

TECHNICAL MANUAL

ULTRANAMEL Vitreous Enamel Panel

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1.1 About This Manual:

This manual has been developed to effectively assist fabricators and contractors to work with ULTRANAMEL. 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.

Based in Perth WA and with many years combined experience, 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
Address: 6 Ashby Close, Forrestfield WA 6058
Phone: 08 9451 2344
Fax: 08 9451 8983
Email: sales@bluechipgroup.net.au

1.4 Product Description:

Vitreous Enamel Panel

ULTRANAMEL vitreous enamel panel consists of a highly durable vitreous enamel coating applied to a decarbonised steel panel with an aluminium honeycomb or calcium silicate backing sheet. Vitreous enamelled architectural panels are routinely specified for commercial, institutional and infrastructure projects around the world; perfect for high impact, high traffic areas such as train stations, shopping malls and tunnels. ULTRANAMEL vitreous enamel panel has excellent anti-graffiti properties and is non-combustible providing unrivalled performance in public areas.

Unlimited Custom Colours

ULTRANAMEL vitreous enamel panel is available in an almost unlimited colour range. The original colour of the vitreous enamel panel is extremely durable and is expected to outlast a normal building life.

Graffiti Proof

ULTRANAMEL vitreous enamel panel is extremely durable. The vitreous enamel coating has excellent scratch, graffiti and impact resistance making it ideal for areas of heavy traffic or extreme wear.

UV Resistant

ULTRANAMEL vitreous enamel panel has a far superior colour consistency over time when compared to typical cladding panels. The colour and gloss level of these panels are unaffected by sunlight.

Fast Installation

ULTRANAMEL vitreous enamel panel is manufactured to order from provided shop drawings. The panels are formed into pre-made cassettes with fixing clips ready for fast and easy onsite installation.

Non-Combustible

ULTRANAMEL vitreous enamel panel is a completely non-combustible steel cladding system, withstanding temperatures of over 400°C and are able to provide fire ratings of over 2 hours.

Low Maintenance

ULTRANAMEL vitreous enamel panel is very low maintenance. The surface is extremely smooth and extremely low static, preventing dust adhesion and resulting in only minimal cleaning required.

Versatile Design

ULTRANAMEL vitreous enamel panel can be custom designed into a wide range of shapes and dimensions. This compiled with a vast colour range make ULTRANAMEL a versatile design choice.

Hygienic Surface

ULTRANAMEL vitreous enamel panel has a completely non-porous surface that does not absorb any bacteria. The non-stick surface allows intense cleaning with hospital grade cleaning agents.

1.5 More Information:

www.bluechipgroup.net.au/facade-cladding-perth/vitreous-enamel-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:

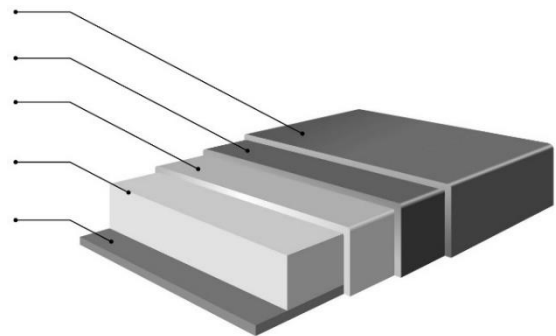
Panel Width:	+/- 3.0mm
Panel Length:	+/- 5.0mm
Thickness:	+/- 2.0%
Bow Allowed:	<0.5%
Squareness:	<5.0mm
Surface Defects:	In accordance with BS 1344

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.

3.1 Panel Composition:

1. Vitreous Enamel Top-coat
2. Vitreous Enamel Base-coat
3. Decarbonised Steel Panel
4. Aluminium Honeycomb Panel or Calcium Silica Backing
5. Steel Backing Sheet



