FAÇADE TESTING & ADVISORY SERVICES

Classification Report

As per BR135:2013 Annex A

Tested as per BS 8414-1:2015 + A1:2017

Prepared for	:	**Kingspan Insulation Ltd.**
Project	:	**System Development**
Report No.	:	**SR0810 Rev.0**
Sample	:	**Kooltherm K15 100mm - 3mm Aluminium Cassette**

UKAS TESTING
4559

March 2018

Al-Futtaim Exova
Facade Testing & Advisory Services Division

1 Introduction

This report details the classification of the aluminium composite panel cladding system (described under Section 2 of this report) in accordance with BR135:2013 Annex A, when tested in accordance with BS 8414-1:2015 + A1:2017 at the Al Futtaim Exova (AFE) laboratory in Dubai, at the request of:

Kingspan Insulation Ltd.,
Pembridge, Leominster,
Hertfordshire, England.

Contact email: highrisetechnical@kingspan.com Contact number: +44 1544 387 382

2 Test Sample Description

The test specimen comprised of an aluminium composite panel wall cladding (Kooltherm K15 100mm - 3mm Aluminium Cassette) fixed onto a masonry block wall.

The top end of the cladding system was closed with 3mm thick aluminium sheet. The main wall side was closed with the aluminium panel folded inward and the wing wall side was left opened. Interface between the cladding system and the combustion chamber was covered with 5mm thick aluminium sheet. The distance of the finished face of the wing wall to the side opening of the combustion chamber was 240mm.
See drawings in Appendix A for material and installation details.

Materials used in the system are detailed in the table below:

Component	Description	Installation Details
Bracket	ECF-B-S-080 Helping Hand bracket 80x60x4mm and polypropylene plastic thermal shim.	The brackets were fixed to the masonry with MFRFB-10/80 A4 wall fixings and nylon wall plugs. Polypropylene plastic shims were placed between masonry wall and brackets.
Cavity barrier	**Horizontal intumescent cavity barrier:** Siderise RH25 S-90/30, 1200x135x75mm, density 80kg/m^3.	The horizontal cavity barriers were fixed to the masonry with RS350 brackets and MFRFB-10/80 A4 wall fixings and nylon wall plugs. 4 nos of horizontal continuous cavity barriers were fixed to the main wall and wing wall, at 75mm, 2410mm, 4740mm and 6355mm above the combustion chamber.
	Vertical cavity barrier: Siderise RV-90/30, 1200x170x75mm, density 80kg/m^3.	3nos of continuous vertical cavity barriers were fixed to the masonry, two on the main wall and one on the wing wall with RS195 brackets and MFRFB-10/80 A4 wall fixings and nylon wall plugs.
	Intumescent closure: 25mm Siderise cassette panel intumescent closure (CPIC)	Intumescent closure was placed on the bottom internal face of aluminium cassette panel folding.

Component	Description	Installation Details
	Cassette insert: Siderise open state cassette insert (OSCI) 100x50mm	Siderise inserts were placed at the folding of the aluminium cassette panels at the cavity barrier locations. It was secured to the back face of the cassette panel by a self-adhesive strip.
Insulation	Kingspan Kooltherm K15 100mm insulation.	Kooltherm K15 100mm insulation foam boards were fixed to the masonry wall with DHM-130-A2 steel pins and DHK140 plastic pins.
Railing & Hooks	2mm thick aluminium Y-Rail.	Railings were fixed to the brackets and screwed with it by 4.8mm diameter TEK screws.
	4mm thick aluminium hook clips.	Aluminium hook clips were fixed to the Y-rail with flat head screws.
Panel	3mm thick aluminium cassette panel.	Aluminium cassette panels were fixed to the railings with aluminium hook clips.

Figure 1: Tested sample elevation showing cladding panel and cavity barrier layouts

