vitracore G2®

NON-COMBUSTIBLE COMPOSITE PANEL / MANUFACTURED BY FAIRVIEW

VITRACORE G2 TESTING AND COMPLIANCE

VITRACORE G2 COMPOSITION

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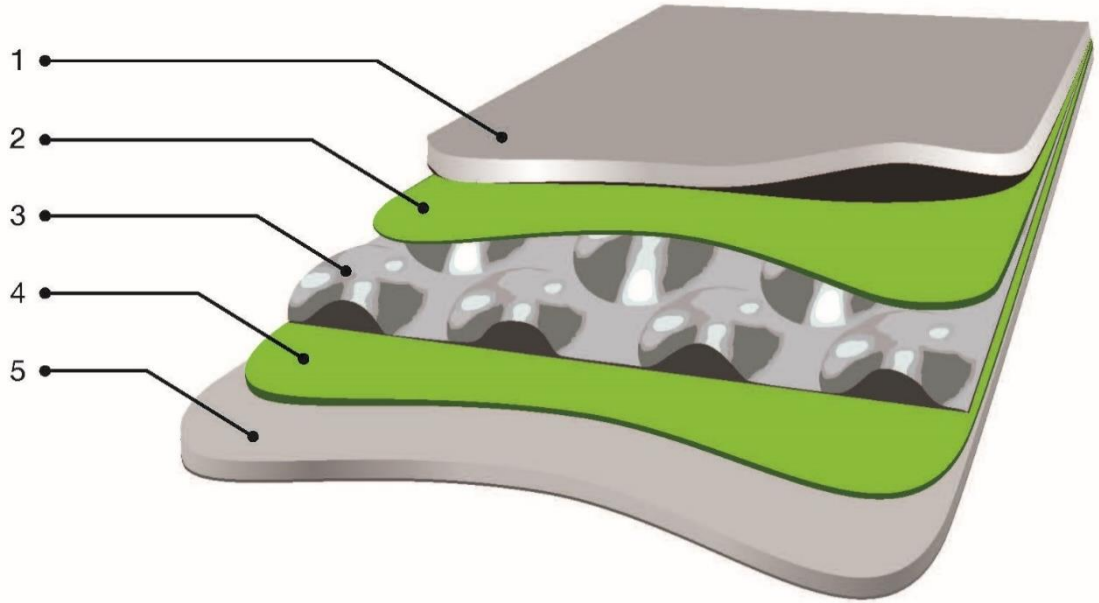
The composition of Vitracore G2 is as follows:

1. 0.7mm aluminium face skin
2. 0.08mm adhesive
3. Profiled aluminium core
4. 0.08mm adhesive
5. 0.5mm aluminium rear skin



VITRACORE G2 DEEMED NON-COMBUSTIBLE UNDER AUSTRALIAN BUILDING CODE

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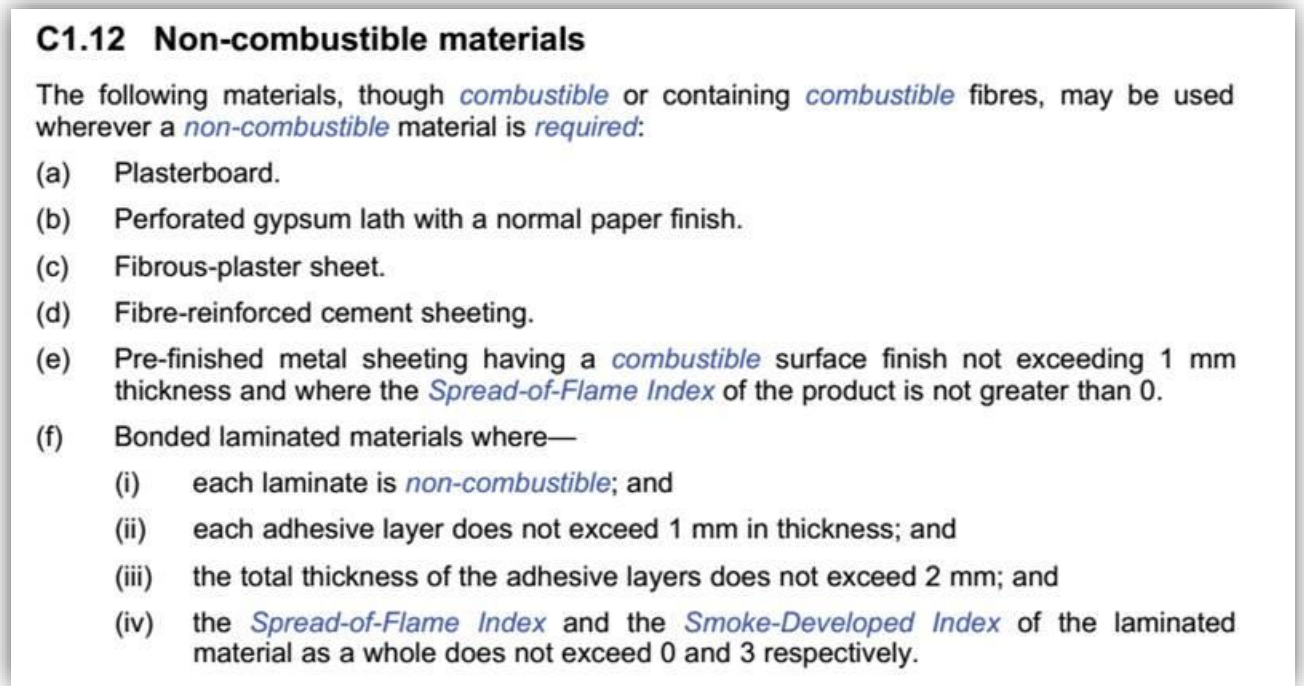
How is Vitracore G2 deemed non-combustible if it contains adhesive?

