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TEST REPORT

REPORT NO.: 2021FE0172

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Applicant : **ALCOPANEL CO. LTD**
7F, Gangnam Main Tower, 275, Gangnam-Daero, Seocho-Gu,
06729 Seoul, Republic of Korea.
(Attn.: Mr. Kevin Kim)

Product : **Fire Retardant Aluminium Composite Panel (ALCOPANEL FR)**

Reference Standard/
Method of test : **BS 8414-1:2020**
Part 1: Test method for non-loadbearing external cladding systems applied to the masonry face of a building

Description of test specimen : Refer Page 3

Date Received : 30 DECEMBER 2020

Date of Test : 18 MARCH 2021

Testing Location : SIRIM RASA BURN HALL, No1A, Persiaran Zurah, Kawasan Perindustrian RASA.
44200 Rasa, Hulu Selangor Darul Ehsan

Job No. : J20201440772

Overall test result : External fire spread - Pass
Internal fire spread - Pass
Visible Flaming - Pass
Mechanical Performance - Pass
Burning Debris and Pool Fires - Pass
Refer APPENDIX 5 for detail result

Issued date : 15 APRIL 2021

(SHARIFAH NUR BADARIAH)
Senior Testing Executive



(AZMI MUSA)
Head
Fire Protection Section
Testing Services Department

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APPENDIX 5: ANALYSIS OF TEST RESULTS

A.5.1 Performance Criteria

In order for the evaluation of testing (classification) to performance criteria for external cladding system in Malaysia to be undertaken, the cladding system must have been tested to the full test duration requirements of BS8414 Part 1:2020 without any early termination of the test. The minimum test duration is 60 minutes. If the test criterion is met, then the performance of the system under investigation is evaluated against the following criteria:

External Fire Spread*

Failure due to external fire spread is deemed to have occurred if the temperature rise above start temperature, T_s (the mean temperature of the thermocouples at level 1 during the 5 minutes before ignition) of any of the external thermocouples at level 2 exceeds 600 °C for a period of at least 30 s, within 15 min of the start time, t_s (time when the temperature recorded by any external thermocouple at level 1 height equals or exceeds a 200 °C temperature rise above T_s and remains above this value for at least 30s).

Internal Fire Spread*

Failure due to internal fire spread is deemed to have occurred if the temperature rise above start temperature, T_s (the mean temperature of the thermocouples at level 1 during the 5 minutes before ignition) of any of the internal thermocouples at level 2 exceeds 600 °C, for a period of at least 30 s, within 15 min of the start time, t_s (time when the temperature recorded by any external thermocouple at level 1 height equals or exceeds a 200 °C temperature rise above T_s and remains above this value for at least 30s).

Visible Flaming**

Failure of the system is deemed to have occurred if visible flaming, which exceeds the confines of the test rig either vertically or laterally during the full 60 minute test period, is observed. For the purposes of this clause, visible flaming is defined as a continuous flame which is observed for more than 60 seconds duration (i.e. not intermittent or glowing)

Mechanical Performance**

Failure will be deemed to have occurred if there is collapse of the system or part thereof (at least 500 mm length and 200 g), flaming or not, onto the floor of the test facility outside the designated crib collapse zone, see note 2, within the duration of the full 60 minute test period.

Burning Debris and Pool Fires**

Failure is deemed to occur if burning debris or a pool fire develops on the floor of the test facility, outside the designated crib collapse zone, see note 1. Burning debris is defined as visible flaming for more than 60 seconds duration (i.e. not intermittent or glowing) within the duration of the full 60 minute test period.

Note 1: The crib collapse zone is defined as a 2.4m x 1.2m positioned centrally on the centre line of the hearth opening (2.4m length parallel to the face of the hearth).

