

Advisory report regarding Fairview Vitracore G2 aluminium composite panel with respect to NCC 2019 volume 1 clause C1.9

Advisory Report

Author: Keith Nicholls

Report Number: FCO-3166 Revision C

Quote Number: CO4924

Date: 1st May 2019

Client: Fairview Architectural Pty Limited

Commercial-in-confidence

Enquiries should be addressed to:

Fire Testing and Assessments	Author	The Client
NATA Registered Laboratory	Infrastructure Technologies	Fairview Architectural Pty Limited
14 Julius Avenue	14 Julius Avenue	18-20 Donald St
North Ryde, NSW 2113	North Ryde, NSW 2113	Lithgow NSW 2790
Australia	Australia	Australia
Telephone +61 2 94905444	Telephone +61 2 94905445	Telephone +61 2 63522355




Report Details

Report CSIRO Reference number: FCO-3266/CO48924

Report Status and Revision History

VERSION	STATUS	DATE	DISTRIBUTION	ISSUE NUMBER
Revision A	Final for issue	23/11/2017	CSIRO; Fairview Architectural Pty Limited	FCO-3166 A
Revision B	Final for issue	18/5/2018	CSIRO; Fairview Architectural Pty Limited	FCO-3166 B
Revision C	Final for issue	1/5/2019	CSIRO; Fairview Architectural Pty Limited	FCO3166 C

Test Report Authorisation

AUTHOR	REVIEWED BY	AUTHORISED BY
Keith Nicholls	Brett Roddy	Brett Roddy
		
1 st May 2019	1 st May 2019	1 st May 2019

Copyright and Disclaimer

© 2019 CSIRO To the extent permitted by law, all rights are reserved and no part of this publication covered by copyright may be reproduced or copied in any form or by any means except with the written permission of CSIRO.

Important disclaimer

CSIRO advises that the information contained in this publication comprises general statements based on scientific research. The reader is advised and needs to be aware that such information may be incomplete or unable to be used in any specific situation. No reliance or actions must, therefore, be made on that information without seeking prior expert professional, scientific and technical advice. To the extent permitted by law, CSIRO (including its employees and consultants) excludes all liability to any person for any consequences, including but not limited to all losses, damages, costs, expenses and any other compensation, arising directly or indirectly from using this publication (in part or in whole) and any information or material contained in it.

Contents

1	Introduction	4
2	Supporting Data	4
3	Analysis of Test Evidence	5
3.1	AS/NZS 1530.3-1999 Performance	5
3.2	AS 1530.1-1994 Performance	5
3.3	NCC 2019 Volume 1 clause C1.9	5
4	The relevance of test data to NCC Clause C1.9.....	6
4.1	Each Laminate is Non-Combustible – Clause C1.9 (e)(vii)(A).....	6
4.2	Each adhesive layer does not exceed 1mm in thickness and a total of 2mm – Clause C1.9 (e)(vii)(B).....	6
4.3	The Spread-of-Flame Index and the Smoke-Developed Index of the laminated material as a whole does not exceed 0 and 3 respectively - Clause C1.9 (e)(vii)(C).....	6
5	Conclusion	6
6	Term of validity	6
7	Limitations.....	6

1 Introduction

This report confirms the extent the available test evidence can be used for the determination of the compliance of Vitracore G2 with respect to NCC 2019 Volume 1 clause C1.9 Part e (vii).

Product	Vitracore G2
Layer 1 - (exposed face)	30- μ m thick surface finish
Layer 2	0.7-mm aluminium sheet
Layer 3	0.1-mm thick adhesive film
Layer 4	0.3-mm thick corrugated profiled aluminium core, expanded to 2.6 mm
Layer 5	0.1-mm thick adhesive film
Layer 6	0.5-mm thick aluminium face finished with 10- μ m thick surface finish

2 Supporting Data

2.1 CSIRO Certificate of Test numbered FNE11459C

On 12 August 2015 this Division conducted a fire test on “Vitracore G2” to AS/NZS 1530.3-1999. Certificate of Test numbered FNE11459C, issued 31 October 2015 by CSIRO and details the test results. The results of this test were:

Ignitability Index:	0
Spread of Flame Index:	0
Heat Release Index:	0
Smoke Developed Index:	1

“Vitracore G2” was described as an aluminium composite sandwich decorative panel comprising of 5 layers:

- Layer 1: 0.7-mm thick aluminium face finished with 30- μ m thick surface finish;
- Layer 2: 0.1-mm thick adhesive film;
- Layer 3: 0.3-mm thick corrugated profiled aluminium core, expanded to 2.6 mm;
- Layer 4: 0.1-mm thick adhesive film;
- Layer 5: 0.5-mm thick aluminium face finished with 10- μ m thick surface finish.

2.2 CSIRO Certificate of Test numbered FNC11476B

On 3 September 2015 this Division conducted a fire test on “Vitracore G2 – Aluminium composite panel incorporating a corrugated profiled aluminium core with aluminium outer skins” to AS 1530.1-1994. Certificate of Test numbered FNC11476B, issued 12 September 2015 by CSIRO and details the test results. The maximum furnace temperature rise was 11.0°C for all specimens, the maximum temperature rise for the specimen surface thermocouple was 5.4°C for all specimens and the duration of sustained flaming was 0 seconds. The material is NOT deemed COMBUSTIBLE according to the test criteria specified in Clause 3.4 of AS 1530.1-1994.

