



# TECHNICAL INFORMATION

DEEMED NON-COMBUSTIBLE COMPOSITE PANEL / MANUFACTURED BY FAIRVIEW



ROYAL RANDWICK RACECOURSE, RANDWICK NSW

## ABOUT THIS MANUAL

This manual has been developed to effectively assist fabricators and contractors to work with Fairview's deemed non-combustible composite panel; Vitracore G2.

Due to the uncontrollable conditions and methods of job scope, as well as the variable skills and judgment of users/installers and the quality of equipment, tools, etc., the suggestions and recommendations contained in this manual are provided without warranty.

The information and recommendations contained herein are believed to be correct at time of publishing 01/03/2018.

Fairview reserves the right to revise the contents of this manual.



**vitracore G2®**

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## ABOUT VITRACORE G2

Manufactured by Fairview; Vitracore Generation 2 (G2) is deemed non-combustible when tested to AS1530.1 and compliant with Clause C1.9(e)(vi) (formerly C1.12f)) as per the requirements as set out by the BCA. Vitracore G2 has also been fullscale tested to the requirements of AS5113 and BS8414. See the Fire Resistance section (page 11) for more information on this.

Visually, Vitracore G2 is the same as traditional composite panel; but what makes it different is the technology of the core, which is constructed from a 100% aluminium structure rather than combustible material.

It is the same to fabricate and install as traditional ACP, and utilises the PPG coating system; thus is available in the same extensive colour range as Vitrabond.

The technology of the core also allows continual production; providing an exceptionally consistent and cost effective product. This high performance panel is ideal for all façade and soffit applications; providing the decisive solution to high demands and requirements.

The benefits of Vitracore G2 include its high mechanical properties and simple fabrication. The outstanding surface flatness of Vitracore is enhanced with a high quality PVDF coating system, which provides optimum resistance to weather and industrial pollutants in an unlimited range of colours, or a selection of natural finishes.

Vitracore G2 can be easily and accurately installed by a pre-made cassette system, requires minimal maintenance and comes with a 15 year warranty.

## KEY FEATURES



### DEEMED NON-COMBUSTIBLE

Vitracore G2 is one of few aluminium composite panels (ACPs) globally that is deemed non-combustible under the Building Code of Australia (BCA) when tested to AS1530.1 & AS1530.3 and compliant with clause C1.9e Part(vi).



### PAINT SYSTEM

Vitracore G2 only uses the highly recognised PVDF KYNAR 500 or FEVE paints known for their high durability, providing the optimum resistance to weather and industrial automation.



### CODEMARK

Vitracore G2 is ABCB CodeMark certified to comply with the building code of Australia ensuring that you are specifying a quality assured product.



### WEATHERPROOFED

Vitracore G2 is weatherproofed to BCA clause FP1.4.



### COST EFFECTIVE

By using Vitracore G2 which is deemed non-combustible you can eliminate any secondary non-combustible layer required to meet the building code and save around \$50-100/m<sup>2</sup>.



### CONCEALED FIX SYSTEM

Vitracore G2 is the same to fabricate and install as traditional ACP by CNC routing panels into the concealed fix z-angle cassette system.



### INFRASTRUCTURE

Being deemed non-combustible and offering simple and lightweight fabrication makes Vitracore G2 a suitable product for large infrastructure projects.



### WARRANTY

Vitracore G2 has up to 15 year's warranty when installed by a licensed installer.



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## QUALITY

### MANUFACTURING QUALITY

A dedication to the total fulfillment of our client's and customer'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:

