



V A L C A N

The Defining Standard

VITRADUAL TECHNICAL INFORMATION



A1 rated to
BS EN 13501-01



Tested to BS8414
& BR135 compliant

CENTRE FOR
**WINDOW AND
CLADDING**
TECHNOLOGY



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Non-Combustible Cladding



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ABOUT THIS MANUAL

This manual has been developed to effectively assist fabricators and contractors to work with Fairview's Aluminium Panel; Vitradual.

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 06/05/2021.

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



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ABOUT VITRADUAL

VitraDual is a 2mm or 3mm non-combustible aluminium cladding system manufactured by Fairview that can be installed as riveted or cassette fixed panels

VitraDual forms part of our range of industry compliant, non-combustible aluminium panel solutions.

The solid aluminium panel is durable and high impact resistant which can be curved and rolled. VitraDual features the PVDF coating system; well proven for its superior quality, extensive colour range and integrity; unlike traditional 3mm powder-coated aluminium.

Panels are prefinished; the flexibility of PVDF coatings means they do not require fabrication prior to coating like traditional powder-coated cassettes, thus minimising lead-times, damage and costs.



KEY FEATURES



A1 rated to
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LIGHTWEIGHT

VitraDual is incredibly rigid and lightweight and is therefore also easy to install.



HIGH DURABILITY

VitraDual panels are highly durable and impact resistant. They can be used effectively in high traffic areas.



NON-COMBUSTIBLE A1 rated to BS EN 13501-1 and BR135 compliant



PAINT SYSTEM

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



VERSATILE

VitraDual can be custom designed into a wide range of shapes and dimensions as well as able to be perforated or curved in some applications making it a versatile design choice.



WARRANTY

VitraDual has up to a 30 year warranty when installed by a licensed installer.



MAINTENANCE

Easy to maintain compared to polyester based coatings



EXTREMELY FLAT

Low surface stress, not susceptible to 'oil canning'



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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 ISO9001 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 | ± 2.0 MM |
| LENGTH | ± 4.0 MM |
| 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. |

WARRANTY

Warranty can be extended on application, please contact the Valcan team for details.

