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19 November 2017

Melanie Smith

Manager Product Assurance

Ministry of Business, Innovation & Employment

PO Box 1473

WELLINGTON 6140

By email: Melanie.Smith@mbie.govt.nz

Dear Melanie,

Product Assurance – ACP Cladding Review

Stage 2: Audit of CodeMark Certificates of Conformity

33 This report is additional to my Stage 1 report dated 27 July 2017 and I have continues the paragraph numbering.

34 There are six CodeMark Certificates of Conformity that relate to Aluminium Composite Panels (ACP) covering 13 products. I have the certificates and I enclose audit summaries. Refer also to Table 4.

35 Four of the products make no claims to compliance with performance requirements C3.5 or C3.7 (refer to paragraph 5.2 for details of C3.5 and C3.7) and so have not been considered further. These are;

a. Alucobond,

b. Alucobond Eco,

c. AlucoBuild, and

d. Alubond.

36 Six of the products are of the so-called 'FR' type. These typically have a core with 30% polyethylene (PE) by mass. All claim compliance with performance requirement C3.5 and four claim compliance to C3.7. These are

a. Alucobond Plus,

b. Alpolic FR,

c. Alubond FRB1,

d. Larson FR,

e. Reynobond FR, and

f. Vitrabond FR (50% PE)

37 Two of the products are of the so-called 'A2' type. These typically have a core with only 7% polyethylene (PE) in the core. These are;

a. Alucobond A2, and

b. Alubond FRA2

38 The remaining product is Alucore which is a system of two aluminium sheets glued either side of an aluminium honeycomb core. Strictly speaking this is not an ACP because it is not a composite, its three sheets of aluminium. However, I reviewed it because it was on the same certificate as the other Alucobond products.

Table 4: Audit summary

Certificate	Product	Control of External Fire Spread				Audit Recommendation
		C3.5	C3.7 (a)	C3.7 (b)	C3.7 (c)	
CM40035	Alucobond	No external fire performance claimed				Not audited
	Alucobond Plus	☑				**Suspend** - Supporting information not representative
	Alucobond A2	☑				**Suspend** - No supporting information
	Alucobond Eco	No external fire performance claimed				Not audited
	Alucore	☑				**Suspend** - No supporting information
CM40075	AlucoBuild	No external fire performance claimed				Not audited
	Alpolic FR	☑				**Suspend** - Supporting information misinterpreted
CM40094	Alubond	No external fire performance claimed				Not audited
	Alubond FRB1	☑	☑	☑	☑	**Suspend** - Supporting information not representative
	Alubond FRA2	☑	☑	☑	☑	**Suspend** - No supporting information
CM40100	Larson FR	☑				**Suspend** - Supporting information misinterpreted
CM40111	Reynobond FR	☑		☑	☑	**Suspend** - Supporting information not representative
CM40193	Vitrabond FR	☑		☑	☑	**Suspend** - Supporting information not representative

39 I have recommended that the six certificates are suspended. Detailed reasons are given in the audit summaries and audit notes. Broadly;

a. in the case of the six FR products the supporting information does not support claims of compliance, and

b. in the case of the two A2 products and Alucore, no evaluations have been provided by either the Certification Body or the Unrestricted Building Certifier.

40 I have also audited the Australian certificates relating to ACP. It is not my role to go in to too much detail about those audits, but there is one matter I would like to raise to avoid future confusion. In the case of the FR products in Australia I have recommended withdrawal rather than suspension. This is because of a difference in standards. The New Zealand acceptable solutions C/AS1 to C/AS6 and the verification method C/VM2 recognises NFPA 285:2012 as a pathway to compliance. The Deemed to Satisfy (DTS) provisions of the Building Code of Australia (BCA) do not recognise NFPA 285:2012. There is an Australian Standard AS 5113:2015 which is in the process of being adopted as a verification method in the BCA which adopts BS 8414:2015. In other words, the pathway to compliance is higher in Australia and so the FR certificates more clearly fall short.

41 This concludes my Stage 2 report.

Yours faithfully

Tony Enright, PhD

Chartered Professional Engineer (Fire)

Fellow, Engineering New Zealand

Enclosed: Audit summary and audit notes (nine products)

Copy: Laura Sinclair, MBIE Laura.Sinclair@mbie.govt.nz
Steve Keeling, JAS-ANZ Steve.Keeling@jas-anz.org

Audit Summary

Product	**Name**		**Type**	
	Alucobond A2		Aluminium Composite Panel	
Audit	**Auditor**		**Audit date**	
	Tony Enright		21 September 2017	
Certificate of Conformity	**Number**	**Revision**	**Date**	**Status**
	40035	Rev 1	November 2013	Current
	Holder		**Certification Body**	
	Kaneba Ltd		CertMark	
Conclusions	No evaluation reports or other supporting information has been provided. There are indications that an A2 product could satisfy the performance requirement C3.5 "Buildings must be designed and constructed so that fire does not spread more than 3.5 m vertically from the fire source over the external cladding of multi-level buildings." However, as stated above no evidence of compliance has been provided in this instance.			
Recommendations	The certificate should be suspended.			

