TECHNICAL INFORMATION

vitracore G2®

DEEMED NON-COMBUSTIBLE ALUMINIUM PANEL / MANUFACTURED BY FAIRVIEW

KUBIX APARTMENTS, WANTIRNA SOUTH, VIC

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 04/12/2018.

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

ABOUT VITRACORE G2

Vitracore G2 is Australia's leading deemed non-combustible aluminium panel.

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

100% developed and manufactured by Fairview, Vitracore G2 is exactly the same as traditional aluminium composite panel (ACP), however, the advanced technology of the core is constructed from a complete aluminium structure rather than from a combustible material. It does not contain any polyethylene.

Not only does it look similar to traditional ACP, it is also the same to fabricate and install. In addition, the technology of the core allows continual production; providing an exceptionally consistent and cost effective product.

Vitracore G2 can be easily and accurately installed by a pre-made cassette system, requires minimal maintenance and comes with excellent long-term performance.

KEY FEATURES

DEEMED NON-COMBUSTIBLE
Vitracore G2 is one of few aluminium panels globally that is deemed non-combustible under the Building Code of Australia (BCA) when tested to AS1530.1 & AS1530.3 under 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 pollution.

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
Vitracore G2 is a more cost effective solution than other products on the market.

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 correctly installed and maintained.

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 ISO9001 Quality Standard 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.

COLLEGE JUNCTION QSCAN, CLAYFIELD QLD

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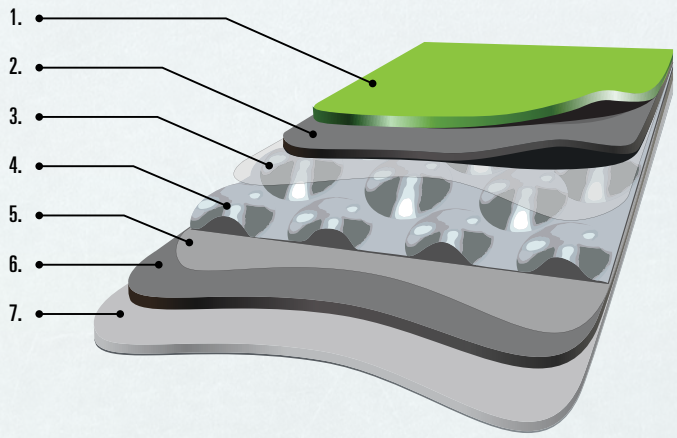
MATERIAL PROPERTIES

TYPICAL COMPOSITION

1. PVDF Coloured Coating
2. 0.7mm Aluminium Skin
3. < 0.1mm Adhesive
4. 3mm Profiled Aluminium Core
5. < 0.1mm Adhesive
6. 0.5mm Aluminium Skin
7. Polyester Anti-corrosion Coating



