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Title:

Classification of Fire Resistance Performance in Accordance with EN 13501-2: 2023

Approved Body No:

0833

Product Name:

Kirncroft Security Door

WF Classification Report No.:

525676 Issue 2

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2

Prepared for:

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Signatories and revision history

Issue No.	Date	FM No.	Report scope and signatures
1	24/11/2022	525676	Initial report issued to Kirncroft Engineering
2	13/02/2026	525676	EN 13501-2 update from 2016 version to 2023 version. Inclusion of $EI_2$15 and $EI_2$20 classification.

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Contents

1. Introduction

This classification report defines the resistance to fire classification and durability of self-closing classification assigned to element 'Kirncroft Security Door' in accordance with the procedures given in EN 13501-2:2023.

2. Details of classified product

2.1 General

The element, 'Kirncroft Security Door', is defined as a fire resisting steel door as described in Clause 7.5.5 of BS EN 13501-2. Its function is to:

1. Resist fire in respect of the fire performance characteristics given in Clause 5 of BS EN 13501-2: 2023.

This classification has been carried out in accordance with Clause 7.5.5 of BS EN 13501-2: 2023 which is the classification of fire doors and shutters including their closing devices and smoke control doors. The product is to be classified for integrity (E), insulation (I_2) and radiation (W) performance only.

2.2 Description

The element, 'Kirncroft Security Door' is fully described in WF Test Report No. 516397 and WF Test Report No. 522292.

The doorsets tested and reports within WF Test Report No. 516397 and WF Test Report No. 522292 were identical in construction. The door tested in WF Test Report No. 516397 was orientated such that the leaf opened away from the heating conditions and the door tested in WF Test Report No. 522292 was orientated such that the leaf opened towards the heating conditions.

In each test, the doorset had overall nominal dimensions of 2095 mm high by 1210 mm wide, incorporating a single door leaf with nominal dimension of 2060 mm high by 1144 mm wide by 45 mm thick. The door leaf was hung within a 2 mm thick galvanised steel frame with a mineral wool core on four stainless steel hinges.

Briefly, the product comprises a door leaf formed from 1 mm thick galvanised steel skins with a 42 mm thick Rockwool FacadeRock 10 (FR10) mineral insulation core (stated density of 140 kg/m3). The leaf incorporated a stainless-steel lever handle with centre and side lock which were disengaged for the test duration. The door leaf included a surface mounted closer mounted to the 'push' side of the leaf.

A full specification of the element is provided in the test reports used in support of this classification report.

3. Test reports / extended application reports and test results in support of the classification

3.1 Test Reports / Extended application reports

Name of laboratory	Name of sponsor	Report reference number	Test standard and date	Test Date
Warringtonfire	Kirncroft Engineering Limited	WF Test Report No. 516397 (Opening away)	BS EN 1634-1: 2014 +A1: 2018	15th August 2022
Warringtonfire	Kirncroft Engineering Limited	WF Test Report No. 522292 (Opening towards)	BS EN 1634-1: 2014 +A1: 2018	14th September 2022

3.2 Results

Test Report Reference 516397		
Report Sponsor	Kirncroft Engineering Ltd	
Test Laboratory	Warringtonfire	
Test Date	15th August 2022	
Test Standard	BS EN 1634-1: 2014 +A1: 2018	
Performance Parameters		**Results**
Integrity	Sustained Flaming	106 minutes
	Gap Gauge	112 minutes*
	Cotton Pad	112 minutes
Insulation (I_1)		14 minutes
Insulation (I_2)		27 minutes
Radiation	Time to exceed 15 kW/m^2	112 minutes*
***No failure. The test was discontinued after a period of 112 minutes.**		

Test Report Reference 522292		
Report Sponsor	Kirncroft Engineering Ltd	
Test Laboratory	Warringtonfire	
Test Date	14th September 2022	
Test Standard	BS EN 1634-1: 2014 +A1: 2018	
Performance Parameters		**Results**
Integrity	Sustained Flaming	96 minutes
	Gap Gauge	100 minutes*
	Cotton Pad	32 minutes
Insulation (I_1)		14 minutes
Insulation (I_2)		19 minutes
Radiation	Time to exceed 15 kW/m^2	100 minutes*
***No failure. The test was discontinued after a period of 100 minutes.**		

4. Classification and field of application

4.1 Reference of classification

This classification has been carried out in accordance with Clause 7 of EN 13501-2:2023.