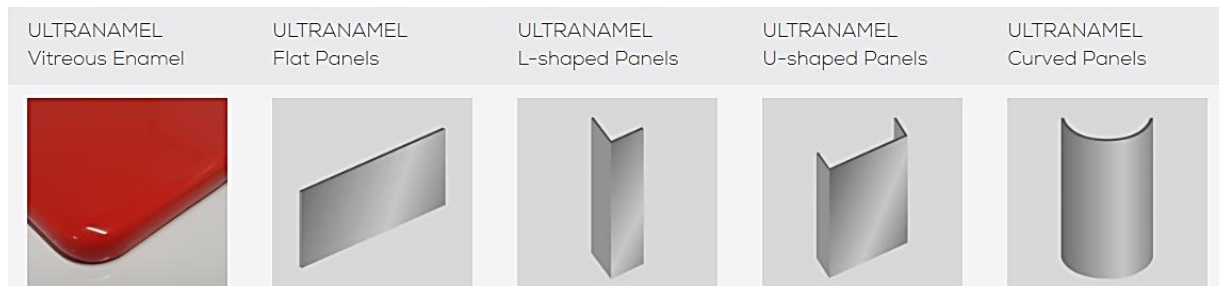
3.2 Recommended Panel Sizes:

It is generally advisable to limit any vitreous enamel panel to a maximum of 2400 x 1150mm for flat panels. For maximum sizes of shaped panels please see the table on the following page. 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

3.2 Recommended Panel Sizes Continued:



PANEL SHAPE	SIZE LIMITS	LEAD TIME	MOQ
ULTRANAMEL Flat Panel	Custom Sizes up to 2400 x 1150mm	10-12 Weeks	1 Panel
ULTRANAMEL L-shaped Panels	Custom Sizes up to 1600 x 1150mm (1150mm is the width + the return)	10-12 Weeks	1 Panel
ULTRANAMEL U-shaped Panels	Custom Sizes up to 1600 x 1150mm (1150mm is the width + both returns)	10-12 Weeks	1 Panel
ULTRANAMEL Curved Panels	Custom Sizes up to 1600 x 1150mm (1150mm is Min. 300mm radius)	10-12 Weeks	1 Panel

3.3 Technical Data – Physical Properties:

ITEM	TEST STANDARD	UNIT	RESULT
Steel Thickness	Actual	mm	1.5
Panel Thickness	Nominal	mm	25
Panel Weight	Nominal	Kg/m ²	35
Melting Point (Steel)	Actual	°C	>1200
Thermal Expansion (Steel)	Actual	mm/m/°C	0.013

4.1 Deemed-to Satisfy Non-combustible:

ULTRANAMEL is deemed-to-satisfy non-combustible as per the requirements of the NCC 2019, clause C1.9(e)(vii) for use on any building of types A, B & C construction, classes 2-9.

4.2 Technical Data – Fire Performance:

ITEM	TEST STANDARD	UNIT	RESULT
Non-combustible (DTS)	NCC C1.9(e)(v)	CSIRO	Pass
Spread of Flame Index	AS 1530.3	CSIRO	0
Smoke Developed Index	AS 1530.3	CSIRO	1
Non-combustible (Euro Class)	BS 476.4	-	Pass
Fire Propagation Index (Euro Class)	BS 476.6	-	0

5.1 Paint Systems:

The outstanding feature of ULTRANAMEL is the vitreous enamel finish which is applied using a special static powder enamelling process including baking at 800 degrees. This produces a virtually indestructible finish which is one of the most durable exterior coatings in the world, and is also highly resistant to graffiti, chemicals, abrasion and impact damage.

