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BRE Global Classification Report

d+b facades Classification of fire performance in accordance with BR 135: 2013 Annex A

Prepared for: d+b facades

Date: 31st July 2019

Report Number: P114006-1001 **Issue: 1**

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Date 31 July 2019

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CLASSIFICATION OF FIRE PERFORMANCE IN ACCORDANCE WITH BR 135:2013 Annex A

Sponsor: d+b facades, The Packway, Larkhill, Salisbury, Wiltshire, SP4 8PY, UK.

Prepared by: BRE Global Ltd, BRE, Bucknalls Lane, Garston, Watford, WD25 9XX, UK.

Product name: Aluminium hook-on cassette panel with Rockwool Insulation.

Classification report No.: P114006-1001

Issue number: 1

This classification report consists of 15 pages and may only be used or reproduced in its entirety.

1 Introduction

This report presents the classification of the system detailed in section 2. The classification is carried out in accordance with the procedures given in BR 135 – 'Fire performance of external thermal insulation for walls of multi-storey buildings', Third edition, Annex A 2013. This classification should be read in conjunction with this document and the associated test reports referenced in section 4.

2 Details of the Classified Product

2.1 Description of substrate

The product was installed on to wall number 3 of the BRE Global cladding test facility.

This apparatus is representative of the face of a building and consists of a masonry structure with a vertical main test wall and a vertical return wall at a 90º angle to and at one side of the main test wall.

2.2 Description of product

Table 1. List of component parts used in the construction of the system.

Item	Description
1	Aluminium brackets: A. 127mm-deep×67mm-wide×120mm-high×5.5mm-thick B. 117mm-deep×67mm-wide×120mm-high×5.5mm-thick
2	Aluminium rails with hook-on anchors (121mm-deep×55mm-wide×6.2mm-thick)
3	Galvanised steel skewer (300mm-long×30mm-wide×1.2mm-thick)
4	Rockwool RW5 (100mm-thick, cut to suit)
5	Rockwool RWA45 Insulation (1200mm-wide×600mm-high×120mm-thick)
6	Anti-rattle clip (28mm-high×18mm-deep×6mm-wide)
7	Aluminium hook-on cassette panel (nominal panel size: 1685mm-high×1230mm-wide×3mm-thick)
8	Aluminium 'L'-shaped combustion chamber surround flashing (200mm-deep×50mm-wide×3mm-thick)

2.3 Installation sequence

Holes were drilled into the masonry substrate, Hiliti HIT-HY 270 resin was injected into the holes and 110mm of the Ø12mm×150mm-long stainless-steel anchors/threaded rods were embedded.

The system had four rows of aluminium brackets. Aluminium brackets (Item 1A) were fixed in two rows at nominal 2300mmin centres up to 3321mm from the ground. Aluminium brackets (Item 1B) were fixed in two rows at nominal 2300mmin centres, the first row was located 5411mm from ground. Both sets of brackets were fastened to the anchors/ threaded rods with M12 nuts with washers.

Aluminium rails with hook-on anchors (Item 2) were fixed to aluminium brackets (Item 1A) with Ø12mm×90mm-long M12 bolts and nuts. The aluminium rails were fixed to the aluminium brackets (Item 1B) with Ø8mm×90mm-long M8 bolts and nuts.

Galvanised steel skewers (Item 3) were folded to 195mm-deep and fixed with Hilti DBZ 6/4.5×40mm-long wedge anchors at nominal 400mm horizontal centres in two rows located: 730mm and 4275mm above the combustion chamber on the main wall only.

Rockwool RW5 (Item 4) was cut to 195mm-deep and pressed onto the galvanised steel skewers (Item 3) as horizontal barriers to the two rows, intersected by the aluminium rails with hook-on anchors (Item 2).

Galvanised steel skewers (Item 3) were folded to 195mm-deep and fixed with Hilti DBZ 6/4.5×40mm-long wedge anchors at nominal 400mm centres in one continuous column located at vertical left-hand side of the combustion chamber opening.

Rockwool RW5 (Item 4) was pressed onto the galvanised steel skewers (Item 3) as a vertical cavity barrier and was intersected by the horizontal cavity barriers.

