ExcelPlas

TEST REPORT

Client: Basic Expert Pty Ltd

Address: 105 Wellington St, St Kilda, 3182, Victoria

Investigation Report # 8520/1

Analysis of ACP Cladding Sample

Revised 12/03/2020

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TASK DETAILS

ExcelPlas Job Number:

 # 8520

Report prepared for:

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Request Date:

25 February 2020

Client PO Reference:

SAMPLE DETAILS

Location of Cladding:	N/A
Sample Description:	
ExcelPlas Sample ID	**Description**
8520/1	White front and White back with White Core Alpolic NC

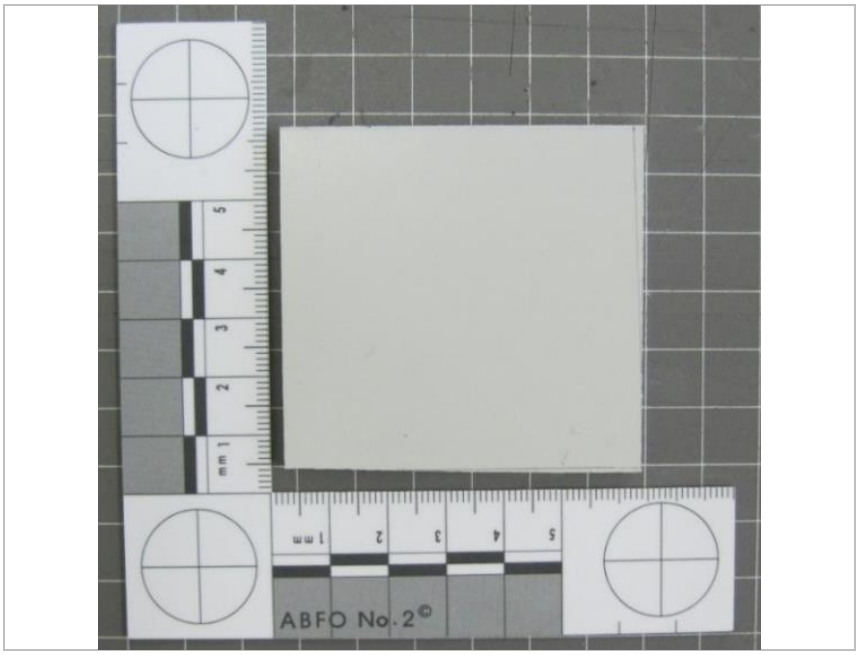

Figure 1. Cladding Sample 8520/1 as supplied to ExcelPlas

FOURIER TRANSFORM INFRARED SPECTROSCOPY

Methodology:	Fourier Transform Infrared (FT-IR) spectroscopy was used for 'finger-printing' for material identification of the polymer and filler components. The FT-IR analysis was performed according to ASTM E573 'Standard Practices for Internal Reflection Spectroscopy" using an Alpha Measurement Module by Bruker Optik. Smaller samples of the core were cut from the larger sample. Spectra of the core were searched against an internal library database for identification.

IR Spectral Results:

ExcelPlas Sample ID	Polymer component	Inert components
8520/1	Polyvinyl acetal (trace levels)	Aluminium Hydroxide and Calcium Carbonate