Tony Enright

BE(Civil), ME(Fire), PhD

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Audit Notes

UK full-scale tests on A2 products	A. In response to the Grenfell Tower fire in the United Kingdom (UK), seven full-scale fire tests were undertaken by BRE Global for the Department for Communities and Local Government (DCLG). The test reports are in the public domain (GOV.UK 2017). B. The first six tests involved specimens comprising of one of the three type of polyethylene (PE) core described above, either; PE, FR or A2 with one of two types of insulation products, either rigid polyisocyanurate (PIR) or Stone Wool. PIR is a combustible thermosetting material and Stone Wool is non-combustible. Each test included horizontal and vertical cavity barriers. C. The BRE Global Tests use the apparatus described in BS 8414:2015 (BSI 2015) and acceptance criteria detailed in BRE 135 The failure criterion for external flame spread is a temperature of 600 °C for more than 30 s at a height of 5 m above the combustion chamber within 15 minutes of the test. (Noting that performance requirement C3.5 requires that fire does not spread more than 3.5 m vertically from the fire source.) D. The test reports find that; the ACP with a PE core <u>fails</u> the external fire spread criterion regardless of the insulating material, the ACP with an A2 core <u>passes</u> the external fire spread criterion regardless of the insulating material, and the ACP with an FR core will <u>fail or pass</u> the external fire spread criterion dependent upon the insulating material. It fails with the combustible PIR insulation and passes with non-combustible insulation. E. Given the above, there are indications that an A2 product could satisfy performance requirement C3.5.
Engineering evaluation	F. A fire engineering evaluation has not been provided.
CB Evaluation Report	G. An evaluation report by the certification body has not been provided (noting that the report by Benjamin Hughes-Brown of CertMark dated 19 November 2016 excludes A2 under the heading 'NZBC' on page 3).
Evaluation Report Review (i.e. UBC)	H. An evaluation report by the Unrestricted Building Certifier has not been provided.
Certificate of Conformity	I. I have no specific comments on the certificate.

Audit Summary

Product	**Name**		**Type**	
	Alucobond Plus		Aluminium Composite Panel	
Audit	**Auditor**		**Audit date**	
	Tony Enright		21 September 2017	
Certificate of Conformity	**Number**	**Revision**	**Date**	**Status**
	40035	Rev 1	November 2013	Current
	Holder		**Certification Body**	
	Kaneba Ltd		CertMark	
Conclusions	The NFPA 285 test report is 18 years old and the tested specimen is not representative of the end use common in New Zealand. The test report should not be relied upon as demonstrating compliance. There are reasonable grounds to believe that Alucobond Plus is unlikely to satisfy performance requirement CP3.5 "Buildings must be designed and constructed so that fire does not spread more than 3.5 m vertically from the fire source over the external cladding of multi-level buildings.			
Recommendations	The certificate should be suspended.			

Tony Enright

BE(Civil), ME(Fire), PhD

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Audit Notes

Warning – UK full-scale tests cast doubt on FR products	A. In response to the Grenfell Tower fire in the United Kingdom (UK), seven full-scale fire tests were undertaken by BRE Global for the Department for Communities and Local Government (DCLG). The test reports are in the public domain (GOV.UK 2017). B. The first six tests involved specimens comprising of one of the three common types i.e., 100% PE, 30% PE 'FR' or 7% PE 'A2' cores and with one of two types of insulation products, either rigid polyisocyanurate (PIR) or Stone Wool. PIR is a combustible thermosetting material and Stone Wool is non-combustible. Each test included horizontal and vertical cavity barriers. C. The BRE Global Tests use the apparatus described in BS 8414:2015 (BSI 2015) and acceptance criteria detailed in BRE 135 (Colwell and Baker 2013). The failure criterion for external flame spread is a temperature of 600 °C for more than 30 s at a height of 5 m above the combustion chamber within 15 minutes of the test. (Noting that performance requirement C3.5 requires that fire does not spread more than 3.5 m vertically from the fire source.) D. The test reports find that; the ACP with a PE core <u>fails</u> the external fire spread criterion regardless of the insulating material, the ACP with an A2 core <u>passes</u> the external fire spread criterion regardless of the insulating material, and the ACP with an FR core will <u>fail or pass</u> the external fire spread criterion dependent upon the insulating material. It fails with the combustible PIR insulation and passes with non-combustible insulation. E. It is common construction practice to install ACP over a cavity behind which is combustible material. It is very uncommon construction practice to install cavity barriers. F. Given the above, there are reasonable grounds to believe that Alucobond Plus is unlikely to satisfy the performance requirement C3.5.
Engineering evaluation	G. A fire engineering evaluation has not been provided.
CB Evaluation Report	H. A 'Product Evaluation Report' has been by Benjamin Hughes-Brown of CertMark dated 19 November 2016. This evaluation report relates to one products Alucobond Plus whereas there are five products listed on the certificate (I will deal with these in separate audit summaries). I. Mr Hughes-Brown refers to himself as a Chartered Professional Engineer which he is not (in New Zealand). This is contrary to NZ legislation. https://www.engineersaustralia.org.au/portal/news/attention-engineers-working-new-zealand-or-providing-engineering-services-clients-new-zealand