ALUMINIUM SKINS

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

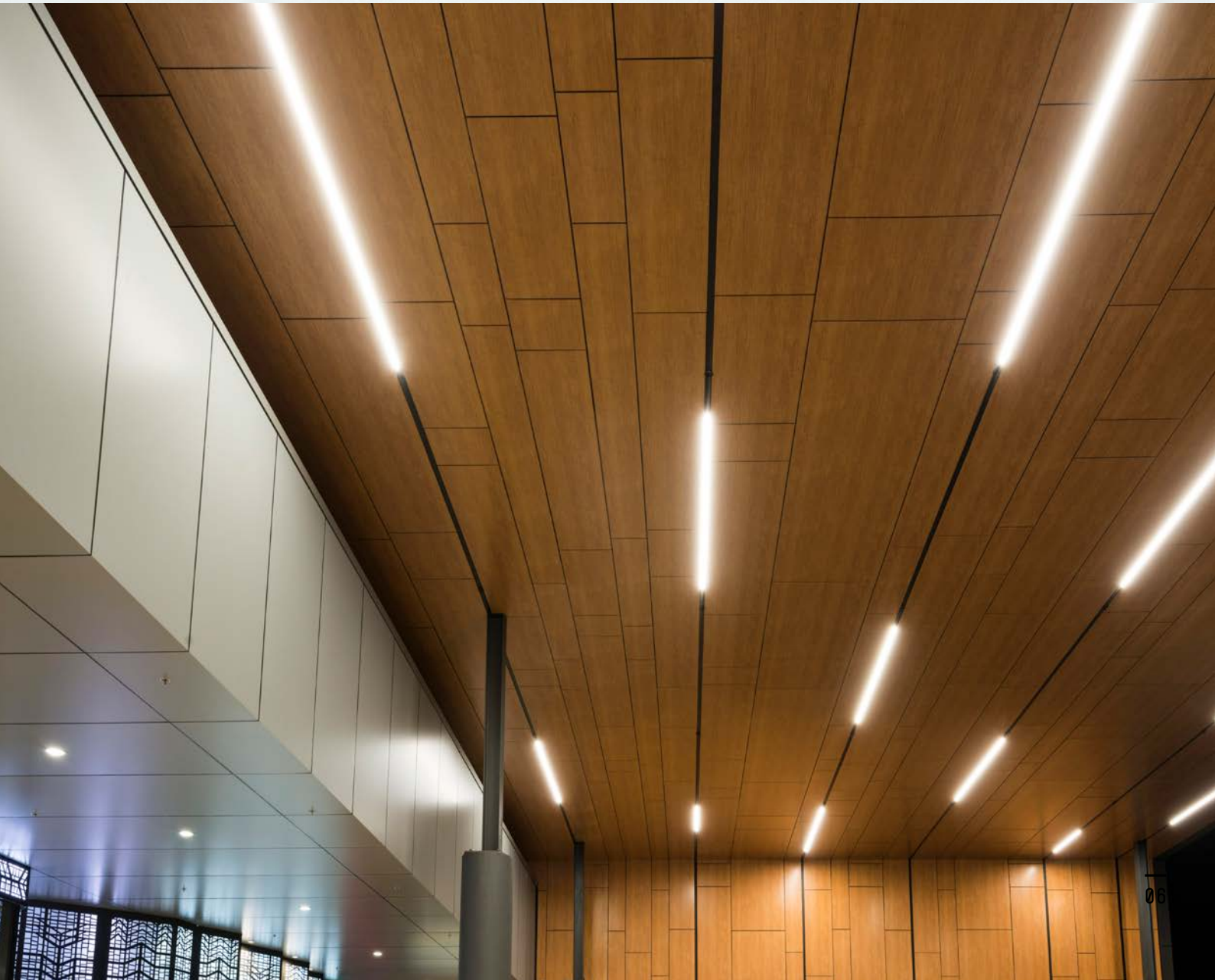
Face skin : 0.7mm

Rear skin : 0.5mm

CORE MATERIAL

The core is a profiled 0.3mm 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, **PLEASE SPEAK TO THE FAIRVIEW TEAM**		

WEIGHT

THICKNESS	WEIGHT (KG/M²)
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/mm²	270
THERMAL RESISTANCE		m²K/W	0.005
ACOUSTIC RESISTANCE	ISO 717-1	dB	Rw (C; Ctr) = 22 (-1; -2)

FINISHES

STOVE LACQUERING

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

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

NATURAL FINISHES

Fairview offers the following natural finished panels:

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

OTHER COATING FINISHES

The Vitracore G2 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	ΔE<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
SALT RESISTANCE	ASTM B117	Includes the following:	
Gloss Retention	ASTM D523	0.8% change	5000hrs
Colour Retention	ASTM 2244	ΔE<0.68	5000hrs
Chalk Resistance	ASTM 4214	Rating: 10	Top rating - no chalk (5000hrs)
HUMIDITY RESISTANCE	ASTM D714	PASS	2000hrs
	ASTM B117	Includes the following:	
Gloss Retention	ASTM D523	No visible change	5000hrs
Colour Retention	ASTM 2244	ΔE<0.52	5000hrs
Chalk Resistance	ASTM 4214	Rating: 10	Top rating - no chalk (5000hrs)
WEATHERING RESISTANCE	ASTM G53	Includes the following:	
Gloss Retention	ASTM D523	6.2% Change	5000hrs
Colour Retention	ASTM 2244	ΔE<0.27	5000hrs
Chalk Resistance	ASTM 4214	Rating: 10	Top rating - no chalk (5000hrs)
CHEMICAL RESISTANCE	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)

JAGUAR LAND ROVER, SOUTHPORT QLD

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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, moisture control, and fire protection. The specification and use of deemed non-combustible façade panels has now become an industry norm amongst architects and industry professionals.

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

To provide further peace of mind and demonstrate full scale performance Vitracore G2 has also been large scale tested to the requirements of AS5113 and BS8414, and did not propagate flame.

VITRACORE G2			
TEST STANDARD	RESULT		
AS1530.1	LAMINATE LAYERS NON-COMBUSTIBLE		
AS1530.3	PASS	Ignitability Index	0
	PASS	Heat Evolved	0
	PASS	Spread of Flame	0
	PASS	Smoke Developed	1
Compliance with C1.9E(vi)	DEEMED NON-COMBUSTIBLE		
BR135 & BS8414	PASS		
AS5113	Flame spread and temperatures well below AS5113 requirements, however as expected for aluminium panels, the debris criteria was not met.		

