# TECHNICAL INFORMATION









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# DOCUMENT TRACKING

VERSION #	DATE	CHANGES
1.0	06/03/20 07/10/20	Initial Issue Content & FormatUpdated
1.2	02/12/20	Install diagram updated and other minor changes
1.3	12/08/21	Text Correction & Install Considerations updated

## 1. ABOUT THIS GUIDE

This guide has been developed to effectively assist fabricators and contractors to work with Fairview's aluminium panel: Vitradual.

The information and recommendations contained herein are believed to be correct at time of publishing, August 2020.

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

# 2. INTRODUCTION

## 2.1 ABOUT VITRADUAL

Vitradual is a 3mm non-combustible solid aluminium cassette cladding system that forms part of Fairview's range of BCA compliant, deemed non-combustible cladding solutions; perfectly suitable for Type A and B constructions where non-combustible products are required.

Vitradual is a high impact resistant, solid panel which can be fabricated, curved and rolled. The prefinished large format cladding panels feature the same PVDF coating system as Fairview's leading aluminium panel Vitracore G2; well proven for its superior quality, extensive colour range and design integrity.

## 2.2 KEY FEATURES

Vitradual's versatility is achieved due to the combination of high-quality considerations and industry leading components. It is an ideal product for application in Type A and B developments where non-combustible building materials are critical.

Vitradual is one of the few large format cladding panels that are deemed non-combustible when tested to AS1530.1 and AS1530.3.

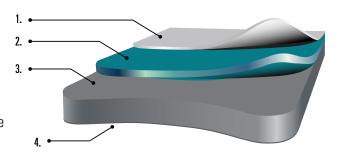
PRODUCT DNA	Pre-finished solid aluminium panel
FINISH	Vitradual uses only the highly recognised PVDF Kynar 500® or FEVE paints known for their high durability, providing the optimum resistance to weather and industrial pollution.
FIXING SYSTEM	A cassette style concealed fixing system which is the same to fabricate and install as traditional ACPs.
APPLICATION	Type A and B constructions where non-combustible materials are required such as mixed-use developments, residential construction, and large-scale government infrastructure projects like hospitals.
WARRANTY	15-year warranty, subject to standard terms and conditions.

# 3. PRODUCT SPECIFICATIONS

## 3.1 TYPICAL COMPOSITION

- 1. Protective film
- 2. PVDF-Kynar 500® coating system
- 3. 3mm Aluminium
- 4. Protective rear coating

The material is rigid, resistant to blows, breakage and pressure and has high bending, buckling and breaking strengths.



## **DIMENSIONS**

Thickness: 3mm Weight: 8.1kg/m2

## 3.2 PANEL SIZES

WIDTH	LENGTH	THICKNESS
1250/1500	2500	
	3200	3mm
	4000	

CUSTOM SIZES ARE AVAILABLE, PLEASE SPEAK TO THE FAIRVIEW TEAM

<sup>\*</sup>Vitradual is not an ACP Panel and has no polyethylene content.

## 3.3 MATERIAL DATA

PHYSICAL PROPERTY	VALUE
Tensile Strength – ultimate, Ftu* (MPa)	138
Tensile Strength – yield, Fty* (MPa)	117
Compressive strength, Fcy (MPa)	96
Shear strength – ultimate, Fsu (MPa)	83
Shear strength - yield, Fsu (MPa)	69
Bearing strength – ultimate, Fbu (MPa)	276
Bearing strength - yield, Fby (MPa)	172
Compressive MOE, E (MPa)	70,000
Thermal Expansion Coefficient	23
Fatigue strength (MPa)	60
Modulus of Resilience (Kj/M³)	130
Embodied carbon (kg-CO2/kg)	8.1

## 3.4 AVERAGE EXPANSION

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

## 4. FINISH

## 4.1 COATING TECHNOLOGY

Vitradual uses only the highly recognised PVDF Kynar 500® or FEVE paints known for their high durability. These premium paints provide the ultimate resistance to weather and industrial pollution on commercial, industrial, infrastructure and residential developments.