At the top and vertical right-hand side of the combustion chamber opening, galvanised steel skewers (Item 3) were folded to 195mm-deep and fixed with Hilti DBZ 6/4.5×40mm-long wedge anchors at nominal 400mm centres in line with the combustion chamber opening. Rockwool RW5 (Item 4) was cut to 230mm-deep and pressed onto to skewers as horizontal and vertical cavity barrier respectively. The Rockwool RW5 fixed directly above the combustion chamber extended from the vertical cavity barrier to edge of the system on the main wall.

Rockwool RWA45 Insulation (Item 5) was fixed as vertical slabs onto masonry substrate with four Hilti 250 IDP 10/12 plastic plugs (one at each corner) and two Hilti 150 IDMR 9/12 77846 metal plugs (towards the centre), per full slab.

Anti-rattle clips (Item 6) were friction fitted to the hook-on slots of the aluminium hook-on cassette panels (Item 7) to restrict movement.

Aluminium hook-on cassette panels (Item 7) were hooked onto the aluminium rails with hook-on anchors (Item 2). The panels were secured to the rails with Hilti S-MD 53 S Ø5.5×38mm-long self-drilling screws with Ø12mm washer at each corner of the panel. Panel gaps were approximately 20mm.

'L'-shaped combustion chamber surround flashings (Item 8) were fixed to the panels at the combustion chamber surround with Hilti S-MD 53 S Ø5.5×38mm-long self-drilling screws with Ø15mm washer at nominal 550mm centres.

2.4 Installation of specimen

All test materials were supplied and installed by the Test Sponsor. BRE Global were not involved in the sample selection process and therefore cannot comment upon the relationship between samples supplied for test and the product supplied to market.

