

TECHNICAL MANUAL

ULTRABOND FR Fire Resistant Aluminium Composite Panel

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1.1 About This Manual:

This manual has been developed to effectively assist fabricators and contractors to work with ULTRABOND FR. Due to the uncontrollable conditions onsite and different methods of job scope, as well as the variable skills and judgment of installers and the quality of equipment, tools, etc, the suggestions and recommendations contained in this manual are provided without warranty. The information and recommendations herein are believed to be correct at time of publishing.

BLUECHIP reserves the right to revise the contents of this manual without prior notice. Any construction or use of the product must be in accordance with all local zoning and/or building codes and in accordance with the current NCC at the time of use. Except as contained in a written warranty certificate, the supplier does not provide any other warranty, either express or implied, and shall not be liable for any damages, including consequential damages.

1.2 Company Background:

Founded in 2003 by five brothers, BLUECHIP has grown every year since to become one of Australia's leading suppliers of architectural building envelopes. BLUECHIP's product range covers the complete system from the structure out including all types of cladding materials, composite decking, sub-framing, insulation, waterproofing and fixings.

With offices in Sydney, Melbourne and Perth, BLUECHIP has supplied more than 3,000,000m² of materials to Australian projects since 2003. Our commitment to innovation and ongoing investment in R&D ensures BLUECHIP will continue to lead the market with BCA/NCC compliant facade solutions in the years ahead.

For architects and consultants, BLUECHIP's wide range of different materials and 'complete-system' approach enables the creation of inspiring high-performance facades. For builders and contractors, BLUECHIP's large local stock, well established supply chains and genuine appreciation for our clients means you can trust us to deliver as promised every time.

1.3 Company Details:

Company: Blue Chip Group Pty Ltd
ABN: 98 162 282 064
Locations: Sydney | Melbourne | Brisbane | Perth
Phone: 1300 945 123
Email: sales@bluechipgroup.net.au



1.4 Product Description:

ULTRABOND FR is a 4mm thick fire resistant aluminium composite panel comprising of a >70% mineral filled core, sandwiched between two prefinished aluminium or other natural metal cover sheets such as zinc, copper or stainless steel. Utilising the renowned PVDF paint system, ULTRABOND FR has been thoroughly tested in Australia by NATA accredited CSIRO and Exova Warringtonfire and it is manufactured to the highest quality standards. It is BCA/NCC compliant for type C* construction projects and has full-scale fire testing in accordance with AS 5113.

NCC 2022 Compliance*

ULTRABOND FR fire resistant aluminium composite panel is compliant with NCC 2022 for use as external cladding on all type C* construction projects ensuring you are specifying a compliant product tested to Australian standards.

AS 5113 Fire Testing*

Although not required for type C construction, ULTRABOND FR fire resistant aluminium composite panel has been tested to AS 5113 by NATA approved Exova Warringtonfire to prove it does contribute to the spread of fire.

Unlimited Custom Colours

ULTRABOND FR fire resistant aluminium composite panel has unlimited colour options, we are able to match any colour from any other colour range. With small MOQ's and fast lead times you can realise your vision.

Local Stock Available

ULTRABOND FR fire resistant aluminium composite panel is stocked in a range of standard solid colours and metallic colours for fast delivery at all times.

PVDF Paint System

ULTRABOND FR fire resistant aluminium composite panel only uses the highly recognised PVDF Kynar 500 or FEVE paint systems known for their high durability and optimum resistance to weather and industrial pollution.

Low Maintenance

The ULTRABOND FR fire resistant aluminium composite panel finish has undergone 40+ years of exposure testing which continues to confirm the superior properties of fluoropolymer coatings.

Cost Effective

ULTRABOND FR fire resistant aluminium composite panel offers a clean and modern look along with a rapid cost effective installation.

Manufacturer's Warranty

ULTRABOND FR aluminium composite panel has a long track record of consistency, reliability and quality and comes with a 15 year's warranty when installed by a licensed installer.

*ULTRABOND FR is NOT deemed-to-satisfy non-combustible so is only compliant for type C buildings. For non-combustible aluminium cladding panels use ULTRACORE IQ which is DTS non-combustible in accordance with NCC 2022 and compliant for use on all buildings;
<https://www.bluechipgroup.net.au/facade-cladding-perth/non-combustible-cladding-perth.html>

1.5 More Information on ULTRABOND FR:

<https://www.bluechipgroup.net.au/facade-cladding-perth/aluminium-composite-panel-perth.html>

2.1 Manufacturing Quality:

A dedication to the total fulfillment of our client's expectations is reflected by a complete quality control system, beginning at the point of specification and continuing through to delivery of the guaranteed products. All activities are carried out in a manner which:

- Uses the framework of ISO9000 Quality Standards to verify the quality of our systems
- Ensures that our products and services are of the highest standards
- Creates continuous improvements to our product and processes through the application of the best quality practices.

