BLUECHIP

We've Got It Covered

ULTRACORE IQ

ULTRACORE IQ

Non-combustible Intelligent Aluminium Core Panel

NCC 2022, Clause C2D10(6)(g) – Compliance & Fire Testing

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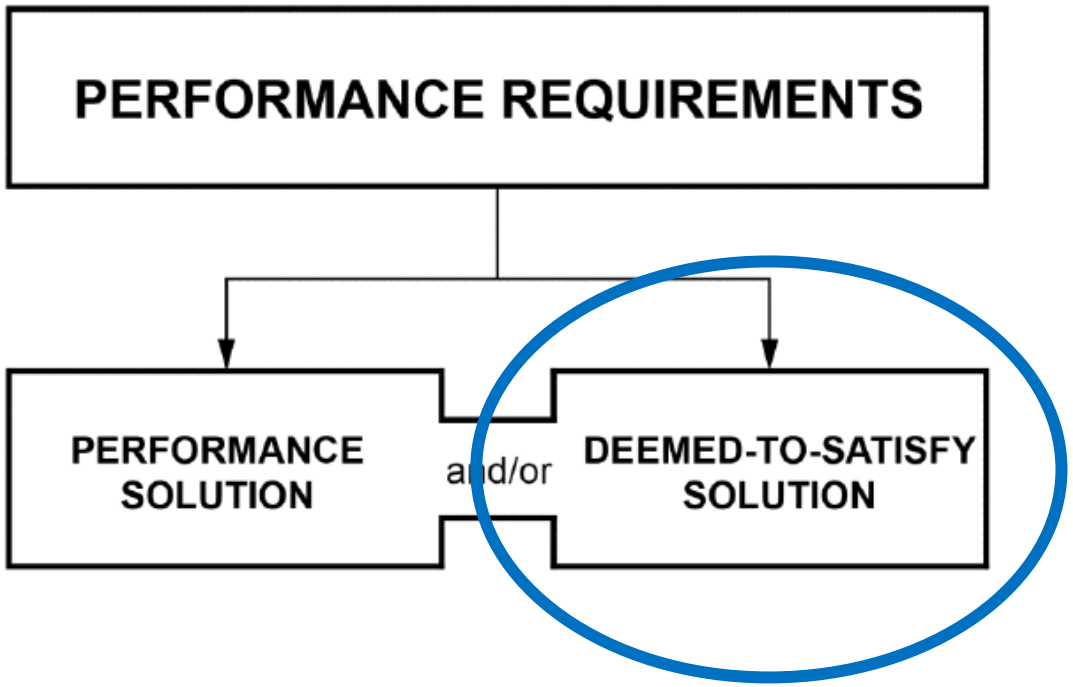
Deemed-to-Satisfy Pathway via Clause *C2D10*

1. Deemed-to-Satisfy (DTS) Pathway *(Clause C2D10)*
2. Performance Solution Pathway *(C1V3 Verification Method)*



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Deemed-to-Satisfy Pathway via Clause *C2D10*

Clause C2D10(1) requires certain building elements and their components to be *non-combustible* in buildings of types A & B construction.

Clause C2D10(1)(a) requires *External Walls* and *Common Walls* including the façade covering, framing and insulation to be *non-combustible*.

> (1) In a building *required* to be of Type A or B construction, the following building elements and their components must be *non-combustible*:
>
> (a) *External walls* and *common walls*, including all components incorporated in them including the facade covering, framing and insulation.

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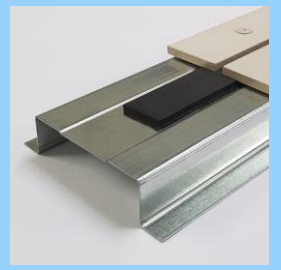
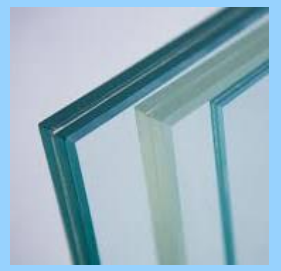
Materials Exempt in Clause *C2D10(4) & (5)*

If we are using the *Deemed-to-Satisfy (DTS)* pathway, this list of products is ***exempt*** from the requirement to be non-combustible.

(4) The requirements of (1) and (2) do not apply to the following:

- (a) Gaskets.
- (b) Caulking.
- (c) Sealants.
- (d) Termite management systems.
- (e) Glass, including laminated glass, and associated adhesives, including tapes.
- (f) Thermal breaks associated with—
  - (i) glazing systems; or
  - (ii) *external wall* systems, where the thermal breaks—
    - (A) are no larger than necessary to achieve thermal objectives; and
    - (B) do not extend beyond one *storey*; and
    - (C) do not extend beyond one *fire compartment*.





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(g) *Damp-proof courses*.

(h) Compressible fillers and backing materials, including those associated with articulation joints, closing gaps not wider than 50 mm.

(i) Isolated—

(i) construction packers and shims; or

(ii) blocking for fixing fixtures; or

(iii) fixings, including fixing accessories; or

(iv) acoustic mounts.

(j) Waterproofing materials applied to the external face, used below ground level and up to 250 mm above ground level.

(k) Joint trims and joint reinforcing tape and mesh of a width not greater than 50 mm.

(l) Weather sealing materials, applied to gaps not wider than 50 mm, used within and between concrete elements.

(m) Wall ties and other masonry components complying with AS 2699 Part 1 and Part 3 as appropriate, and associated with masonry wall construction.

(n) Reinforcing bars and associated minor elements that are wholly or predominately encased in concrete or grout.

(o) A paint, lacquer or a similar finish or coating.

(p) Adhesives, including tapes, associated with stiffeners for cladding systems.

(q) Fire-protective materials and components *required* for the protection of penetrations.

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(5) The following materials, when entirely composed of itself, are *non-combustible* and may be used wherever a *non-combustible* material is *required*:

(a) Concrete.

(b) Steel, including metallic coated steel.