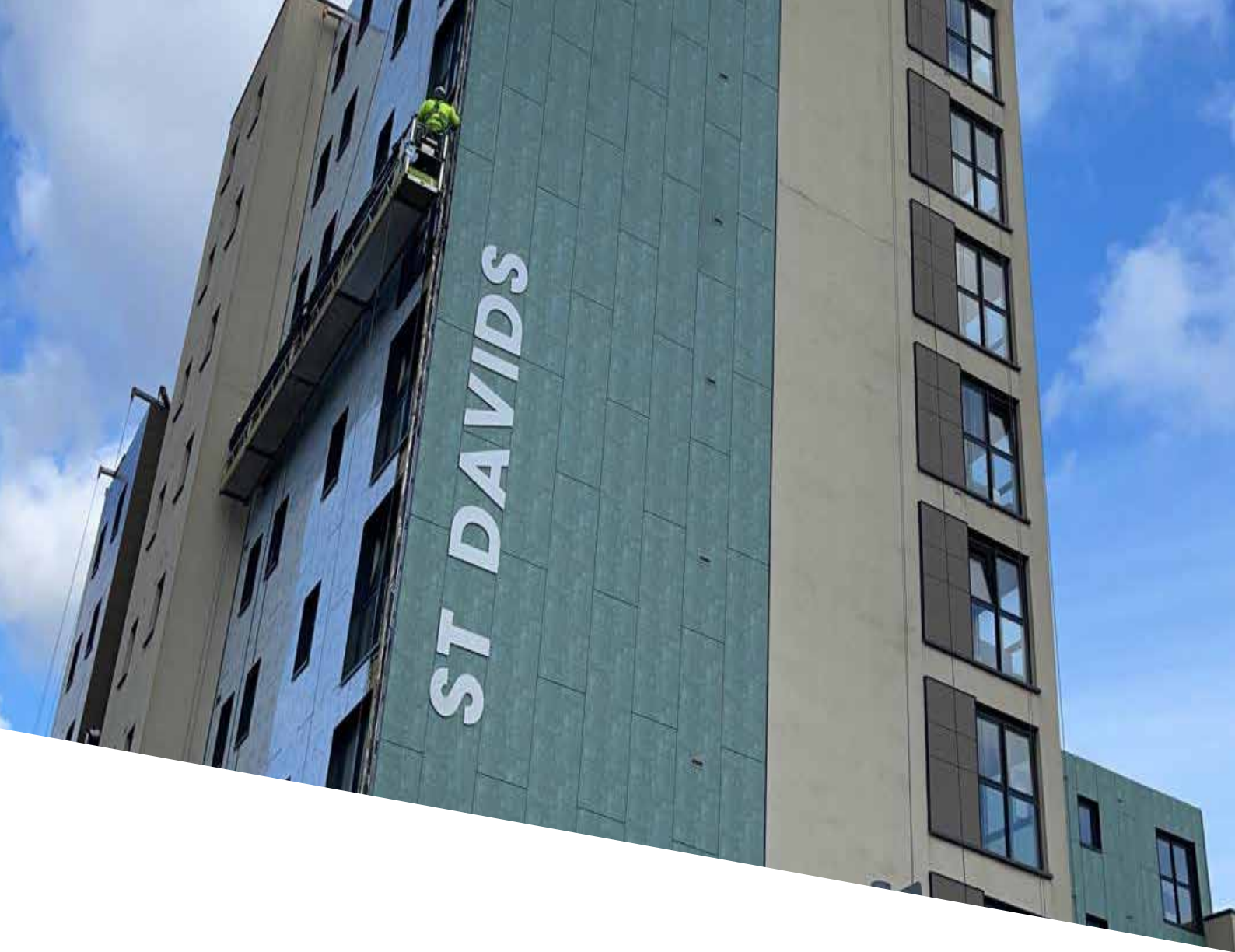
Warranty can be extended on application, please contact the Valcan team for details.



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MATERIAL PROPERTIES



TYPICAL COMPOSITION

1. Protective film
2. PVDF-Kynar 500 coating system
3. 2mm or 3mm Aluminium
4. Rear Coating

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

ALUMINIUM

Vitradual is manufactured from 3000 or 5000 series aluminium for machinability and exterior performance, other aluminium grades available as required for projects.

DIMENSIONS

| WIDTH | LENGTH | THICKNESS |
|-------------|--------|-----------|
| 1250 / 1500 | 2500 | 2MM / 3MM |
| 1250 / 1500 | 3200 | 2MM / 3MM |
| 1250 / 1500 | 4000 | 2MM / 3MM |

Custom sizes are available - Please speak to the Valcan Team

WEIGHT

| THICKNESS | WEIGHT (KG/M ²) |
|-----------|-----------------------------|
| 3 MM | 8.13 |
| 2 MM | 5.42 |

TECHNICAL DATA

Based on 5754/H22 grade, others grades available

| PHYSICAL PROPERTY | VALUE |
|------------------------|-------------------------------|
| Density | 2.66 G/CM ³ |
| Melting Property | 600 °C |
| Thermal Expansion | 24 x 10 ⁻⁶ / K |
| Modulus of Elasticity | 68 GPa |
| Thermal Conductivity | 147 W / MK |
| Electrical Resistivity | 0.0495 x 10 ⁻⁶ Ω M |
| Tensile Strength | 220 - 270 MPA |
| Proof Stress | 130 MIN MPA |
| Hardness Brinell | 63 HB |
| Acoustic Insulation | RW 27 |

| LOAD (KN/M ²) | MAX SPAN (M) | |
|---------------------------|---------------|---------------|
| | VITRADUAL 2MM | VITRADUAL 3MM |
| 0.50 | 1.00 | 1.50 |
| 1.00 | 0.71 | 1.06 |
| 1.50 | 0.58 | 0.87 |
| 2.00 | 0.50 | 0.75 |
| 2.50 | 0.45 | 0.67 |
| 3.00 | 0.41 | 0.61 |
| 3.50 | 0.38 | 0.57 |
| 4.00 | 0.35 | 0.53 |