2.2 Acceptable Tolerances:

Panel Width:	+/- 3.0mm
Panel Length:	+/- 5.0mm
Thickness:	+/- 2.0%
Bow Allowed:	<0.5%
Squareness:	<5.0mm
Surface Defects:	In accordance with AAMA 2605-05

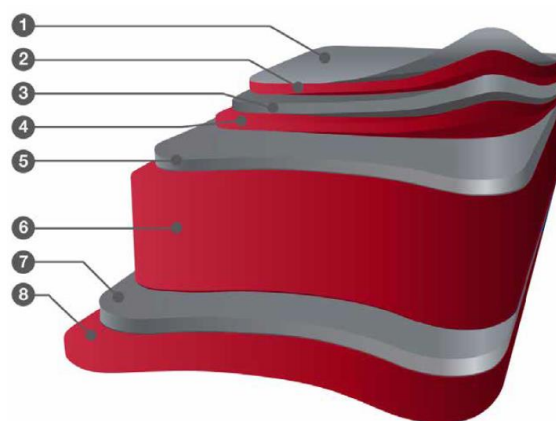
2.3 Product Warranty:

The standard product warranty is 10 years, with longer warranties available on a project specific basis. The supplier excludes all warranties in relation to the goods except for those provided in a Warranty Certificate provided to the Customer by the supplier in relation to the Goods.

A project specific full-system warranty may be available if the product is supplied with all recommended system components and fabricated and installed by a licensed installer accredited and approved by BLUECHIP in writing.

3.1 Panel Composition:

1. Peel-off Protective Film
2. Clear Coating
3. PVDF Coloured Coating
4. Primer Coating
5. 0.5mm Aluminium Face Skin
6. 3.0mm >70% Mineral Core
7. 0.5mm Aluminium Rear Skin
8. Polyester Anti-corrosion Coating



3.2 Core Composition:

The fire resistant (FR) core is >70% mineral filled, the key component being the compound Aluminium Hydroxide. ULTRABOND FR core material is tested and independently certified to Australian standards.



3.3 Technical Data – Physical Properties:

ITEM	TEST STANDARD	UNIT	RESULT
Thickness	Actual	mm	4.0
Panel Weight	Actual	Kg/m ²	7.6
Tensile Strength	ASTM E8	Kg/m ²	5.15
Yield Strength	ASTM E8	Kg/m ²	12.7
Flexural Stiffness (250mm Span)	ASTM C393	Kg/m ²	6.7x10 ⁸
Flexural Elasticity	ASTM C393	Kg/m ²	3666
Elongation	ASTM E8	%	7.1
Deflection Temperature at 66 PSI	ASTM D648	°C	116
Thermal Conductivity	ASTM C-518	W/mK	0.39
Thermal Expansion	Actual	mm/m/°C	0.025
Alloy Grade / Temper	Actual	-	3003 H24
Vertical Pull	ASTM C297	N/mm ²	5.9
Drum Peel	ASTM D1781	N/mm ²	368
Flat Shear	ASTM D1002	N/mm ²	6.84
Sound Isolation Rate – 500Hz	ISO 140/3	RW	26
Sound Isolation Rate – 1000Hz	ISO 140/3	RW	29
Standard Sheet Sizes (600m ² MOQ)			
▪ 2500 x 1250mm	Actual	m ²	3.125
▪ 3200 x 1250mm	Actual	m ²	4.00
▪ 4000 x 1250mm	Actual	m ²	5.00
▪ 2500 x 1570mm	Actual	m ²	3.925
▪ 3200 x 1570mm	Actual	m ²	5.024
▪ 4000 x 1570mm	Actual	m ²	6.28

4.1 Technical Data – Fire Performance:

ITEM	TEST STANDARD	UNIT	RESULT
Full Panel Fire Testing*			
▪ Ignitability*	AS 1530.3	-	0
▪ Spread of Flame*	AS 1530.3	-	0
▪ Heat Evolved*	AS 1530.3	-	0
▪ Smoke Developed*	AS 1530.3	-	1
FR Core Only Fire Testing*			
▪ Ignitability*	AS 1530.3	-	11
▪ Spread of Flame*	AS 1530.3	-	0
▪ Heat Evolved*	AS 1530.3	-	2
▪ Smoke Developed*	AS 1530.3	-	1
Group Number*	ISO 9705	-	2
Full-scale Temperature Criteria*	AS 5113	°C	Pass
Full-scale Flaming Criteria*	AS 5113	No Flaming	Pass
Full-scale Openings Criteria*	AS 5113	No Openings	Pass
Full-scale Spread-of-Flame*	AS 5113	No Spread	Pass