(c) Masonry, including mortar.

(d) Aluminium, including aluminium alloy.

(e) Autoclaved aerated concrete, including mortar.

(f) Iron.

(g) Terracotta.

(h) Porcelain.

(i) Ceramic.

(j) Natural stone.

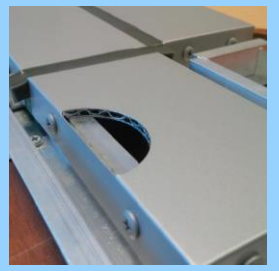
(k) Copper.

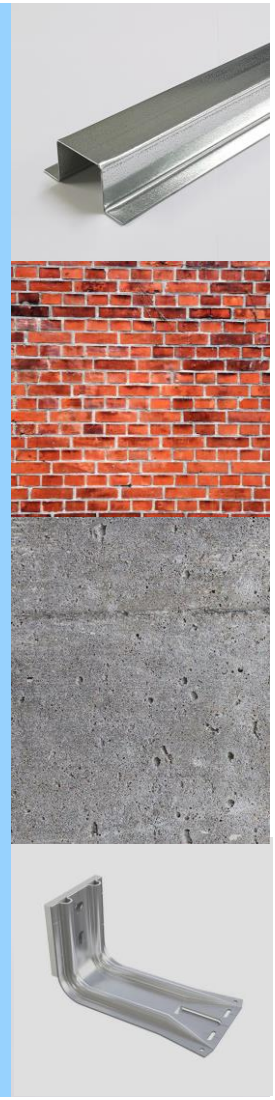
(l) Zinc.

(m) Lead.

(n) Bronze.

(o) Brass.





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ULTRACORE IQ is DTS compliant via *C2D10(6)(g)*

(6) The following materials 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) *Sarking-type materials* that do not exceed 1 mm in thickness and have a *Flammability Index* not greater than 5.

(g) Bonded laminated materials where—

(i) each lamina, including any core, is *non-combustible*; and

(ii) each adhesive layer does not exceed 1 mm in thickness and the total thickness of the adhesive layers does not exceed 2 mm; and

(iii) 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; and

(iv) when located externally, are fixed in accordance with C2D15.

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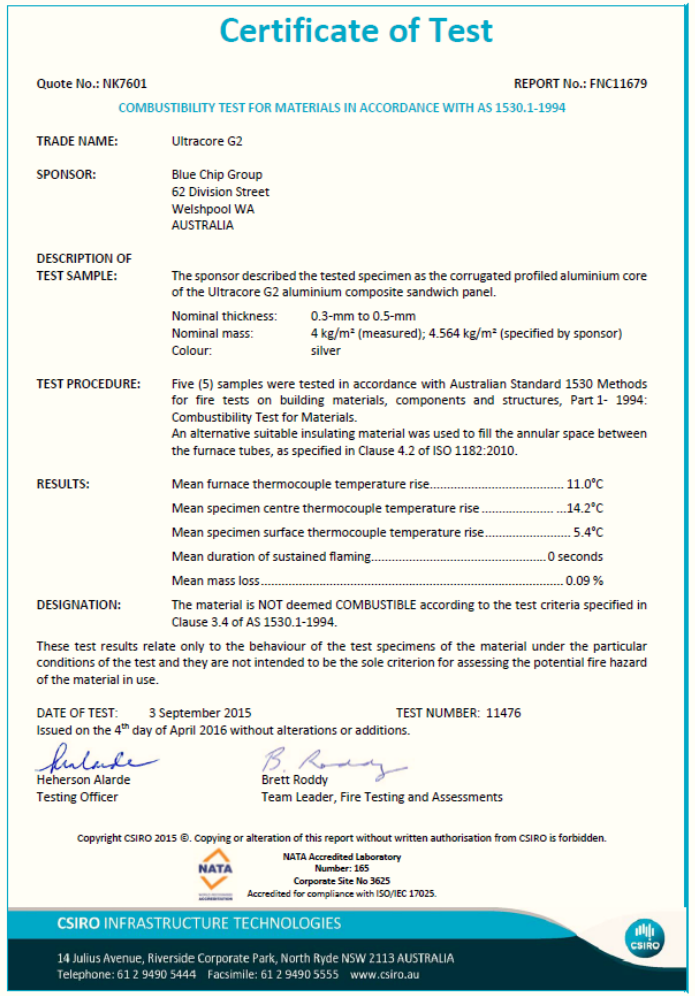
Test Certificates used for *C2D10(6)* Compliance

- AS 1530.1
- AS 1530.3
- NATA Accredited
- AS 1530.2 for Sarking



Certificate of Test

Quote No.: NK7601 REPORT No.: FNC11679

COMBUSTIBILITY TEST FOR MATERIALS IN ACCORDANCE WITH AS 1530.1-1994

TRADE NAME: Ultracore G2

SPONSOR: Blue Chip Group
62 Division Street
Welshpool WA
AUSTRALIA

DESCRIPTION OF TEST SAMPLE: The sponsor described the tested specimen as the corrugated profiled aluminium core of the Ultracore G2 aluminium composite sandwich panel.

Nominal thickness: 0.3-mm to 0.5-mm
Nominal mass: 4 kg/m² (measured); 4.564 kg/m² (specified by sponsor)
Colour: silver

TEST PROCEDURE: Five (5) samples were tested in accordance with Australian Standard 1530 Methods for fire tests on building materials, components and structures, Part 1- 1994: Combustibility Test for Materials.
An alternative suitable insulating material was used to fill the annular space between the furnace tubes, as specified in Clause 4.2 of ISO 1182:2010.

RESULTS:

Mean furnace thermocouple temperature rise	11.0°C
Mean specimen centre thermocouple temperature rise	14.2°C
Mean specimen surface thermocouple temperature rise	5.4°C
Mean duration of sustained flaming	0 seconds
Mean mass loss	0.09 %

DESIGNATION: The material is NOT deemed COMBUSTIBLE according to the test criteria specified in Clause 3.4 of AS 1530.1-1994.