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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 | $\Delta E < 5$ | 4,000 HRS |
| Gloss Meter | ASTM D523 | PASS | |
| Gloss Retention | ASTM D2244 | 85% | 4,000 HRS |
| Chalking Resistance | ASTM D2244 | <8 units | 4,000 HRS |
| Pencil Hardness | ASTM D3363 | | |
| Dry Film Adhesion Wet Adhesion Adhesion | | PASS PASS PASS | 38°C, 24 HRS 100°C, 24 HRS |
| Reverse Impact Resistance | ASTM D2794 | NO CRACKING | 12.7 MM x 0.5 KG x 500 MM |
| 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 Hours Soaking in 3% De-tergent |
| SALT RESISTANCE | ASTM B117 | INCLUDES THE FOLLOWING: | |
| Gloss Retention | ASTM D523 | 0.8% Change | 5,000 HRS |
| Colour Retention | ASTM 2244 | $\Delta E < 0.68$ | 5,000 HRS |
| Chalk Resistance | ASTM 4214 | Rating: 10 | Top Rating - No Chalk (5,000 HRS) |
| HUMIDITY RESISTANCE | ASTM D714 | PASS | 2,000 HRS |
| | ASTM B117 | INCLUDES THE FOLLOWING | |
| Gloss Retention | ASTM D523 | NO VISIBLE CHANGE | 5,000 HRS |
| Colour Retention | ASTM 2244 | $\Delta E < 0.52$ | 5,000 HRS |
| CHALK RESISTANCE | ASTM 4214 | Rating: 10 | Top Rating - No Chalk (5,000 HRS) |
| WEATHERING RESISTANCE | ASTM G53 | INCLUDES THE FOLLOWING | |
| Gloss Retention | ASTM D523 | 6.2% Change | 5,000 HRS |
| Colour Retention | ASTM 2244 | $\Delta E < 0.27$ | 5,000 HRS |
| Chalk Resistance | ASTM 4214 | Rating: 10 | Top Rating - No Chalk (5,000 HRS) |
| CHEMICAL RESISTANCE | ASTM C207 | PASS | Mortar, 24 HRS |
| | ASTM D1308 | PASS | 10% HCL, 15 MIN |
| | | PASS | 70% HNO3 Vapours, 30 MIN |
| | | INCLUDES THE FOLLOWING | |
| Gloss Retention | ASTM D523 | 6.2% Change | 16 HRS |
| Colour Retention | ASTM 2244 | No Change | 16 HRS |
| Chalk Resistance | ASTM 4214 | Rating: 10 | Top Rating - No Chalk (5,000 HRS) |



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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 performance.

VitraDual is one of the few large format cladding panels that are truly 100% non-combustible achieving A1 when tested to BS EN 13501-1 on any colour and a wide range of substrates. Also tested to BS8414-2 for fire performance of external cladding systems and compliant to BR135 requirements, VitraDual gives the insurers, architects, contractors and building owners peace of mind on product specification. The tested system for BS8414/BR135 provides minimal lateral damage, this means should a fire occur in a room and break out, only a small area of the facade should need replating.

Visually, VitraDual is similar to 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, an ideal product for all applications where non-combustible panels are required; such as high-rise buildings, schools or hospitals.

As with all building products, the use of VitraDual must be authorised by the regulatory body.



A1 rated to
BS EN 13501-0*



Tested to BS8414
& BR135 compliant



The Fire Resistance standards achieved with standard VitraDual are as follows

| VITRADUAL | |
|---------------|------------------------------------|
| TEST STANDARD | RESULT |
| BS EN 13501-1 | A1 / Non-Combustible in any colour |
| BS8414/BR135 | Pass / Compliant |



| PARAMETER | RESULTS | |
|-----------------------------------|---------------------------------------|--|
| | FIRE SPREAD TEST RESULT TIME TS (MIN) | COMPLIANCE WITH PARAMETERS IN ANNEX A BR135:2013 |
| External Fire Spread | > 15 minutes | Compliant |
| Internal Fire Spread (Cavity) | > 15 minutes | Compliant |
| Internal Fire Spread (Insulation) | > 15 minutes | Compliant |



TESTING & CERTIFICATION

Testing of Vitradual panels was in accordance with 'Standard for Systemised building envelopes CWCT, 2006'

Tests are accredited to both flat sheet and cassette panel systems. For further detail see certificate number 2020/96D which can be downloaded from our website.

