

1:0 SCOPE

The extent of the panel system work is indicated on the drawings and in the specifications. The work includes the design, supply, fabrication and installation of Alucolux pre-finished Aluminium panels with all necessary sub-structures, mechanical fixings, hardware and fittings to provide a complete installation, conforming with the requirements of the drawings and specification herein.

Panel system requirements include Alucolux pre-finished Aluminium panels with an engineered certified fixing system, including corresponding copings, flashings, fixing hardware, shims, furring, fasteners, gaskets and sealants, related flashing adapters and masking for a complete watertight installation.

2:0 INSTALLER QUALITY ASSURANCE

The fabrication and installation are to be carried out by an approved installer with at least 5 years' experience in façade manufacturing and installation. They must be licensed to the local building authority to do such façade construction and contracting and are required to show evidence of accreditation upon tendering.

3:0 DESIGN CRITERIA

Alucolux Cladding shall be designed and installed as a watertight cassette panel system with mechanical fixing for each individual panel. Alucolux shall be installed as individual panels as indicated by the grid layout on the architectural drawings. All sub frames, fixing and joint details shall be designed to perform to the expected structure and thermal loads and movements.

All proprietary fixings including top hats are as per the manufacturer's/distributor's specification. All proprietary fixings including top hats are as per manufacturer's/distributor's specification. Each panel shall be fastened using extruded Aluminium angle brackets with compatible, system engineered and corresponding fixing hardware. The finished exposed panel face should be clean of fixings with all fastening concealed within and behind the panel joints. A minimum 12mm construction joint must be provided between all cladding panels and elements. All construction joints shall be sealed to conceal fixings and form a watertight seal. The sealer shall be a silicone sealant designed for Aluminium cladding joint seal application and carry a sealant manufacturer's warranty for a minimum of 15 years.

Any Horizontal cladding areas shall have a fall away from the vertical façade areas with a slope of 1:15 (approximately 5 degrees) with the intention of avoiding water pooling.

Based on a surface gloss finish of 30%, the panel surface shall not have any imperfections such as buckles, creases, oil canning and other surface defects when viewed at any position but not less than at an angle of 15 degrees to the true plane of the panel, with natural lighting of incident of not less than the same angle.

The solid Aluminium panel cladding shall be designed to meet or exceed the performances required for prevailing local weather conditions.

3.1 EXPANSION AND CONTRACTION: The cladding shall be fabricated and installed as to provide for all expansion and contraction of the components. Any temperature change due to climatic conditions shall not cause buckling, opening of joints, undue stress on fastening and anchors, noise or any other defects.

3.2 FLATNESS: The cladding surface taken individually shall not have any irregularities such as oil canning, waves, buckles and other imperfections when viewed at any position but not less than an angle of 15 degrees to the true plane of the panel, with natural lighting of incident of not less than the same angle.

4:0 MATERIALS AND FINISHES

4.1 ALUCOLUX 3.0mm PRE-FINISHED SOLID ALUMINIUM: All cladding panels shall be 3.0mm thick Alucolux. The 3.0mm Aluminium is composed of 100% 3003-H24 Aluminium alloy and includes a corrosion inhibitive primer on the rear surface and a PPG Fluoropolymer base finish on the top surface.

4.2 MECHANICAL PROPERTIES

- (a) Flexibility: 0-2 T-Bend; no pic-off
- (b) Reverse Impact: ASTM D2794; no cracking or adhesion loss
- (c) Adhesion: ASTM D3359; no adhesion loss
- (d) Weight: 8.16kg/SQM
- (e) Tensile Strength: EN 485-2; 145-185 MPa
- (f) Yield Strength: ASTM E8; ≥ 115 MPa
- (g) Elongation: EN 485-2; $A_{50} \geq 6\%$
- (h) Specific Gravity: 2.72 g/cc

4.3 THERMAL PROPERTIES

- (a) Thermal Resistance (R-Value): 0.000016 m²k/w
- (b) Thermal Conductivity: 180 W/m-K

4.4 PRODUCT DIMENSIONS AND TOLERANCES

- (a) Total Thickness: 3.0mm
- (b) Standard Width: 1250mm / 1500mm
- (c) Custom Width: 800 – 1600mm
- (d) Custom Lengths: 1800 – 6000mm (Min. 30 panels per length)
- (e) Width: +/- 2.0mm
- (f) Length: +/- 2.0mm
- (g) Thickness: +/- 0.1mm
- (h) Bow: 0.5% of the length and / or width

4.5 SURFACE FINISH: Alucolux panels are finished in AAMA 2605-13 accredited PPG Duranar Fluoropolymer coil coatings, applied by high quality coil coating (roll-to-roll) continuous method. Duranar coil coatings combine PPG proprietary resin and pigment technologies with 70% of the resin system being fluoropolymer base resins. The coatings are highly resistant to chalking, fading, chipping, and peeling allowing for consistent finishes and minimal maintenance.

The painting process allows for the following coating options:

2-coat-2-bake (Dry film $\geq 25\mu\text{m}$)

3-coat-3-bake (Dry film $\geq 32\mu\text{m}$)

4-coat-4-bake (Dry film $\geq 40\mu\text{m}$, for wood / stone look)

And with Fluoropolymer PVDF/ FEVE certificated coating systems. The coating finish shall have a minimum manufacturer's warranty for 15 years. Warranty conditions may vary depending on the project location and should always be checked with the product's representative.