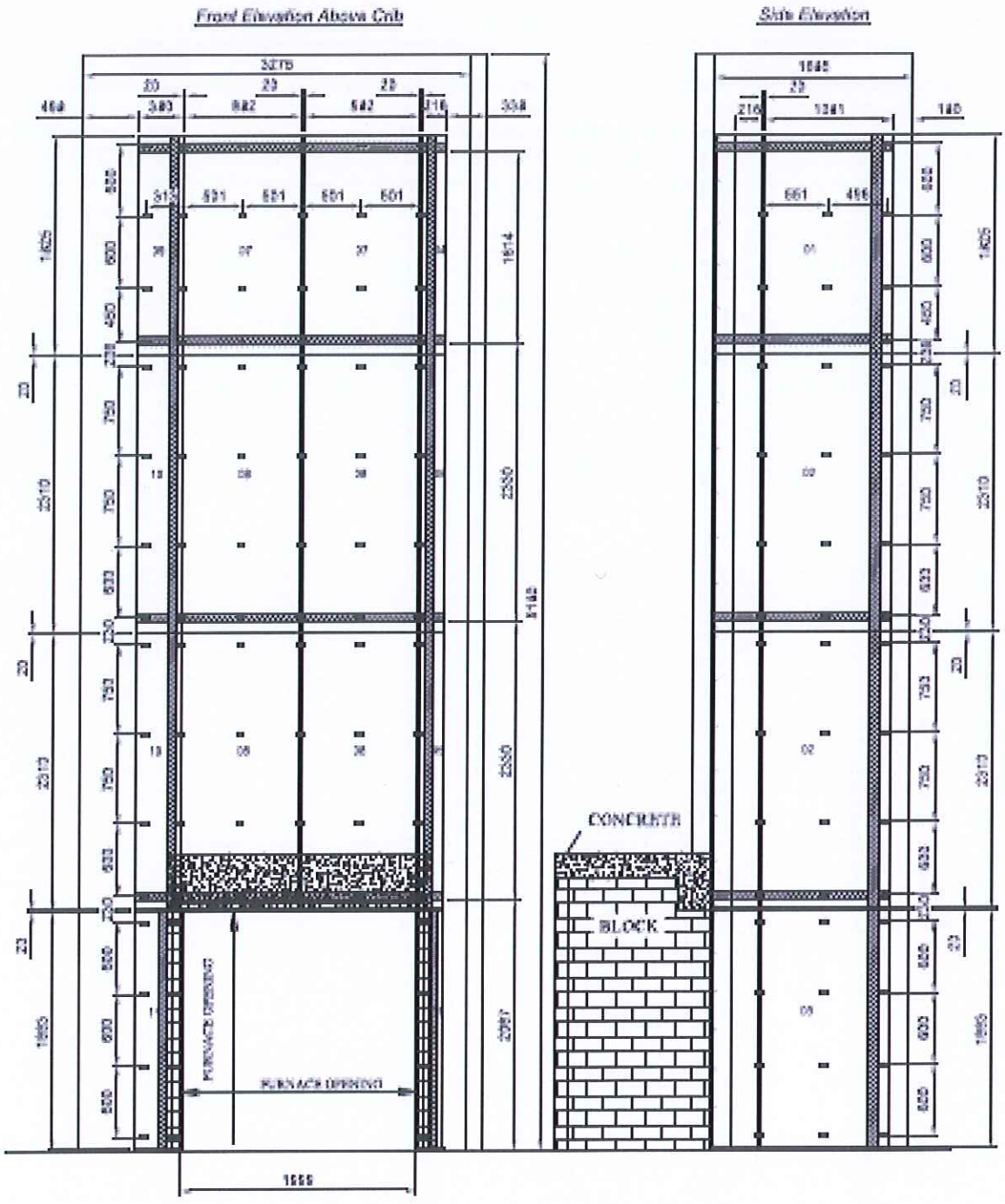


Figure 2: Corner detail of tested system

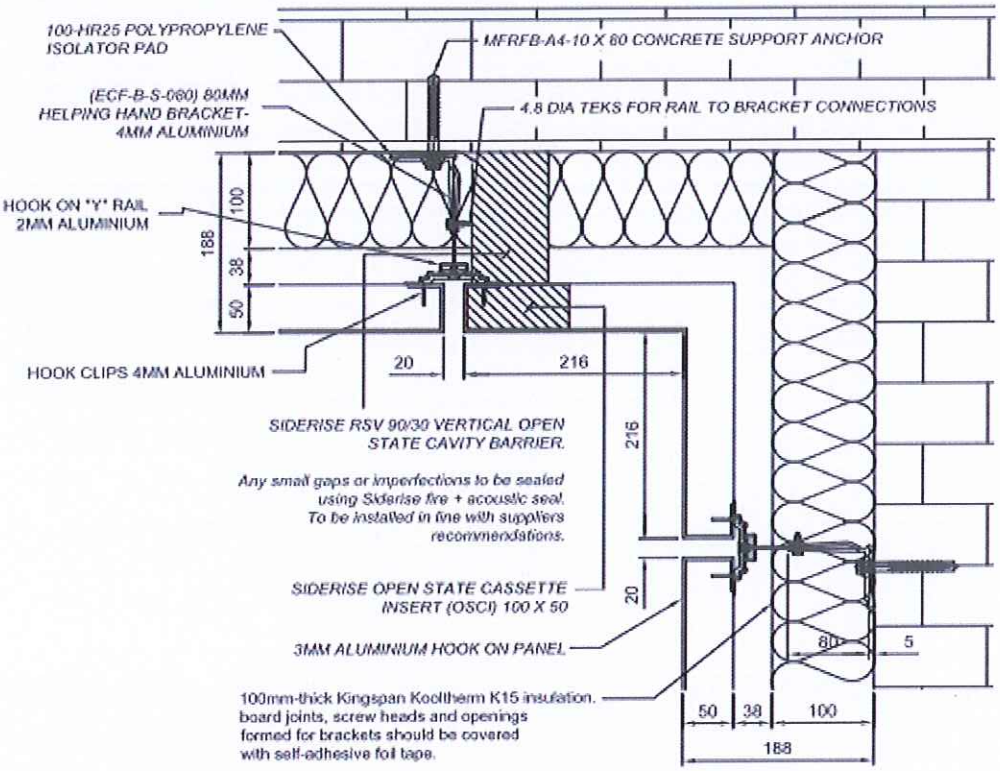
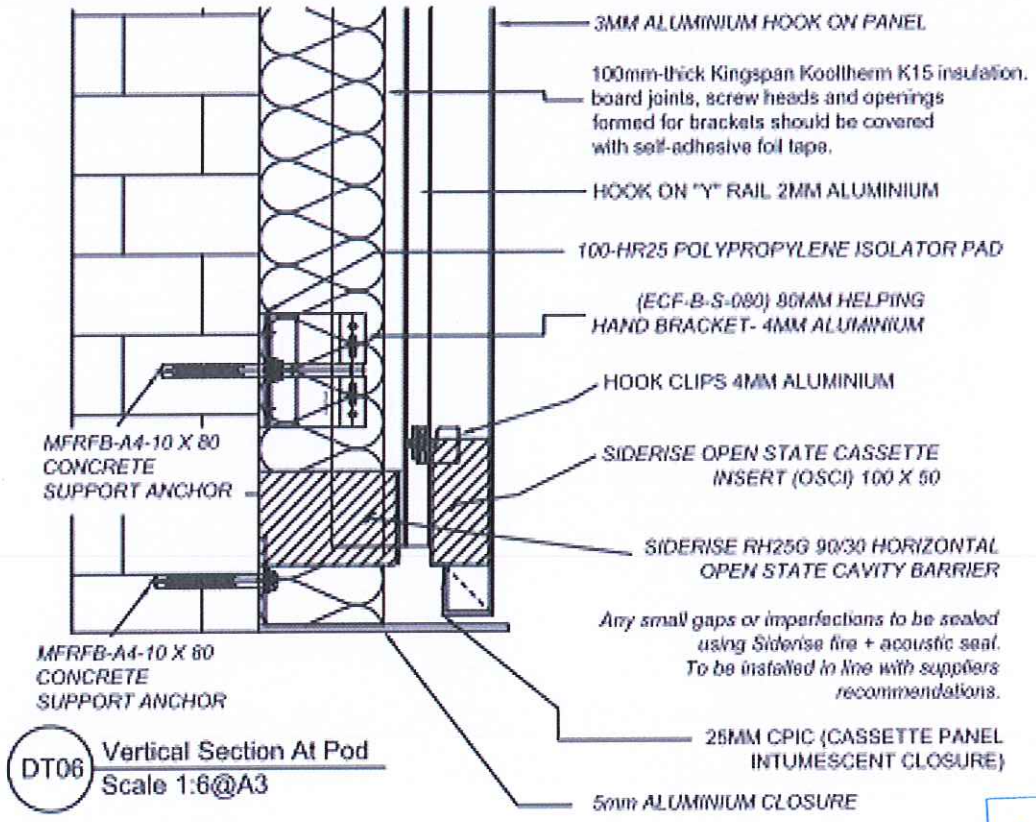


Figure 3: Detail of the system above the combustion chamber



3 Test Data/Observations

Parameters	Temperature Data / Observations
T_s, start temperature	25°C
t_s, start time	387 seconds after ignition of the crib (thermocouple 3)
Maximum allowable temperature at Level 2 within 900 seconds from t_s.	625°C
Peak temperature & time at Level 2 (external)	635°C at 1293 seconds from t_s (thermocouple 12)
Peak temperature & time at Level 2 (internal cavity)	383°C at 1440 seconds from t_s (thermocouple 20)
Peak temperature / time at Level 2 (internal Kingspan Kooltherm K15 100mm insulation)	85°C at 2697 seconds from t_s (thermocouple 27)

Level 1: 2500mm above the top of the combustion chamber opening on the test apparatus.

Level 2: 5000mm above the top of the combustion chamber opening on the test apparatus.

Start Temperature, T_s: Mean temperature of the thermocouples at Level 1, five minutes prior to ignition of the heat source.

Start Time, t_s: Time when the temperature recorded by any external thermocouple at Level 1 equals or exceeds 200°C above T_s and remains above this value for at least 30 seconds.

4 Test Results

Parameters	Fire Spread Time, t_s	Result
External fire spread	>15 minutes	**Compliant**
Internal fire spread (cavity)	>15 minutes	**Compliant**
Internal fire spread (insulation)	>15 minutes	**Compliant**
Mechanical performance	• Approximately 5m² of the total external visible surface area was completely consumed by fire. • Approximately 7m² of the total external visible surface area was discoloured. The heat source was extinguished after 30 minutes from the ignition and observation were continued for another 30 minutes. No early termination.	

5 Classification

The system described in this classification report has been tested in accordance BS 8414-1:2015 + A1:2017 and complied with the performance criteria detailed in BR135:2013 Annex A.

This classification report should be read in conjunction with the test report AFE laboratory test report DLR1448Rev.0, which fully details all aspects of the system and tests carried out.

Table 1 Document Status

Rev No.	Author	Approved for Issue		
		Name	Signature	Date
0	Arun Kumar M	Manoj Kumar Laboratory Manager		15·03·2018

Al-Futtaim EXOVA
Facade Testing & Advisory Services Division