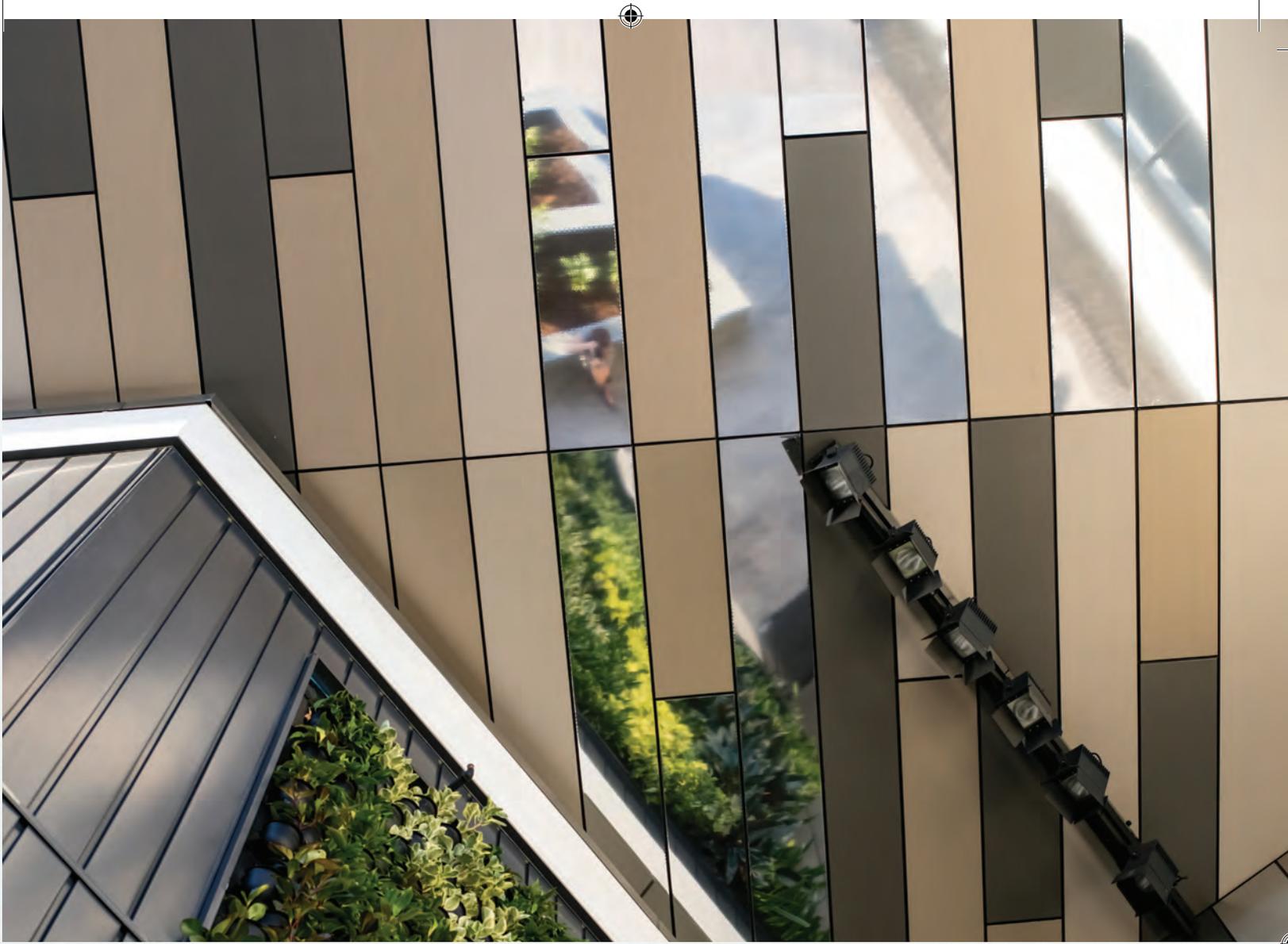
- Uses the framework of ISO9000 and ISO10005 Quality Standards to verify the quality of our systems
- Ensures that our products and services are of the highest standards
- Creates continuous improvements to our product through the application of the best quality practices.

### ACCEPTABLE VARIATION

WIDTH	± 2.0mm
LENGTH	± 4.0mm
THICKNESS	± 2%
BOW	Maximum 0.5% of the length an/or width
SQUARENESS	Maximum 5.0mm
SURFACE DEFECTS	The surface shall not have any irregularities such as dents, scratches and other imperfections in accordance with our quality assurance.

### WARRANTY

A warranty of up to 15 years is offered, when installed by a licensed installer.



