

The performances of the respective doorsets during the test referenced WF No. 177153 are cited to display the ability of the 'Banham' rim and mortice locksets to contribute towards the required fire resistance performance.

Whilst the test report records initial failure of the 30 minute doorset after 26 minutes and the 60 minute doorset after 57 minutes, in each instance the initial failure was remote from the locksets and could not be considered to be as a consequence of their installation.

Review of the test observations shows that no instance of integrity failure occurred to either of the locksets fitted to the 30 minute doorset within the required 30 minute period (the doorset being sealed off at this time to allow continuation of the test for the 60 minute doorset).

The observations also show that the locksets fitted to the 60 minute doorset continued to satisfy the integrity criteria of the test beyond the initial failure of the doorset for the 63 minute duration of the test.

The lock models included within the tested doorset assemblies have demonstrated their ability to be included within fire resistant doorsets without detracting from the performance of the doorset and are therefore positively appraised without further discussion, subject to the requirements of the 'Proposed doorsets' section given later in this report.

It is proposed that in addition to the rim lock and mortice lockset models included in the fire test additional similar models may also be appraised on the basis of their similarity to those models tested.

L2008

The Banham 'L2008' deadlock differs from the tested L2000 and L2000 Mk II locksets only in that it does not include a double cylinder allowing operation via a key from the inside. In terms of the overall dimensions and method of installation it is identical to the tested model. Positive appraisal of the L2008 rim lock is considered acceptable on this basis.

Electronic release The standard 10" box striker normally fitted with the L2000 rim locks was included with the L2000 Mk II fitted to Doorset A and suitable demonstrated is suitability. In addition to the standard strike is it also required that the L2000 may be fitted with an electronic release box striker.

The electronic release version impinges into the door frame to door leaf junction by the same extent, the overall size of the faceplate fixing into the door frame rebate being 256 mm high by 32 mm wide for both versions. However the surface mounted portion of the electronic release striker being slightly larger than standard to accommodate the release components.

To ensure that the electronic release did not pose a greater risk to the performance of a doorset than the standard version Doorset B within the test included an L2000 and electronic release.

Whilst the tested assembly demonstrated the performance of the electronic release when mounted as part of a 60 minute doorset assembly, its similarity in terms of overall dimensions, thickness of faceplate and interruption of the leaf to frame junction, are considered suitable comparisons to enable justification of its use with 30 minute doorsets.

M2008 The Banham 'M2008' model has an identical case to the tested 'M2002' but having a thumb turn on the inside rather than a cylinder. In terms of its installation it does not require any additional material to be removed from the door leaf, nor is it any more onerous than the tested double cylinder lockset.

B7134 The Banham B7134 mortice lock case is identical the Imperial G7134 previously appraised as part of the Imperial range, but includes a larger forend assembly than that model. Comparison of the forend of the B7134 can be made with that of the tested Banham M2002 which has identical dimensions.

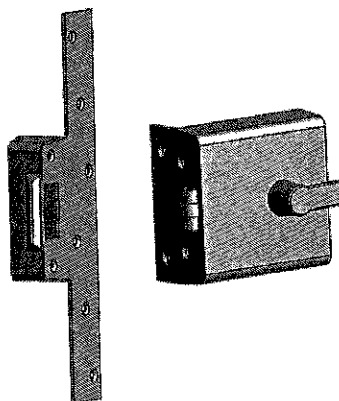
M5000/5008 The Banham 'M5000' and 'M5008' Mortice case deadlocks are of the same basic construction and materials as the tested M2002 differing only in that the M5000 is provided with a Euro profile double cylinder and the M5008 a Euro profile cylinder and thumb turn. The Euro profile cylinder requires a slightly smaller hole to be made through the thickness of the door leaf and so can be considered as a less onerous installation than the tested 'M2002' model.

M97 The 'M97' lockset is a 5 lever deadlock similar in overall dimensions to the tested M2002, but having a slightly larger case size at 77 mm wide by 108 mm high as opposed to that of the M2002 at 70 mm wide by 103 mm high. However the lock's forend is 44 mm shorter at 166 mm high and 2 mm narrower at 26 mm wide. Additionally the lockset does not have any cylinder passing through the thickness of the door leaf so requires only a minimal amount of additional leaf material to be removed for its installation.

Given the reduction in forend dimensions and omission of a cylinder the performance of the M97 is considered to be at least equal to that of the M2002. A requirement of its positive appraisal is that the lock shall be provided with the same intumescent protection as included with the tested lockset.