These test results relate only to the behaviour of the test specimens of the material under the particular conditions of the test and they are not intended to be the sole criterion for assessing the potential fire hazard of the material in use.

DATE OF TEST: 3 September 2015 TEST NUMBER: 11476
Issued on the 4th day of April 2016 without alterations or additions.

Heherson Alarde
Testing Officer

Brett Roddy
Team Leader, Fire Testing and Assessments

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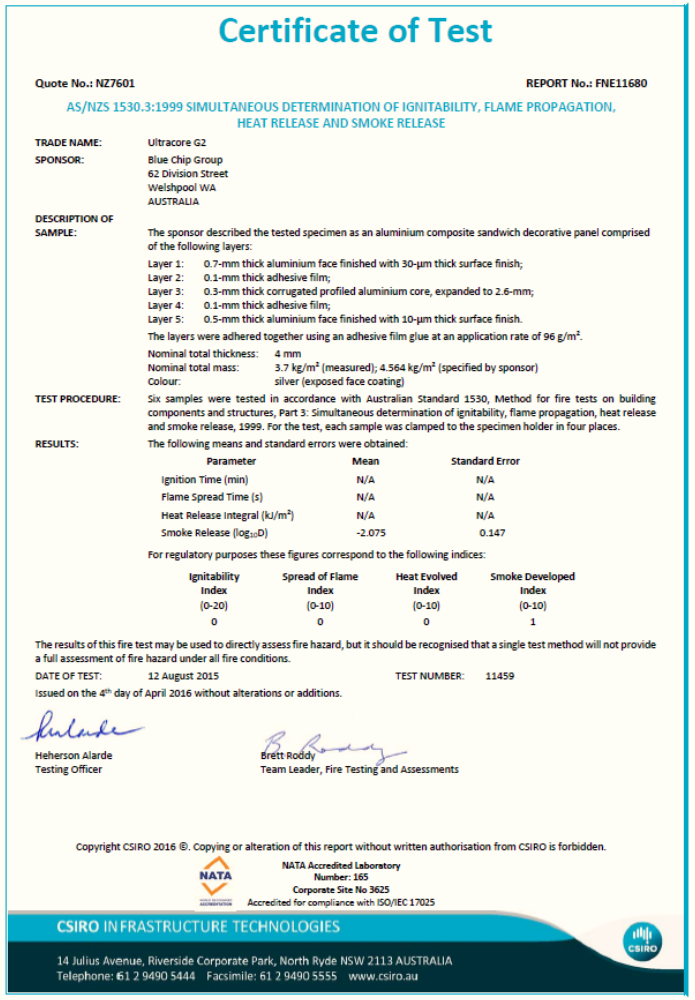

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Quote No.: NZ7601 REPORT No.: FNE11680

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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.

Nominal total thickness: 4 mm
Nominal total mass: 3.7 kg/m² (measured); 4.564 kg/m² (specified by sponsor)
Colour: silver (exposed face coating)

TEST PROCEDURE: Six samples were tested in accordance with Australian Standard 1530, Method for fire tests on building components and structures, Part 3: Simultaneous determination of ignitability, flame propagation, heat release and smoke release, 1999. For the test, each sample was clamped to the specimen holder in four places.

RESULTS: The following means and standard errors were obtained:

Parameter	Mean	Standard Error
Ignition Time (min)	N/A	N/A
Flame Spread Time (s)	N/A	N/A
Heat Release Integral (kJ/m²)	N/A	N/A
Smoke Release ($\log_{10}$D)	-2.075	0.147

For regulatory purposes these figures correspond to the following indices:

Ignitability Index (0-20)	Spread of Flame Index (0-10)	Heat Evolved Index (0-10)	Smoke Developed Index (0-10)
0	0	0	1

The results of this fire test may be used to directly assess fire hazard, but it should be recognised that a single test method will not provide a full assessment of fire hazard under all fire conditions.

DATE OF TEST: 12 August 2015 TEST NUMBER: 11459
Issued on the 4th day of April 2016 without alterations or additions.

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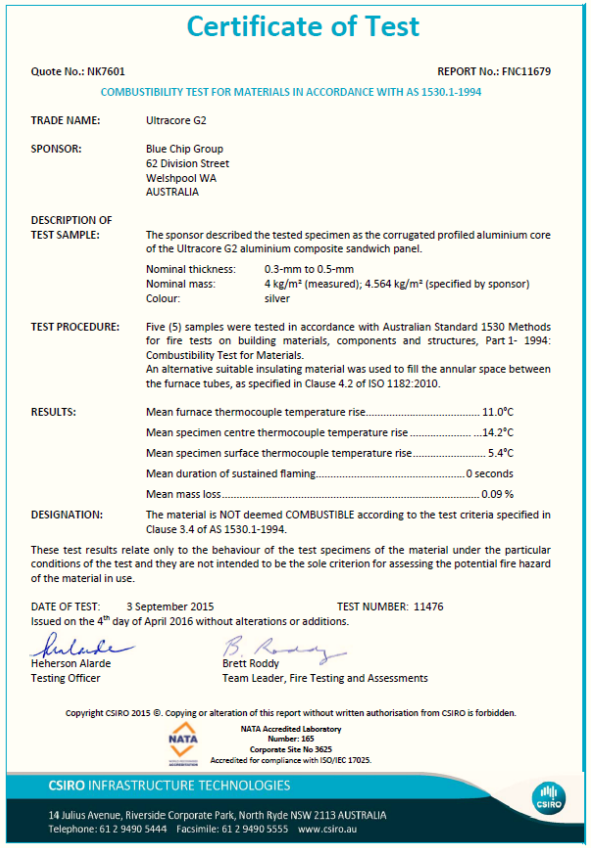
AS 1530.1 Test for Material Combustibility is required for DTS compliance with *C2D10(6)(g)(i)*

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



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Colour: silver

TEST PROCEDURE: Five (5) samples were tested in accordance with Australian Standard 1530 Methods for fire tests on building materials, components and structures, Part 1- 1994: Combustibility Test for Materials.
An alternative suitable insulating material was used to fill the annular space between the furnace tubes, as specified in Clause 4.2 of ISO 1182:2010.