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<https://www.bluechipgroup.net.au/facade-cladding-perth/non-combustible-cladding-perth.html>



5.1 Paint Systems:

ULTRABOND FR panels use only PVDF Kynar 500 or FEVE fluoropolymer-based paint systems applied using continuous coil coating. These paint systems are known for their high durability and optimum resistance to weather and industrial pollution. More than 40 years of use globally confirms the superior chemical and physical properties of fluoropolymer coatings.

ULTRABOND FR coatings are applied in accordance with AAMA 2605-05, the internationally recognised paint standard for architecturally finished aluminium.

5.2 Technical Data – PVDF Kynar 500 Coating Properties:

ITEM	TEST STANDARD	UNIT	RESULT
Aluminium Substrate	ASTM D1005	-	Pass
Coating Flexibility	ASTM D4145	2T	Pass
Dry Film Thickness <ul style="list-style-type: none"> ▪ Primer Coating ▪ Coloured Coating ▪ Clear Coating (If applicable) 	ASTM D1400 ASTM D1400 ASTM D1400	Mil Mil Mil	0.2-0.3 0.7-0.8 0.3-0.4
Colour Difference	ASTM 2244	4000hrs	DE<5
Gloss Retention	ASTM 2244	4000hrs	85%
Chalking Resistance	ASTM 2244	4000hrs	<8
Pencil Hardness	ASTM D3363	-	HB
Dry Film Adhesion	Actual	38°C, 24hrs	Pass
Wet Film Adhesion	Actual	100°C, 24hrs	Pass
Reverse Impact Adhesion	ASTM D3359	1/16	Pass
Bending / Gardener Impact	ASTM D3281	-	Pass
Salt Resistance <ul style="list-style-type: none"> ▪ 5% Salt Spray @ 95°F ▪ Gloss Reduction ▪ Colour Change ▪ Chalk Resistance 	ASTM B117 ASTM D523 ASTM 2244 ASTM 4214	4000hrs 5000hrs 5000hrs 5000hrs	Pass 0.8% DE=0.68 Pass
Humidity Resistance <ul style="list-style-type: none"> ▪ 100% RH @ 95°F ▪ Gloss Reduction ▪ Colour Change ▪ Chalk Resistance 	ASTM B117 ASTM D523 ASTM 2244 ASTM 4214	4000hrs 5000hrs 5000hrs 5000hrs	Pass 0% DE=0.52 Pass
Weather Resistance <ul style="list-style-type: none"> ▪ Exterior Exposure @ 45° ▪ Gloss Reduction ▪ Colour Change ▪ Chalk Resistance 	South Florida ASTM D523 ASTM 2244 ASTM 4214	10 years 5000hrs 5000hrs 5000hrs	Pass 6.2% DE=0.27 Pass
Chemical Resistance <ul style="list-style-type: none"> ▪ Mortar Test ▪ Gloss Reduction ▪ Colour Change 	ASTM C207 ASTM D523 ASTM 2244	24hrs 16hrs 16hrs	Pass 6.2% DE=0
Solvent Resistance - MEK	ASTM 2794	Double Rub	Pass
Acid Resistance – 10% H2SO4	ASTM 1308	7 days	Pass
Alkali Resistance – 10% NaOH	ASTM 1308	7 days	Pass
Detergent Resistance – 3%	ASTM D2248	72hrs	Pass



6.1 V-grooving:

V-grooving ULTRABOND FR to fabricate cassette panels is a simple and easy process, very similar to v-grooving other common ACP materials. Traditionally ACP with a solid core and 0.5mm face skin is grooved to leave approximately 0.3mm of core material remaining with total material remaining of 0.8mm (0.5mm face skin + 0.3mm of core).

The recommended overall depth for v-grooving ULTRABOND FR is the same as other common ACP materials to leave between 0.7-0.8mm of total material remaining including the 0.5mm face skin and 0.2-0.3mm of the fire-resistant core.

It is important to leave a minimum of 0.2mm core material at the base of the groove (0.7mm total material) so that the 0.5mm face skin is not touched by the router bit to ensure its inherent mechanical strength and structural integrity is retained.