More than 50 years of South Florida Exposure Testing is continuing to confirm the superior chemical and physical properties of fluoropolymer coatings.

Vitradual has virtually an unlimited colour range with the possibility of matching almost any panel colour, which provides a fully customisable option to achieve your dream design.



## 4.2. COATING SPECIFICATIONS

#### TYPICAL COATING TYPE

Vitradual uses only the highly recognised PVDF Kynar 500® or FEVE paints known for their high durability. These premium paints provide an optimum resistance to weather and industrial pollution on commercial, industrial, infrastructure, and residential developments.

More than 50 years of South Florida Exposure Testing is continuing to confirm the superior chemical and physical properties of fluoropolymer coatings.

For a full list of standard Vitradual colours, refer to our Solid and Metallics Colour Charts.

The Vitradual range also offers the following finishes:

- REPEL a self-cleaning surface coating
- VitraArt for personalised design and imagery

## KYNAR 500®PVDF DATA

CLASSIFICATION	TEST STANDARD	RESULT	COMMENTS
Nominal Coating thickness	TP-ET-02	45.7 μm	±3.9 $\mu$ m
Colour Uniformity	ASTM D2244-16	$\Delta E = 0.06$	Pass
Specular Gloss	ASTM D523-14	G 24.8	Pass
Dry Film Hardness	ASTM D3363-05 (R2011)e2	3H	Pass
Film Adhesion	ASTM D3359-17	Dry: 5B Wet: 5B Boiling Water: 5B	Pass
Impact Resistance	AAMA 2605 (8.5)	After impact, no removal	Pass
Abrasion Resistance	ASTM D968-17A	118.6	Pass
Muriatic Acid Resistance (15 min spot)	AAMA 2605 (8.7.1)	5B	Pass
Mortar Resistance (24hr pat test)	AAMA 2605 (8.7.2)	5B	Pass
Nitric Acid Resistance	AAMA 2605 (8.7.3)	$\Delta E = 0.31$	Pass
Detergent Resistance	AAMA 2605 (8.7.4)	5B	Pass
Window Cleaner Resistance	AAMA 2605 (8.7.5)	5B	Pass

## 5. PERFORMANCE

## 5.1 FIRE

In today's architecture, it is the technical details as well as the appearance that count; such as sustainability, thermal insulation and fire protection.

Visually, Vitradual is like traditional composite panel, however what makes it different is the fact that it is constructed from 100% aluminium rather than combustible material such as polyethylene and fire rated mineral. This makes Vitradual, in addition to Vitracore G2, an ideal product for all applications where non-combustible panels are required, such as high-rise buildings, schools or hospitals.

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

## 5.2 THERMAL

#### THERMAL INSULATING PROPERTIES

THERMAL RESISTANCE FROM -50°C TO +80°C						
TEST STANDARD	THERMAL RESISTANCE 1A M2.K/W	HEAT TRANSMISSION COEFFICIENT W/(M2.K)				
Panel Thickness (mm)	Thermal Resistance 1A m2.K/W	Heat Transmission Coefficient W/(m2.K)				
3	0.0069	5.65				

#### **AVERAGE EXPANSION**

MATERIAL	EXPANSION COEFFICIENT (X10 -6/°C)	ELONGATION PER 1000MMT=50°C
Vitradual	23.8	1.2mm
Aluminium	23.8	1.2mm
Zinc	26.7	1.3mm
Steel	12.2	0.6mm
Concrete	12	0.6mm

# 6. STRUCTURAL

## 6.1 WINDLOADING

Span and fixing table when installed as per the Vitradual Cassette Fix Installation

- Refer to the complete Vitradual Spanning and Wind loading document for design and construction notes.
- Larger panel size is easily possible with suitable engineering