**Issue 7 –
Add FD500 Roller
bolt lock**

It is proposed that the FD500 Roller bolt lock be added to the current range of approved Banham products, based on the existing WF No. 177153 test data.



In terms of the lock material, it is critical that materials which are combustible or have a lower melting point are not utilised since materials which melt or ignite may advance the burn through of the leaf and therefore lead to a premature integrity failure.

It is critical that the lock dimensions are not increased since the increased mortice required for a large case may lead to an earlier burn through of the leaf or increased strike/forend dimensions may lead to the penetration of flames/hot gases at the leaf edge due to further interruption of intumescent seals and an increase in conducted heat.

In terms of the intumescent protection, it is critical that this is not reduced from that tested, as the reaction of this material when subjected to the heating conditions of the test is essential in limiting the burn through of the leaf and at the leaf to frame gap at the lock position.

Substitution of the alternative lockset may therefore be considered in terms of the critical aspects discussed and where such locksets fall within the scope of the tested locksets, it is considered reasonable to assume that no reduction in the performance of the doorset would be expected as a consequence of their substitution.

The proposed lock is a rim mounted lock with elements of the lock body forend and strikeplate recessed into the edge of the door leaf (95 mm high x 25 mm deep) and frame rebate (256 mm high x 32 mm wide with 95 mm high exposed keep section).

The lock body forend and strikeplate are virtually identical, with the same method of installation to the Banham L2000 (Mark II) fitted to the 30 minute doorset in the WF No. 177153. Therefore this is considered suitable supporting test evidence for the 30 minute application.

The lock body forend is virtually identical, with the same method of installation to the Banham EL4000 fitted to the 60 minute doorset in the WF No. 177153. However, the tested strikeplate was 256 mm high x 32 mm wide with a 130 mm high exposed keep section.

The tested strikeplate can be considered to be a more onerous detail as the exposed keep section being larger will act as an increased heat sink which may result in increased erosion in this area. Therefore this is considered suitable supporting test evidence for the 60 minute application.

On this basis the existing test evidence is considered suitable justification for the use of the FD500 Roller bolt lock on 30 minute and 60 minute timber/mineral-based doorsets, conditional on compliance with the intumescent protection and doorsets specifications identified below.

The FD500 has a roller bolt latching mechanism as opposed to a standard deadbolt, allowing egress at all times.

The roller bolt cannot be relied upon to retain the door in the closed position; consequently the use of this lock shall be restricted to doorsets that have been proven for the required period without the restraint of a latch/lock.

**Intumescent
Protection (All
locks in Annex C)**

It is a requirement of this appraisal that the 'Imperial', 'Benton' and 'Primera' locksets and the 'Banham' M2002/8, M500/8, M97 and B7134 locksets must be installed within the leaf such that the case is bedded on 1 mm Interdens (Mono Ammonium Phosphate) intumescent to all faces and that a 1 mm thickness of the same material is provided behind the forend.

Additionally the 'Banham' L2000', L2000 MkII' and L2008 shall have a 2 mm thickness of Interdens (Mono Ammonium Phosphate) intumescent fitted behind the faceplate of the rim lock and also behind faceplate of the box striker, as per the tested detail.

Based on the above discussion the lock ranges listed within the tables of Annex C are deemed acceptable.

**Proposed
Doorsets (All
locks in Annex C)**

As stated in this report, the doorset, in the required configuration, will be previously tested (or assessed by Exova Warringtonfire, BM TRADA or Chiltern International Fire) and its performance is therefore not in doubt.

To enable the use of 'Banham' locksets 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 locksets to be used safely:

- a) The doorset shall carry valid certification or the doorset, including the door frame and associated ironmongery should have achieved 30 or 60 minutes integrity and where applicable insulation, when tested by a UKAS approved laboratory (or assessed by Exova Warringtonfire, BM TRADA or Chiltern International Fire) to EN 1634-1.
- b) If the proposed doorset is to be used in double-leaf configuration the test or assessment evidence should be applicable to double-leaf configuration (square meeting edges only).

- c) The leaves of the proposed doorset shall be of a minimum thickness of 44 mm for 30 minute doorsets and 52 mm for 60 minute doorsets. 60 minute doors shall include non-combustible sub-facings of a minimum 3 mm thickness.
- d) The leaves should incorporate hardwood lippings of a minimum thickness of 6 mm and minimum density 640kg/m^3 .
- e) Door frame density - 450 kg/m^3 for 30 minute doorsets and 640 kg/m^3 for 60 minute doorsets.
- f) In the case of roller bolt latch/bolt models, these shall only be fitted to previously proven unlatched doorsets.
- g) In the case of roller bolt latch sashlocks and all deadlocks, these shall only be fitted to previously proven unlatched doorsets or must always be locked.