RESULTS:

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Mean mass loss	0.09 %

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Understanding *AS 1530.1*

AS 1530.1 is referenced in the NCC 2022 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 is a cylinder, 45mm in diameter and 50mm high & for thin sheet-type products it is built up using multiple layers.

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

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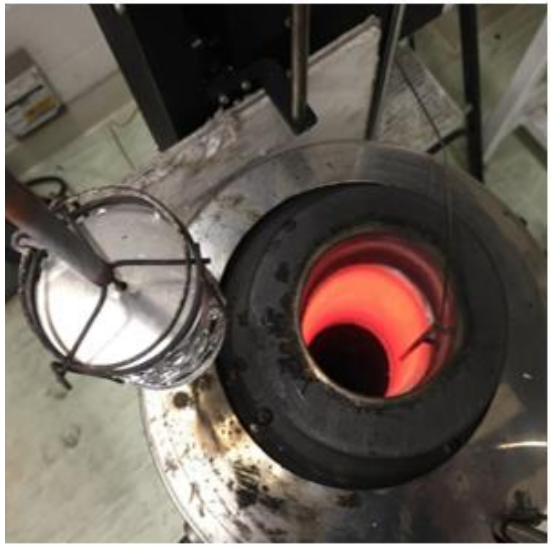
Passing *AS 1530.1*

The severity and strict criteria mean that a 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 to fail if the specimen flames for more than 5 seconds or the rise in temperature during the test exceeds 50°C.



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ULTRACORE IQ – *AS 1530.1*

ULTRACORE IQ 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 IQ laminas, including the core, are deemed non-combustible as per criteria (i), the first of three criteria for it to be classified as a DTS non-combustible material as per *C2D10(6)*.

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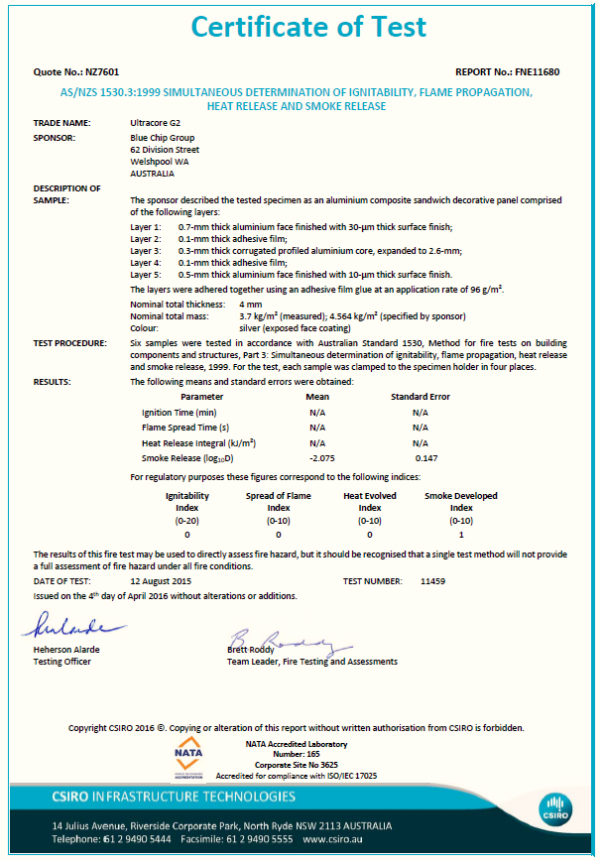
NATA Assessment to Confirm Adhesive Thickness as per *C2D10(6)(g)(ii)* is Recommended

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



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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.

Nominal total thickness: 4 mm
Nominal total mass: 3.7 kg/m² (measured); 4.564 kg/m² (specified by sponsor)
Colour: silver (exposed face coating)

TEST PROCEDURE: Six samples were tested in accordance with Australian Standard 1530, Method for fire tests on building components and structures, Part 3: Simultaneous determination of ignitability, flame propagation, heat release and smoke release, 1999. For the test, each sample was clamped to the specimen holder in four places.

RESULTS: The following means and standard errors were obtained:

Parameter	Mean	Standard Error
Ignition Time (min)	N/A	N/A
Flame Spread Time (s)	N/A	N/A
Heat Release Integral (kJ/m²)	N/A	N/A
Smoke Release ($\log_{10}$D)	-2.075	0.147

For regulatory purposes these figures correspond to the following indices:

Ignitability Index (0-20)	Spread of Flame Index (0-10)	Heat Evolved Index (0-10)	Smoke Developed Index (0-10)
0	0	0	1

The results of this fire test may be used to directly assess fire hazard, but it should be recognised that a single test method will not provide a full assessment of fire hazard under all fire conditions.