## 6.2 SPAN TABLE

Simple Span Limiting	Pan	el Dimensions Panel Length		Maximum Pressur Strength	Design Wind e on Panel Serviceability	nane		ets requi			spacing o		
Pressure (kPa)	b (mm)	a (mm)	a/b	P <sub>u</sub> (kPa)	Ps (kPa)	Dia. 5	Dia. 6	Dia.7	Dia.8	No.8	No.10	No.12	No.14
8288	400	400	1.0	9.000	9.000	8	8	8	8	195	225	260	295
	400	450	1.1	9.000	8.846	8	8	8	8	195	225	260	295
	400	600	1.5	9.000	5.736	8	8	8	8	195	225	260	295
	400	900	2.3	8.367	4.139	8	8	8	8	210	245	280	300
	400	1200	3.0	7.768	3.750	10	8	8	8	230	260	300	300
	400	1500	3.8	7.555	3.611	11	10	8	8	235	270	300	300
	400	1800	4.5	7.461	3.550	14	11	10	9	240	275	300	300
	400	2100	5.3	7.413	3.519	16	13	11	10	240	275	300	300
	400	2400	6.0	7.386	3.502	18	15	13	11	240	275	300	300
	400	2700	6.8	7.370	3.491	20	17	14	13	240	275	300	300
	400	3000	7.5	7.359	3.484	22	18	16	14	240	275	300	300
	400	3300	8.3	7.352	3.480	24	20	17	15	240	275	300	300
	400	3600	9.0	7.347	3.477	26	22	19	17	240	275	300	300
	400	4000	10.0	7.343	3.474	29	24	21	18	240	275	300	300
3683	600	600	1.0	8.504	3.297	8	8	8	8	140	160	180	210
	600	900	1.5	4.813	1.699	8	8	8	8	245	280	300	300
	600	1200	2.0	3.914	1.311	8	8	8	8	300	300	300	300
	600	1500	2.5	3.594	1.172	8	8	8	8	300	300	300	300
	600	1800	3.0	3.453	1.111	10	8	8	8	300	300	300	300
	600	2100	3.5	3.381	1.080	11	9	8	8	300	300	300	300
	600	2400	4.0	3.340	1.062	12	10	9	8	300	300	300	300
	600	2700	4.5	3.316	1.052	14	11	10	9	300	300	300	300
	600	3000	5.0	3.300	1.045	15	13	11	10	300	300	300	300
	600	3300	5.5	3.290	1.041	16	14	12	10	300	300	300	300
	600	3600	6.0	3.283	1.038	18	15	13	11	300	300	300	300
	600	4000	6.7	3.276	1.035	20	16	14	12	300	300	300	300
1637	900	900	1.0	3.780	0.977	8	8	8	8	210	240	270	300
	900	1200	1.3	2.432	0.588	8	8	8	8	300	300	300	300
	900	1500	1.7	1.952	0.450	8	8	8	8	300	300	300	300
	900	1800	2.0	1.740	0.388	8	8	8	8	300	300	300	300
	900	2100	2.3	1.632	0.357	8	8	8	8	300	300	300	300
	900	2400	2.7	1.571	0.340	9	8	8	8	300	300	300	300
	900	2700	3.0	1.535	0.329	10	8	8	8	300	300	300	300
	900	3000	3.3	1.511	0.322	10	9	8	8	300	300	300	300
	900	3300	3.7	1.495	0.318	11	9	8	8	300	300	300	300
	900	3600	4.0	1.485	0.315	12	10	9	8	300	300	300	300
	900	4000	4.4	1.475	0.312	13	11	10	9	300	300	300	300
0.921	1200	1200	1.0	2.126	0.412	8	8	8	8	280	300	300	300
	1200	1500	1.3	1.486	0.274	8	8	8	8	300	300	300	300
	1200	1800	1.5	1.203	0.212	8	8	8	8	300	300	300	300
	1200	2100	1.8	1.059	0.181	8	8	8	8	300	300	300	300
	1200	2400	2.0	0.979	0.164	8	8	8	8	300	300	300	300
	1200	2700	2.3	0.930	0.153	8	8	8	8	300	300	300	300
	1200	3000	2.5	0.899	0.147	8	8	8	8	300	300	300	300
	1200	3300	2.8	0.878	0.142	9	8	8	8	300	300	300	300
	1200	3600	3.0	0.863	0.139	10	8	8	8	300	300	300	300
	1200	4000	3.3	0.850	0.136	10	9	8	8	300	300	300	300