Flat sheets face have been fixed to rails with stainless steel rivets at maximum spacing of 600 mm:

| | |
|------------------------------|--|
| Wind resistance: | PASS |
| Serviceability test: | 2400Pa |
| Safety test pressure: | 3600Pa |
| Rainscreen system: | Valcan rainscreen with Vitradual panels supported on Vitrafix vertical rails |
| Panel description: | Flat Sheet & Cassette |

| Windloading | Rivets at 500mm centres | Rivets at 600mm centres |
|-------------|-------------------------|-------------------------|
| 600 PA | X | X |
| 1200 PA | X | X |
| 1800 PA | X | X |
| 2400 PA | X | |



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Cassettes formed by double folding panel edges, the aluminium was factory grooved before folding - residual thickness after grooving 0.8-1.0mm.

Cassettes with shorter dimension greater than 1000mm provided with stiffeners across the short dimension of the panel, these were spaced at centres shown below.

Stiffeners formed of 2mm aluminium folded to form top hats with overall width of 150mm and height of 25mm. Stiffeners fixed to back of panels using stud welds.

Cassettes fixed to carrier rails using Vitrafix self-drilling fixings through flanges at panel edges; flanges of adjacent panels overlap to create a closed jointed system. Fixing locations at maximum 600mm spacing in vertical joints and at each rail in horizontal joints.

| Height (mm) | Width (mm) | Stiffeners | Stiffener Spacing |
|-------------|------------|-----------------|-------------------|
| 3000 | 1250 | 3 No horizontal | 750 c/c |
| 2000 | 500 | None | N/A |
| 2000 | 250 | None | N/A |
| 1250 | 3000 | 3 No vertical | N/A |
| 1000 | 1000 | 1 No vertical | N/A |
| 1000 | 750 | None | N/A |
| 800 | 800 | None | N/A |
| 800 | 200 | None | N/A |
| 700 | 200 | None | N/A |
| 500 | 2000 | None | N/A |
| 300 | 800 | None | N/A |
| 250 | 2000 | None | N/A |
| 250 | 800 | None | N/A |
| 250 | 200 | None | N/A |
| 200 | 800 | None | N/A |

For the full certificate please refer to our website valcan.co.uk/product/vitr dual/



THE BRITISH BOARD OF AGRÉMENT (BBA)



VitraDual has also been accredited by BBA and full system test to CWCT standards.



Download the full certificate from our website | www.valcan.co.uk

KEY POINTS FROM THE CERTIFICATE:

England & Wales, Scotland and Northern Ireland regulations:
“VitraDual panels are unrestricted by regulations relating to internal and external fire spread.”

Under Section 7, Behaviour in relation to fire:

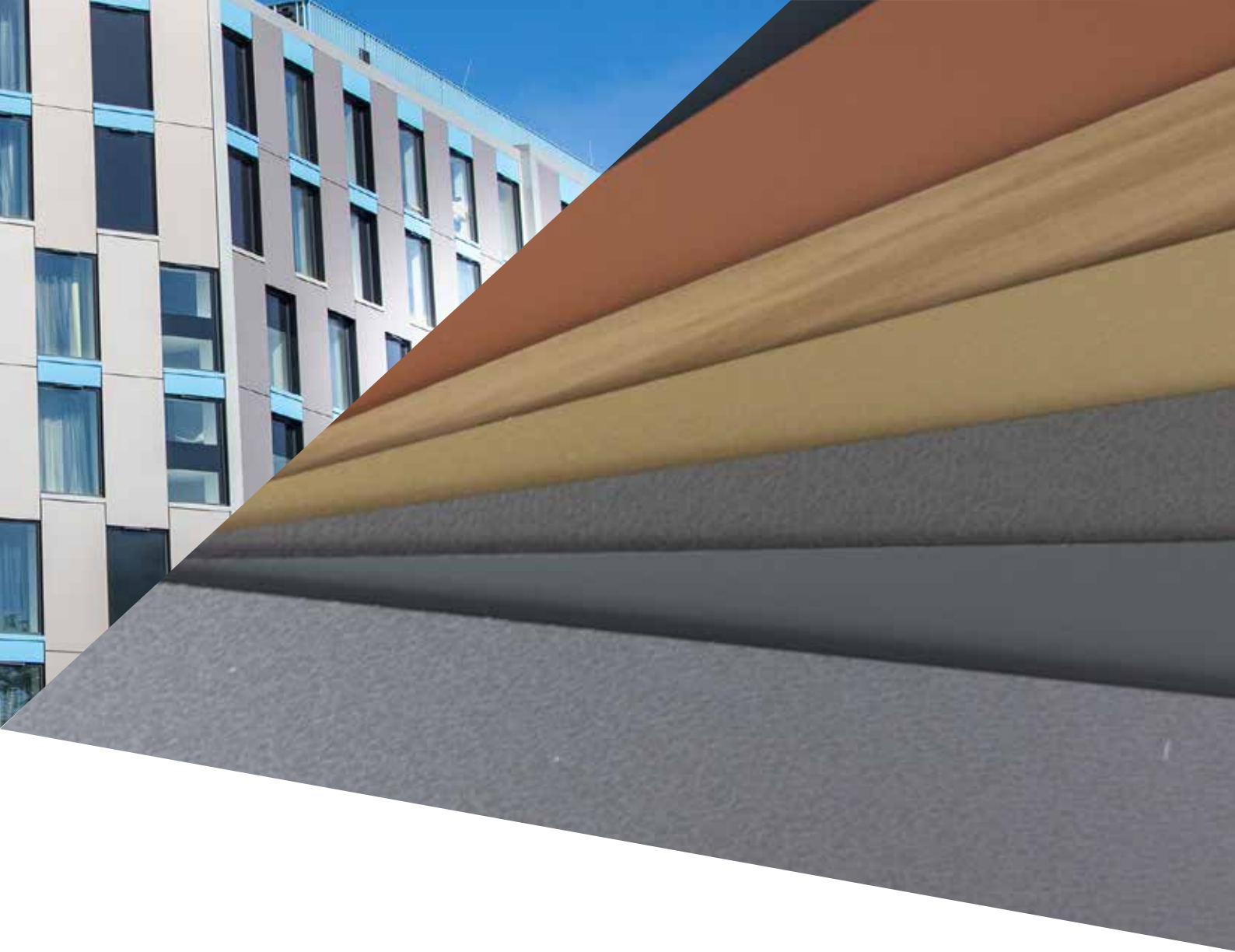
“The panel is classified as non-combustible and is not subject to any restriction on building height or proximity to boundaries.”

Under Section 10, Durability:

“When incorporated in an overall wall cladding system, the panel should have a service life of at least 30 years if designed, installed and maintained in accordance with this certificate.”

Under Section 11, Reuse and recyclability:

“The product is manufactured from aluminium which can be recycled.”



FINISHES

STOVE LACQUERING

VitraDual only uses the highly recognised PVDF KYNAR 500, or FEVE coating systems known for their high durability. These premium paints provide an optimum resistance to weather and industrial pollution. More than 40 years of South Florida Exposure Testing is continuing to confirm the superior chemical and physical properties of fluoro polymer coatings.