	This reveals a lack of familiarity of and experience with the NZBC requirements on the part of the certification body. J. To demonstrate compliance Mr Hughes-Brown has relied upon an NFPA 285 test report although he has not cited a date or reference number in his evaluation. I have assumed that he is referring to the test report in the 'supporting documents' folder for Alusuisse by Omega Point Laboratories number 15632-105515 dated 7 October 1999. I am not sure whether Omega Point Laboratories has a mutually recognized accreditation for New Zealand. K. The specimen is tested as a complete system including any external cladding, insulation, external substrate framing and internal wall membrane. L. The tested specimen is not representative of the end use common in New Zealand. For example, the specimen includes cavity barriers. The NFPA 285 test report should not have been relied upon in the Evaluation Report. M. I note that Mr Hughes-Brown has stipulated: "*The technical literature is considered acceptable provided it is a controlled document, finalised, endorsed by an appropriately qualified person and addresses the relevant prescriptive clause of the NZBC.*" The NFPA 285 test report is not a controlled document.
Evaluation Report Review (i.e. UBC)	N. An evaluation report by the Unrestricted Building Certifier has not been provided.
Certificate of Conformity	O. I have no specific comments on the certificate.

Audit Summary

Product	**Name**		**Type**	
	Alucore		Aluminium Honeycomb Core	
Audit	**Auditor**		**Audit date**	
	Tony Enright		21 September 2017	
Certificate of Conformity	**Number**	**Revision**	**Date**	**Status**
	40035	Rev 1	November 2013	Current
	Holder		**Certification Body**	
	Kaneba Ltd		CertMark	
Conclusions	No evaluation reports or other supporting information has been provided.			
Recommendations	The certificate should be suspended.			

Tony Enright

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Audit Notes

Engineering evaluation	A. A fire engineering evaluation has not been provided.
CB Evaluation Report	B. An evaluation report by the certification body has not been provided.
Evaluation Report Review (i.e. UBC)	C. An evaluation report by the Unrestricted Building Certifier has not been provided.
Certificate of Conformity	D. I have no specific comments on the certificate.

Audit Summary

Product	**Name**		**Type**	
	Alpolic FR		Aluminium Composite Panel	
Audit	**Auditor**		**Audit date**	
	Tony Enright		21 September 2017	
Certificate of Conformity	**Number**	**Revision**	**Date**	**Status**
	40075	I01-R01	December 2016	Current
	Holder		**Certification Body**	
	PSP Ltd		CertMark	
Conclusions	The justification for compliance with performance requirement C3.5 is effectively a 'cut and paste' of the BEAL Appraisal C1012 dated January 2012. However, the BEAL appraisal is strictly limited to situations that satisfy the acceptable solution C/ASX clause 5.8 and these limitations are not included on the certificate. There are reasonable grounds to believe that Alpolic FR is unlikely to satisfy performance requirement CP3.5 "Buildings must be designed and constructed so that fire does not spread more than 3.5 m vertically from the fire source over the external cladding of multi-level buildings."			
Recommendations	The certificate should be suspended.			

Tony Enright

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Audit Notes

Warning – UK full-scale tests cast doubt on FR products	A. In response to the Grenfell Tower fire in the United Kingdom (UK), seven full-scale fire tests were undertaken by BRE Global for the Department for Communities and Local Government (DCLG). The test reports are in the public domain (GOV.UK 2017). B. The first six tests involved specimens comprising of one of the three common types i.e., 100% PE, FR or A2 core and with one of two types of insulation products, either rigid polyisocyanurate (PIR) or Stone Wool. PIR is a combustible thermosetting material and Stone Wool is non-combustible. Each test included horizontal and vertical cavity barriers. C. The BRE Global Tests use the apparatus described in BS 8414:2015 (BSI 2015) and acceptance criteria detailed in BRE 135 (Colwell and Baker 2013). The failure criterion for external flame spread is a temperature of 600 °C for more than 30 s at a height of 5 m above the combustion chamber within 15 minutes of the test. (Noting that performance requirement C3.5 requires that fire does not spread more than 3.5 m vertically from the fire source.) D. The test reports find that; the ACP with a PE core <u>fails</u> the external fire spread criterion regardless of the insulating material, the ACP with an A2 core <u>passes</u> the external fire spread criterion regardless of the insulating material, and the ACP with an FR core will <u>fail or pass</u> the external fire spread criterion dependent upon the insulating material. It fails with the combustible PIR insulation and passes with non-combustible insulation. E. It is common construction practice to install ACP over a cavity behind which is combustible material. It is very uncommon construction practice to install cavity barriers. F. Given the above, there are reasonable grounds to believe that Alpolic FR is unlikely to satisfy the performance requirement C3.5.
Engineering evaluation	G. A fire engineering evaluation is not provided. This implies that the fire-related performance requirements are assumed to be deemed to comply with either the suite of acceptable solutions C/ASX or the verification method C/VM2.
CB Evaluation Report	H. A 'Product Evaluation Report' has been by Benjamin Hughes Brown for CertMark dated 31 December 2015. This evaluation report relates to two products; AlucoBuild and Alpolic FR whereas the certificate is limited to Alpolic FR. I. The justification for compliance with performance requirement C3.5 is effectively a 'cut and paste' of the BEAL Appraisal C1012 dated January 2012 (c.f. Table 1 bottom of p5). The BEAL Appraisal also relates to AlucoBuild and Alpolic FR.