Additionally, the amount of interruption to the intumescent seal specification at the door leaf to frame perimeter clearance gaps should be replicated, or greater than that that originally specified for the tested doorset.

- a) The doorset shall carry valid certification or the doorset, including the door frame and associated ironmongery should have achieved up to 60 minutes integrity, when tested by a UKAS approved laboratory (or assessed by Exova Warringtonfire, BM TRADA or Chiltern International Fire) to BS EN 1634-1.
- b) If the proposed doorset is to be used in double-leaf configuration the test or assessment evidence should be applicable to double-leaf configurations.
- c) Sliding door lock models shall only be used with doorsets previously proven in this configuration.
- d) The critical aspects of the doorset construction are given earlier in this report and shall be replicated on the proposed doorset, in particular for 60 minute doorsets, the necessity for the door leaf to include non-combustible sub-facings.
- e) In the case of roller bolt latch models, these shall only be fitted to previously proven for the required period without the restraint of a latch/lock.
- f) In the case all deadlocks, these shall only be fitted to previously proven unlatched doorsets or must always be locked.

Conclusions

Should the recommendations given in this report be followed, it can be concluded that the 'Imperial', 'Benton' and 'Primera' locksets listed within the tables included in Annex A & B of this report may be fitted to previously tested or assessed (by Exova Warringtonfire, BM TRADA or Chiltern International Fire) insulated timber/mineral-based doorsets, to provide up to 60 minutes integrity performance if tested in accordance with BS EN 1634-1.

In addition should the recommendations given in this report be followed, it can be concluded that the Banham locks listed within the tables included in Annex C of this report may be fitted to previously tested or assessed (by Exova Warringtonfire, BM TRADA or Chiltern International Fire) insulated timber/mineral-based doorsets, to provide up to 60 minutes integrity performance if tested in accordance with BS EN 1634-1.

Review

It has been confirmed by Guardian Lock & Engineering Co. Ltd that there have been no changes to the specification, materials or manufacturing location of the locks and latches considered in the original appraisal referenced WF Assessment Report No. 169923 last issued 26th January 2016.

The data used for the original appraisal has been re-examined and found to be satisfactory. The procedures adopted for the original assessment have also been re-examined and are similar to those currently in use.

Therefore, with respect to the assessment of performance given in WF Assessment Report No. 169923, the contents should remain valid for a further 5 years.

This review is based on information used to formulate the original assessment. No other information or data has been provided by Guardian Lock & Engineering Co. Ltd which could affect this review.

The original appraisal report was performed in accordance with the principles of the UK Fire Test Study Group Resolution 82: 2001. This review has therefore also been conducted using the principles of Resolution 82: 2001.

Validity

This assessment is issued on the basis of test data and information available at the time of issue. If contradictory evidence becomes available to Exova Warringtonfire the assessment will be unconditionally withdrawn and Guardian Lock and Engineering Co. Ltd will be notified in writing. Similarly the assessment is invalidated if the assessed construction is subsequently tested because actual test data is deemed to take precedence over an expressed opinion. The assessment is valid initially for a period of five years, i.e. until 30th June 2023, after which time it is recommended that it be returned for re-appraisal.

The appraisal is only valid provided that no other modifications are made to the tested construction other than those described in this report.

Summary of Primary Supporting Data

**WF Test Report
No. 165592**

Test report relating to the performance of two fully insulated, single-acting, single-leaf, timber doorsets incorporating various building hardware, when subjected to a test in accordance with BS EN 1634-1: 2000 to determine their fire resistance performance.

Doorset A had overall dimensions of 2080 mm high by 1008 mm wide and incorporated a door leaf of overall dimensions 2043 mm high by 944 mm wide by 44 mm thick. The door leaf comprised a flaxboard core, softwood stiles and rails, hardwood lippings to the vertical edges and MDF facings and was hung within a softwood door frame on three steel hinges.

Doorset B had overall dimensions of 2080 mm high by 1005 mm wide and incorporated a door leaf of overall dimensions 2035 mm high by 923 mm wide by 52 mm thick. The door leaf comprised a flaxboard core, softwood stiles and rails, hardwood lippings to the vertical edges, non-combustible board sub-facings and chipboard outer facings and was hung within a hardwood door frame on three steel hinges.

Each doorset was fitted with a Euro-profile Sashlock referenced "G72-7000", a Lever roller bolt fire escape deadlatch referenced "G9062" including full frame mortice key pattern (G9067) and break glass (G9070) and a Tubular latch referenced "G4060". All the mortised components were protected via 1 mm thick mono-ammonium phosphate intumescent material (Interdens).