COLLEGE JUNCTION QSCAN, CLAYFIELD QLD





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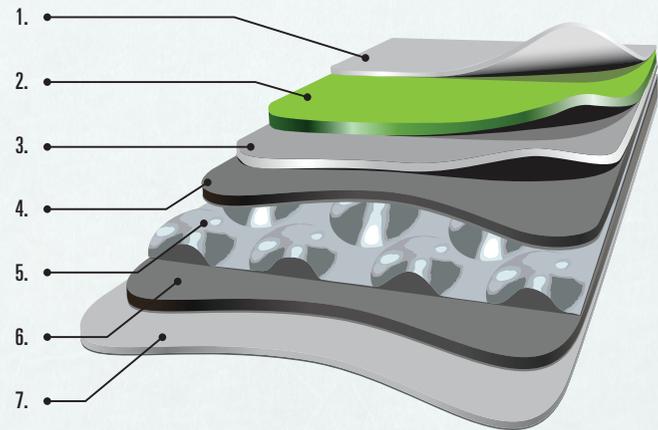
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## MATERIAL PROPERTIES

### TYPICAL COMPOSITION

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1. Peel-off Protective Film
2. PVDF Coloured Coating
3. Primer Coating
4. 0.7mm Aluminium Skin
5. 3mm Profiled Aluminium Core
6. 0.5mm Aluminium Skin
7. Polyester Anti-corrosion Coating



### ALUMINIUM SKINS

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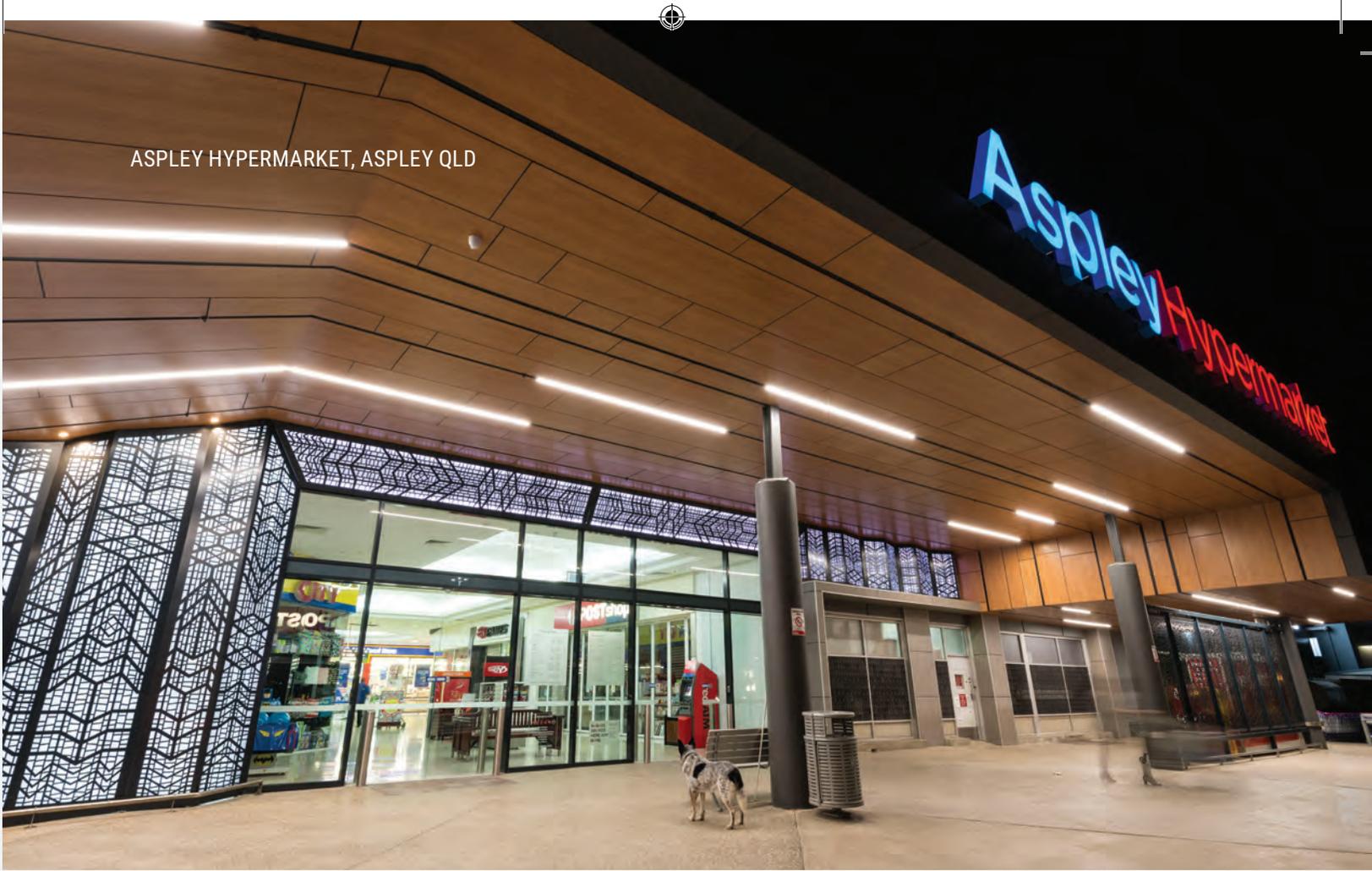
Surface material both sides: 0.5mm Aluminium sheets of a minimum 3000 series grade.