3 Product Specification

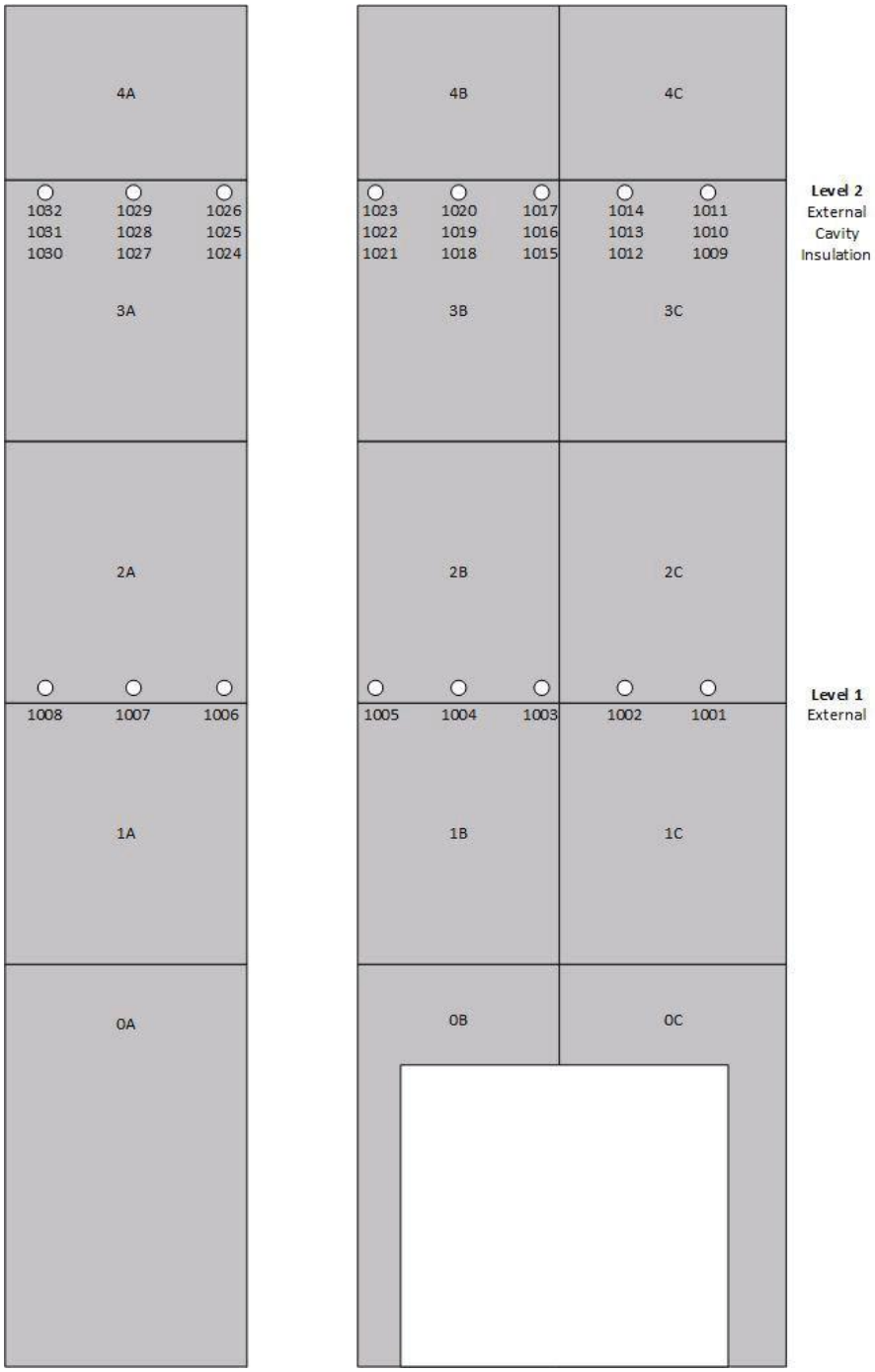

Figure 1. Layout of panels, TC positions and panel numbering used for reporting (0A – 4C). Not to scale.

Figure 2. Photographs of completed build prior to test up to mid-height.