DATE OF TEST: 12 August 2015 TEST NUMBER: 11459

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Testing Officer

Brett Roddy
Team Leader, Fire Testing and Assessments

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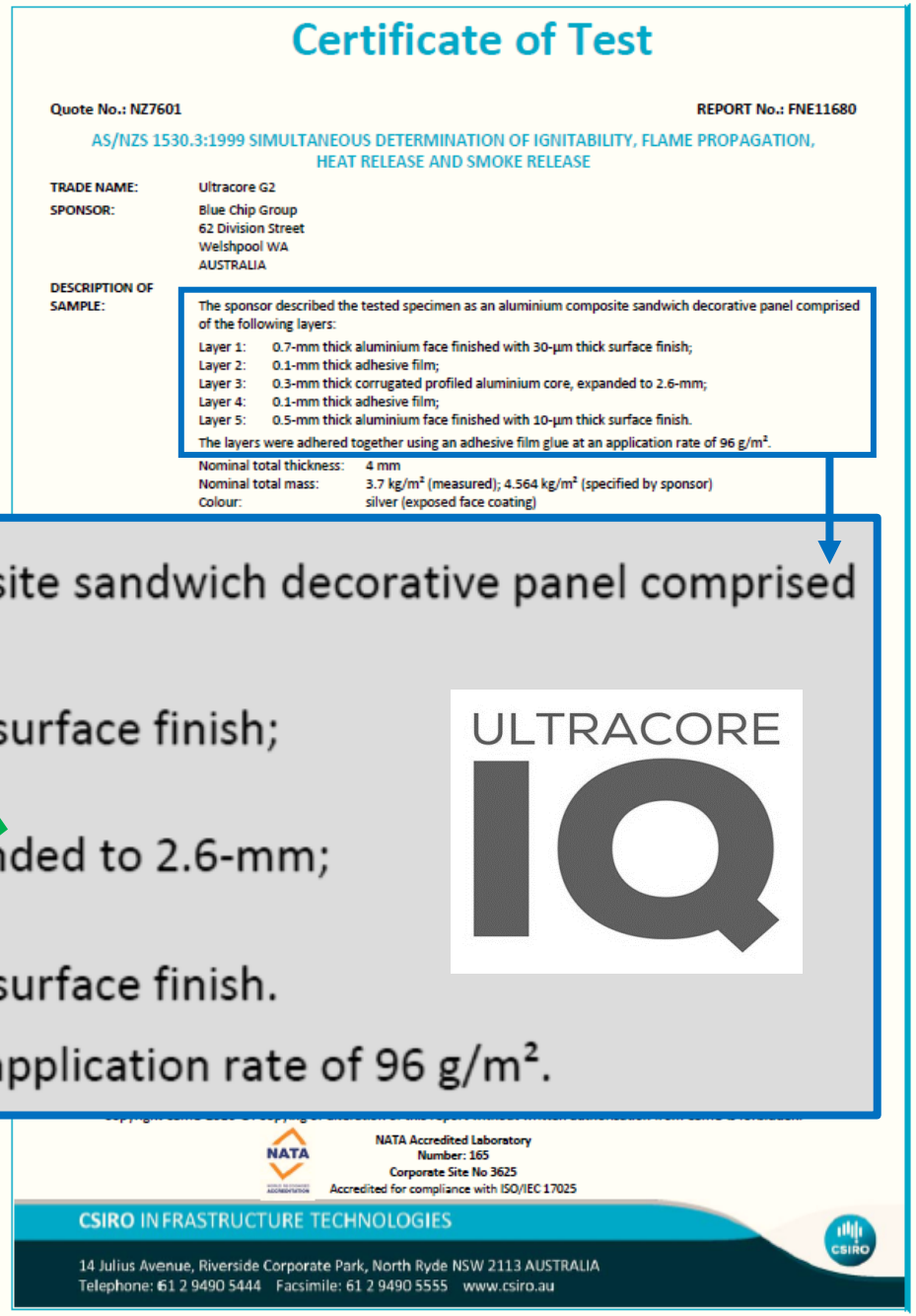
ULTRACORE IQ Aluminium Core Panel glue is applied as **<0.1mm dry-film** layers so there is no way it can be thicker than stated at only 10% (1/10th) of the NCC allowance.



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ULTRACORE IQ

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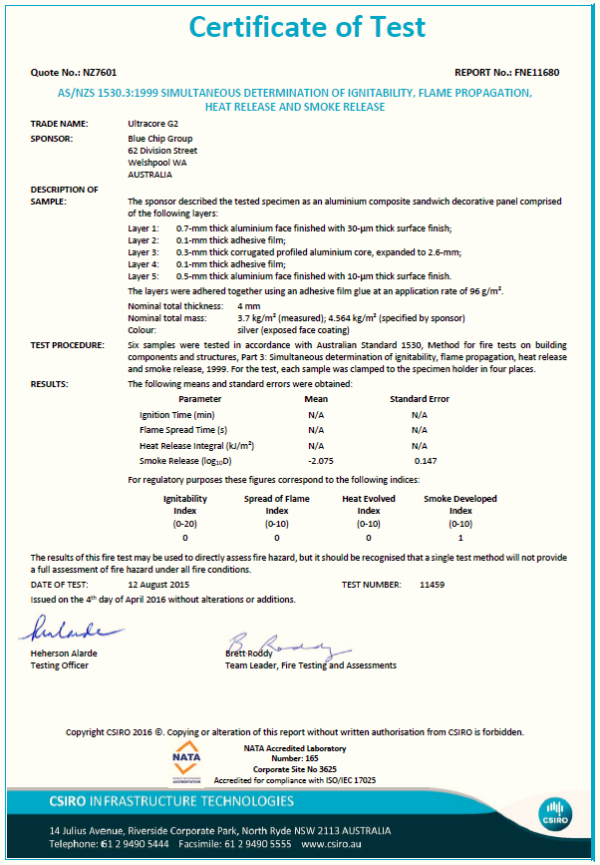
AS 1530.3 Test for Fire Hazard Properties is Required for Compliance with *C2D10(6)(g)(iii)*

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



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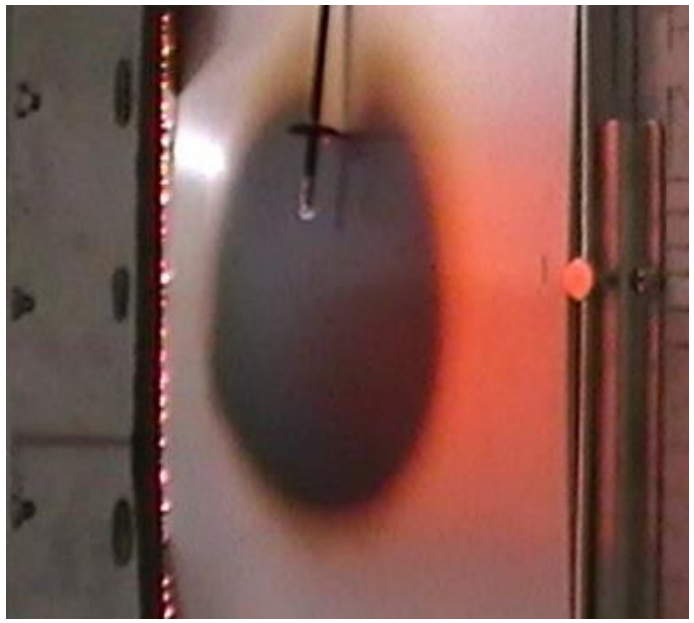
ULTRACORE IQ - *AS 1530.3*