	J. The BEAL Appraisal is limited to the approach of the acceptable solutions (clause 5.8 of C/ASX) and is therefore only appropriate for use in: • single storey buildings 1 m or more from the boundary for all purpose groups or • for buildings up to 7 m high, 1 m or more from the boundary, for all purpose groups other than SC and SD, and • there is also a condition relating to C/AS1 part 9 for protection of combustible materials near flues. These two limitations and one condition are not included on the certificate. K. I note that Mr Hughes-Brown refers to himself as a Chartered Professional Engineer which he is not (in New Zealand). This is contrary to NZ legislation. https://www.engineersaustralia.org.au/portal/news/attention-engineers-working-new-zealand-or-providing-engineering-services-clients-new-zealand This reveals a lack of familiarity of and experience with the NZBC requirements on the part of the certification body. L. The conclusion of the evaluation report refers to the BCA (i.e. Building Code of Australia) rather than the NZBC. During the Audit Mr John Thorpe of CertMark stated the NZ certificates were "me too" versions of the Australian certificates. This type of error supports the concern expressed above of a lack of familiarity of and experience with the NZBC. M. The BEAL Appraisal describes itself as an alternative solution i.e. *"The PACS has been appraised as an Alternative Solution in terms of New Zealand Building Code Compliance"*. I assume this to be for the non-fire related performance requirements as C3.5 is satisfied via the acceptable solutions (clause 5.8 of C/ASX).
Evaluation Report Review (i.e. UBC)	N. An evaluation report is not necessarily required from a fire-related point of view. However, a review is potentially required under the scheme rules for the non-fire performance requirements as these appear to be based on an alternative solution as described in comment F above.
Certificate of Conformity	O. The product description describes the core as a "… fire resistant mineral core." This is not correct as the core is 20% to 30% LDPE. P. Further to item J above, given that the Product Evaluation Report relies upon the approach of the acceptable solutions, the certificate should be limited to buildings of 20 storeys or less as greater than 20 storeys is outside pf the scope of the acceptable solutions. Having said that if the height limitation of 7 m is applied then this will cover it. Q. Compliance with performance requirement C3.7 is not claimed presumably because the certificate is limited to buildings 1 m or more from the boundary. Notwithstanding this, this omission could

	be misleading and this limitation should be explicitly stated on the certificate to avoid confusion. R. Condition J of the certificate states: *"Installation must be carried out in accordance with PSP Technical Manual November 1, 2016."* A search of the PSP web site for the manual yields a document that is titled 'Section 3 Fabrication & installation'. It is undated. An accurate and preferably permanent link (such as a DOI address) should be provided and the web address included on the certificate. S. Condition K of the certificate states: *"Installation of components and accessories supplied by PSP must be carried out by personal trained and certified by PSP."* No information is given as to how a user of the certificate (such as a Building Consent Authority) can determine whether an installer is duly certified. This condition is impractical and makes the certificate unworkable. T. Limitation M of the certificate states: *"This certificate is limited to the details within this certificate, including the compliance elements, product description and purpose or use."* This is circular, unnecessary and confusing.

Audit Summary

Product	**Name**		**Type**	
	Alubond FRA2		Aluminium Composite Panel	
Audit	**Auditor**		**Audit date**	
	Tony Enright		21 September 2017	
Certificate of Conformity	**Number**	**Revision**	**Date**	**Status**
	40094	--	21 August 2013	Current
	Holder		**Certification Body**	
	Symonite Panels Limited		CertMark	
Conclusions	No evaluation reports or other supporting information has been provided. There are indications that an A2 product could satisfy the performance requirement C3.5 "Buildings must be designed and constructed so that fire does not spread more than 3.5 m vertically from the fire source over the external cladding of multi-level buildings." However, as stated above no evidence of compliance has been provided in this instance.			
Recommendations	The certificate should be suspended.			