4.2 Classification

The element, 'Kirncroft Security Door' is classified according to the example of the following combinations of performance parameters and classes as appropriate.

R	E	I	W		*t*	*t*	-	M	S	-	C	IncSlow	sn	ef	r

Classification based upon Test Report referenced 516397 (Opening away)

Fire resistance classification*:

$EI_2$20-C, E90-C, EW90-C

This classification document does not represent type approval or certification of the product.

Classification based upon Test Report referenced 522292 (Opening towards)

Fire resistance classification*:

$EI_2$15-C, E90-C, EW90-C

This classification document does not represent type approval or certification of the product.

**Note: the classifications stated are the maximum classifications permitted. Any classification period below this is covered by default.*

4.3 Field of application

This classification is valid for the following end use applications:

Scope of classification as defined within WF Report No. 516397 and WF Report No. 522292 and in accordance with BS EN 13501-2: 2023.

4.3.1 Direct Field of application

The direct field of application for 'Kirncroft Security Door' as tested in WF Report No. 516397 and WF Report No. 522292 and classified within this report is given in Annex A and is based on the DIAP rules for fire resistance given in section 13 of BS EN 1634-1: 2014 +A1: 2018.

5. Limitations

This classification document does not represent type approval or certification of the product.

Annex A - Direct Field of Application

A.1 Rules

This Direct Field of Application (DIAP) has been derived based on the field of direct application of test result rules found within Clause 13 of BS EN 1634-1:2014+A1:2018.

A.2 General Description of Construction

The materials, construction and specification of the 'Kirncroft Security Door' as tested in WF516397 and WF522292, relevant to this classification report are detailed within the test reports referenced in section 3.

A.3 Design Variations

This Annex details the permitted variation to the designs tested in WF516397 and WF522292 whilst maintaining the products ability to meet the classification periods outlined within Section 4.2 of this report.

Other than the permitted variations detailed in this annex, the materials, construction and specification of the doorset must remain as tested in WF516397 and WF522292.

A.4 Field of Application

A.4.1 Configuration

Applicable DIAP rules:

- **BS EN 1634-1: 2014+A1: 2018** clause **13.2.1:** number of leaves and the mode of operation (e.g. sliding, single action or double action) shall not be changed.

Permitted variation:

Based on the above rules it is not permitted to change the number of leaves or mode of operation therefore, the doorsets must consist of 1No leaves and be of a single acting operation.

Number of Leaves	Mode of Operation
1	Single Action

A.4.2 Materials and Construction

Applicable DIAP rules:

- **BS EN 1634-1: 2014+A1: 2018** clause **13.2.1:** Unless otherwise stated in the following sections, the materials and construction of the doorset or openable window shall be the same as that tested.

Permitted variation:

The following sections give the permitted variation to materials and construction to that tested and described in WF516397 and WF522292.

A.4.2.1 Metal construction

Applicable DIAP rules:

- **BS EN 1634-1: 2014+A1:** 2018 clause **13.2.2.2:** The dimensions of metal wrap around frames may be increased to accommodate increased supporting construction thickness.
- The thickness of the metal may also be increased by up to 25%.
- The number of stiffening elements for uninsulated doors and the number and type of fixings of such members within the panel fabrication may be increased proportionally with the increase in size but shall not be reduced.

Permitted variation:

An increase in dimensions of metal wrap around frames to accommodate increased supporting construction thickness.

An increase in thickness of the **metal** is permitted provided the total increase is not greater than 25%.

The type of metal shall not be changed from that tested.