Like any other standard ACP, a 90-degree v-groove router bit should be used with a minimum 3.0mm flat at the base of the v-groove.

MACHINE	TOOLING	DEPTH	M/Min
CNC Router (Recommended)	90° with flat 3.0mm wide base	Min 0.8mm of material remaining	10-15
Wall Saw or Portable Saw	Same as above	Same as above	10-15

6.2 Cutting:

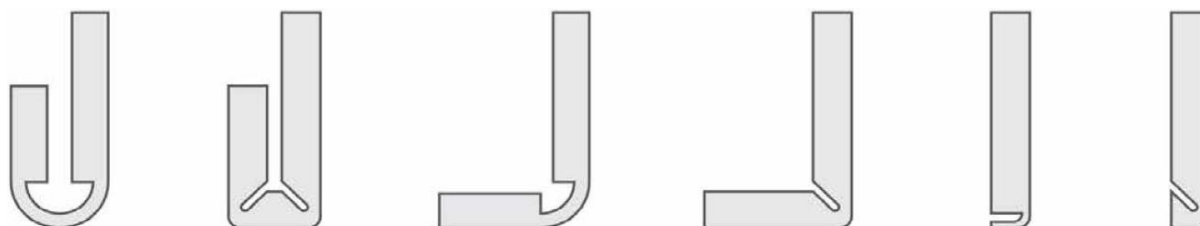
ULTRABOND FR can be cut with identical tooling to that used for similar ACP's. For CNC router machines, an up-spiral cutter is recommended to assist with swarf removal. There is no coolant required on the cutter or v-groove tooling when fabricating ULTRABOND FR panels.

6.3 Rolling:

ULTRABOND FR can be rolled to form a curved panel. Rolling machines with 2 sets of rollers are recommended for best results and rollers should be perfectly clean and free from swarf which may damage the panels. It is recommended to conduct testing to ensure satisfaction with the results before commencing production.

6.3 Edge Close-out Methods:

Acceptable edge close-out methods are as below;

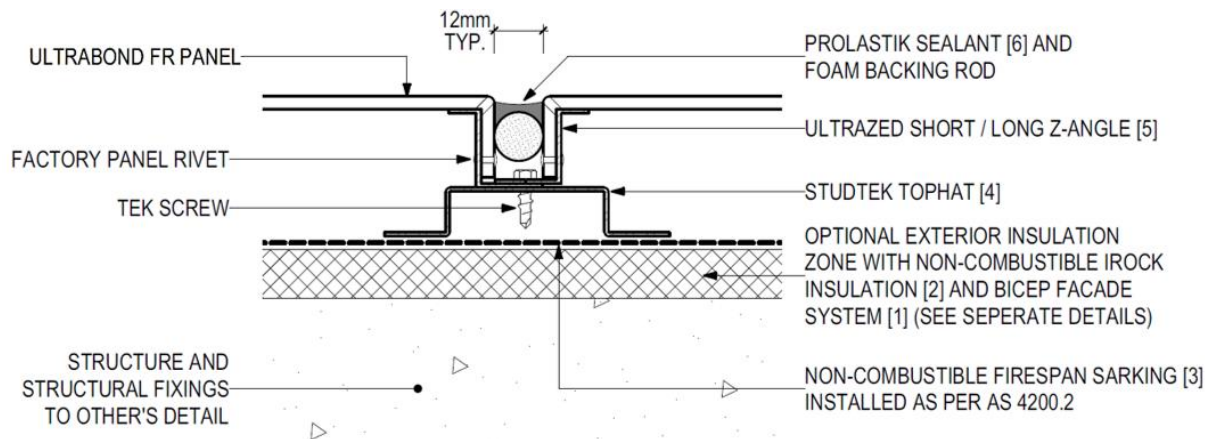


7.1 Installation:

Mechanical cassette-fix installation is the recommended installation system for ULTRABOND FR cladding using the well-proven v-groove 'route & return' fabrication method with offset aluminium z-angles as per the below detail. It is also acceptable to install ULTRABOND FR in a glazing suite for curtain wall application. Tape-fix installation is not recommended.

Installation Details:

The panels shall be fabricated and installed in accordance with the most recent version of the ULTRABOND FR Installation Details which are available online at www.bluechipgroup.net.au or by emailing sales@bluechipgroup.net.au or by calling **1300 945 123**. (Only PDF installation details are available online. For CAD/DWG installation details email or call as above).



