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BRE Global Classification Report

Gammastone SRL Classification of fire performance in accordance with BR 135: 2013 Annex A

Prepared for: Gammastone SRL

Date: 8th October 2018

Report Number: P108115-1001 Issue: 1

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Table of Contents

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

Sponsor: Gammastone SRL, 00068 Rignano Flaminio (RM), Italy

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Product name: GammaStone Natural AIR panel rainscreen system with FibranGeo Lana Di Roccial stone wool

Classification report No.: P108115-1001

Issue number: 1

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This classification report consists of 16 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.

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2 Details of the Classified Product

2.1 Description of substrate

The product was installed on to wall number 1 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. The main wall includes the combustion chamber.

2.2 Description of product

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

Item	Description
1	'L'-shaped aluminium bracket 80mm-deep×40mm-wide×3mm-thick fixed using 10mm×65mm screw with plastic anchor and washer (one per bracket).
2	'L'-shaped aluminium bracket 150mm-long×80mm-deep×40mm-wide×3mm-thick fixed using 10mm×65mm screw with plastic anchor and washer (two per bracket).
3	'T'-shaped aluminium rails (vertical) 60mm-wide×50mm-deep fixed onto the 'L'-shaped brackets with 4.8mm×12mm TL14 rivets.
4	FibranGEO Lana Di Roccia stone wool (100mm-thick).
5	Horizontal aluminium rails fitted onto the vertical 'T'-shaped rails through slots using 4.8mm×12mm TL14 rivets.
6	Profiled clips 62mm×30mm×35mm fixed to the back of the panels using 4.8mm×12mm TL14 rivets.
7	20.5mm-thick GammaStone Natural AIR panels hooked onto the horizontal profiled rails.

2.3 Installation sequence

'L'-shaped brackets (item 1) were fixed with one 10mm×65mm screw with plastic anchor and washer, the brackets were fixed nominally at 780mm horizontal centres (main/wing wall) and 450mm - 480mm vertical centres. On the edge of the main wall, last two rows had horizontal centre of 240mm.

'L'-shaped brackets (item 2) were fixed with two 10mm×65mm screw with plastic anchor and washer at two locations, 3000mm and 6000mm above the ground. Horizontal centres remained the same.

'T'-shaped rails (vertical) were fitted to the 'L'-shaped brackets with 4.8mm×12mm TL14 rivets, where the rivets would alternate between one and two per bracket vertically.

The FibranGEO Lana Di Roccia stone wool was cut to size and fitted horizontally between the 'T'-shaped rails and masonry support structure. The stone wool was flush with the 'T'-shaped rail front face.

The horizontal profiled rails were fitted onto the vertical 'T'-shaped rails through slots using 4.8mm x 12mm TL14 rivets, at 206mm–1250mm vertical centres.

The profiled clips 62mm×30mm×35mm were fixed to the back of the panels using 4.8mm×12mm TL14 rivets, at 575mm horizontal centres and 206mm-1250mm vertical centres.

The 20.5mm-thick GammaStone Natural AIR panels were slotted onto the horizontal profiled rails. An assortment of panel sizes was installed with a staggered arrangement.