The “Vitracore G2 – Aluminium composite panel incorporating a corrugated profiled aluminium core with aluminium outer skins” was described as an aluminium composite panel comprising of 3 layers:

- Layer 1: 0.7-mm thick aluminium face;
- Layer 3: 0.3-mm thick corrugated profiled aluminium core, expanded to 2.6 mm;
- Layer 5: 0.5-mm thick aluminium face.

3 Analysis of Test Evidence

3.1 AS/NZS 1530.3-1999 Performance

Material as a Whole

With reference to Certificate of Test in accordance with AS/NZS 1530.3-1999 numbered FNE11459C issued by CSIRO. The report details the test result for Vitracore G2 as a whole. When tested, the Spread-of-Flame Index and the Smoke-Developed Index of the composite panel did not exceed 0 and 3 respectively.

3.2 AS 1530.1-1994 Performance

Non-Combustibility of layers other than adhesive

CSIRO Certificate of Test FNC11476B shows that the aluminium layers of the “Vitrabond G2” are not deemed combustible when tested to the requirements of AS 1530.1-1994. Clause 1.4 of AS 1530.1-1994 states that that “...The test method is not applicable to products which are coated, faced or laminated. In such cases, tests may be carried out separately on the individual materials from which the product is formed...”. The face, core and reverse face aluminium layers were not tested separately to AS 1530.1. However, these layers all comprise the same aluminium material, therefore testing them in one test meets the requirement to test the materials that form this panel.

3.3 NCC 2019 Volume 1 clause C1.9

The relevant part of this clause is part (e) (vii)

C1.9 Non-combustible building elements

- e) The following materials may be used wherever a *non-combustible* material is *required*:
- i) Plasterboard.
 - ii) Perforated gypsum lath with a normal paper finish.
 - iii) Fibrous-plaster sheet.
 - iv) Fibre-reinforced cement sheeting.
 - v) Pre-finished metal sheeting having a *combustible* surface finish not exceeding 1 mm thickness and where the *Spread-of-Flame Index* of the product is not greater than 0.
 - vi) *Sarking-type materials* that do not exceed 1 mm in thickness and have a *Flammability Index* not greater than 5.
 - vii) Bonded laminated materials where—
 - A) each lamina, including any core, is *non-combustible*; and
 - B) each adhesive layer does not exceed 1 mm in thickness and the total thickness of the adhesive layers does not exceed 2 mm; and
 - C) the Spread-of-Flame Index and the Smoke-Developed Index of the bonded laminated material as a whole do not exceed 0 and 3 respectively.

4 The relevance of test data to NCC Clause C1.9

4.1 Each Laminate is Non-Combustible – Clause C1.9 (e)(vii)(A)

With reference to the discussion in Section 3.2 of this report it is confirmed that when the aluminium facing and the core of Vitrabond G2 when tested in isolation in accordance with AS 1530.1 1994, they meet the requirements of AS 1530.1 1994 Clause 3.4 for non-combustibility.

Based on the above it is confirmed each lamina is non-combustible.

4.2 Each adhesive layer does not exceed 1mm in thickness and a total of 2mm – Clause C1.9 (e)(vii)(B)

With reference to the proposed construction specification in Section 1 of this report, it is confirmed the product includes adhesive layers that are less than 1mm thick and less than 2mm in total thickness.

4.3 The Spread-of-Flame Index and the Smoke-Developed Index of the laminated material as a whole does not exceed 0 and 3 respectively - Clause C1.9 (e)(vii)(C)

With reference to the discussion in Section 3.1, it is confirmed that the Spread-of-Flame Index and the Smoke-Developed Index of the material do not exceed 0 and 3 respectively.

5 Conclusion

Considering the discussion in Section 4 of this report, it is confirmed there is sufficient evidence for a determination of compliance with NCC 2019 Volume 1 clause C1.9 Part e (vii), and consequently, according to Part C1.9 confirm the products may be used where non-combustible materials are required.

It is understood by CSIRO that determination of compliance with NCC 2019 Volume 1 clause C1.9 Part e (vii) is to be undertaken by the Authority Having Jurisdiction.

6 Term of validity

This report will lapse on 31st May 2024. Should you wish us to re-examine this report with a view to the possible extension of its term of validity, would you please apply to us three to four months before the date of expiry. This Division reserves the right at any time to amend or withdraw this report in the light of new knowledge.

7 Limitations

This report is prepared for the report client listed on page 1 and applies to the nominated materials and forms of construction. Any modifications, changes or amendments to the referenced standards or Building Regulations may invalidate the findings of this report.

CONTACT US

t 1300 363 400
+61 3 9252 6000
e enquiries@csiro.au
w www.csiro.au

YOUR CSIRO

Australia is founding its future in science and innovation. Its national science agency, CSIRO, is a powerhouse of ideas, technologies and skills for building prosperity, growth, health and sustainability. It serves governments, industries, business and communities across the nation.

FOR FURTHER INFORMATION

Infrastructure Technologies

Keith Nicholls
Senior Consultant Assessments Engineer

t +61 2 94905450
e keith.nicholls@csiro.au
w <https://research.csiro.au/infratech/fire-safety/fire-testing/>

Infrastructure Technologies

Brett Roddy
Manager, Fire Testing and Assessments

t +61 2 94905449
e brett.rodny@csiro.au
w <https://research.csiro.au/infratech/fire-safety/fire-testing/>