Tony Enright

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Audit Notes

UK full-scale tests on A2 products	A. In response to the Grenfell Tower fire in the United Kingdom (UK), seven full-scale fire tests were undertaken by BRE Global for the Department for Communities and Local Government (DCLG). The test reports are in the public domain (GOV.UK 2017). B. The first six tests involved specimens comprising of one of the three type of polyethylene (PE) core described above, either; PE, FR or A2 with one of two types of insulation products, either rigid polyisocyanurate (PIR) or Stone Wool. PIR is a combustible thermosetting material and Stone Wool is non-combustible. Each test included horizontal and vertical cavity barriers. C. The BRE Global Tests use the apparatus described in BS 8414:2015 (BSI 2015) and acceptance criteria detailed in BRE 135 The failure criterion for external flame spread is a temperature of 600 °C for more than 30 s at a height of 5 m above the combustion chamber within 15 minutes of the test. (Noting that performance requirement C3.5 requires that fire does not spread more than 3.5 m vertically from the fire source.) D. The test reports find that; the ACP with a PE core <u>fails</u> the external fire spread criterion regardless of the insulating material, the ACP with an A2 core <u>passes</u> the external fire spread criterion regardless of the insulating material, and the ACP with an FR core will <u>fail or pass</u> the external fire spread criterion dependent upon the insulating material. It fails with the combustible PIR insulation and passes with non-combustible insulation. E. Given the above, there are indications that an A2 product could satisfy performance requirement C3.5. I note finally however, that I have not seen evidence in the supporting documents that Alubond FRA2 is an A2 product as classified by EN 13501-1.
Engineering evaluation	F. I have not been provided with an engineering evaluation report.
CB Evaluation Report	G. I have not been provided with an evaluation report by the certification body
Evaluation Report Review (i.e. UBC)	H. I have not been provided with an evaluation report by the Unrestricted Building Certifier.
Certificate of Conformity	I. The certificate claims compliance with C3.7(a) i.e. that the product is non-combustible. This is not possible for an FR product. J. Limitation 3 of the certificate requires: *"Only to be installed by a suitably qualified tradesperson trained by Symonite specifically to install Symonite Alubond Cladding Systems."*. This is difficult for builder or a building consent authority to check without reference to a register of suitably qualified tradespersons.

Audit Summary

Product	**Name**		**Type**	
	Alubond FRB1		Aluminium Composite Panel	
Audit	**Auditor**		**Audit date**	
	Tony Enright		21 September 2017	
Certificate of Conformity	**Number**	**Revision**	**Date**	**Status**
	40094	--	21 August 2013	Current
	Holder		**Certification Body**	
	Symonite Panels Limited		CertMark	
Conclusions	The engineering evaluation does not refer to a specific NFPA285 test report and therefore does not consider the particular construction details of the tested specimen. Similarly, the cassette fixing details are not representative of the tested specimen and furthermore allow for variations. The certificate claims the product is non-combustible. This is incorrect, the product is combustible. There are reasonable grounds to believe that Alubond FRB1 is unlikely to satisfy performance requirement CP3.5 "Buildings must be designed and constructed so that fire does not spread more than 3.5 m vertically from the fire source over the external cladding of multi-level buildings.			
Recommendations	The certificate should be suspended.			

Tony Enright

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Audit Notes

Warning – UK full-scale tests cast doubt on FR products	A. In response to the Grenfell Tower fire in the United Kingdom (UK), seven full-scale fire tests were undertaken by BRE Global for the Department for Communities and Local Government (DCLG). The test reports are in the public domain (GOV.UK 2017). B. The first six tests involved specimens comprising of one of the three common types i.e., 100% PE, FR or A2 core and with one of two types of insulation products, either rigid polyisocyanurate (PIR) or Stone Wool. PIR is a combustible thermosetting material and Stone Wool is non-combustible. Each test included horizontal and vertical cavity barriers. C. The BRE Global Tests use the apparatus described in BS 8414:2015 (BSI 2015) and acceptance criteria detailed in BRE 135 (Colwell and Baker 2013). The failure criterion for external flame spread is a temperature of 600 °C for more than 30 s at a height of 5 m above the combustion chamber within 15 minutes of the test. (Noting that performance requirement C3.5 requires that fire does not spread more than 3.5 m vertically from the fire source.) D. The test reports find that; the ACP with a PE core <u>fails</u> the external fire spread criterion regardless of the insulating material, the ACP with an A2 core <u>passes</u> the external fire spread criterion regardless of the insulating material, and the ACP with an FR core will <u>fail or pass</u> the external fire spread criterion dependent upon the insulating material. It fails with the combustible PIR insulation and passes with non-combustible insulation. E. It is common construction practice to install ACP over a cavity behind which is combustible material. It is very uncommon construction practice to install cavity barriers. F. Given the above, there are reasonable grounds to believe that Alubond FRB1 is unlikely to satisfy the performance requirement C3.5.
Engineering evaluation	G. An engineering evaluation has been provided in the form of a letter dated 20 January 2014 from Mr Michael Lake of Abacus Engineering. The letter states that Alubond FRB1 has been tested to NFPA 285 and passed the test criteria and therefore clause 5.8.2(b) of C/ASX is satisfied. H. I note that Mr Lake is a Chartered Professional Engineer in the practice field of Structural. He is not Chartered Professional Engineer in the practice flied of Fire although I understand he does hold a post-graduate qualification in fire engineering. I. I note an NFPA 285 test report is included in the supporting documents. The test report is by Architectural Testing Incorporated of York Pennsylvania, USA. It is dated 18 June 2013. I am not sure whether Architectural Testing has a mutually recognized accreditation for New Zealand although I not that it is