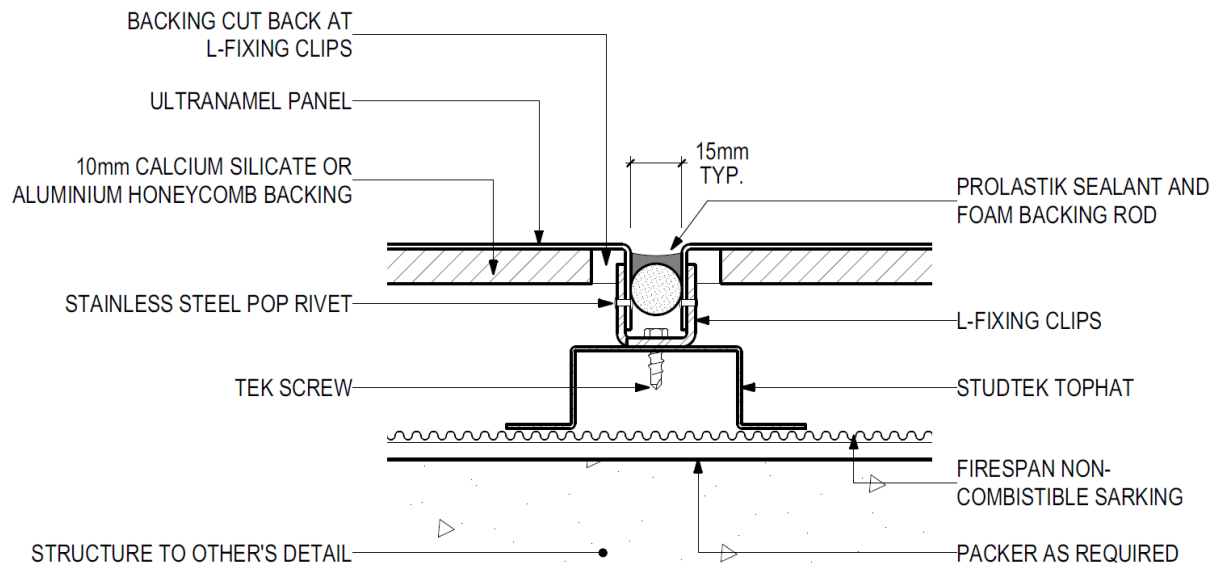
ULTRANAMEL finish is applied in accordance with BS 1344, the internationally recognised coating standard for vitreous enamel panels.

5.2 Technical Data – Vitreous Enamel Coating:

TEST STANDARD	DESCRIPTION	ULTRANAMEL RESULT
ASTM B117-07a	Salt spray test	No visual change
ASTM C538-83: 2009	Colour retention	No colour change
ASTM: C481	Aging of sandwich constructions	No visual change
BS 1344.1	Resistance to thermal shock	No visual flaking or crazing of enamel
BS 1344.2: 1975	Resistance to Citric Acid at room temperature	Class AA
BS 1344.5 : 1984	Resistance to hot detergent solutions used for washing textiles	No visible cracking
BS 14483.1 : 2004	Resistance to chemical corrosion	Class AA (both Sulphuric and Citric Acid)
BS 14483.2 : 2004	Resistance to chemical corrosion by boiling acids, neutral liquid and/or their vapours	No visible cracking
BS EN 10209 : 1996, Annex D	Adherence level of enamel	Class 1
BS EN 14483.4 : 2004	Resistance to hot sodium hydroxide	Rate of mass loss = 1.37g/m ² /hr
BS EN ISO 15695 : 2001	Scratch resistance	Complies
BS EN ISO 28722 : 2011, Clause 5.3	Resistance to abrasion	Total Mass loss = 0.021g
BS EN ISO 28722 : 2011, Clause 5.4	Impact resistance	No damage
BS EN ISO 8289 : 2011	Low voltage test	0 Defects
BS1344.21 : 1993	Resistance to Impact Pistol Test	No cracking, powdering off, spalling or chipping at maximum force
BS1344.6 : 1971	Resistance to Alkali	No visible change

6.1 Installation:

Mechanical cassette-fix installation is the recommended installation system for ULTRANAMEL cladding using the well-proven offset aluminium clips as per the below detail.



ULTRANAMEL installation details are available in PDF and CAD on request. The ULTRANAMEL installation details are provided for conceptual purposes only. These are not the only methods that can be used to attach ULTRANAMEL, nor can they be used generically without consideration for each individual application. Good design engineering may preclude the choice of details used.

6.2 Acceptable System Components:

Sarking:

Shall be FIRESPAN deemed-to-satisfy non-combustible sarking tested by a NATA accredited laboratory to AS 1530.1. Install and tape in accordance with AS 4200.2 to all cladding areas.

Sub-framing System:

The sub-framing system to be attached to the main structure 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. 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.

- STUDTEK Facade Framing, 08 9451 2344, sales@bluechipgroup.net.au.

STUDTEK Zinalume Framing is recommended and it is cold-formed according to AS/NZS:4600 from Zinalume G300 steel which is continuous hot-dipped aluminium/zinc alloy-coated structural steel as per AS:1397.

Panel Joint Sealant:

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

7.1 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 steel 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.

7.2 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

7.3 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 ULTRANAMEL 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.

7.4 Storage & Handling:

- Considerable care should be taken in the handling of ULTRANAMEL as the panels are sensitive to impact particularly from small hard objects such as stones which can dent the vitreous enamel finish
- 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 ULTRANAMEL 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.

7.5 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.