### CORE MATERIAL

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The core is a profiled aluminium core, expanded to 2.8mm.

ASPLEY HYPERMARKET, ASPLEY QLD





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## DIMENSIONS

WIDTH	LENGTH	THICKNESS
1250	2500	4mm
	3200	
	4000	
1500	2500	
	3200	
	4000	
CUSTOM SIZES ARE AVAILABLE, <b>PLEASE SPEAK TO THE FAIRVIEW TEAM</b>		

## WEIGHT

THICKNESS	WEIGHT (KG/M <sup>2</sup> )
4mm	4.6

## TECHNICAL DATA

CLASSIFICATION	TEST STANDARD	UNIT	RESULT
TEMPERATURE LIMIT		°C	-50 ± 80
CORE SHEAR PROPERTIES	ASTM C393/393-11	MPa	Core shear ultimate strength: 0.91 Facing Stress: 130.7
TENSILE PROPERTIES OF FACING ALUMINIUM PANEL	ASTM E8/E8M15a	MPa	Tensile Strength: 172.9 MPa Elongation: 8.4%
TENSILE STRENGTH	ASTM C297/C297M15	MPa	0.81
FACING PEEL TORQUE	ASTM D1781-98 (2012)	mm N/mm <sup>2</sup>	270
THERMAL RESISTANCE		m <sup>2</sup> K/W	0.005
ACOUSTIC RESISTANCE	ISO 717-1	dB	Rw (C; Ctr) = 22 (-1; -2)

## FINISHES

### STOVE LACQUERING

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Vitracore G2 only uses the highly recognised PVDF KYNAR 500, FEVE or VITREFLON V700 paints known for their excellent durability. These premium paints provide an optimum resistance to weather and industrial pollution. More than 50 years of South Florida Exposure Testing is continuing to confirm the superior chemical and physical properties of fluoropolymer coatings.

Vitracore G2 has unlimited colour options, we are able to match any colour, from any other colour range. For a full list of standard Vitracore G2 colours, refer to the latest Vitracore G2 Colour Chart.

### ANODISING

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Vitracore G2 panels come in a range of Anodised finishes, offering both standard and customised colours and textures.

### NATURAL FINISHES

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Fairview offers the following natural finished panels:

- Vitracore/ZN - Natural zinc composite panel
- Natural Aluminium Vitracore - uncoloured aluminium finishes including brushed and mirror.

### OTHER COATING FINISHES

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The Vitrabond range also offers the following finishes:

- REPEL - a self-cleaning surface coating
- ANTI-BACTERIAL Coating - to meet food handling and storage requirements
- VITRA ART - for personalised design and imagery

For an ultra-durable vitreous enamel coated panel, please refer to 'Vitranamel', another Fairview product.