The Building Code of Australia (BCA) recognises that while some products may contain combustible adhesives or fibres, the effect of these is negligible and hence the products are deemed non-combustible. This is covered under BCA Clause C1.12*.



C1.12 Non-combustible materials

The following materials, though *combustible* or containing *combustible* fibres, may be used wherever a *non-combustible* material is *required*:

(a) Plasterboard.

(b) Perforated gypsum lath with a normal paper finish.

(c) Fibrous-plaster sheet.

(d) Fibre-reinforced cement sheeting.

(e) 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.

(f) Bonded laminated materials where—

(i) each laminate is *non-combustible*; and

(ii) each adhesive layer does not exceed 1 mm in thickness; and

(iii) the total thickness of the adhesive layers does not exceed 2 mm; and

(iv) the *Spread-of-Flame Index* and the *Smoke-Developed Index* of the laminated material as a whole does not exceed 0 and 3 respectively.

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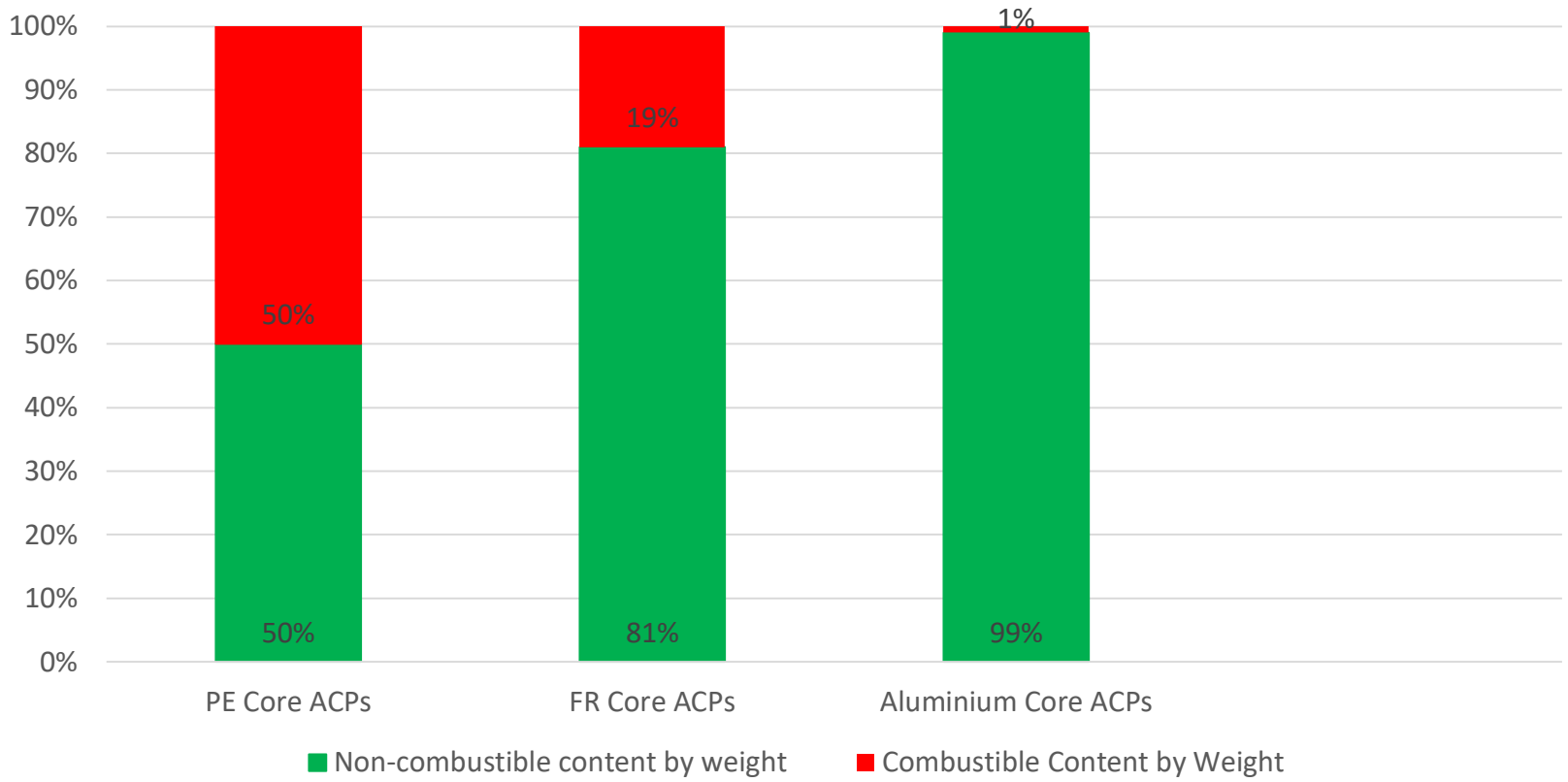
OTHER PRODUCTS DEEMED NON-COMBUSTIBLE ALSO CONTAIN COMBUSTIBLE ADHESIVE OR FIBRES