For a full list of standard VitraDual colours, refer to our range of Colour Charts or visit the Valcan website www.valcan.co.uk

OTHER COATING FINISHES

The VitraDual range also offers the following finishes:

- REPEL - A self-cleaning surface coating
- VITRAART - for personalised design and imagery

THERMAL PERFORMANCE

THERMAL INSULATING PROPERTIES

| THERMAL RESISTANCE | | |
|----------------------|------------------------------|--|
| FROM -50°C TO +80°C | | |
| 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 1000MM T=50°C |
|-----------------|---|------------------------------|
| VITRADUAL | 23.8 | 0.0232MM/M/°C |
| ALUMINIUM | 23.8 | 0.0232MM/M/°C |
| STAINLESS STEEL | 26.7 | 0.0166MM |
| STEEL | 12.2 | 0.0120MM |





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INSTALLATION & FABRICATION METHODS



INSTALLATION METHODS

See the VitraDual Installation manual for details

The VitraDual installation details are provided for conceptual purposes only.

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 isolation tape should be applied to insulate between dissimilar materials in order to avoid corrosive and electrolytic action
- For Cassette Fix, the bend-in portions between panel joints should not be caulked before protective film is removed.





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CUTTING

VitraDual can be cut with a wall-saw, circular saw, guillotines, flat bed routers and rail saws. The requirements for a circular saw are identical to that for cutting solid aluminium. for more information see the VitraDual Technical Manual or contact the technical team.

| THE CUTTING TOOL MATERIAL TO BE CARBIDE TIPPED. THICKNESS 2-4MM | |
|---|----------------|
| TOOTH GEOMETRY: | TRAPEZE/FLAT |
| TOOTH PITCH: | 10-12MM |
| RAKE ANGLE: | -5° [NEGATIVE] |
| CLEARANCE ANGLE: | 15° |
| MAX CUTTING SPEED: | 20M/MM |



CONTOUR CUTTING

VitraDual panel can be contour cut with CNC routers, copy routers. Coolant may be required dependant on tooling and machine set up.



ROUTING/FOLDING

VitraDual panel can be cold shaped, enabling it to form various shapes and sizes. A bullnose, rectangular or V-shaped groove can be routed on the back of the panel, following potential fold lines. The panel can then be hand folded along this groove, creating a precise and even fold. The outer radius of the fold can be determined by the shape and width of the routed groove.



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. 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.



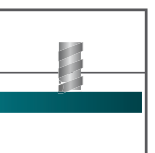
DRILLING

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 2.5 times the VitraDual panel thickness. Use protective foils. For serial production, tests should be made on sample panels.



STUD WELDING

It is possible to stud weld to the back of the VitraDual panel without deforming the face of the panel, this can be used for a non-combustible attachment of stiffeners



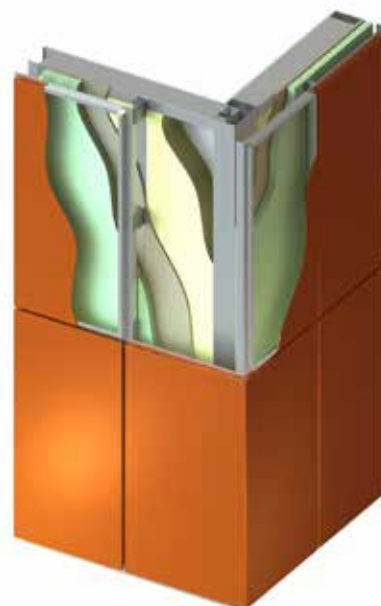
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CASSETTE FIX

To obtain a cleaner looking face to the facade, the cassette system utilises folded panels with colour matched fixings installed in the recess where the panel joints overlap. This system utilises the same Vitrafix VF1 system as used on the rivet fix option.





RIVET FIX

Rivet Fix is the simplest and most cost effective way of installing façade panels. This method uses colour matched rivets to secure the panels back to the Vitrafix VF1 carrier frame. The use of colour matched rivets allows a semi discrete installation method.





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MISCELLANEOUS



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 community in mind.

As part of our commitment to using recyclable or reusable materials wherever possible; all VitraDual is 100% recyclable.

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 residuals 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.



HANDLING & 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 cover sheet
- 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.



CLEANING & CARING

RECOMMENDED CLEANING AGENTS

- Mineral Spirits
- Organic Cleaners
- PH-Neutral Solvents

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.

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Inherently Better



Total Assurance



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