# TECHNICAL DATA OF KYNAR 500 PVDF COATING

CLASSIFICATION	TEST STANDARD	RESULT	REMARKS
Substrate	ASTM D1005	Pass	Aluminium
Flexibility	ASTM D4145 ECCA T7 NCCA 11-19	Pass	1~2T - No Cracking
DFT	ASTM D1400 ASTM D1005 NCCA 11-13, 14, 15	Pass	
Colour Difference	ASTM 2244	$\Delta E < 5$	4000hrs
Gloss Meter	ASTM D523	Pass	
Gloss Retention	ASTM 2244	85%	4000hrs
Chalking Resistance	ASTM 2244	<8 units	4000hrs
Pencil Hardness	ASTM D3363		
Dry Film Adhesion Wet Adhesion Hot Adhesion		Pass Pass Pass	38°C, 24hrs 100°C, 24hrs
Reverse Impact Resistance	ASTM D2794	No Cracking	12.7mm x 0.5kg x 500mm
Bending/Gardner Impact	ASTM D3281	Pass	Normal
Solvent Resistance	ASTM 2794	Pass	MEK double rubs
Acid Resistance	ASTM 1308	Pass	7 days soaking in 10% H2SO4
Alkali Resistance	ASTM 1308	Pass	7 days soaking in 10% NaOH
Detergent Resistance	ASTM D2248	Pass	72 hrs soaking in 3% detergent
<b>SALT RESISTANCE</b>	ASTM B117	Includes the following:	
Gloss Retention	ASTM D523	0.8% change	5000hrs
Colour Retention	ASTM 2244	$\Delta E < 0.68$	5000hrs
Chalk Resistance	ASTM 4214	Rating: 10	Top rating - no chalk (5000hrs)
<b>HUMIDITY RESISTANCE</b>	ASTM D714	PASS	2000hrs
	ASTM B117	Includes the following:	
Gloss Retention	ASTM D523	No visible change	5000hrs
Colour Retention	ASTM 2244	$\Delta E < 0.52$	5000hrs
Chalk Resistance	ASTM 4214	Rating: 10	Top rating - no chalk (5000hrs)
<b>WEATHERING RESISTANCE</b>	ASTM G53	Includes the following:	
Gloss Retention	ASTM D523	6.2% Change	5000hrs
Colour Retention	ASTM 2244	$\Delta E < 0.27$	5000hrs
Chalk Resistance	ASTM 4214	Rating: 10	Top rating - no chalk (5000hrs)
<b>CHEMICAL RESISTANCE</b>	ASTM C207	Pass	Mortar, 24hrs
	ASTM D1308	Pass	10% Hcl, 15 min
		Pass	70% HN03 Vapours, 30 min
	Includes the following:		
Gloss Retention	ASTM D523	6.2% Change	16hrs
Colour Retention	ASTM 2244	No Change	16hrs
Chalk Resistance	ASTM 4214	Rating: 10	Top rating - no chalk (5000hrs)





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## FIRE RESISTANCE

In today's architecture, it is the technical details, as well as the appearance that count; such as sustainability, thermal insulation, and fire protection. The specification and use of non-combustible façade panels has now become an industry norm amongst architects and industry professionals.

Vitracore G2 was the first ACP panel to be awarded the status 'deemed non-combustible' under the Building Code of Australia (BCA) including Clause C1.9e Part(vi) and is fully tested to AS1530.1 and AS1530.3. Vitracore G2 is the proven choice for use where non-combustible cladding must be specified such as hospitals, schools and high-rise buildings.

Here are the test results of Vitracore G2.

VITRACORE G2			
TEST STANDARD	RESULT		
AS1530.1	DEEMED NON-COMBUSTIBLE		
AS1530.3	PASS	Ignitability Index	0
	PASS	Heat Evolved	0
	PASS	Spread of Flame	0
	PASS	Smoke Developed	1

## AVERAGE EXPANSION

The expansion and contraction of Vitracore G2 is controlled by the aluminium cover sheets.