Products covered under Clause C1.12 are utilised widely across construction and include:

- Plasterboard
- Compressed Fibre Cement
- Aluminium cored composite panels

COMPARISON OF COMBUSTIBLE CONTENT IN ALUMINIUM COMPOSITE PANELS



COMPARING PRODUCTS UNDER AS1530.1 TEST*

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VITRACORE G2 & SOLID FR CORE

Clause C1.12 excludes testing the adhesive so this is removed from the panels.

Due to the production method used when making solid FR core, the only way to remove the adhesive is by also removing the aluminium skin.

*This is a very severe test and involves placing specimens into a furnace at approximately 700C, and measuring temperature rise and flaming time to determine if the product is combustible. In consideration to composite panels, clause 1.4 of AS1530.1 states 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…" This prevents non-combustible skins protecting a combustible core.

SAMPLES LAYERED INTO CYLINDERS FOR TESTING

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The sample format required for AS1530.1 testing is a cylinder, 45mm diameter and 50mm high. For thin sheets this is built up using several layers.

SAMPLES HEATED TO 750 DEGREES CELSIUS

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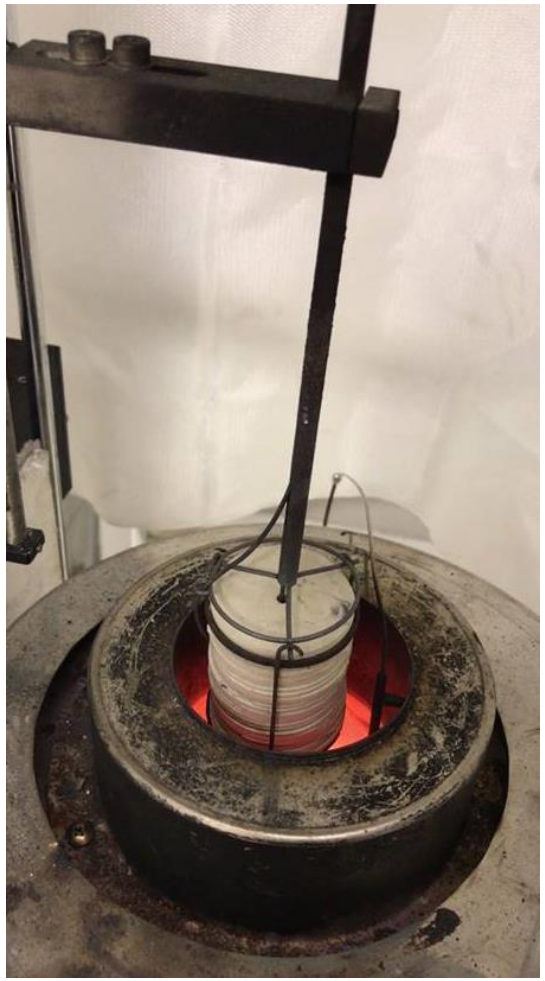
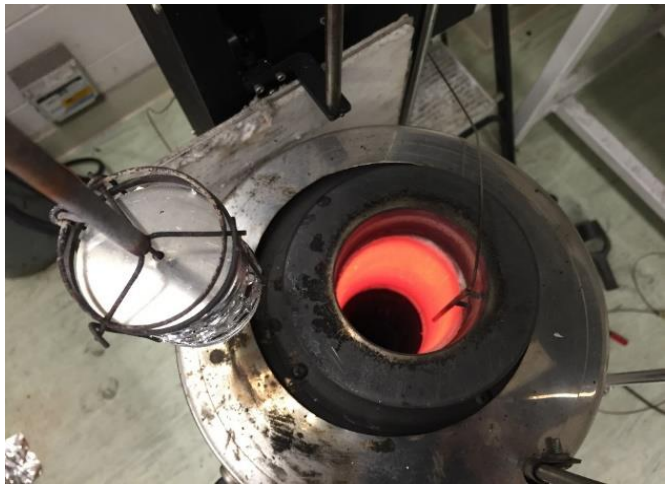


The AS1530.1 test procedure is to place into a furnace at 750C for 30 minutes.

A product is combustible if the samples flame for more than five seconds, or the temperature rise exceeds 50C.



VITRACORE G2 DOES NOT FLAME

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Vitracore G2 passed the AS1530.1 test. As the furnace temperature is hotter than the melting point of aluminium it partially melted. Vitracore G2 was not deemed combustible to AS1530.1.