A.4.3 Leaf Size

Applicable DIAP rules:

- **BS EN 1634-1: 2014+A1: 2018** clause **13.3.2:** The amount of variation of size permitted is dependent on whether the classification time was just reached (Category 'A') or whether an extended time (Category 'B') in accordance with the values shown in Table 1 were fulfilled before the test was concluded.
- **BS EN 1634-1: 2014+A1: 2018** clause **13.3.3.2.1** For Category 'B' tests (with specified overrun of classification period) all smaller sizes are permitted and increases in height and width are permitted as stated in Annex B.
- **BS EN 1634-1: 2014+A1: 2018** clause **13.3.3.2.2:** For smaller doorset sizes the relative positioning of movement restrictors (e.g. hinges and latches) shall remain the same as tested or any change to the distances between them will be limited to the same percentage reduction as the decrease of test specimen size.
- **BS EN 1634-1: 2014+A1: 2018** clause **13.3.3.2.2:** For larger doorset sizes the following apply: a) the height of the latch above floor level shall be equal to or greater than the tested height, and such increase in height shall be at least proportional to the increase in door height; b) the distance of the top hinge from the top of the door leaf shall be equal to or less than tested; c) the distance of the bottom hinge from bottom of door leaf shall be equal to or less than that tested; d) where three hinges or distortion preventers are used, the distance between the bottom of the door leaf and the centre restraint shall be equal to or greater than that tested.
- **BS EN 1634-1: 2014+A1: 2018** clause 13.3.1 states that the increase and decrease of dimensions permitted by the DIAP are applicable to the overall size and to each door leaf, each side panel and each over panel independently.
- **BS EN 1634-1: 2014+A1: 2018** clause **13.3.3.1:** No increases in size are permitted for doorsets which are required to satisfy radiation control levels unless the insulation criteria are also satisfied.

Permitted variation:

A decrease in leaf size is permitted provided that the relative positioning of movement restrictors (e.g. hinges and latches) are the same as tested or any change to the distances between them are limited to the same percentage reduction as the decrease of test specimen size.

An increase from the tested dimensions for the doorset, **tested in WF516397 (opening away) only**, is permitted up to the maximum dimensions given in the table below, providing the rules above are applied for hardware positioning and that the doorset is **integrity ≤E90 and integrity and insulation ≤$EI_2$20 only** and not required to satisfy radiation control levels.

Tested Overall Height	Tested Overall Width	Tested Overall Area
2095mm	1210mm	2.53m^2
Maximum Overall Height	**Maximum Overall Width**	**Maximum Overall Area**
2409mm	1392mm	3.04m^2

Tested Leaf Height	Tested Leaf Width	Tested Leaf Area
2060mm	1144mm	2.36m^2
Maximum Leaf Height	**Maximum Leaf Width**	**Maximum Leaf Area**
2369mm	1316mm	2.83m^2

A.4.5 Laminate and Veneers

Applicable DIAP rules:

- **BS EN 1634-1: 2014+A1: 2018** clause **13.2.3.2:** Decorative laminates and timber veneers up to 1,5 mm thickness may be added to the faces (but not the leaf edges) of doors that satisfy the insulation criteria (normal or supplementary procedure).

Permitted variation:

Decorative laminates and timber veneers are not permitted.

A.4.6 Paint

Applicable DIAP rules:

- **BS EN 1634-1: 2014+A1: 2018** clause **13.2.3.1:** Where the paint finish is not expected to contribute to the fire resistance of the door, alternative paints are acceptable and may be added to door leaves or frames for which unfinished test specimens were tested.

Permitted variation:

The 'Kirncroft Security Door' doorset tested in WF516397 and WF522292 may be finished in paint.

Finish Type
Paint finish that does not contribute to the fire resistance of the door

A.4.7 Hardware

A.4.7.1 Hinges and Dog Bolts

Applicable DIAP rules:

- **BS EN 1634-1: 2014+A1: 2018** clause **13.2.5:** The number of hinges and dog bolts may be increased but shall not be decreased.

Permitted variation:

The 'Kirncroft Security Door' doorset has been classified for fire resistance and therefore the number of hinges may not be changed from that tested. The doorset must include the following number of hinges and dog bolts:

Hinges	Dogbolts
4	4

A.4.7.2 Door Closing Devices

Applicable DIAP rules:

- **BS EN 1634-1: 2014+A1: 2018** clause **13.2.5:** Where a doorset has been tested with a door closing device fitted, but with the retention force released in accordance with 10.1.4, the doorset may be provided either with or without that closing device, i.e. where self-closing characteristics are not required.