As per the requirements of NCC 2022, 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*



Ignitability Index (0-20)	Spread of Flame Index (0-10)	Heat Evolved Index (0-10)	Smoke Developed Index (0-10)
0	0	0	1

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ULTRACORE IQ Results as per *C2D10(6)(g)*

ULTRACORE IQ Intelligent Non-combustible Aluminium Core Panel

TEST	RESULT	
AS 1530.1*	Not deemed COMBUSTIBLE	
NATA Assessment**	Adhesive per Layer	0.1mm
	Total Adhesive	0.2mm
AS 1530.3***	Spread-of-Flame	0
	Smoke-Developed	1

*Refer to CSIRO AS 1530.1 Testing Certificate #: FNC11679
**Refer to CSIRO Compliance Assessment Number #: FCO-3188
***Refer to CSIRO AS 1530.3 Testing Certificate #: FNE11680

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Cassette Fixing Requirement in *C2D10(6)(g)(iv)*

After extensive lobbying by industry leaders, the ABCB has added an additional requirement in NCC 2022 to make tape or adhesive fixing non-compliant in external cladding applications – *update highlighted.*

Clause C2D10(6)(g) for Bonded Laminated Materials in NCC 2022

(g) Bonded laminated materials where—

(i) each lamina, including any core, is *non-combustible*; and

(ii) each adhesive layer does not exceed 1 mm in thickness and the total thickness of the adhesive layers does not exceed 2 mm; and

(iii) 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; and

(iv) when located externally, are fixed in accordance with C2D15.

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Cassette Fixing Compliance with *C2D15*

The most commonly recommended installation method is the widely used and globally proven *cassette fixing* which is specifically listed as compliant in *C2D15* as *highlighted* below. *ULTRACORE IQ* can also be installed in a channel-type fixing method (ie curtain-wall) or face-fixed if required.

C2D15 Fixing of bonded laminated cladding panels

(1) In a building *required* to be of Type A or B construction, externally located bonded laminated cladding panels must have all layers of cladding mechanically supported or restrained to the supporting frame.

Notes

For C2D15(1), mechanical support or restraint means fixing that does not solely rely on chemical adhesive and includes concealed fixing systems such as cassette fixing, channel-type fixing and face fixing.

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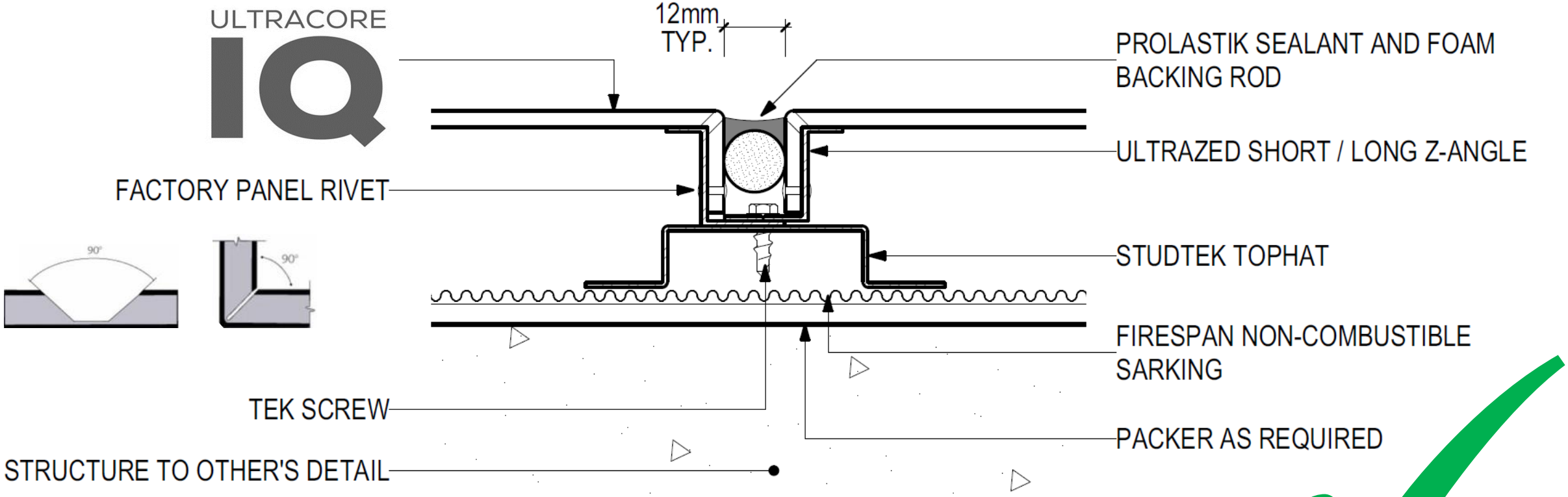
ULTRACORE IQ – *Cassette Fixing Installation*

(V-groove and folding is only recommended for bonded laminated panels)