MATERIAL	EXPANSION COEFFICIENT (X10 <sup>-6</sup> /°C)	ELONGATION PER 1000MM T=50°C
Vitracore G2	23.8	1.2
Aluminium	23.8	1.2
Zinc	26.7	1.3
Steel	12.2	0.6
Concrete	12	0.6



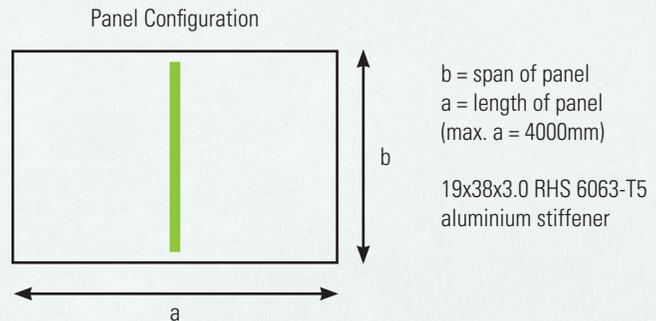
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## WINDLOADING

Span and fixing table (with stiffener) when installed as per the Vitrabond Cassette Fix Installation manual.

- Where ultimate strength is satisfied, stiffeners can be added to improve serviceability.
- Panels can be engineered beyond the given ultimate strengths if required.
- Refer to the complete Vitracore G2 Spanning and Windloading document for design and construction notes.



PANEL SPAN			LIMITING WIND PRESSURE (KPA)					MAXIMUM SPACING OF 5MMØ RIVETS ALONG FOLDED EDGE PERIMETER OF PANEL (MM)
PANEL WIDTH B (MM)	PANEL LENGTH A (MM)	RATIO A/B	CORRECTION FACTORS		ULTIMATE STRENGTH		SERVICEABILITY	
			KS	KD	POSITIVE WIND PRESSURE	NEGATIVE WIND PRESSURE	ANY DIRECTION WIND PRESSURE	
400	400	1.0	0.377	0.281	9.000	-9.000	± 7.768	300
	600	1.5	0.628	0.566	9.000	-9.000	± 3.851	300
	800	2.0	0.786	0.740	9.000	-9.000	± 2.946	300
	1000	2.5	0.881	0.841	9.000	-8.528	± 2.590	300
	1200	3.0	0.942	0.911	9.000	-7.979	± 2.393	300
600	600	1.0	0.377	0.281	9.000	-8.873	± 2.302	300
	900	1.5	0.628	0.566	6.485	-5.321	± 1.141	300
	1200	2.0	0.786	0.740	5.177	-4.248	± 0.873	300
	1500	2.5	0.881	0.841	4.619	-3.790	± 0.767	300
	1800	3.0	0.942	0.911	4.322	-3.546	± 0.709	300
900	900	1.0	0.377	0.281	4.806	-3.944	± 0.682	300
	1350	1.5	0.628	0.566	2.882	-2.365	± 0.338	300
	1800	2.0	0.786	0.740	2.301	-1.888	± 0.259	300
	2250	2.5	0.881	0.841	2.053	-1.685	± 0.227	300
	2700	3.0	0.942	0.911	1.921	-1.576	± 0.210	300
1200	1200	1.0	0.377	0.281	2.703	-2.218	± 0.288	300
	1800	1.5	0.628	0.566	1.621	-1.330	± 0.143	300
	2400	2.0	0.786	0.740	1.294	-1.062	± 0.109	300
	3000	2.5	0.881	0.841	1.155	-0.948	± 0.096	300
	3600	3.0	0.942	0.911	1.080	-0.887	± 0.089	300
1500	1500	1.0	0.377	0.281	1.730	-1.420	± 0.147	300
	2250	1.5	0.628	0.566	1.038	-0.851	± 0.073	300
	3000	2.0	0.786	0.740	0.828	-0.680	± 0.056	300
	3750	2.5	0.881	0.841	0.739	0.606	± 0.049	300
	4000	2.7	0.904	0.866	0.721	-0.591	± 0.048	300

Stiffeners to be fixed to the back of the Vitracore G2 panel using two continuous strips of 12mm wide 3M VHB tape 4941F. The stiffener shall be the length of the span (b) of the Vitracore G2 panel.

## INSTALLATION COMPONENTS

All standard components are available from Fairview in the Vitrafix installation accessories range for simple order and supply.

COMPONENTS	VITRAFIX CODE
Sika Hyflex 305-AP	WSS305
Aluminium Z-Angles	AZ4025 (high) AZ2310 (low)
Steel Tophats	T1550/15 (15mm) T2050/24 (24mm) T2050/35 (35mm)
Aluminium Stiffener	ASR2819
Aluminium Angle	AAL3203
Screws	SHQ208

THIELE STREET APARTMENTS, DONCASTER VIC



MORLING COLLEGE, MAQUARIE PARK NSW



## FABRICATION METHODS



### ROLL BENDING

Vitracore G2 panel can be bent with a roll-bending machine. Use polished rollers free of imperfections only. Minimum radius of 2000mm.