The specimens satisfied the test requirements for the following periods:

		Doorset A	Doorset B
Integrity	Sustained Flames	37 minutes	65 minutes
	Gap Gauge	37 minutes	65 minutes
	Cotton Pad	37 minutes	62 minutes
Insulation		37 minutes	65 minutes

The test was discontinued after a period of 75 minutes

The locks were not subject to independent sampling.

Test date : 16th July 2007

Test sponsor : Guardian Lock And Engineering Co. Ltd

**WF Report No.
397291**

An investigation of two timber-based doorsets, which utilised the heating and pressure conditions given in BS EN 1363-1:2012.

For the purposes of the test, the doorsets were referenced Doorset A and Doorset B.

Doorset A had overall dimensions of 1488 mm high by 662 mm wide incorporating a door leaf with overall dimensions 1455 mm high by 595 mm wide by 44 mm thick. The door leaf was of a solid graduated density chipboard construction, with 8 mm hardwood lippings to the vertical edges and was mounted in a softwood frame. The doorset was fitted with two morticed locksets as detailed below. The locks were latched for the duration of the test.

Description	Reference
Roller bolt deadlock	B0172PP – 100 – P.
Primera Anti-Ligature Roller Bolt Deadlock.	PRCASEGA11.
Stainless steel lever handles, paired with items 6 and 7	3510 - Modric lever handles
Euro profile Cylinder, paired with items 6 and 7	7419 NB Euro Profile Cylinder with turn.

Doorset B had overall dimensions of 1488 mm high by 673 mm wide incorporating a door leaf with overall dimensions 1455 mm high by 595 mm wide by 54 mm thick. The door leaf was of a solid graduated density chipboard construction, with 8 mm hardwood lippings to the vertical edges and was mounted in a hardwood frame. The doorset was fitted with two morticed locksets as detailed below. The locks were latched for the duration of the test.

Description	Reference
Roller bolt deadlock	B0172PP – 100 – P.
Primera Anti-Ligature Roller Bolt Deadlock.	PRCASEGA11.
Stainless steel lever handles, paired with items 6 and 7	3510 - Modric lever handles
Euro profile Cylinder, paired with items 6 and 7	7419 NB Euro Profile Cylinder with turn.

Doorset A achieved 36 minutes integrity performance, at which point the doorset was blanked off to allow the testing of Doorset B to continue. Doorset B achieved 68 minutes integrity performance, at which point the test was discontinued without failure.

The locks were not subject to independent sampling.

The test was undertaken on the 20th March 2018 and was sponsored by Guardian Lock & Engineering.

**WF Test Report
No. 177153
issue 2**

Test report relating to the performance of two fully insulated, single-acting, single-leaf, timber doorsets incorporating various building hardware, when subjected to a test in accordance with BS EN 1634-1: 2000 to determine their fire resistance performance.

Doorset A had overall dimensions of 2075 mm high by 883 mm wide and incorporated a door leaf of overall dimensions 2030 mm high by 813 mm wide by 44 mm thick. The door leaf comprised a flaxboard core, MDF stiles and rails, hardwood lippings to the vertical edges and plywood facings and was hung within a softwood door frame on three steel hinges.

Doorset B had overall dimensions of 2080 mm high by 1012 mm wide and incorporated a door leaf of overall dimensions 2038 mm high by 928 mm wide by 53 mm thick. The door leaf comprised a flaxboard core, softwood stiles and rails, hardwood lippings to the vertical edges, non-combustible board sub-facings and chipboard outer facings and was hung within a hardwood door frame on three steel hinges.

Doorset A was fitted with a Security double cylinder rim lock (deadbolt version) with 10" box striker referenced "Banham L2000 (Mark II)" which was engaged for the test duration and a Hook bolt double cylinder security mortise deadlock with 10" box striker referenced "Banham M2002" which was disengaged for the test duration.

Doorset B was fitted with a Security single/outside cylinder rim lock (standard latch version) with 10" electric release box striker referenced "Banham EL4000" which was engaged for the test duration and a Hook bolt double cylinder security mortise deadlock with 10" box striker referenced "Banham M2002" which was disengaged for the test duration.

The specimens satisfied the test requirements for the following periods:

		Doorset A	Doorset B
Integrity	Sustained Flames	26 minutes	57 minutes
	Gap Gauge	30 minutes#	63 minutes
	Cotton Pad	26 minutes	57 minutes
Insulation		37 minutes	26 minutes

#Doorset blanked off. The test was discontinued after a period of 63 minutes.