	now part of Intertek. Significantly, this test report does not specify whether it is for Alubond, Alubond FRB1 or Alubone FRA2. J. The evaluation does not cite a specific NFPA test report (see my comments in paragraph I). Therefore, the evaluation does not refer to the test specimen construction details. NFPA 285 test results are strictly limited to the particular construction details. K. I note that cassette fixing details are provided on file (but not referred to in the certificate). These are drawings SYM-A1 to SYM-A3 and SYM 01 to SYM-16, all undated. These are not representative of the tested specimen. *L.* The cassette fixing details contain a note that says: "*Drawings provided are examples of installation methods and are to be used as a guide only. Final dimensions and details will vary based on application and must be approved and installed by qualified professionals. Information within is provided without liability.*" This is too open ended. What variations are acceptable and what is the definition of a qualified professional?
CB Evaluation Report	M. An evaluation report by the certification body has not been provided.
Evaluation Report Review (i.e. UBC)	N. An evaluation report by the Unrestricted Building Certifier has not been provided.
Certificate of Conformity	O. The certificate claims compliance with C3.7(a) i.e. that the product is non-combustible. This is not possible for an FR product. P. Limitation 3 of the certificate requires: "*Only to be installed by a suitably qualified tradesperson trained by Simonite specifically to install Symonite Alubond Cladding Systems.*". This is difficult for builder or a building consent authority to check without reference to a register of suitably qualified tradespersons.

Audit Summary

Product	**Name**		**Type**	
	Larson FR		Aluminium Composite Panel	
Audit	**Auditor**		**Audit date**	
	Tony Enright		21 September 2017	
Certificate of Conformity	**Number**	**Revision**	**Date**	**Status**
	40100	--	12 August 2014	Current
	Holder		**Certification Body**	
	Alucoil S A		CertMark	
Conclusions	Test data is provided that indicates this product can only be used in limited conditions and no such limitations appear on the certificate. There are reasonable grounds to believe that Larson FR is unlikely to satisfy performance requirement CP3.5 "Buildings must be designed and constructed so that fire does not spread more than 3.5 m vertically from the fire source over the external cladding of multi-level buildings."			
Recommendations	The certificate should be suspended.			

Tony Enright

BE(Civil), ME(Fire), PhD

Chartered Professional Engineer (Fire)

Fellow, Engineering New Zealand

Audit Notes

Warning – UK full-scale tests cast doubt on FR products	A. In response to the Grenfell Tower fire in the United Kingdom (UK), seven full-scale fire tests were undertaken by BRE Global for the Department for Communities and Local Government (DCLG). The test reports are in the public domain (GOV.UK 2017). B. The first six tests involved specimens comprising of one of the three common types i.e., 100% PE, FR or A2 core and with one of two types of insulation products, either rigid polyisocyanurate (PIR) or Stone Wool. PIR is a combustible thermosetting material and Stone Wool is non-combustible. Each test included horizontal and vertical cavity barriers. C. The BRE Global Tests use the apparatus described in BS 8414:2015 (BSI 2015) and acceptance criteria detailed in BRE 135 (Colwell and Baker 2013). The failure criterion for external flame spread is a temperature of 600 °C for more than 30 s at a height of 5 m above the combustion chamber within 15 minutes of the test. (Noting that performance requirement C3.5 requires that fire does not spread more than 3.5 m vertically from the fire source.) D. The test reports find that; the ACP with a PE core <u>fails</u> the external fire spread criterion regardless of the insulating material, the ACP with an A2 core <u>passes</u> the external fire spread criterion regardless of the insulating material, and the ACP with an FR core will <u>fail or pass</u> the external fire spread criterion dependent upon the insulating material. It fails with the combustible PIR insulation and passes with non-combustible insulation. E. It is common construction practice to install ACP over a cavity behind which is combustible material. It is very uncommon construction practice to install cavity barriers. F. Given the above, there are reasonable grounds to believe that Larson FR is unlikely to satisfy the performance requirement C3.5.
Engineering evaluation	G. A fire engineering evaluation has not been provided.
CB Evaluation Report	H. A 'Technical Review Re-Accreditation Audit' report has been prepared by Roni Bezic of CertMark dated August 2017. I. A number of test reports are referred to. The most relevant of these are two test reports to AS/NZS3837:1998: • AWTA Test report 7-589884-CO dated 22 March 2013, and • AWTA Test report 7-589886-CO also dated 22 March 2013. One of the pathways to compliance under the acceptable solution C/ASX is to use the cone calorimeter test ISO 5660-1:2002. This is effectively the same as AS/NZS3837:1998. Under Clause C7.1.5 of C/ASX testing must be done without the aluminium sheet present. It is not entirely clear, but the second AWTA test may be of the FR core only. If so, the mean total heat released of 83.5 MJ//kg exceeds the limit of 50 MJ/kg meaning it would be restricted to

	buildings of equal to or less than 7 m building height and 1.0 m or more from the relevant boundary. No such restriction are included on the certificate. In this case, the supporting material indicates that the product is not suitable.
Evaluation Report Review (i.e. UBC)	J. An evaluation report review by the Unrestricted Building Certifier has not been provided.
Certificate of Conformity	K. The product description includes a reference to the core being 'fire rated' this is incorrect and misleading. L. Condition 'b' states that Larson FR is "… only to be installed by a suitably licensed tradesperson." No criteria or register are given. M. Limitation 'i' refers to Type A, B or C construction. This is terminology from the Building Code of Australia. It is not used in the New Zealand Building Code.