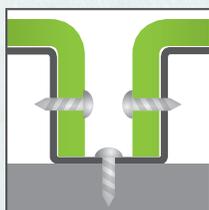


### CUTTING

Vitracore G2 can be cut with identical tooling to that used for Vitrabond and similar ACP's. For the CNC an upspiral cutter is recommended to assist with swarf removal. There is no coolant required on the cutter or groover.

Specific details below:

	TOOLING	FEEDS/SPEEDS	COMMENTS
CNC ROUTER	6.35mm Upspiral cutter. 1 or 2 flute.	RPM: 18000 Speed: 6-10m/min	Clean panel edges if not all swarf is removed
FESTOOL	Use Festool special saw blade for aluminium.	10-15m/min	Orientate panel so blade is cutting into the face to prevent burring



### SCREWING

Vitracore G2 can be screwed with conventional stainless steel or galvanised screws for metal. For outdoor use allow for thermal expansion.



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## RIVETING

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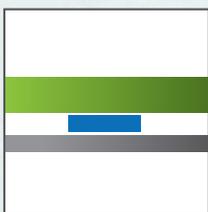
Riveting is possible with the usual equipment and solid rivets or blind rivets. For outdoor use allow for thermal expansion.



## DRILLING

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Vitracore AHP panel can be drilled with centre point twist drills normally used for aluminium or machines common for metals. Drill material: High-Speed Steel (HSS).



## GLUING

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Usual metal adhesives or double sided VHB tape should be used.



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## GROOVING VITRACORE G2

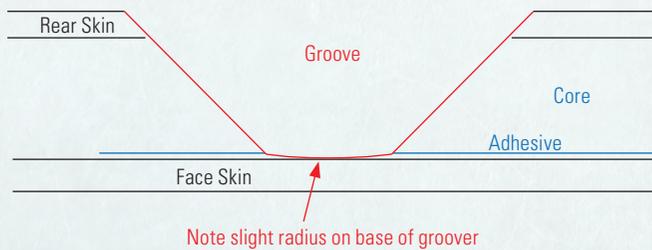
GROOVING - Grooving Vitracore G2 is a simple and easy process - very similar to grooving traditional ACP such as Vitrabond. The special profiled core of Vitracore G2 is slightly more exacting on the groove depth but does not present any issues.

For a CNC Router, the perfect depth is just brushing the rear of the aluminium face skin. The tooling is the same as that for ACP – a 90 degree V-Groover with a 3mm flat. As depicted in the diagram below, for best results the flat should be adjusted to a slight curve. This is simply done with a finisher or bench grinder. Of course, this tool still works just as well for ACP.

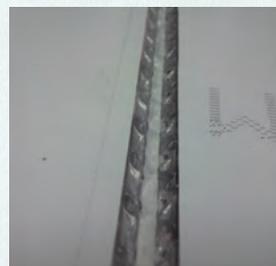
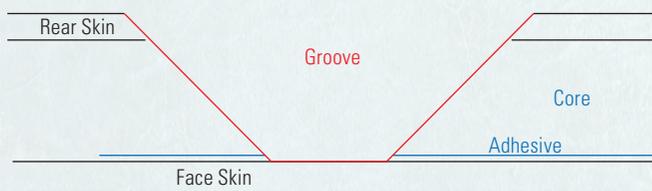
When using a Festool or Wallsaw, the grooving blade should remove all the aluminium of the core and be touching the adhesive layer on the rear of the face skin. With the Festool, the correct depth gauge roller is the Dibond4, available from Fairview. This allows the blade to cut slightly deeper than it would with the usual Alucobond4 roller. It is important that the tooling be kept sharp as blunt tooling increases heat and pressure on the panel, which in turn can reduce groove quality.