7.2 Acceptable System Components:

Insulated Façade System - OPTIONAL:

For an optional insulated façade system use BICEP façade brackets and support profiles with IROCK non-combustible insulation to achieve an engineered acoustic and thermal barrier.



Sarking:

The sarking shall be ULTRAPERM vapour permeable membrane which is; deemed-to-satisfy 'non-combustible' as per NCC 2022 Clause C2D10(6)(f), is AS 4200.1 compliant and classified as a 'water barrier' as per NCC 2022 Clauses F3D3 and F8D3(1), is classified as 'class 4 vapour permeable' for compliant use in all climate zones 1-8 as per NCC 2022 Clauses F8P1 and F8D3(2), and is installed in accordance with AS 4200.2 for deemed-to-satisfy weatherproofing.



Sub-framing System:

The sub-framing system shall be STUDTEK steel top-hats attached to the main structure (or BICEP Façade System) in a manner to ensure all applied loadings to the cladding is transferred back to the main structure. Size and spacing of top hat members shall be determined according to applied loads and deflection limitations for any given project. Top-hat centres shall be maximum 600mm or installed in a matrix layout to provide full perimeter support to each panel as required to adequately support the cladding system.



Aluminium Z-angle Profiles:

Shall be CLADTRIM extruded aluminium alloy AA 6063-T5 supplied by Blue Chip Group Pty Ltd. The long z-angle shall be powder-coated to avoid bimetallic corrosion with the top-hats.



Panel Joint Sealant:

Panel joints are to be sealed with PROLASTIK NC silicone sealant supplied by Blue Chip Group Pty Ltd and installed over closed cell foam backing rod to manufacturer's specifications.



Stiffeners & Tape:

As a minimum, the stiffeners shall be CLADTRIM 38 x 19 x 3mm RHS (rectangle hollow section) extruded aluminium alloy AA 6063-T5 supplied by Blue Chip Group Pty Ltd. The stiffeners are to be fixed to the back of the ULTRACORE IQ panel using two continuous strips of 12mm wide TESA 7044 ACXplus double-sided tape and a suitable structural adhesive. All stiffeners shall be mechanically fixed to the cassette-fix panel returns at each end in accordance with the manufacturer's install details. Tapes should be applied in accordance with all tape manufacturer's guidelines for preparation and application.





7.3 General Installation Guidelines:

- All sheets should be installed in the same direction as marked on the protective film to prevent possible finish variation.
- As minor colour variation can occur between production lots, it is recommended to place total requirements for a project in one order to ensure colour consistency.
- Where aluminium materials come into contact with dissimilar metals, a proper insulator, protective coating or caulking tape should be applied to insulate between dissimilar materials in order to avoid bimetallic corrosion and/or electrolytic action.
- The cassette fixed panel joints should not be caulked before the protective film is removed.
- The panel should be mechanically supported around penetrations and the face side should be sealed with a suitable sealant as required for weatherproofing.

7.4 Recommended Panel Sizes:

Panel sizes should be limited as required for any given application, considering the minimum & maximum temperatures the panel will be exposed to, the colour of the panel and the façade orientation to ensure the panels thermal movement will not exceed the systems capabilities and to ensure ongoing durability and waterproofing.

Special consideration should be given to the following;

- Overall panel sizes to ensure thermal movement will not exceed joint sealant capabilities
- Distance to joints either side of corner and parapet panels to avoid stress on the corner

8.1 Protective Film:

- Make sure no damage will occur to the panel prior to the removal of the protective film.
- Remove the protective film within 45 days of installation to avoid glue residue on panel surface due to weathering.
- Do not apply PVC tapes, polyurethane sealant or silicone sealant onto ULTRABOND FR protective film. The plasticiser contained in these materials can penetrate the protective film and cause a gloss change in the coating.
- Do not apply spray paint or permanent marker to the film as the colour may penetrate the film and affect the surface coating of the panel.

8.2 Storage & Handling:

- Considerable care should be taken in the handling of ULTRABOND FR as the panels are sensitive to impact particularly from small hard objects such as stones which can dent the aluminium cover sheet
- A minimum of two people should be used when moving and stacking large sheets to avoid surface damage. Sliding panels should be avoided unless they are back-to-back.
- Pallets of ULTRABOND FR should be stored horizontally in a cool and dry area where temperature is stable with adequate support to prevent sagging.
- Stacked pallets should be identically sized and not more than three (3) pallets high.

8.3 Cleaning & Maintenance:

- The cladding shall be cleaned and maintained in accordance with AAMA 609 & 610-09 as required to avoid any accumulation of surface contaminants and to maintain the desired performance and appearance.