*Reference: BR135

**Further evaluation will be undertaken by Authority Having Jurisdiction for these additional requirements.



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The cladding system was tested to the requirements of **BS 8414-1:2020** without early termination of the test, and therefore assessment is possible according to the results from the following table:

Criterion	Assessment of criteria	
	Start time t_s	Results
<p>External fire spread</p> <p>It is required that there is no external fire spread is occurred where if the temperature rise above start temperature, T_s (the mean temperature of the thermocouples at level 1 during the 5 minutes before ignition) of any of the external thermocouples at level 2 exceeds 600 °C for a period of at least 30 s, within 15 min of the start time, t_s (time when the temperature recorded by any external thermocouple at level 1 height equals or exceeds a 200 °C temperature rise above T_s and remains above this value for at least 30s).</p>	≥15 minutes	Passed
<p>Internal fire spread (ventilation layer)</p> <p>It is required that there is no internal fire spread is occurred where, if the temperature rise above start temperature, T_s (the mean temperature of the thermocouples at level 1 during the 5 minutes before ignition) of any of the internal thermocouples at level 2 exceeds 600 °C, for a period of at least 30 s, within 15 min of the start time, t_s (time when the temperature recorded by any external thermocouple at level 1 height equals or exceeds a 200 °C temperature rise above T_s and remains above this value for at least 30s).</p>	≥15 minutes	Passed
<p>System burn-through</p> <p>It is required that there is no system burn-through occurs where fire reaches the internal surface, continuous flaming defined as a flame with a duration in excess of 60 s, is observed on the internal surface of the test specimen at or above a height of 0.5 m above the combustion chamber opening within 15 min of the start time, t_s.</p>	≥15 minutes	Passed

Criterion	Assessment of criteria	
	Duration	Results
<p>Visible Flaming</p> <p>It is required that there is no visible flaming, which exceeds the confines of the test rig either vertically or laterally during the full 60 minutes test period. For the purposes of this clause, visible flaming is defined as a continuous flame which is observed for more than 60 seconds duration (i.e. not intermittent or glowing).</p>	60 minutes	Passed
<p>Mechanical Performance</p> <p>It is required that there is no collapse of the system or part thereof (at least 500 mm length and 200 g), flaming or not, onto the floor of the test facility outside the designated crib collapse zone, see note 1, within the duration of the full 60 minute test period.</p>	60 minutes	Passed
<p>Burning Debris and Pool Fires</p> <p>It is required that there is no burning debris or a pool fire develops on the floor of the test facility, outside the designated crib collapse zone, see note 1. Burning debris is defined as visible flaming for more than 60 seconds duration (i.e. not intermittent or glowing) within the duration of the full 60 minute test period.</p>	60 minutes	Passed



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 - a) Informing and placing a notice in the media;
 - b) Obtaining an injunction from Court (cost on a solicitor-client basis to be borne by the Applicant);
 - c) Refusing to accept any further Product for Testing Services from the Applicant or whosoever related to the Applicant, whether subsidiary or otherwise;
 - d) Instructing the Applicant to withdraw and recall the advertisement, statement or document in question and advertise a clarification and apology to SIRIM QAS International, SIRIM and/or other SIRIM's subsidiaries twice in a national publication of SIRIM QAS International's choice at the Applicant's sole cost; and
 - e) Informing or lodging a report pertaining the Applicant's Test Report with the relevant authorities.
10. SIRIM QAS International is committed in supporting an environmentally-friendly business practices by reducing paper consumption, therefore we do not issue any hard copy of Test Report to the Applicant. However, certified true copy(ies) of the Test Report may be issued upon request by the Applicant upon payment of the relevant fee.
11. Issuance of Amendment Report due to the following reasons are chargeable to the Applicant :
 - a) Changes in details of the Applicant name and/or address;
 - b) Changes in details of the Manufacturer's name and/or address;
 - c) Changes in details of the Factory location name and/or address;
 - d) Changes in details of the model and/or type designation
12. However, issuance of Supplementary Report due to the following reasons are FOC :
 - a) Misprints and typo errors;
 - b) Missing technical information as agreed in PP1 form;
 - c) Test data not reported;
 - d) Mistake in reporting of test data
13. Corrections to report shall only be allowed if the date of issuance of the original report has not exceeded 6 months and shall be limited to maximum 3 times, after either case whichever occurs earlier, an Amendment or a Supplementary Report shall not be issued.



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