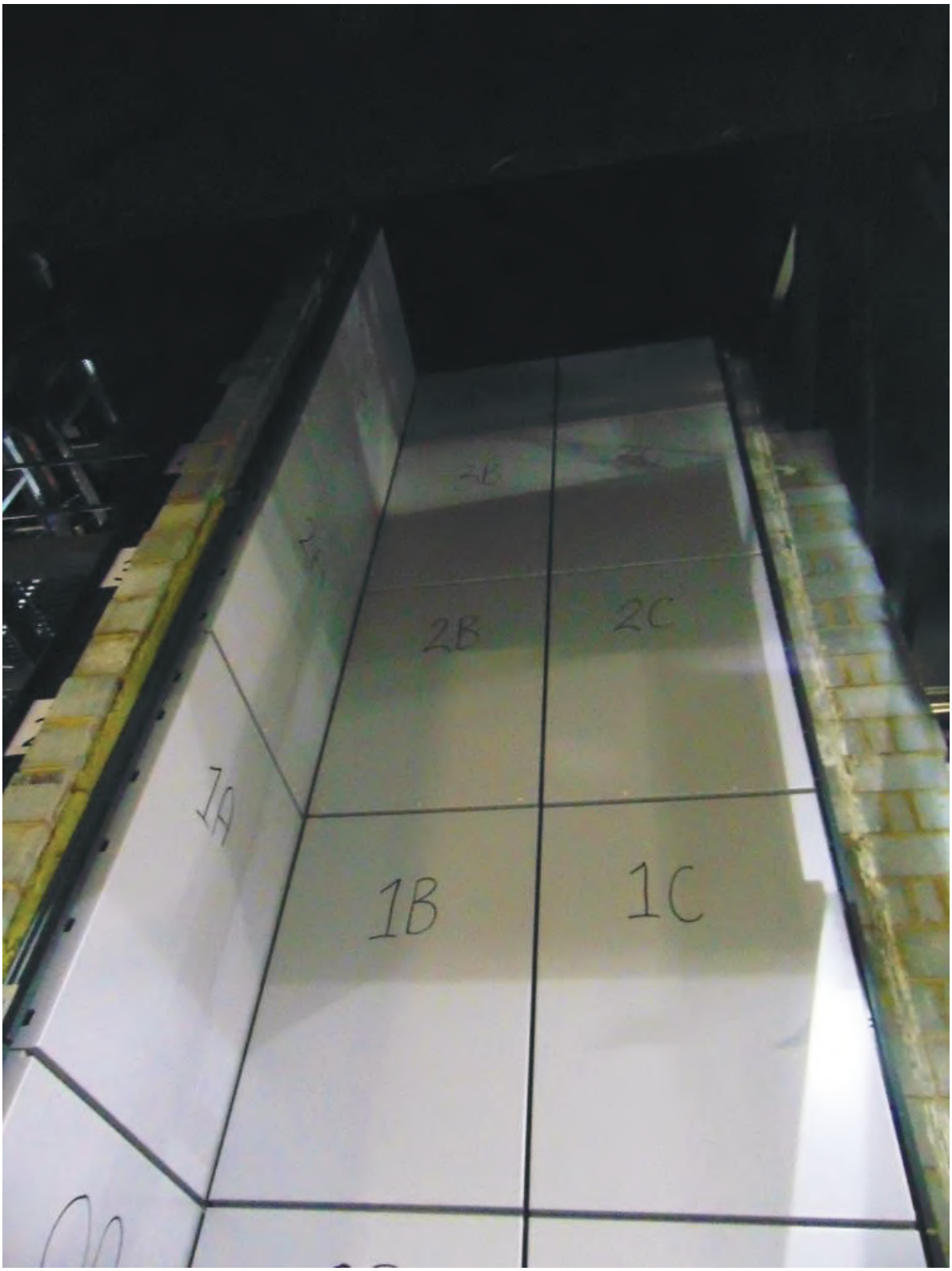

Figure 3. Photograph of completed build prior to test up to top of system.