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

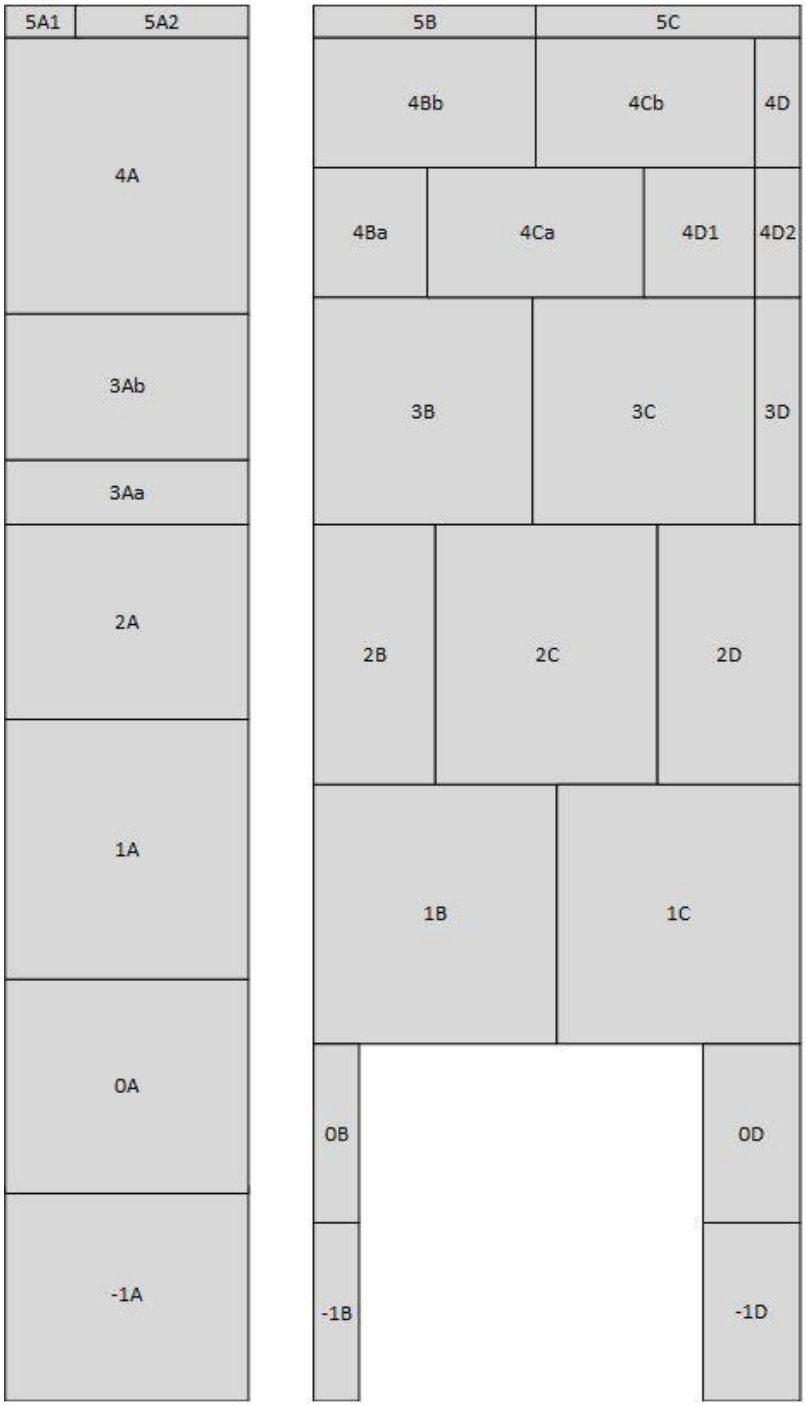

Figure 1. Layout of panels and numbering system used for reporting. Not to scale.

Figure 2. Full-height photograph of cladding system prior to test.