## 7. DURABILITY

## 7.1 EVALUATION

Durability is defined in the ABCB handbook as "... the capability of a building or plumbing installation to perform its function over a specified period."

The ABCB handbook also provides this context for consideration: "Durability is not an inherent property of a material or component. It is the outcome of complex interactions among a number of factors."

For building components durability is described in terms of design life. The durability performance of a building by its ability to remain fit-for-purpose over its design life in the environment it is subjected to and with appropriate maintenance.

The minimum design life for a wall cladding system on a building with a normal design life category is 15 years (refer to ABCB Handbook table 3.1).

#### 7.2 STRUCTURAL

The NCC referenced standard for actions on buildings AS/NZ 1170 series provides direction for determining the appropriate loads on building components. Typically, a 50-year design life is the basis for structural design.

The design capacity of Vitradual and its supports and fixings, must be determined in accordance with this design life using verification method BV1.

Project specifications for Vitradual that are created in accordance with this document therefore have structural adequacy for a design life of 50 years.

## 7.3 MATERIAL PROPERTIES

Vitradual has been subject to many tests and assessments concerning laminating strength of the product. For durability of the paint finishes used on Vitradual, refer to Kynar 500® FSF® documentation available at https://www.kynar500.com/en/resources.

Kynar 500® resin has been exposed to over 50 years of South Florida exposure testing with excellent results.

## 8. INSTALLATION CONSIDERATIONS

## 8.1 INSTALLATION CONSIDERATIONS

- 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 isolation tape should be applied to insulate between dissimilar materials in order to avoid corrosive and electrolytic action.
- For Cassette Fix, the returns between panel joints should not be caulked before film is removed.
- Please ensure Vitradual is used as part of a compliant wall system, with all components complying
  with the Deemed-to-Satisfy provisions of the relevant NCC, or approved as part of a performance
  solution.

## 8.2 PROTECTIVE FILM

- Make sure no damage will occur to the panel following removal of protective film.
- Remove 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 Vitradual 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 panel.
- Details 4, 6 & 8 include provision for drainage of liquid water, this can be disregarded if the wall system adequately treats this elsewhere.
- Detail 5 includes an "L" angle to strengthen the external fold, this can be disregarded if the rigidity of the fold is treated elsewhere (eg. in horizontal fixings)

## 8.3 ACCESSORIES

Please refer to the Vitrafix brochure.

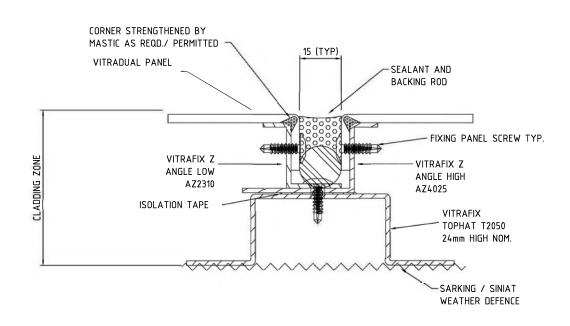
#### 8.4 SEQUENCE

As a rule, the sequence of installation is as follows:

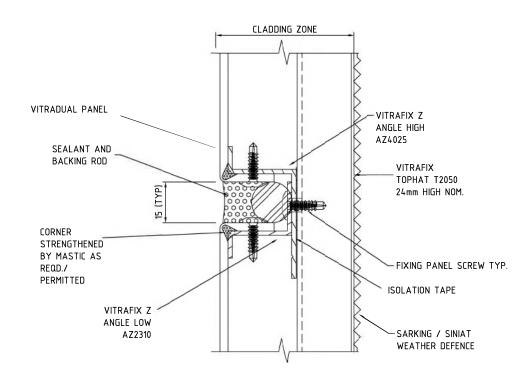
- 1. Installation of the water membrane as per manufacturers requirements.
- 2. Installation of top hats, levelled and fixed as per wind loading requirements.
- 3. Vitradual panels fabricated and prepared for installation.
- 4. Installation of fabricated Vitradual panels, fixing through Z angles to tophats as per wind loading requirements.
- 5. Caulking applied to panel joints as per manufacturers requirements.
- 6. Removal of protective film within 45 days of installation.

# 9. INSTALLATION DETAILS

## 1. TYPICAL VERTICAL PANEL JOINT DETAIL

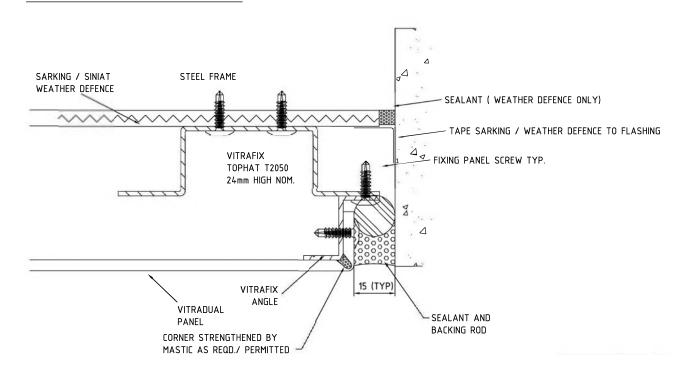


## 2. HORIZONTAL JOINT DETAIL

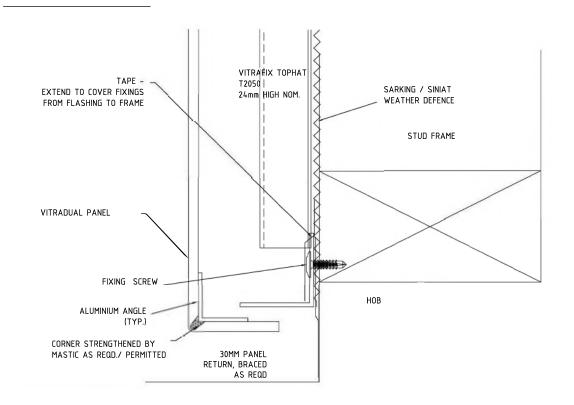


#### DISCLAIMER:

## 3. WALL JUNCTION DETAIL

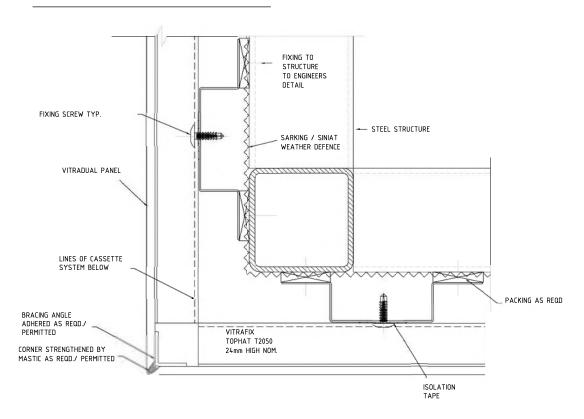


## 4. BASE OPTION 1

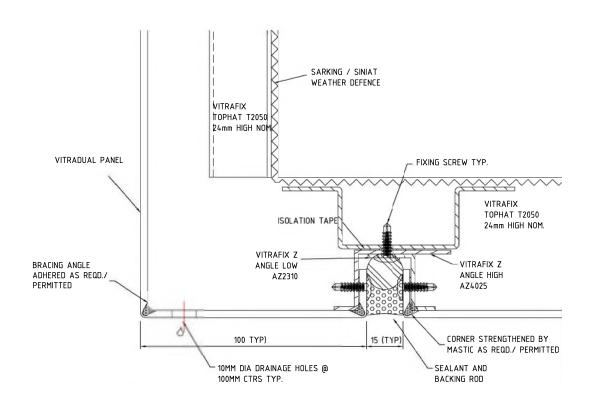


#### DISCLAIMER:

## 5. EXTERNAL CORNER DETAIL

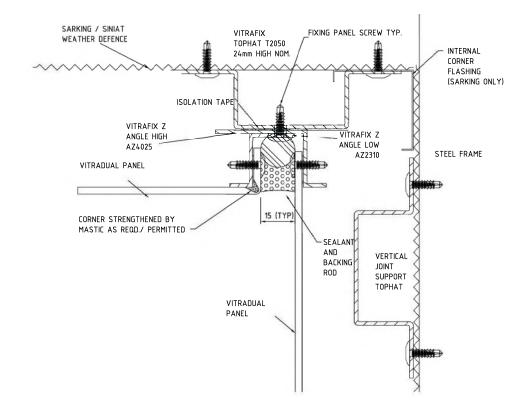


## 6. DETAIL AT SOFFIT JUNCTION

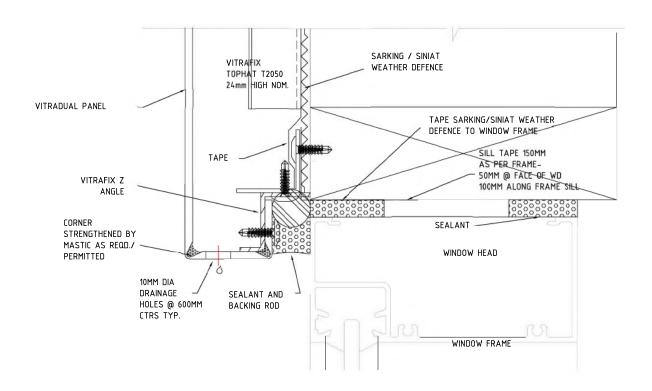


#### DISCLAIMER:

## 7. REAR SOFFIT DETAIL

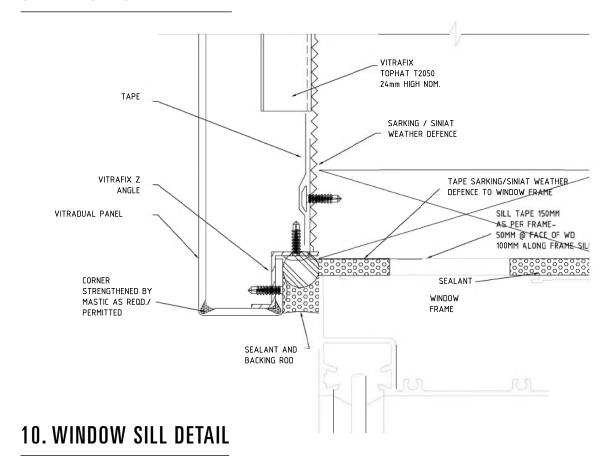