AVERAGE EXPANSION

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

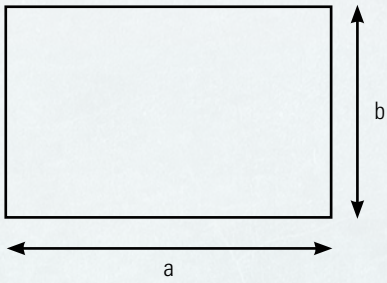
MATERIAL	EXPANSION COEFFICIENT (X10 -6/°C)	ELONGATION PER 1000MM TΔ=50°C
Vitracore G2	23.8	1.2
Aluminium	23.8	1.2
Zinc	26.7	1.3
Steel	12.2	0.6
Concrete	12	0.6

WINDLOADING

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

- Refer to the complete Vitracore G2 Spanning and Windloading document for design and construction notes.
- Where sufficient stiffeners are used, the dimensions below can be read as panel section sizes between stiffeners

Panel Configuration



b = span of panel
a = length of panel
(max. a = 4000mm)

PANEL SPAN			LIMITING WIND PRESSURE (KPA)					MAXIMUM SPACING OF 5MMØ RIVETS ALONG FOLDED EDGE PERIMITER OF PANEL (MM)
			CORRECTION FACTORS		ULTIMATE STRENGTH		SERVICEABILITY	
PANEL WIDTH B (MM)	PANEL LENGTH A (MM)	RATIO A/B	K_S	K_D	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

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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

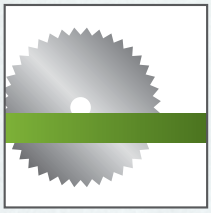
THIELE STREET APARTMENTS, DONCASTER VIC

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.

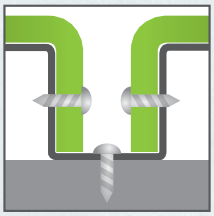


CUTTING

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 class 3 self-drilling screws for metal. Take care to avoid overtightening the screws and denting the face skin of the panel. For outdoor use allow for thermal expansion.

RIVETING

Riveting is possible with the usual equipment and solid rivets or blind rivets, some localised pull-in of the face skin may occur. For outdoor use allow for thermal expansion.

DRILLING

Vitracore G2 panel can be drilled with centre point twist drills normally used for aluminium or steel. Use High-Speed Steel (HSS) drill bits.

GLUING

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

GROOVING VITRACORE G2

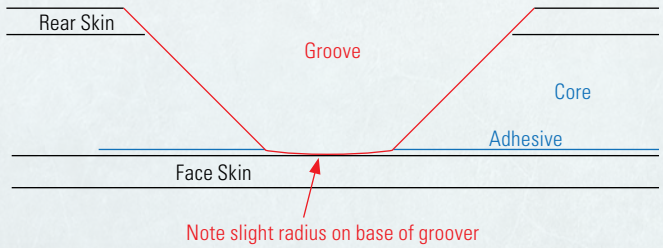
GROOVING - Grooving Vitracore G2 is a simple and easy process - very similar to grooving traditional ACP such as Vitrabond. The special profiled core of Vitracore G2 is slightly more exacting on the groove depth but does not present any issues.

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 linisher 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

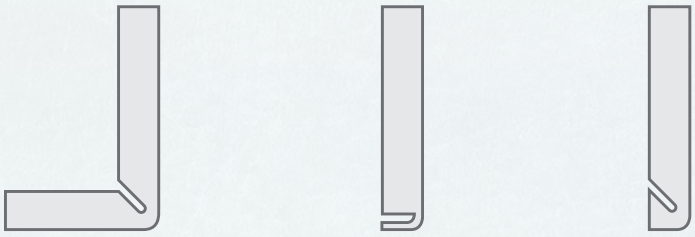


FESTOOL GROOVE

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.

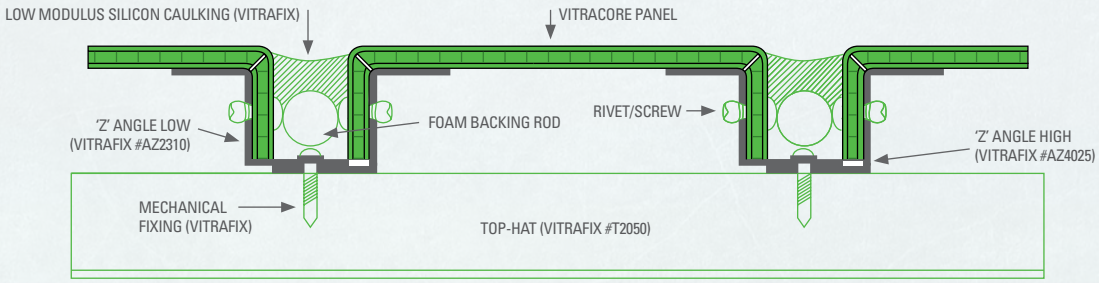
EDGE CLOSE-OUT & TREATMENT DETAILS



PARKROYAL HOTEL, PARRAMATTA NSW

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

MISCELLANEOUS

PROTECTIVE FILM

- 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

- 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

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

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VERSION 2.2

FAIRVIEW™

DEFINING ARCHITECTURE SINCE 1963

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SALES ENQUIRIES 1800 007 175 HELPDESK.AU@FV.COM.AU

WWW.FV.COM.AU