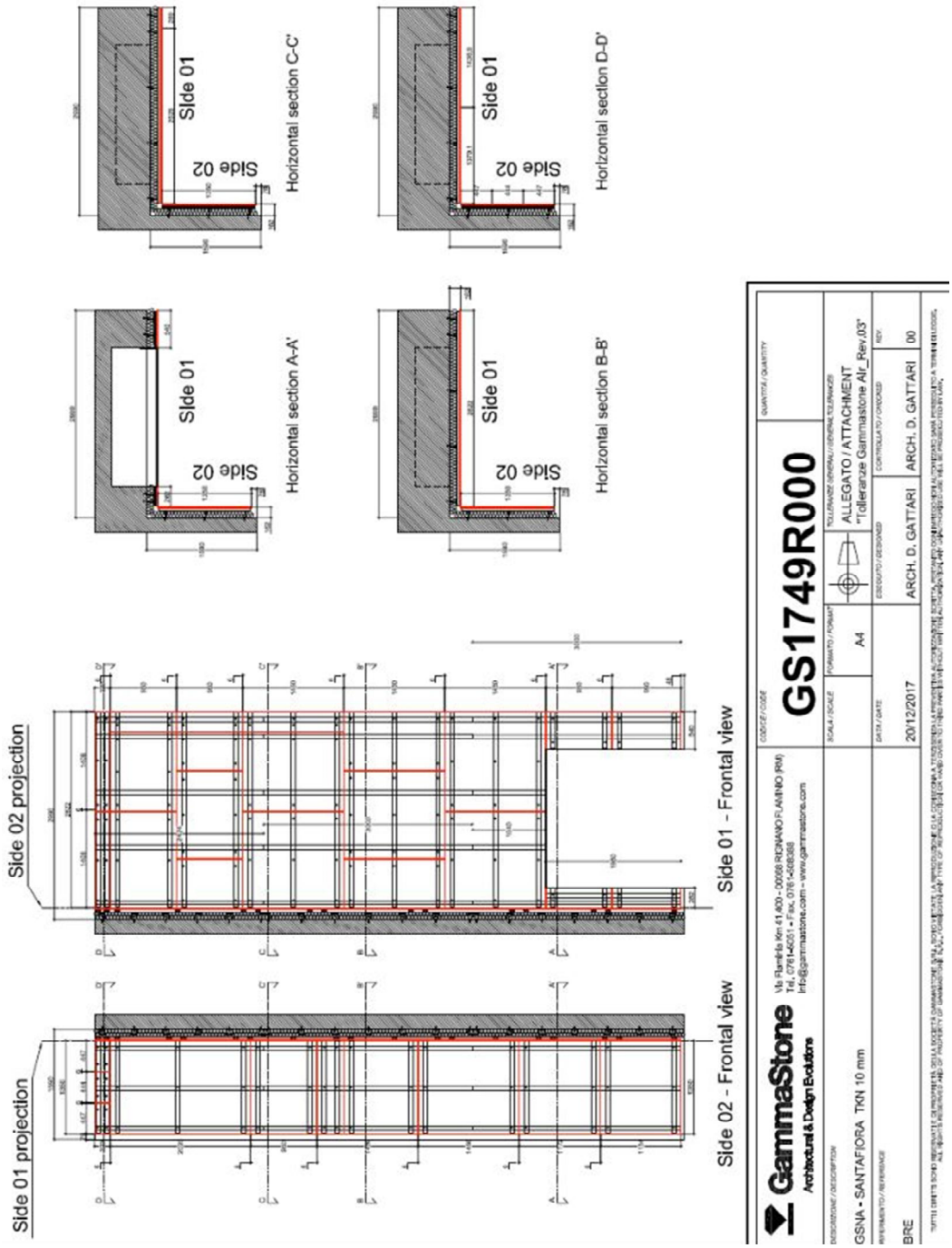

Figure 3. Layout of tested system (supplied by Test Sponsor).

