

## **DESIGNER SPECIFICATION FOR NUCLEO Bonded Laminated Aluminium Cladding System Fixed Watertight Cassettes – 4.0 mm thick**

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### 1. SCOPE OF WORK

The scope of work includes the design, supply, fabrication and installation of NUCLEO bonded and laminated aluminium panel cladding, complete with all necessary sub-structures, anchors, hardware and fittings to provide a total installation, fully in conformity with the requirements and intent of the drawings and specification herein.

The cladding system shall be installed complete with matching copings, flashings etc. by an approved cladding specialist contractor in accordance with the supplier's recommendations.

### 2. DESIGN CONCEPT

The proposed NUCLEO panel cladding shall be based on a watertight cassette panel system and divided into individual panels as indicated on architectural drawings.

A typical panel shall be fitted with extruded aluminium angle brackets. Such brackets shall be positioned in such a manner that brackets attached to adjacent panels shall overlap.

Fastening of panels shall take place and be concealed within the panel joints through the overlapping angle brackets into furring channels behind.

A construction joint of 12mm minimum shall be provided between cladding elements to cater for easy panel installation. All fixing and joint details shall be designed to provide for the expected thermal and structural movements.

To conceal fixings and form a watertight seal, seal construction joint with a suitable low modulus silicone or polyurethane sealant over a closed cell foam backing rod. Sealant applied to be of a type in accordance with sealant supplier's recommendations.

Horizontal cladding areas ideally should have a slope of 1:15 (4° approx) and to prevent staining should slope away from visible vertical facade areas.

### 3. DESIGN CRITERIA

NUCLEO panel cladding shall be so designed to meet or exceed specified performances required for the prevailing local weather conditions.

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3.1. Design Wind Loading : \_\_\_\_\_ kPa positive and negative  
No cladding element shall sustain permanent deformation or failure under loading equivalent 1.5 times the design wind pressure specified.

3.2. Deflection

Deflection of any aluminium frame shall not exceed 1/120 of the clear span.

3.3. Expansion and Contraction

The cladding shall be so fabricated and erected as to provide for all expansion and contraction of the components. Any temperature change due to climatic conditions shall not cause harmful buckling, opening of joints, undue stress on fastening and anchors, noise of any kind or other defects.

4. MATERIAL AND FINISHES

4.1. Cladding Material

All cladding shall be 4.0mm thick NUCLEO aluminium panel, Outer skins of ASTM Alloy 5052 and profiled core of ASTM Alloy 3003

- a. Panel thickness: 4.0mm
- b. Thickness front skin: 0.7 mm
- c. Thickness rear skin: 0.5 mm
- d. Panel weight 4.6 kg/m<sup>2</sup>
- e. Finish

The external cladding panel surface shall be factory prefinished by the supplier with a Fluoropolymer coating of either PVDF or FEVE or combination of both applied through a "REVERSE ROLLER COATING" process. Total dry-film thickness of the coating shall be 30 microns minimum and less than 100 microns consisting of a chromate conversion coating, an inhibitive primer and a top coat. The coated surface shall comply strictly with:

- AAMA 2605-13

The finished surface shall be factory protected with a self-adhesive peel-off foil, tested to withstand at least 3 months exposure to local weather conditions

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without losing the original peel-off characteristic or causing stains or other damages.

Application of the Fluoropolymer coating system by means of spray coating before or after forming and shaping of the cladding elements shall not be permitted.

The reverse side of the cladding panel surface facing the wall shall be in mill finish or wash coat and line marked with the brand, colour and date of manufacture.

(g) Colour/Gloss : As per NUCLEO standard colour chart

4.2 The NUCLEO aluminium panel shall be tested in accordance with Australian Standards listed below.

Test	Description	Result
AS 1530.1	Methods for fire tests on building materials, components and structures Combustibility test for materials	Passed
AS 1530.3	Simultaneous determination of Ignitibility, Flame Propagation, Heat Release and Smoke Release”	Ignitability Index 0 Flame Propagation 0 Heat Release 0 Smoke Release 0-1

4.3. Aluminium extrusions  
 Non visible extrusion shall be of aluminium alloy AA 6060-T5 in mill finish.

4.4. Fixings

(a) Fasteners, including concealed screws, nuts, bolts and other items required for connecting aluminium to aluminium or aluminium to steel shall be in accordance with AS 3566.2 and of a type to suit its application and exposure conditions.

Class 1 and 2: Internal applications.  
 Class 3: External applications, moderate industrial and marine applications.  
 Class 4: Severe marine applications

(b) All fixing anchors, brackets and similar attachments used in the erections, shall be of aluminium, non-magnetic stainless steel, zinc coated steel, or hot dip zinc galvanised steel.

(c) Other fixing options should be discussed with a qualified professional.

4.5. Dissimilar Materials

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It is advisable where two surfaces of dissimilar material come into contact, such surfaces shall be insulated with a layer of PVC or Polyethylene tape. This option should be discussed with a qualified professional

### 5. FABRICATION

- 5.1. All cladding panels shall be factory fabricated and assembled in compliance with the supplier's Data Sheets and Fabrication Guidelines and to the best standard of workmanship under experienced factory supervision and control.
- 5.2. All panels shall be cut and routed using equipment and tools recommended and approved by the panel supplier. After folding into cassettes, an extruded aluminium profile shall be fixed to the minimum 20mm deep return bend.

Fixings shall be properly positioned so that the edge of the fixing hole is no closer than 7mm from the edge of the NUCLEO panel and the distance between fixings shall not exceed 500mm.

- 5.3. If reinforcement of the panel is required please seek the advice of a qualified professional.
- 5.4. Each panel shall be marked on the reverse side for easy identification of size and location.
- 5.5. Finished panels shall be stored and transported to site in vertical position, face-to-face resp. back-to-back, with adequate protection to prevent scratches and dents.
- 5.6. The factory applied protective peel-off foil shall only be removed after the panels have been installed on site.

### 6. INSTALLATION

- 6.1. Panels shall be stored on site in vertical position, face-to face resp. back-to back-, with adequate protection to prevent scratches and dents.
- 6.2. Any component parts which are observed to be defective in any way, including warped, bowed, dented, abraded and broken members must not be installed. Member or parts which have been damaged during installation or thereafter before the time of final acceptance shall be removed and replaced.
- 6.3. No cutting, trimming, welding or brazing of any component parts during erection, in any manner which would damage the finish, decrease the strength or result in a visual imperfection or failure in performance shall be executed during erection.

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Component parts which require alteration shall be returned to shop for fabrication, if necessary replaced with new parts.

- 6.4 Anchorage of the cladding structure to the building structure shall be by approved methods in strict accordance to the specification and approved shop and/or erection drawing. Supporting brackets shall be so designed as to provide three-dimensional adjustments and accurate location of cladding components.
- 6.5 All component parts shall be installed level, true to line with uniform joints and reveals.
- 6.6 Cladding panels shall be left protected by the factory applied peel-off foil as long as possible. Under no circumstances shall the peel-off foil on individual panels be partially removed and left exposed to weathering.
- 6.7 Before handing over of the completed cladding, all peel-off foil shall be removed. Panels which were exposed to weathering without peel-off foil shall be cleaned in accordance with supplier's recommendation.

### 7. CONTACT

HVG Facades Pty Ltd  
29 Henderson Street  
Turrella NSW 2205  
[hvgfacades.com.au](http://hvgfacades.com.au)

Thomas Brenner  
0414 707 205  
[tbrenner@hvgfacades.com.au](mailto:tbrenner@hvgfacades.com.au)