The 0.7mm face skin used with Vitracore G2 is what enables the groove depth to penetrate to the rear of the face skin, while still providing the required corner strength and gentle radius on the fold. If there are concerns the groove has gone too deep and cut into the face skin of the panel, a possible solution is to glue an 'L' angle down the rear of the fold; or in a cassette panel glue the zed angle to the rear of the panel.

### CNC GROOVE



### FESTOOL GROOVE



Specific details on feeds and speeds:

	TOOLING	FEEDS/SPEEDS	COMMENTS
CNC ROUTER	Typical 90° ACP V-groover with 3mm flat. Available from most tooling suppliers.	RPM: 18000 Feed: 8-12m/min	Keep sharp. Recommended to curve the flat on the groover slightly.
FESTOOL	Standard Festool 90° grooving blade. Use Dibond 4 depth gauge roller.	Speed: 10-15m/min	Groove on a flat even surface to ensure depth accuracy.



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## EDGE CLOSE-OUT & TREATMENT DETAILS



A



B



C

PARKROYAL HOTEL, PARRAMATTA NSW



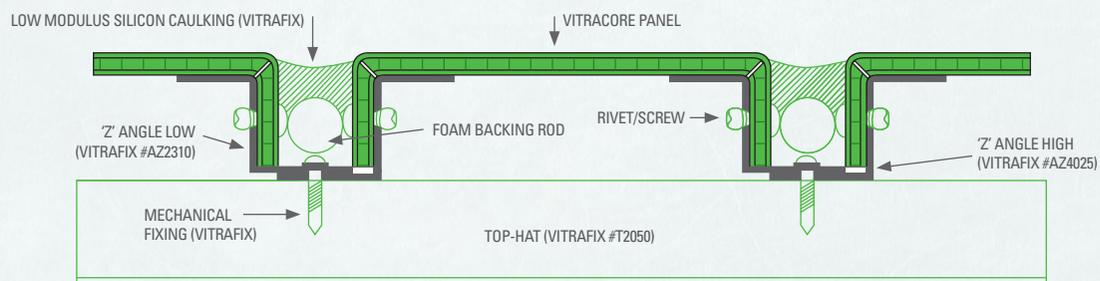


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## FIXING SYSTEM

### CASSETTE FIX



## 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 requirement for a project in one order to ensure colour consistency.
- Where aluminium materials come in contact with dissimilar metals, a proper insulator or caulking tape should be applied to insulate between dissimilar materials in order to avoid corrosive and electrolytic action.
- The panel returns should not be caulked before protective film is removed.

*NOTE: Please refer to the Vitracore G2 Installation Manual for full installation details.*

BUNJIL PLACE, MELBOURNE VIC





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## MISCELLANEOUS

### PROTECTIVE FILM

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- Make sure no damage will occur to the panel following removal of protective film
- Remove protective film within 3 months of installation to avoid glue residuals on panel surface
- Do not apply PVC tapes, polyurethane sealant or silicone sealant onto Vitracore G2 protective film. The plasticiser contained in these materials can penetrate the protective film and cause a gloss change in the coating over time
- Do not apply spray paint or permanent marker to the film as the colour may penetrate the film and affect the panel

### HANDLING AND STORAGE

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- Considerable care should be taken in the handling of Vitracore G2
- Vitracore G2 panels are sensitive to impact, particularly shocks from small, hard objects, which can dent the aluminium cover sheet
- A minimum of two people should be used when moving large sheets to avoid scratching
- To prevent surface damage when stacking Vitracore G2, there should be no swarf between the panels
- Vitracore G2 should be stored in a cool and dry area where temperature is relatively stable
- Pallets of Vitracore G2 should be stored horizontally with adequate support to prevent sagging
- Stacked pallets should be identically sized and not more than four (4) pallets high

### SUSTAINABILITY

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Vitracore G2 has been designed with an expected performance life of over 50 years.

All Fairview products have been developed with the health of environment and community in mind. As part of our commitment to using recyclable or reusable materials wherever possible; all Vitracore G2 ACP is 100% recyclable.

CHERMSIDE NORTHERN REGIONAL  
BUSINESS CENTRE & LIBRARY, QLD



CHERMSIDE NORTHERN REGIONAL  
BUSINESS CENTRE & LIBRARY, QLD





FAIRVIEW™

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