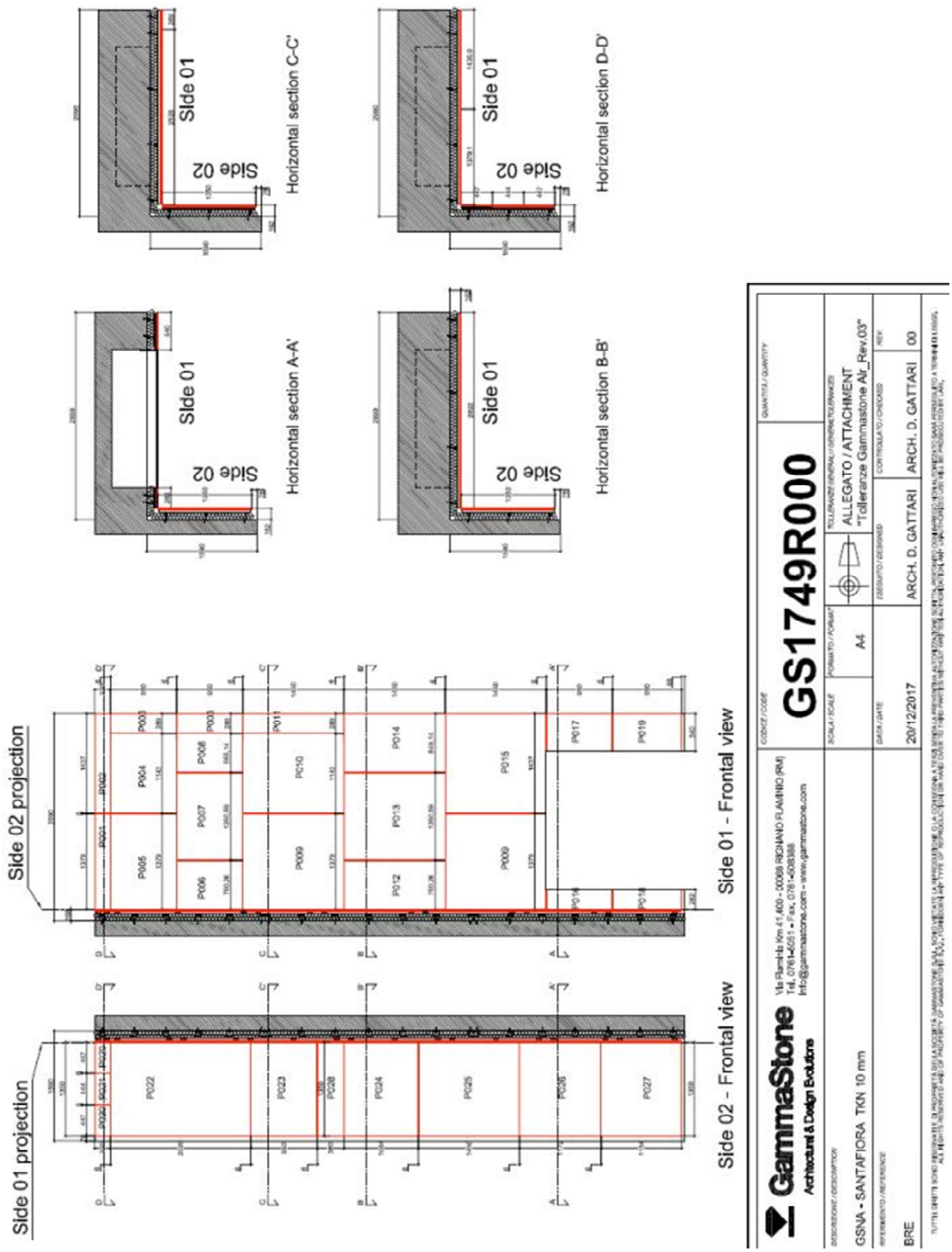

Figure 4. Panel Layout (supplied by Test Sponsor).

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	Gammastone SRL	P108115-1000 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		>15 minutes	Compliant

4.3 Mechanical performance

Flaming droplets were briefly observed from the cladding system from 10 minutes and 10 seconds after ignition, self-extinguishing as they dropped at the base of system. Cracking of stone panels was observed from 12 minutes and 45 seconds until approximately 22 minutes and 25 seconds. Detachment of stone panel layer was observed from 15 minutes and 45 seconds until approximately 24 minutes and 40 seconds. Complete detachment of panel 2C was observed at 28 minutes and 11 seconds.