Permitted variation:

The 'Kirncroft Security Door' doorset was tested with a retaining door closing device for fire resistance and has been classified for fire resistance and therefore must be fitted with the closing device tested in WF516397 and WF522292.

A.4.7.3 Locks/latches

Applicable DIAP rules:

- **BS EN 1634-1: 2014+A1: 2018** clause **13.2.5:** The number of movement restrictors such as locks and latches is not covered by direct application. Interchange of building hardware is not covered by the field of direct application.

Permitted variation:

The 'Kirncroft Security Door' doorset must be fitted with the lock/latch detailed in WF516397 and WF522292.

A change in the number of movement restrictors such as locks and latches in not permitted.

A.4.8 Installation

A.4.8.1 Sealing to the structure

Applicable DIAP rules:

- **BS EN 1634-1: 2014+A1: 2018** clause **13.2.1:** Unless otherwise stated, the materials and construction of the doorset or openable window shall be the same as that tested.

Permitted variation:

A change to the sealing materials between the back of frame and supporting construction to that tested in WF516397 and WF522292 is not permitted.

A.4.8.2 Fixings

Applicable DIAP rules:

- **BS EN 1634-1: 2014+A1: 2018** clause **13.5.4:** The rules for alternative supporting constructions assume that the fixings methods used in each type of supporting construction are appropriate.
- **BS EN 1634-1: 2014+A1: 2018** clause **13.2.4:** The number of fixings per unit length used to attach doorsets to supporting constructions may be increased, but shall not be decreased and the distance between fixings may be reduced but shall not be increased.

Permitted variation:

Fixings to be positioned identical to that tested in WF516397 and WF522292.

- The fixings must be appropriate to the supporting construction to which the doorset is installed.

A.4.8.3 Door Gaps

Applicable DIAP rules:

- **BS EN 1634-1: 2014+A1: 2018** clause **13.3.3.2.5:** The maximum size of the primary gaps is restricted to the following sizes in practice: x = (a + b)/2 + 2 mm where x is the maximum permitted gap size; a is the maximum measured gap size; b is the mean measured gap size. The minimum size of the primary gaps may be reduced. The permitted gap size may be different for different parts of the door.

Permitted variation:

On the basis of the above defined rules the gaps within the following table may be applied but not exceeded for the doorset tested in WF516397:

Gap Location	Maximum Permitted Gap Dimension (mm)
Across the Head	6.6
Hanging Edge	5.4
Leading Edge	7.1
Threshold	8.8

On the basis of the above defined rules the gaps within the following table may be applied but not exceeded for the doorset tested in WF522292:

Gap Location	Maximum Permitted Gap Dimension (mm)
Across the Head	6.6
Hanging Edge	5.1
Leading Edge	6.3
Threshold	10.2

A.4.9 Supporting Construction

Applicable DIAP rules:

- **BS EN 1634-1: 2014+A1: 2018** clause **13.5.2:** The fire resistance of a doorset tested in a high or low density rigid standard supporting construction as specified in EN 1363-1 can be applied to a doorset mounted in the same manner in a wall provided the density and thickness of the wall are equal to or greater than that in which the doorset was tested.
- **BS EN 1634-1: 2014+A1: 2018** clause **13.5.3:** The fire resistance of the partition shall have been established separately in a previous test.
- **BS EN 1634-1: 2014+A1: 2018** clause **13.5.4 (e):** For uninsulated metal doors, the result of a test in a rigid standard supporting construction is applicable to that door assembly mounted in a flexible construction, but not vice versa.

Permitted variation:

The 'Kirncroft Security Door' doorset may be fitted into a flexible supporting construction (a wall or partition which is of the board covered type with studs made from metal or timber), provided the partition has:

- A fire resistance period (established separately in a previous test) equal or greater than the fire resistance period of the doorset design.