Audit Summary

Product	**Name**		**Type**	
	Reynobond FR		Aluminium Composite Panel	
Audit	**Auditor**		**Audit date**	
	Tony Enright		21 September 2017	
Certificate of Conformity	**Number**	**Revision**	**Date**	**Status**
	40111	Rev 2	April 2016	Current
	Holder		**Certification Body**	
	Symonite Panels Ltd		CertMark	
Conclusions	The tested specimen is not representative of the end use common in New Zealand. The test report should not be relied upon as demonstrating compliance. The certificate claims the product has a fire-resistant core. This is incorrect. There are reasonable grounds to believe that Reynobond FR is unlikely to satisfy performance requirement CP3.5 "Buildings must be designed and constructed so that fire does not spread more than 3.5 m vertically from the fire source over the external cladding of multi-level buildings.			
Recommendations	The certificate should be suspended.			

Tony Enright

BE(Civil), ME(Fire), PhD

Chartered Professional Engineer (Fire)
Fellow, Engineering New Zealand

Audit Notes

Warning – UK full-scale tests cast doubt on FR products	A. In response to the Grenfell Tower fire in the United Kingdom (UK), seven full-scale fire tests were undertaken by BRE Global for the Department for Communities and Local Government (DCLG). The test reports are in the public domain (GOV.UK 2017). B. The first six tests involved specimens comprising of one of the three common types i.e., 100% PE, FR or A2 core and with one of two types of insulation products, either rigid polyisocyanurate (PIR) or Stone Wool. PIR is a combustible thermosetting material and Stone Wool is non-combustible. Each test included horizontal and vertical cavity barriers. C. The BRE Global Tests use the apparatus described in BS 8414:2015 (BSI 2015) and acceptance criteria detailed in BRE 135 (Colwell and Baker 2013). The failure criterion for external flame spread is a temperature of 600 °C for more than 30 s at a height of 5 m above the combustion chamber within 15 minutes of the test. (Noting that performance requirement C3.5 requires that fire does not spread more than 3.5 m vertically from the fire source.) D. The test reports find that; the ACP with a PE core <u>fails</u> the external fire spread criterion regardless of the insulating material, the ACP with an A2 core <u>passes</u> the external fire spread criterion regardless of the insulating material, and the ACP with an FR core will <u>fail or pass</u> the external fire spread criterion dependent upon the insulating material. It fails with the combustible PIR insulation and passes with non-combustible insulation. E. It is common construction practice to install ACP over a cavity behind which is combustible material. It is very uncommon construction practice to install cavity barriers. F. Given the above, there are reasonable grounds to believe that Reynobond FR is unlikely to satisfy the performance requirement C3.5.
Engineering evaluation	G. A fire engineering evaluation has not been provided.
CB Evaluation Report	H. A 'Product Evaluation Report' has been prepared by Benjamin Hughes-Brown of CertMark dated 19 November 2015. I. Mr Hughes-Brown refers to himself as a Chartered Professional Engineer which he is not (in New Zealand). This is contrary to NZ legislation. https://www.engineersaustralia.org.au/portal/news/attention-engineers-working-new-zealand-or-providing-engineering-services-clients-new-zealand This reveals a lack of familiarity of and experience with the NZBC requirements on the part of the certification body. J. To demonstrate compliance Mr Hughes-Brown has relied upon an NFPA 285 test report for Alcoa Cladding Systems by Omega Point Laboratories number 8902-116005 dated 15 March 2004. I am not

	sure whether Omega Point Laboratories has a mutually recognized accreditation for New Zealand. K. The specimen is tested as a complete system including any external cladding, insulation, external substrate framing and internal wall membrane. L. The tested specimen is not representative of the end use common in New Zealand. For example, the specimen includes cavity barriers. The NFPA 285 test report should not have been relied upon in the Evaluation Report. M. I note that Mr Hughes-Brown has stipulated: "*The technical literature is considered acceptable provided it is a controlled document, finalised, endorsed by an appropriately qualified person and addresses the relevant prescriptive clause of the NZBC.*" The NFPA 285 test report is not a controlled document.
Evaluation Report Review (i.e. UBC)	N. An evaluation report review by the unrestricted building certifier has not been provided.
Certificate of Conformity	O. The product description describes the core as a "… 3mm fire resistant mineral core." This is incorrect. P. There is considerable confusion and overlap between Sections labeled "Product Purpose or Use" and Conditions and Limitations. This adds to ambiguity of the certificate Q. For C3.7 (b) and (c) i.e. claims that the product is compliant for buildings that are greater than 10.0 m in height and less than 1.0 m from the relevant boundary when subject to design by a suitably qualified engineer in accordance with AS/NZS 1170 suite of standards. There is no definition of what a "suitably qualified engineer" (fire or structural) is and there is no statement of what the acceptance criteria is to be used beyond those limits. R. Condition 'b' requires that the product must be; "*…installed by an installer approved by Symonite Panels Ltd*". This is difficult for builder or a building consent authority to check without reference to a register of suitably approved installers.