4.4 System damage

4.4.1 Stone finished panels

With reference to *Figure 1,* the damage observed to the stone panels was as follows:

Main wall –

- Panels (-1B/0B) showed light discolouration with patches of discolouration on the right-hand side adjacent with the combustion chamber surround.
- Panels (-1D/0D) showed patches of discolouration.
- Panel 1B cracked horizontally through the middle with significant distortion and discolouration.
- Panel 1C showed 65% detachment of the stone and core layer, exposing the thin steel layer. The steel layer was distorted and discoloured. The remaining part of the panel was discoloured.
- Panel 2B showed 85% discolouration.
- Panel 2C detached from system.
- Panel 2D showed 30% discolouration.
- Panel 3B showed partial detachment of the stone and core layer with distortion, exposing the steel layer with 100% discolouration,
- Panel 3C showed 25% dark discolouration with a gradient effect.
- Panel 3D showed minimum discolouration.
- Panel 4Ba showed 5% discolouration on the bottom edge, and slight discolouration around the panel gaps.
- Panel 4Ca showed 10% discolouration on the bottom edge, and slight dark discolouration around the panel gaps.
- Panels 4D1/4D2 were intact and were undamaged.
- Panels 5B/5C showed were undamaged with minimal discolouration on panel joints.

Wing wall –

- Panel -1A showed vertical lines of discolouration across the panel.
- Panel 0A cracked at mid-height towards the wing/main wall junction, with melted material dripping out and discolouration.
- Panel 1A showed 5% discolouration along the bottom joint and wing/main wall junction.
- Panel 2A showed 5% discolouration along the bottom edge, partial detachment in the bottom right-hand corner. Minimum discolouration along the wing/main wall junction.
- Panel 3Aa showed discolouration along the bottom joint.
- Panel 3Ab showed discoloration at the wing/main wall junction.
- The panels above were intact and were undamaged.

4.4.2 Horizontal aluminium rails

Horizontal rails either side of the combustion chamber were intact and undamaged. Horizontal rails above the combustion chamber up to level 1 thermocouples, were approximately 600-1000mm consumed with discoloration.

The rails between level 1 and 2 thermocouples showed slight distortion with discolouration. The rails above level 2 thermocouples were intact with discolouration down the middle. The rails above were intact with patches of discolouration.

4.4.3 Stone wool insulation

All stone wool insulation slabs remained intact and in place.

On the main wall, the stone wool insulation immediately above the combustion chamber, showed dark/pale discolouration. Either side of the combustion chamber the stone wool showed 15% dark/pale discolouration. Up to the height of level 1 thermocouples, the stone wool was discoloured in line with combustion chamber, surrounded by a pale/dark discolouration. Between level 1 and 2 thermocouples discolouration was consistent and tapered towards level 2 thermocouples.

On the wing wall, below level 1 thermocouples on wing/main wall junction there was a patch of dark discolouration. Above this point the discolouration fades into a light discolouration for approximately 1000mm.

4.4.4 'T'-shaped aluminium rails (vertical)

On the main wall, either side of the combustion chamber the rails were undamaged to the height of the combustion chamber. Above the combustion chamber, the 'T'-shaped rails were partially consumed and distorted to an approximate height of 2000mm. Rails on the main wall above the combustion chamber to level 1 thermocouples showed patches of discolouration. Rails on the main wall, from level 1 to level 2 thermocouples showed discolouration.

On the wing wall, to height of the combustion chamber there was a patch discolouration on wing/main wall junction rail. The rail on the wing wall edge showed patches of discolouration at approximately 3000-4000mm from the ground. The middle and edge of the wall rail at approximately 4000mm above the ground showed discolouration to the level 2 thermocouples. Rails above were undamaged.

4.4.5 'L'-shaped aluminium brackets

Minimal discolouration to the 'L'-shaped brackets just above the combustion chamber. No damage or discolouration to the other brackets.

4.4.6 Combustion chamber surround

Partial consumption of the window pod at the top inner edge of the combustion chamber with heavy distortion, the right-hand side was partially peeling off, with discolouration. The combustion chamber surround edges were distorted at the top corner with discolouration.

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.

The specification and interpretation of fire test methods are the subject of ongoing development and refinement. Changes in associated legislation may also occur. For these reasons, it is recommended that the relevance of test and classification reports over five years old should be considered by the user. The laboratory that issued the report will be able to offer, on behalf of the legal owner, a review of the procedures adopted for a particular test or classification to ensure that they are consistent with current practices, and if required may endorse the report.

Report Ends