SOLID FR CORE FLAMES AFTER ONE MINUTE

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The solid FR core did not pass the AS1530.1 test. Due to significant flaming the testing was stopped. The FR core was deemed combustible to AS1530.1.

VITRACORE G2 DEEMED NON-COMBUSTIBLE UNDER AUSTRALIAN BUILDING CODE*

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CONFORMANCE TO C1.12	VITRACORE G2	FR CORE ACP
Each laminate non-combustible to AS1530.1	✔	✖
< 1mm thickness adhesive	✔	✔
< 2mm total adhesive thickness	✔	✔
Spread of flame is 0	✔	✔
Smoke developed index < 3	✔	✔
SUITABLE FOR USE WHERE NON-COMBUSTIBLE MATERIALS ARE REQUIRED?	✔	✖

* In accordance with BCA Clause C1.12, which states that bonded laminate materials may be used wherever a non-combustible material is required; providing:

- Each laminate (front and rear skins and core) is non-combustible; and
- Each adhesive layer does not exceed 1mm in thickness; and
- The total thickness of the adhesive layers does not exceed 2mm; and
- The Spread-of-Flame and the Smoke-Developed Index of the laminated material as a whole does not exceed 0 and 3 respectively.

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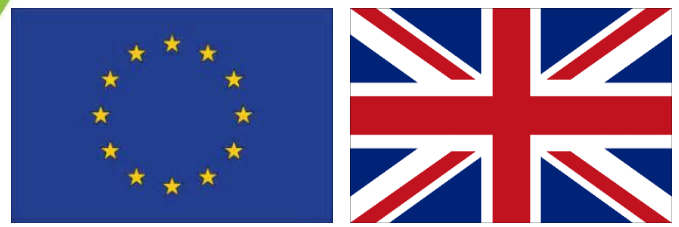
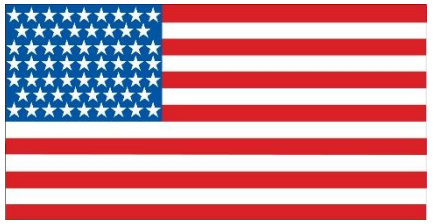
VITRACORE G2 ALSO DEEMED NON-COMBUSTIBLE IN INTERNATIONAL TESTS



VITRACORE G2 is deemed non-combustible in Europe and UK according to EN13501*



VITRACORE G2 is deemed non-combustible in USA according to ASTM E136** and ASTM E84***

*EN13501 is a European classification standard based on a combination of small and medium scale test methods assessing combustibility, heat release, smoke density and burning droplets.

