ULTRACORE
Deemed-to-Satisfy Non-combustible Aluminium Core Panel
NCC 2019 C1.9(e)(vii) Compliance & Testing
Deemed-to-Satisfy Pathway in NCC 2019

1. Deemed-to-Satisfy Solution (Clause C1.9)

2. Performance Solution (CV3 Verification Method)
Deemed-to-Satisfy Cladding (Clause C1.9)

Clause C1.9 requires external cladding and walls to comply with the Deemed-to-Satisfy (DTS) requirements of NCC 2019 – Specifically that all components of External Walls and Common Walls including the cladding, framing & insulation are non-combustible for type A & B construction.

C1.9 Non-combustible building elements

(a) In a building required to be of Type A or B construction, the following building elements and their components must be non-combustible:

(i) External walls and common walls, including all components incorporated in them including the facade covering, framing and insulation.
## Basic Table of Construction Types

**Class 2, 3 & 9 Buildings:** Units, Apartments, Motels, Schools, Health & Aged Care, Assembly Areas

**Class 5, 6, 7 & 8 Buildings:** Offices, Retail Buildings, Shops, Carparks, Warehouses, Laboratories, Factories

<table>
<thead>
<tr>
<th>Rise in Stories</th>
<th>Class 2, 3 or 9 Building</th>
<th>Class 5, 6, 7 or 8 Building</th>
<th>Class 1 or 10 Building</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 or more</td>
<td>A*</td>
<td>A*</td>
<td>n/a</td>
</tr>
<tr>
<td>3</td>
<td>A*</td>
<td>B*</td>
<td>n/a</td>
</tr>
<tr>
<td>2</td>
<td>B*</td>
<td>C**</td>
<td>n/a</td>
</tr>
<tr>
<td>1</td>
<td>C**</td>
<td>C**</td>
<td>n/a</td>
</tr>
</tbody>
</table>

*All Type A & B Construction Requires all External Cladding to be Non-combustible as per Clause C1.9

**May also be Type A or B Construction based on Compartment Size as per C2.2 & C2.3
Materials Exempted in Clause C1.9(d)

This means the below products do not need to be non-combustible when using a Deemed-to-Satisfy cladding system for type A & B construction.

(d) The requirements of (a) and (b) do not apply to the following:

(i)  Gaskets.
(ii) Caulking.
(iii) Sealants.
(iv) Termite management systems
(v)  Glass, including laminated glass.
(vi) Thermal breaks associated with glazing systems.
(vii) Damp-proof courses.
Non-combustible Materials in Clause C1.9(e)

(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.
Bonded Laminates Clause C1.9(e)(vii)

After careful consideration & review of all the evidence, the Australian Building Codes Board (ABCB) has retained this clause in NCC 2019 unchanged from Amendment 1 in NCC 2016 – changes highlighted.

Clause C1.9(e)(vii) for Bonded Laminated Materials in NCC 2019

(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.

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Test Certificates used to Confirm C1.9 Compliance

- AS 1530.1
- AS 1530.3
- NATA Accredited
- AS 1530.2 for Sarking
AS 1530.1 Test for Material Combustibility is Required for DTS Compliance with C1.9(e)(vii)(A)

- AS 1530.1
- Combustibility test
- Each lamina must PASS
- Including the core
Understanding AS 1530.1

AS 1530.1 is referenced in the NCC 2019 definitions as the test method for material combustibility. It is an extremely severe test and NO material which passes AS 1530.1 has ever been shown to contribute to Spread-of-Fire.

The sample format required for AS 1530.1 testing is a cylinder, 45mm in diameter and 50mm high. For thin sheets it is built up using several layers.

Non-combustible means—
(a) applied to a material — not deemed combustible as determined by AS 1530.1
Passing AS 1530.1 Testing

The severity and strict criteria means that any product with any organic material will fail.

The testing procedure involves enclosing the specimen in a wire cage and then lowering it into a furnace at 750°C for 30 minutes.

A product is deemed COMBUSTIBLE (fails) if the samples flame for more than 5 seconds or the temperature rise in 30 minutes exceeds 50°C.
Aluminium Core Panel

ULTRACORE Aluminium Core Panel has been tested to AS 1530.1 by NATA accredited CSIRO and the laminas did not flame or increase the temperature by more than 50°C = PASS.

Accordingly, the ULTRACORE laminas, including the core, were not deemed COMBUSTIBLE as per criteria (A), the first of the criteria for a bonded laminated material to be DTS non-combustible as per C1.9(e)(vii).
NATA Assessment to Confirm Adhesive Thickness as per C1.9(e)(vii)(B) is Recommended

- NATA Assessment
- To confirm glue thickness
- Max. 1mm per layer
- Max. 2mm total

Certificate of Test

Important Note: Dry-film adhesive layers (not liquid) to guarantee thickness is exactly as stated (0.1mm)
ULTRACORE Aluminium Core Panel has the glue applied as **0.1mm dry-film** layers so there is no way it can be thicker than stated. It is 10% (1/10th) of the NCC 2019 allowance.

The sponsor described the tested specimen as an aluminium composite sandwich decorative panel comprised of the following layers:

Layer 1: 0.7-mm thick aluminium face finished with 30-μm 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-μm thick surface finish.