Audit Summary

Product	**Name**		**Type**	
	Vitrabond FR		Aluminium Composite Panel	
Audit	**Auditor**		**Audit date**	
	Tony Enright		21 September 2017	
Certificate of Conformity	**Number**	**Revision**	**Date**	**Status**
	40193	Rev 1	June 2017	Current
	Holder		**Certification Body**	
	Fairview Architectural		CertMark	
Conclusions	Unlike other FR type products that have a 30% PE content in the core Vitrabond FR has 50% PE content in the core. This difference is significant. The tested specimen is not representative of the end use common in New Zealand. The test report should not be relied upon as demonstrating compliance. The product evaluation report requires mechanical fixing yet the certificate contradicts this and allows tape fixing. There are reasonable grounds to believe that Vitrabond FR is unlikely to satisfy performance requirement CP3.5 "Buildings must be designed and constructed so that fire does not spread more than 3.5 m vertically from the fire source over the external cladding of multi-level buildings."			
Recommendations	The certificate should be suspended.			

Tony Enright

BE(Civil), ME(Fire), PhD

Chartered Professional Engineer (Fire)
Fellow, Engineering New Zealand

Audit Notes

Warning – UK full-scale tests cast doubt on FR products	A. In response to the Grenfell Tower fire in the United Kingdom (UK), seven full-scale fire tests were undertaken by BRE Global for the Department for Communities and Local Government (DCLG). The test reports are in the public domain (GOV.UK 2017). B. The first six tests involved specimens comprising of one of the three common types i.e., 100% PE, FR or A2 core and with one of two types of insulation products, either rigid polyisocyanurate (PIR) or Stone Wool. PIR is a combustible thermosetting material and Stone Wool is non-combustible. Each test included horizontal and vertical cavity barriers. C. The BRE Global Tests use the apparatus described in BS 8414:2015 (BSI 2015) and acceptance criteria detailed in BRE 135 (Colwell and Baker 2013). The failure criterion for external flame spread is a temperature of 600 °C for more than 30 s at a height of 5 m above the combustion chamber within 15 minutes of the test. (Noting that performance requirement C3.5 requires that fire does not spread more than 3.5 m vertically from the fire source.) D. The test reports find that; the ACP with a PE core <u>fails</u> the external fire spread criterion regardless of the insulating material, the ACP with an A2 core <u>passes</u> the external fire spread criterion regardless of the insulating material, and the ACP with an FR core will <u>fail or pass</u> the external fire spread criterion dependent upon the insulating material. It fails with the combustible PIR insulation and passes with non-combustible insulation. E. The CSIRO Certificate of Assessment number 2144 dated 31 October 2014 states that the sample tested had a core comprising 50% PE by mass. The FR samples tested by BRE Global had the more conventional 30% PE content. This difference is significant. F. As a check, I have measured and weighed a sample of Vitrabond FR and I calculate that the PE content in the core is 45% noting that there will be a margin of error. This is consistent with the 50% value reported by CSIRO. (The CSIRO value should be assumed!) G. It is common construction practice to install ACP over a cavity behind which is combustible material. It is very uncommon construction practice to install cavity barriers. H. Given the above, there are reasonable grounds to believe that Vitrabond FR is unlikely to satisfy the performance requirement C3.5.
Engineering evaluation	I. A fire engineering evaluation has not been provided.
CB Evaluation Report	J. A product evaluation report (titled a Technical Review) has been prepared by Benjamin Hughes-Brown of CertMark dated 12 December 2016. K. To demonstrate compliance Mr Hughes-Brown has relied upon an NFPA 285 test report by Architectural Testing reference C1783.01-

	121-24 dated 15 October 2012. I am not sure whether Architectural Testing from Connecticut, USA has a mutually recognized accreditation for New Zealand. L. The specimen is tested as a complete system including any external cladding, insulation, external substrate framing and internal wall membrane. The tested specimen is not representative of the end use common in New Zealand. • For example, the specimen includes cavity barriers (fire blanket in the bottom zee girt), and • The fixing details in the NFPA285 specimen differ from the cassette fix (and there is not a tape-fixed specimen). Noting that at page 6 of the Technical Review requires mechanical fixing which would appear to prohibit tape fixing.
Evaluation Report Review (i.e. UBC)	M. An evaluation report review by the unrestricted building certifier has not been provided.
Certificate of Conformity	N. As described above the certificate allows tape fixing which is contradictory to the product evaluation report and contradictory to the tested specimen. O. Condition 'g' requires: "The Vitraond FR Cladding System must be installed by an installer approved by Fairview Architectural. This is difficult for builder or a building consent authority to check without reference to a register of suitably approved installers.