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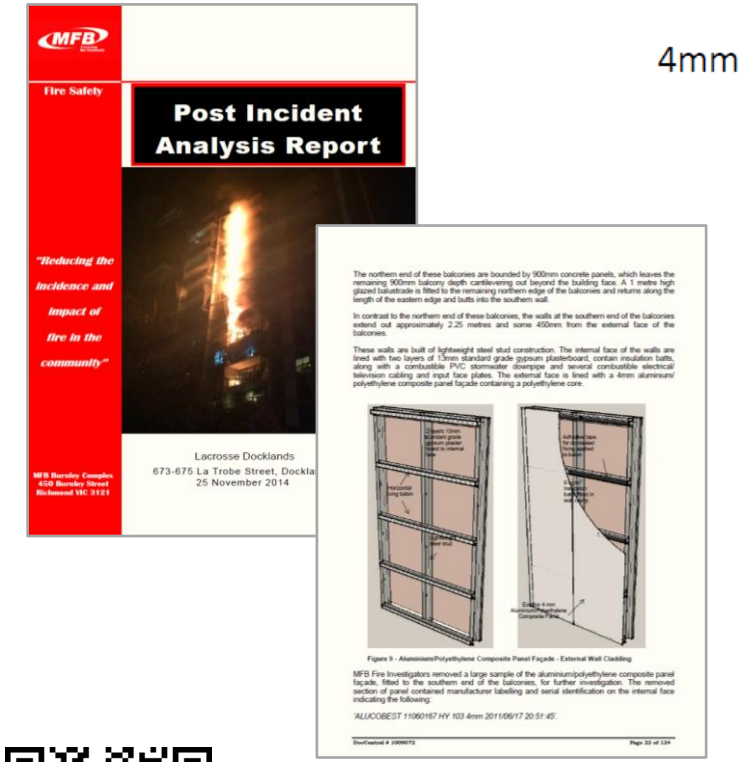
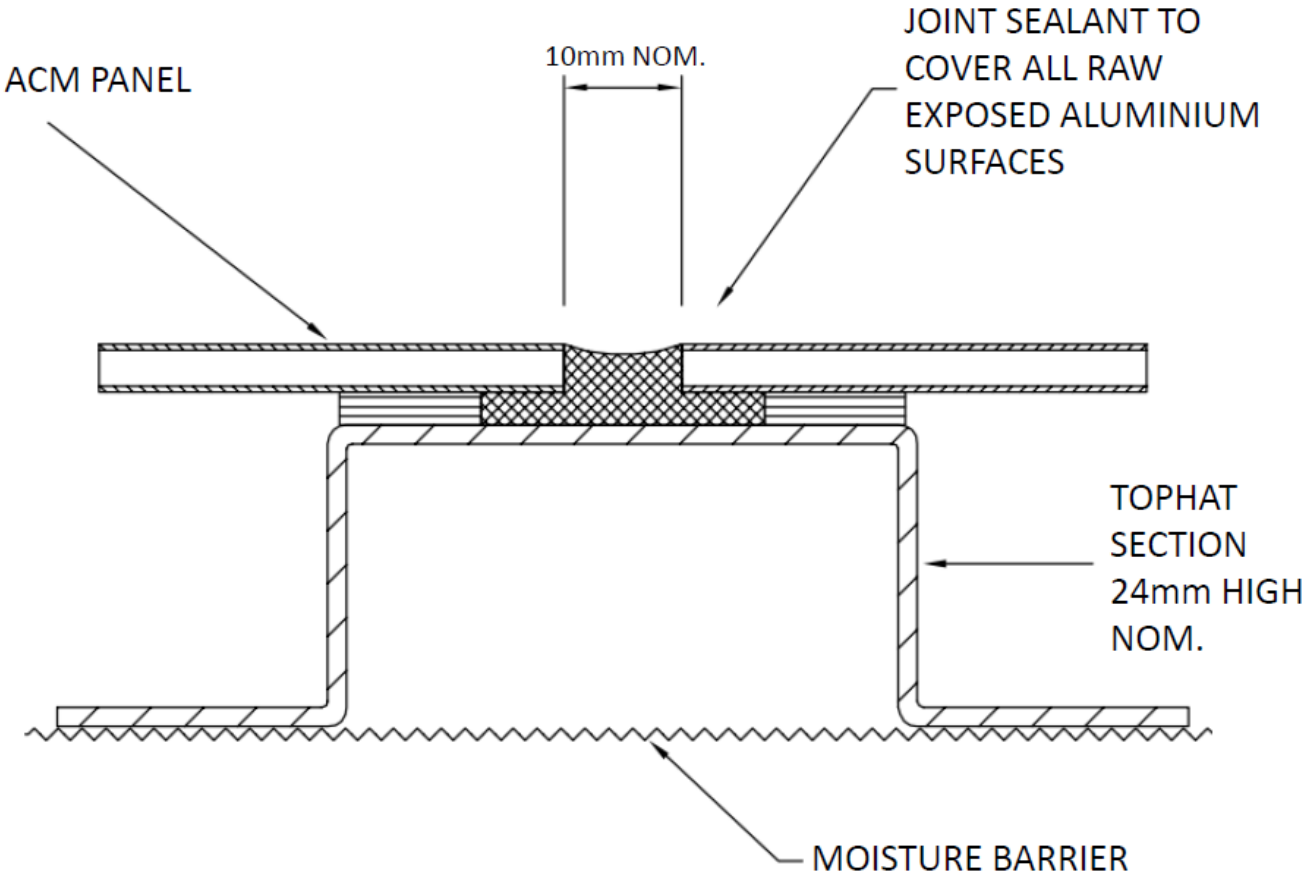
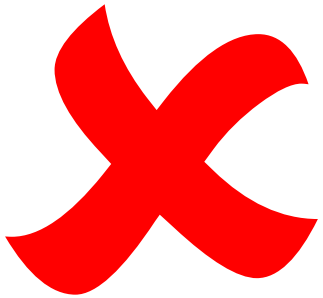
Tape Fixing – Not Compliant or Recommended