The layers were adhered together using an adhesive film glue at an application rate of 96 g/m².
AS 1530.3 Test for Fire Hazard Properties is Required for DTS Compliance with C1.9(e)(vii)(C)

- AS 1530.3
- Fire Hazard Properties
- 0 for Spread-of-Flame
- 3 for Smoke-Developed
ULTRACORE - AS 1530.3 Test

As per the requirements of NCC 2019, this test involves the bonded laminate material as a whole being tested to AS 1530.3. Finished samples are mounted vertically in front of a radiant heat source to simultaneously determine:

- Ignitability Index = 0
- Spread-of-Flame Index = 0
- Heat Evolved Index = 0
- Smoke-Developed Index = 1
### ULTRACORE Results Table as per C1.9(e)(vii)

#### ULTRACORE Non-combustible Aluminium Core Panel

<table>
<thead>
<tr>
<th>TEST</th>
<th>RESULT</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS 1530.1*</td>
<td>Not deemed COMBUSTIBLE</td>
</tr>
<tr>
<td>NATA Assessment**</td>
<td>Adhesive per Layer 0.1mm</td>
</tr>
<tr>
<td></td>
<td>Total Adhesive 0.2mm</td>
</tr>
<tr>
<td>AS 1530.3***</td>
<td>Spread-of-Flame 0</td>
</tr>
<tr>
<td></td>
<td>Smoke-Developed 1</td>
</tr>
</tbody>
</table>

*Refer CSIRO AS 1530.1 Certificate #: FNC11679  
**Refer CSIRO Assessment Number #: FCO-3188  
***Refer CSIRO AS 1530.3 Certificate #: FNE11680
Benefits of Deemed-to-Satisfy Cladding

- DTS solutions are ‘Black & White’ in the code
- This avoids the risk of liability to certifiers, fire engineers and architects
- DTS products have a category D insurance rating (the lowest risk)
- They avoid any difference of opinion or dispute
- They are much more likely to be covered by your own PI insurance
- They do not have onerous requirements to be installed exactly as tested in order to be compliant

"If the LACROSSE cladding was DTS compliant then the fire would never have spread so rapidly like it did. Furthermore the architect, fire engineer, certifier and builder would have been absolved of liability”
ULTRACORE – DTS Non-combustible System

Mechanical Cassette Fixing (V-groove Route & Return)

ULTRACORE G2 PANEL

FACTORY PANEL RIVET

PROLASTIK SEALANT AND FOAM BACKING ROD

ULTRAZED SHORT / LONG Z-ANGLE

STUDEK TOPHAT

FIRESSPAN NON-COMBUSTIBLE SARKING

PACKER AS REQUIRED

TEK SCREW

STRUCTURE TO OTHER'S DETAIL
Tape Fix – Not Compliant or Recommended
Adhesive Tape-fix System (Flat Stick Method as per Lacrosse)
ULTRACORE Aluminium Core Panel

➢ DTS compliant for types A, B & C construction
➢ Category D insurance rating (lowest risk)
➢ All waste and cladding materials is 100% recyclable (NO landfill)
➢ 4kg/m2 total panel weight
➢ Low debris quantity
➢ Low thermal conductivity
➢ Fast to fabricate
➢ No risk of score-fractures during v-grooving
SOLID Aluminium Panel in Comparison

- DTS compliant for types A, B & C construction
- Category D insurance rating (lowest risk)
- All waste and cladding materials is 100% recyclable
- 8kg/m² total panel weight
- High debris quantity
- High thermal conductivity
- Slow to fabricate ($$$$
- High risk of score-fractures during v-grooving
ULTRACORE Key Benefits

➢ All the benefits of other panels excluding rolling tighter than 2m radius*
➢ AS 5113 testing to prove ‘real-world’ fire safety – NO fire spread
➢ 80 x lower thermal conductivity for greater fire safety and section J compliance**
➢ 1/3 the amount of debris in a fire scenario**
➢ Tried & tested durability on v-grooved corners**
➢ Less stress on sealant for long-term waterproofing**
➢ Much greater resistance to oil canning**
➢ Much faster to fabricate = cost savings**
➢ 50% less weight for structural & labour savings**
➢ 50% less carbon footprint**
➢ ICA category D insurance rating (lowest risk)

*It can still be rolled tight by routing out the core as shown
**Compared to Solid Aluminium panels
PROJECT:
Elizabeth Quay, The Towers

ARCHITECT:
Cottee Parker

BUILDER:
Probuild Constructions

PRODUCT:
ULTRACORE

FAÇADE M2:
6,000m²

COMPLIANCE PATHWAY:
Deemed-to-Satisfy (DTS)
PROJECT: Kings Square, Fremantle

ARCHITECT: Hassell

BUILDER: Probuild Constructions

PRODUCT: ULTRACORE

FAÇADE M2: 2,700m²

COMPLIANCE PATHWAY: Deemed-to-Satisfy (DTS)
PROJECT: Optus Stadium
ARCHITECT: Hassell / Cox
BUILDER: Multiplex
PRODUCT: ULTRACORE
FAÇADE M2: 4,000m²
COMPLIANCE PATHWAY: Deemed-to-Satisfy (DTS)
Which BLUECHIP Products are DTS Compliant?
How do I Specify Fully Compliant DTS Systems?

ULTRACORE

Overview | Availability | Colour Chart | Gallery | Downloads | Support


NCC/BCA Fire Compliance | PVDF Coating Standard | Cleaning & Maintenance

PDF Install Details | CAD Install Details | Testing & Certification

Firespan Sarking | Studtek Framing | Ultrazed Z-angles

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To claim 1 formal CPD point please hand in your CPD attendance & assessment form or email it to; sales@bluechipgroup.net.au
Call **1300 945 123** to view this amazing 5m video

This incredible 18m high test based on AS 5113 had 2 levels of highly flammable PE core panels below 3 levels of ULTRACORE panels. After the 30min test and a raging PE fire, all the PE panels were completely gone and the ULTRACORE panels passed with flying colours, successfully stopped the vertical spread and proving beyond any doubt that it does not contribute to the Spread-of-Fire.

ULTRACORE Fire-break Test for University of Melbourne Edited