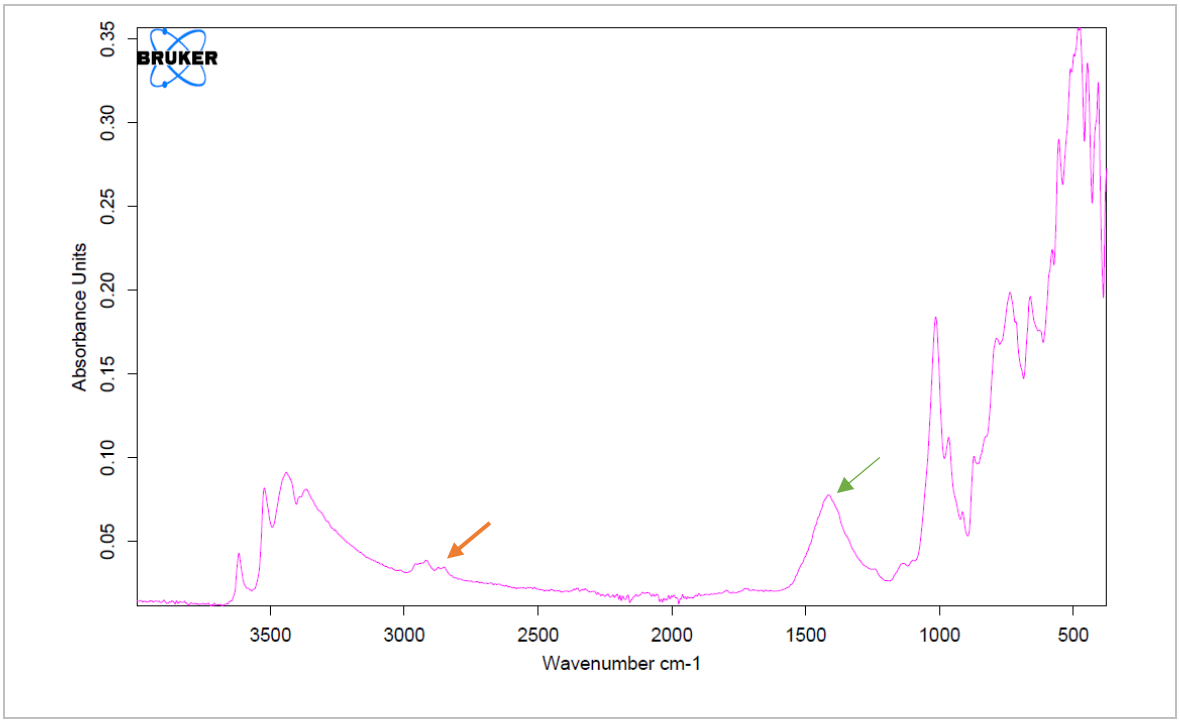

Figure 2. *Spectrum of the cladding sample 8520/1 (pink) overlaid with a known spectrum of Alumina Trihydrate in Polyethylene carrier (blue), the strongest match from our internal library. As indicted by the orange arrow, the two peaks at 2919 cm^{-1} and 2850 cm^{-1} which are indicative of C-H stretching in Polyvinyl acetal. However, the C-H stretching peaks are tiny and almost insignificant, which indicates that polymer content is a trace level that is either a contaminant or a binder. As indicated by the green arrow, the strong peak at 1416 cm^{-1} is a characteristic peak of calcite ($CaCO_3$).*

ASH RESIDUE TESTING

Methodology:	Ashing residue testing was based on ASTM D 5630 - 13 “Standard Test Method for Ash Content in Plastics” using a muffle furnace. This technique enables quantification of the combustible and non-combustible fractions.

Ash Residue Results:

ExcelPlas Sample ID	Ash Residue Mass %
8520/1 - Result 1	69.3
8520/1 - Result 2	69.3

THERMO-GRAVIMETRIC ANALYSIS (TGA)

Methodology:	TGA testing was based on ASTM E1131 - 08(2014) "Standard Test Method for Compositional Analysis by Thermogravimetry". This technique measures the weight loss of the material via thermal degradation with temperature. The weight loss profile enables identification of different components in the core of the cladding sample. Atmosphere: Air Heating rate and range: 10 °C/min up to 1000 °C

TGA Results:

Sample ID	Onset, °C	Peak Burn Rate Temperature, °C	Residue, %
8520/1	234.5	239.6, 314.6, 523.6, 726.7	60.3