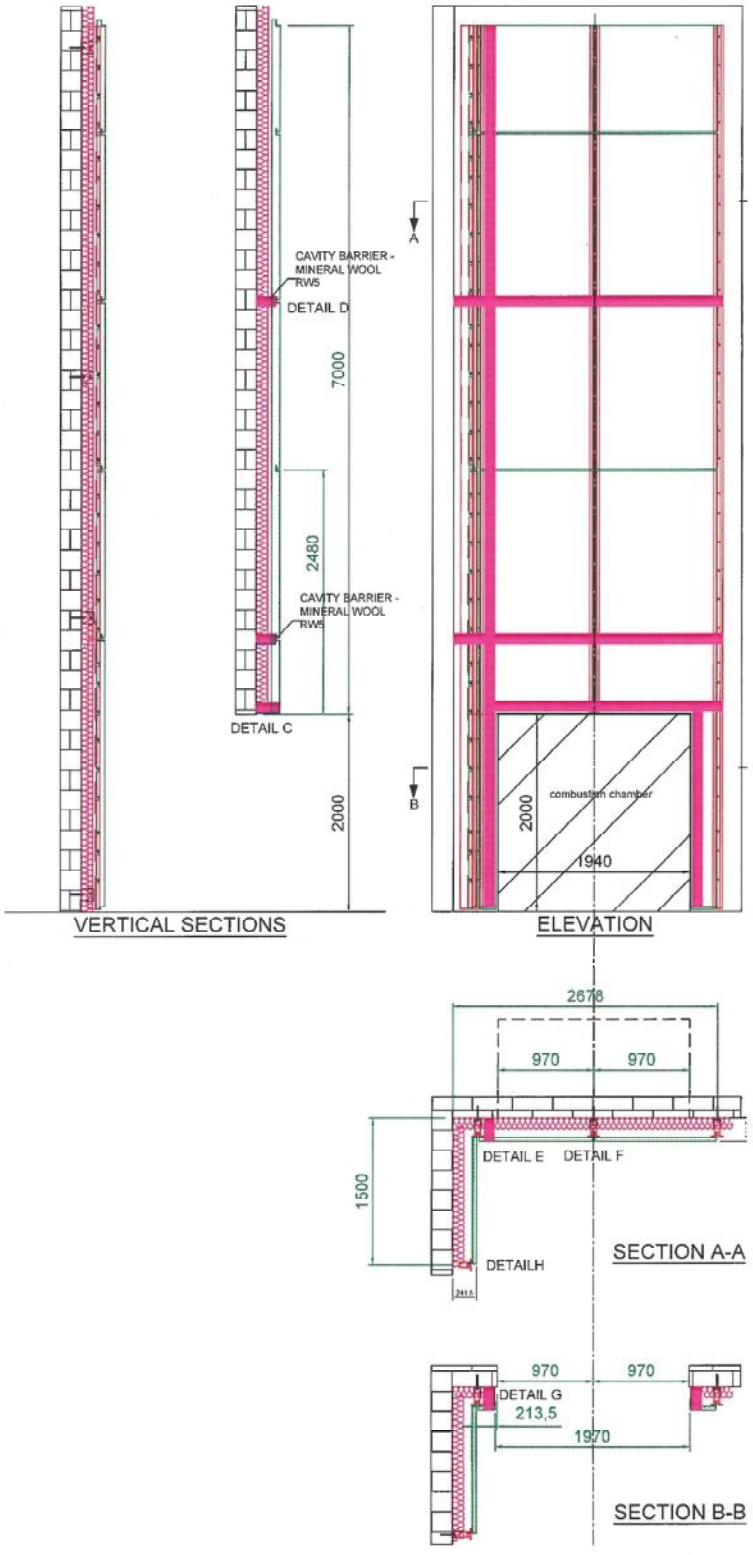

Figure 4 System overview (supplied by Test Sponsor).

4 Supporting Evidence

4.1 Test reports

Name of Laboratory	Name of sponsor	Test reports/extended application report Nos.	Test method / extended application rules & date
BRE Global, BRE	d+b facades	P114006-1000 Issue 1	BS 8414-1:2015 + A1:2017

4.2 Test results

Test method	**Parameter**	**No. tests**	**Results**	
			Fire spread test result time, t_s (min)	**Compliance with parameters in Annex A BR135:2013**
BS 8414-1:2015 + A1:2017	External fire spread	1	>15 minutes	Compliant
	Internal fire spread (cavity layer)		>15 minutes	Compliant
	Internal fire spread (insulation layer)		>15 minutes	Compliant

4.3 Mechanical performance

Falling debris was observed between 9 minutes and 17 second to 20 minutes. Consumption to panels were observed till 28 minutes. There was no flaming debris, pool fire or spalling.

There was no ongoing combustion following extinguish of timber crib.

4.4 System damage

4.4.1 Aluminium panels

The damage observed to the aluminium panels was as follows:

On the main wall the aluminium panels were consumed in an area approx. 1.5m-wide×4.1m-high in a triangular fashion (approx. 3.1m^2) that tapered from max width of the combustion chamber opening. The panels were distorted and discoloured up to the base of panels 4B & 4C. On the wing wall the panels were distorted and discoloured up to panel 3A.

4.4.2 Combustion chamber flashing

The combustion chamber flashing on the top edge was consumed to approx. 1.7m-wide. The right-hand side flashing had a 400mm section consumed with the remaining section distorted and discoloured. The left-hand side was distorted and discoloured.

4.4.3 Stone wool insulation

On the main wall, the insulation was discoloured up to the top of the system. On the wing wall the insulation had sections discoloured along the main-wing wall junction up to the top of the system from above the combustion chamber opening.

4.4.4 Horizontal & vertical cavity barriers

All horizontal cavity barriers were intact and discoloured to full width.

The vertical cavity barrier located on the left-hand side of the combustion chamber opening was intact and discoloured to full-height. The vertical cavity barrier located on the right hand-side was intact and discoloured from mid-height to the top of barrier in line the combustion chamber opening.

4.4.5 Aluminium rails & brackets

On the main wall, the central rail and brackets in line with the combustion chamber centre line, were consumed up 4300mm and discoloured up to 5200mm above the combustion chamber opening. The rail located at the outer edge of the main wall was distorted from 800mm to 4000mm and discoloured up to 4300mm above the combustion chamber opening. The rail located at the main-wing wall junction had patches of discolouration up to 4300mm above the combustion chamber opening.

On the wing wall, the rail and brackets located at the outer edge of the wall was intact with no visible damage.

5 Classification and Field of Application

5.1 Reference of classification

This classification has been carried out in accordance with Annex A of BR 135 – 'Fire performance of external thermal insulation for walls of multi-storey buildings.' Third Edition 2013.

5.2 Classification

The system described in this classification report has been tested and met the performance criteria set in Annex A of BR 135:2013.

5.3 Field of application

This classification is valid only for the system as installed and detailed in Section 2 of this classification report and the associated details found in the related test reports, referenced in Section 4.

6 Limitations

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

The classification applies only to the system as tested and detailed in the classification report. The classification report can only cover the details of the system as tested. It cannot state what is not covered. When specifying or checking a system it is important to check that the classification documents cover the end-use application.

Report Ends