Alucolux coils are pre-treated (chromate-free passivation) after remove surface pollution. Then the primer and color coating and clear coating applied. The rear surface of the panel is primer coated to minimize oxidation while the top surface is protected with an adhesive film to prevent damage during fabrication and installation.

The paint surface is to meet the following standards;

- A. Pencil Hardness: F-2H (ASTM D3363)
- B. Humidity Resistance (4,000 Hr) (AAMA 2605-13)
- C. Cyclic Corrosion Testing (2,000 Hr) (AAMA 2605-13)
- D. Colour Retention: 5 units after 4,000 Hrs.
- E. Chalk Resistance: Max. 8 unit after 4,000 Hrs.
- F. Gloss Retention: 70% after 4,000 Hrs.

4.6 COLOUR: The surface shall consist of fluoropolymer-based PPG Duranar in Alucolux as specified.

4.7 FIRE RESISTANCE AND OTHER CERTIFICATION: Alucolux is constructed from 100% Aluminium and is BCA compliant as per clause C1.9 as a deemed-to-satisfy (DTS) non-combustible solution suitable for Type A, B and C buildings. The product has tested and passed the following standards for non-combustibility and weatherproof compliance:

- A. EN 13501-1 (Class A1)
- B. ASTM E84 (Class A)
- C. BS 476 Part 6&7
- D. BS 8414
- E. NFPA 285

5.0 FIXINGS

5.1 The following measures should be taken in order to prevent any bimetallic or galvanic corrosion between Alucolux panels and the fastener products. Fasteners, including concealed screws, nuts, bolts and other items required for connecting Aluminium to Aluminium or Aluminium to steel shall be of non-magnetic stainless steel. In addition, spacers must be installed between the panel and the top hat. Blind rivets used for fastening Alucolux material to the Aluminium sub-frame shall be of Aluminium alloy with stainless steel mandrel. All fixing anchors, brackets and other attachments used in the installation shall be of Aluminium, non-magnetic stainless steel, zinc coated steel or hot dip zinc galvanized steel.

5.2 Any face fix installations will be subject to the conditions outlined in the manufacturer's *Perforated and/or Face-Fix Installed Product Warranty for Oceania*.

6.0 FABRICATION

Panel fabrication shall be in accordance with specifications in the drawings relevant for the specific project.

6.1 All cladding panels shall be factory fabricated and assembled in compliance with the manufacturer's data sheets by experienced factory supervision and control.

6.2 Alucolux is a workable product that can be easily routed or V-Cut / U-Cut using an industrial or commercial grade router with a PCD twisted helical end mill of 90° or 110°. The diameter of the end mill tool should be between 8 and 12mm. The recommended routing depth on the panel is 2.3mm conducted at a recommended rotation speed between 15,000 to 20,000 RPM. Tool head speed should be kept between minimum 1m/min and maximum 3m/min to achieve optimum results.

6.3 It is recommended that lubrication (both ethanol and cutting oil based products are suitable) is applied continuously to avoid increased heat on the surface of the panel. Sustained heat during the routing procedure can lead to coating damage on the finished surface of the panel.

6.4 Panels shall be designed to withstand the specified wind load. If reinforcement stiffeners are required, they are to be applied in strict conformance to the manufacturer's/distributor's specification. The ends of the stiffener shall be mechanically fixed to the panel sub-frame.

6.5 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.

6.6 The factory applied Alucolux protective film shall only be removed after the panels have been installed on site.

7.0 INSTALLATION

7.1 Panels must be stored on site in vertical position, face-to face / back-to back-, with adequate protection to prevent scratches and dents to the painted surface.

7.2 Do not install component parts that are observed to be defective, including warped, bowed or dented.

7.3 Never cut, trim, weld, or braze component parts during erection in a manner which would damage the finish, decrease strength, or result in visual imperfection or a failure in performance. Return component parts which require alteration to shop for re-fabrication, if possible, or for replacement with new parts.

7.4 Fixing of the cladding structure to the building structure shall be by approved methods in strict accordance to the specification and approved shop drawing. All panels shall be correctly horizontal and perpendicular and precisely attached to the building structure.

7.5 All component parts shall be installed level, in line with uniform joints and reveals.

7.6 Protective films used on Alucolux are solely intended to protect the surface of the product against dirt, scratches and tool marks that may potentially arise during the handling, storage and transport of the product. The protective film is not intended to protect against corrosion, humidity or contact with any chemical products. It should be removed within 45 days following completion of fabrication and installation. Under no circumstances shall the film on individual panels be partially removed and left exposed to weathering.

7.7 Alucolux must be installed in the direction indicated by the arrow on the protective film.

7.8 Before handing over of the completed cladding, all of the protective film shall be removed. Panels which were exposed to weathering without peel-off foil shall be cleaned in accordance with manufacturer's recommendation.

7.8 A Manufacturer's Warranty shall be issued on a strictly project specific basis, with the standard warranty being issued for 15 years, issued directly by the manufacturer to the local end-user.

[End].