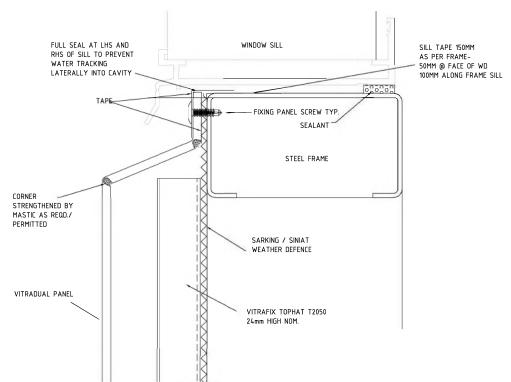
## 8. WINDOW HEAD DETAIL



#### DISCLAIMER:

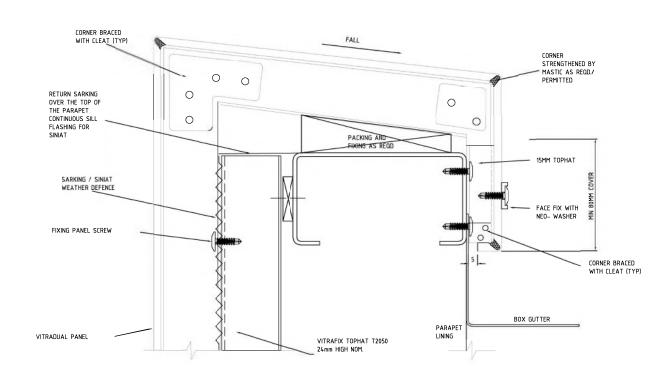
## 9. WINDOW JAMB DETAIL



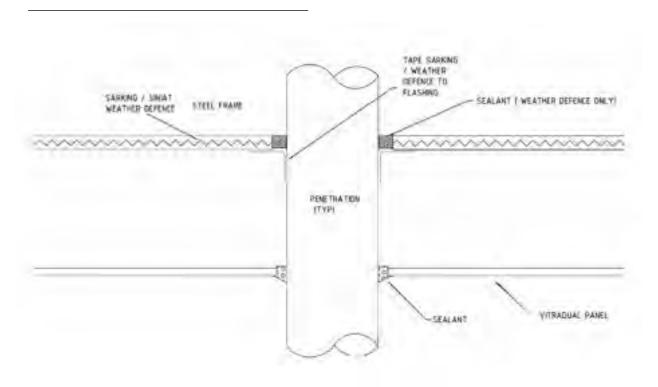


#### DISCLAIMER:

## 11. PARAPET CAPPING DETAIL



## 12. TYPICAL PENETRATION DETAIL



#### DISCLAIMER:

## 10. FABRICATION DETAIL

## 10.1 FABRICATION CONSIDERATIONS



#### **CONTOUR CUTTING**

Vitradual panel can be contour cut with water jets, CNC routers, copy routers and jigsaws. Coolant is recommended for router processing.



#### **FOLDING**

There must be between 0.7mm and 1mm of aluminium left at the base of the routed groove. Too much material can cause stress and result in a larger radius fold than desired. It will also make folding the panel more difficult and prevent the required fold angle from being obtained.



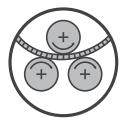
#### SHEARING

Shearing can be done with a guillotine. Ensure the blanking tools are padded. Shearing causes a slight roll down along the cut edge of the panel.



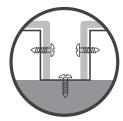
#### **PUNCHING**

The punching of flat formed parts from Vitradual is performed in the same way as a solid aluminium sheeting, using sharp tools and dies with minimal cutting clearance. Varying shapes may easily be punched with normal aluminium punching machinery. As with shearing, a slight roll down may occur.



#### **ROLL BENDING**

Vitradual panel can be bent with a roll-bending machine. Use polished rollers free of imperfections only with a minimum radius of 200mm.



#### **SCREWING**

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



#### RIVETING

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



#### DRILLING

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



#### **BENDING**

Bending is possible with a folding table or brake press. The inside bending radius is roughly 5 times the Vitradual panel thickness. Use protective foils. For serial production, tests should be made on sample panels.

## 10.2 MACHINING

Vitradual is designed to be machined on a CNC with cutting fluid at a depth of 2.3mm, leaving 0.7mm remaining at the fold.