**ASTM E136 is similar in configuration to the AS1530.1 test. It uses a furnace to expose building materials to a temperature of 750°C until failure occurs or for at least 30 minutes

***ASTM E84 test method exposes a 7.32m x 0.5m specimen to a controlled air flow and flaming fire with the specimen exposed face down to the ignition source. Performance is evaluated by fire spread and smoke density.

EXPLANATION OF TESTS & BCA APPLICATION

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THE BCA REQUIRES EXTERNAL WALLS TO BE NON-COMBUSTIBLE ON TYPE A AND B CONSTRUCTION. NON-COMBUSTIBLE IS DEFINED BY TESTING TO AS1530.1, WITH ADDITIONAL CONSIDERATION TO SECTION C1.12 AND AS1530.3

AS1530.1

THIS IS A VERY SEVERE TEST AND INVOLVES PLACING SPECIMENS INTO A FURNACE AT APPROXIMATELY 700C, AND MEASURING TEMPERATURE RISE AND FLAMING TIME TO DETERMINE IF THE PRODUCT IS COMBUSTIBLE.

IN REFERENCE TO COMPOSITE PANELS, CLAUSE 1.4 OF AS1530.1 STATES 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…" THIS PREVENTS NON-COMBUSTIBLE SKINS PROTECTING A COMBUSTIBLE CORE.

C1.12F

THIS CLAUSE OF THE BCA STATES THAT BONDED LAMINATE MATERIALS MAY BE USED WHEREVER A NON-COMBUSTIBLE MATERIAL IS REQUIRED; PROVIDING:

- EACH LAMINATE IS *NON-COMBUSTIBLE;* AND
- EACH ADHESIVE LAYER DOES NOT EXCEED 1MM IN THICKNESS; AND
- THE TOTAL THICKNESS OF THE ADHESIVE LAYERS DOES NOT EXCEED 2MM; AND
- THE *SPREAD-OF-FLAME* AND THE *SMOKE-DEVELOPED INDEX* OF THE LAMINATED MATERIAL AS A WHOLE DOES NOT EXCEED 0 AND 3 RESPECTIVELY **(WHEN TESTED TO AS1530.3)**

AS1530.3

THIS TEST INVOLVES A COMPLETE PANEL MOUNTED VERTICALLY IN FRONT OF A RADIANT HEAT SOURCE TO SIMULTANEOUSLY DETERMINE IGNITABILITY, FLAME PROPAGATION, HEAT RELEASE AND SMOKE RELEASE. BASED ON CALCULATED VALUES THE MATERIAL IS GIVEN A PERFORMANCE RATING.

AS5113

THE AS5113 IS A LARGE SCALE FIRE PROPAGATION TESTING OF EXTERNAL WALLS OF BUILDINGS, ALLOWING AN ALTERNATIVE ROUTE TO COMPLIANCE FOR COMBUSTIBLE PRODUCTS. THE PANELS ARE TESTED AS INSTALLED IN AN 'L' SHAPED TEST RIG OVER 8M TALL, WITH A LARGE FIRE SOURCE AT THE BASE TO CLOSELY MIMIC A REAL-LIFE SITUATION. RESULTS ARE DETERMINED BASED ON FIRE SPREAD AND TEMPERATURE CHANGE UP THE FAÇADE.

EXPLANATION OF INTERNATIONAL TESTS

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EN13501

EN13501 IS A EUROPEAN CLASSIFICATION STANDARD BASED ON A COMBINATION OF SMALL AND MEDIUM SCALE TEST METHODS ASSESSING COMBUSTIBILITY, HEAT RELEASE, SMOKE DENSITY AND BURNING DROPLETS.

ASTM E136

THIS IS SIMILAR IN CONFIGURATION TO THE AS1530.1 TEST. IT USES A FURNACE TO EXPOSE BUILDING MATERIALS TO A TEMPERATURE OF 750°C UNTIL FAILURE OCCURS OR FOR AT LEAST 30 MINUTES

ASTM E84

THIS TEST METHOD EXPOSES A 7.32M X 0.5M SPECIMEN TO A CONTROLLED AIR FLOW AND FLAMING FIRE WITH THE SPECIMEN EXPOSED FACE DOWN TO THE IGNITION SOURCE. PERFORMANCE IS EVALUATED BY FIRE SPREAD AND SMOKE DENSITY.