Flat Stick or Hybrid Method as per Lacrosse & Neo200







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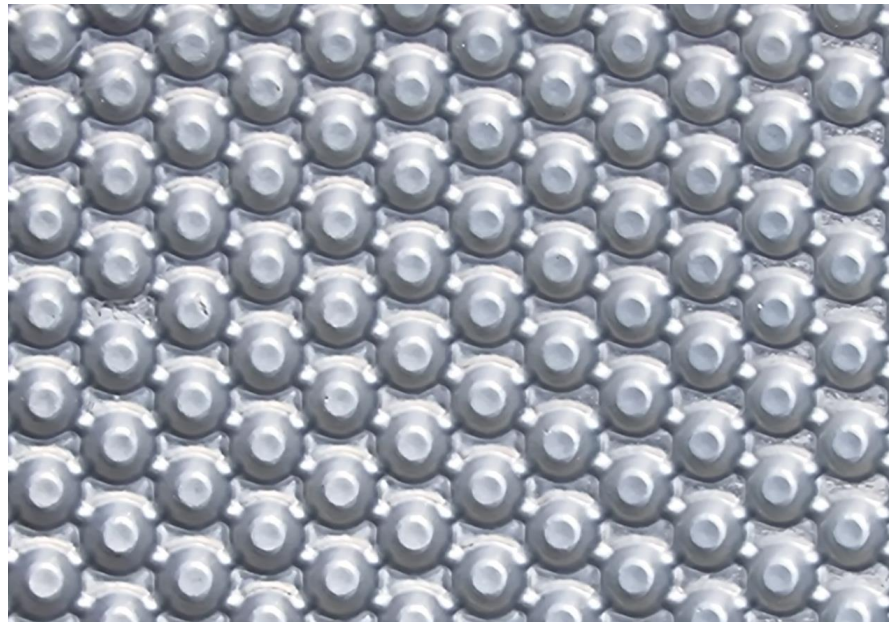
ULTRACORE IQ

Key Benefits of ULTRACORE IQ

- All common aluminium panel benefits including curved panels
- AS 5113 testing to prove superior 'real-world' fire safety and 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**
- *Proven durability in the cassette-fix system**
- *Concealed fixings with seamless corners/parapets**
- *Much greater resistance to oil canning**
- *Much faster to fabricate = $$$ cost savings**
- *50% less weight for structural & labour savings**
- *50% less carbon footprint**

**In comparison to 3mm Solid Aluminium Panels*



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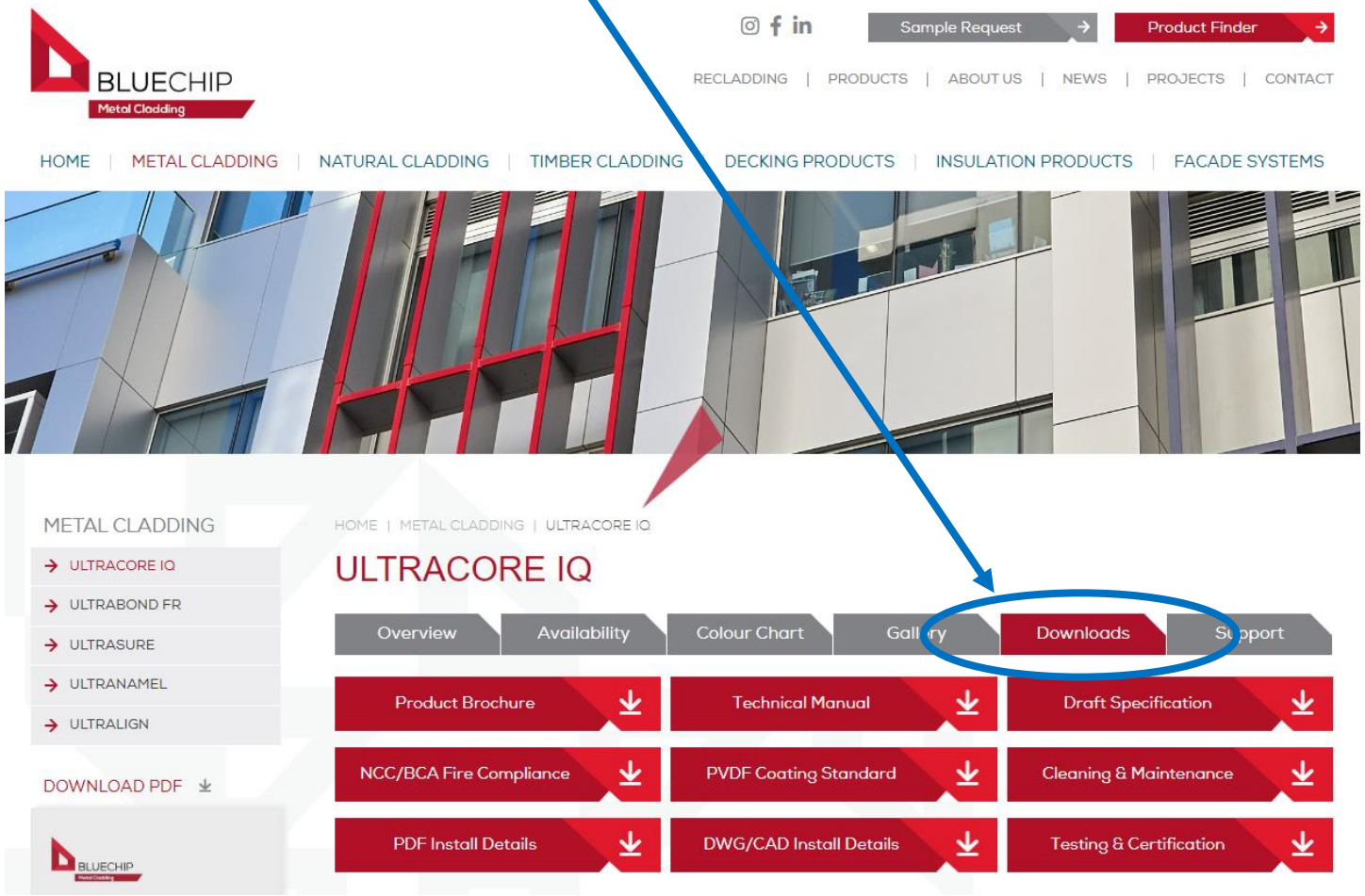

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