## 10.3 CNC GROOVE

TOOL	4.76mm Single flute upspiral cutter				
FEED	1500mm/minute				
SPINDLE	21,000mm/minute				

CNC Grooving requires a 3D ramp into the Groove with cutting fluid also required to prevent Vitradual from overheating.

Our recommended cutting fluid is TRICK-SOL high performance water soluble cutting oil mixed at a 1:3 ratio oil to water or equivalent cutting fluid.

Ensure the cutting fluid is correctly applied to the cutting bit during machining.

## 10.4 CNC CUTTING

TOOL	4.76mm Single flute upspiral cutter	
FEED	1500mm/minute	
SPINDLE	21,000mm/minute	

CNC cutting requires a 3D ramp into the Groove with cutting fluid also required to prevent Vitradual from overheating.

Our recommended cutting fluid is TRICK-SOL high performance water soluble cutting oil mixed at a 1:3 ratio oil to water or equivalent cutting fluid.

Ensure the cutting fluid is correctly applied to the cutting bit during machining.

# 11. TYPICAL WARRANTY DETAILS

## 11.1 WARRANTY CONSIDERATIONS

Vitradual is an incredibly durable material when used in the right application. When assessing an installation for warranty defects, unless given express written authorization from Fairview, check for the following:

- Less than a 5° pitch (risk of water pooling)
- Panels installed with directional arrows consistent (unless intentional)
- Maintenance schedule is documented and undertaken

Please contact your Fairview representative for full terms and conditions or any product specific enquiries.

## 11.2 KEEP YOUR WARRANTY FRESH

Maintaining your Vitradual finish is an important component to maintaining your warranty. Document each time you clean your Vitradual panels. Cleaning frequencies are based on project location and are provided in the warranty.

#### RECOMMENDED CLEANING AGENTS

- Mineral spirits
- Organic cleaners
- PH-Neutral solvents

## 12. MISCELLANEOUS

## 12.1 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 ISO 9001 Quality Standards to verify the quality of our systems
- Ensures that our products and services are of the highest standards
- Create 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 and/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.	

#### 12.2 HANDLING AND STORAGE

- Considerable care should be taken in the handling of Vitradual.
- Vitradual panels are sensitive to impact, particularly shocks from small, hard objects, which can
  dent the aluminium.
- A minimum of two people should be used when sliding large sheets to avoid scratching.
- To prevent surface damage when stacking Vitradual, there should be nothing between the panels.
- Vitradual should be stored in a cool and dry area where temperature is relatively stable.
- Pallets of Vitradual should be stored horizontally with adequate support to prevent sagging.
- Stacked pallets should be identically sized and not more than four (4) pallets high.

## 12.3 SUSTAINABILITY

Vitradual has been designed with an expected performance life of over 50 years. All Fairview products have been developed with the health of the environment, and the community, in mind.

As part of our commitment to use recyclable or reusable materials wherever possible, all Vitradual is 100% recyclable.

## 12.4 REPORT REGISTER

BCA 2019 VOL1 Section	DESCRIPTION	TEST/ASSESSMENT	REPORT/REFERENCE NUMBER
C - Fire Resistence	Combustibility	AS 1530.1	FNC11690
	Early Fire Hazard Properties	AS 1530.3	FNE12495
F - Health and Amenity	Weatherproofing	FP.14	30B-19-0059-TRP-6774697-2 30B-19-0059-TRP-6774698-2
G - Ancillary Provisions	BAL Ratings	IGNIS Assessment	IGNS-5289 Issue 01 Rev00
Additional/ Supporting	Assessment	RED FIRE REPORT NCC2019	190603_JV19-00103_Fairview NCC2019_Vitradual_v1
	Coating Standard	AAMA2605-17	180710004SHF-BP-8
	CodeMark	CodeMark	Please contact us for our current CodeMark number

NOTES	

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