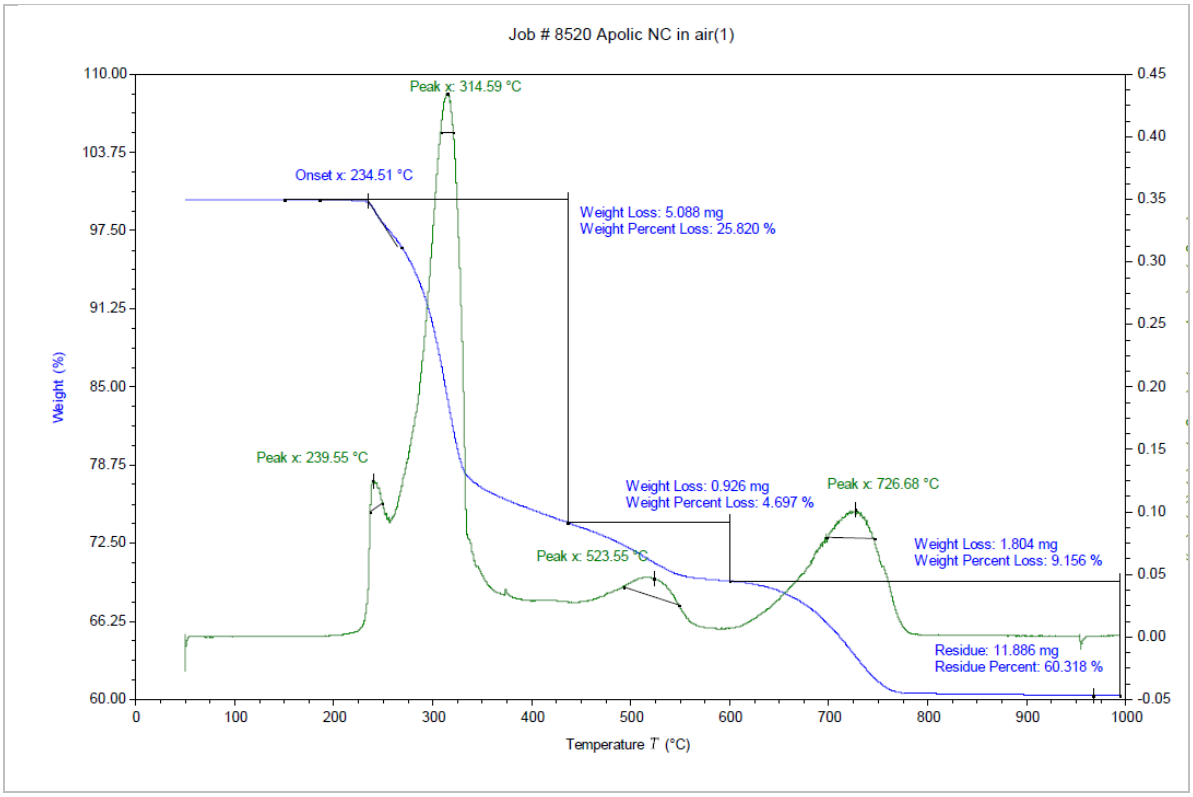

Figure 3. Thermo-gravimetric trace of sample 8520/1

CONCLUSION

The level of inert filler in each sample was determined using a combination of results obtained from quantitative ash data, thermogravimetry analysis (TGA), and FT-IR spectroscopy.

The amount of organic polymer in the sample is at a trace level and this low level concentration of polymer is not enough to make the panel combustible.

Based on the additional information supplied by the client dated on 25th February 2020, the cladding is "not deemed combustible" according to test report AS1530.1 (see attached certificate). Thus the ICA category is D.

Aluminium Composite Materials fall within four general categories ranging from A – high fire risk through to D – non-combustible, determined by the composition of the core materials as shown in Appendix A.

According to the Insurance Council of Australia (ICA), the categories of the cladding samples tested are shown in the table below.

ExcelPlas Sample ID	ICA Category	Measured Inert filler (%) [1]	Organic polymer (%) [1]
8520/1	D	~97 [2]	~3 [2]

Notes:

1. These results are based on a single sample submitted for testing. This does not necessarily indicate all panels on site have similar composition, particularly if there are panels from different batch runs and/or suppliers.
2. The percentage of organic polymer was determined from the infrared spectrum obtained and due to only having trace levels of the polymer the results for inert filler and organic polymer are approximate values.

Appendix A: Insurance Council of Australia

Notes from Insurance Council of Australia website:

http://www.insurancecouncil.com.au/issues-submissions/issues/insurance-industry-aluminium-composite-panels-residual-hazard-identificationreporting-protocol

Insurers have observed that ACPs typically come in four general categories defined by the composition of their core materials ranging from A – High fire risk, through to D – non-combustible as follows:

Category	Polymer Percentage[1]	Polymer%	Inert Filler%
A	30-100% Polymer and 0-70% inert materials	30-100%	0-70%
B	8-29% Polymer and 71-92% inert materials	8-29%	71-92%
C	1-7% Polymer and 93-99% inert materials	1-7%	93-99%
D	0% Polymer and 100% inert materials or deemed non-combustible by the NCC	0%	100%

[1] Polymer including all types of flammable polymers

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The testing herein is based upon accepted industry practice as well as the test methods listed.

Test results reported herein do not apply to samples other than those tested.

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We believe the conclusions and recommendations contained in this report were reasonable and appropriate at the time of issue of the report. However, please note that fundamental input assumptions upon which this report is based may change with time. It is the user's responsibility to ensure that input assumptions remain valid.

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We thank you for your time