The locks were not subject to independent sampling.

Test date : 13th October 2008

Test sponsor : Guardian Lock And Engineering Co. Ltd

Declaration by Guardian Lock And Engineering Co. Ltd

We the undersigned confirm that we have read and complied with the obligations placed on us by the UK Fire Test Study Group Resolution No. 82: 2001.

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 the 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 Exova Warringtonfire to withdraw the assessment.

Signed:

For and on behalf of:

Signatories


Responsible Officer (Issue 7) R. Anning* - Principle Certification Engineer


Approved (Issue 7) M. Tolan* - Certification Engineer

* For and on behalf of Exova Warringtonfire.

Report Issued: 16 th January 2008
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The assessment report is not valid unless it incorporates the declaration duly signed by the applicant.

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Issue 2: Correction of typographical errors pages 5, 6 and 8. Amendment of product descriptions Annex A. (23rd January 2008)

Issue 3: Additional lock references added page 24. (23rd April 2008)

Issue 4: Addition of Banham locksets and additional test evidence. (21st September 2009)

Issue 5: Inclusion of additional locksets including Benton and Primera ranges. (17th November 2014)

Issue 6: Inclusion of Benton Kaba cylinder profile locks (26th January 2016)

Issue 7: 5 year review, plus the additional locks in Annex B and C (26th June 2018)

Annex A – Approved Locksets

Table 3 – Primera Locksets	
Model Ref.	Lock type and description
PR-6101RBD	Roller bolt Lock case
PR-6106ALNL-LL	Auto Locking Night latch - c/w double follower, Radius Latch & M'plier (LL & P'port)
PR-6111RBD	Roller Bolt Deadlock 101 x 235 (Swiss profile)
PR-6114ALNL-NHB	Auto Locking Night latch - lightly sprung non Holdback (Swiss profile) & M'plier
PR-6115ALNL-HB	Auto Locking Night latch - lightly sprung c/w Holdback (Swiss profile) & M'plier
PR-6121RBD	Roller Bolt Deadlock 101 x 235 (Oval profile)
PR-6124ALNL-NHB	Auto Locking Night latch - lightly sprung non Holdback (Oval profile) & M'plier
PR-6125ALNL-HB	Auto Locking Night latch - lightly sprung c/w Holdback (Oval profile) & M'plier
PR-6130RBD	Roller Bolt Deadlock 101 x 235 x 72mm centre
PR-6131RBD	Roller Bolt Deadlock 101 x 235 x 72mm centre-Communal
PR-6136ALNL-NHB	Auto Locking Night latch Unified - L/S, no HB. Radius latch & M'plier
PR-6137ALNL-HB	Auto Locking Night latch Unified - L/S, c/w HB. Radius latch & M'plier
PR-6138ALNL-NHB	Auto Locking Night latch 38mm - L/S, no HB. Radius latch & M'plier
PR-6139ALNL-HB	Auto Locking Night latch 38mm - L/S, c/w HB. Radius latch & M'plier
PR-6140ALNL-NHB-O	Auto Locking Night latch Unified - Oval Profile L/S, no HB. Radius latch & M'plier
PR-6141ALNL-HB-O	Auto Locking Night latch Unified - Oval Profile L/S, c/w HB. Radius latch & M'plier
PR-6142ALNL-HB-S	Auto Locking Night latch Unified - Swiss Profile L/S, no HB. Radius latch & M'plier
PR-6143ALNL-HB-S	Auto Locking Night latch Unified - Swiss Profile L/S, c/w HB. Radius latch & M'plier
PR-6144RBD-S	Roller Bolt Deadlock 101 x 235 x 72mm centre (Swiss Profile)
PR-6145RBD-S	Roller Bolt Deadlock 101 x 235 x 72mm centre-Communal (Swiss Profile)
PR-6146RBD-O	Roller Bolt Deadlock 101 x 235 x 72mm centre (Oval Profile)
PR-6147RBD-O	Roller Bolt Deadlock 101 x 235 x 72mm centre-Communal (Oval Profile)
PR-6148RBD-LL	Roller Bolt Deadlock 101 x 235 x 72mm centre c/w double follower (Lifeline)
PR-6151RBD	Roller Bolt Deadlock 76 x 235 x 72mm centre
PR-6152RBD-O	Roller Bolt Deadlock 76 x 235 x 72mm centre (Oval Profile)
PR-6153RBD-S	Roller Bolt Deadlock 76 x 235 x 72mm centre (Swiss Profile)
PR-6303-TMB-CWRK	Rhino Door Bolt