



BRANZ Appraised
Appraisal No.487 [2006]

BRANZ Appraisals

**Technical Assessments of products
for building and construction**

**BRANZ
APPRAISAL
CERTIFICATE
No. 487 (2006)**

**ULLTRACLAD®
CAVITY SYSTEM**

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Product

1.1 The Ulltraclad® Cavity System is a cavity-based, inter-locking powder coated aluminium weatherboard system. It is designed to be used as an external wall cladding system for residential and light commercial type buildings where domestic construction techniques are used.

1.2 The system includes horizontally fixed Ulltraclad® weatherboards (Standard, Baby Corro, Tee Board and Vertical Plank), timber battens, internal and external corner mouldings, starter strips, board jointers, board locators, joinery flashings and accessories.

1.3 The system incorporates a primary and secondary means of weather resistance (first and second line of defence) against water penetration by separating the cladding from the external wall framing with a nominal 20 mm cavity.



Scope

2.1 The Ulltraclad® Cavity System has been appraised as an external wall cladding for buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1; and,
- constructed with timber framing complying with the NZBC; and,
- with a risk score of 0-20, calculated in accordance with NZBC Acceptable Solution E2/AS1, Table 2; and,
- situated in NZS 3604 Building Wind Zones up to, and including 'Very High'.

2.2 The Ulltraclad® Cavity System must only be installed horizontally on vertical, flat surfaces.

2.3 The Ulltraclad® Cavity System is appraised for use with aluminium window and door joinery that is installed with vertical jambs and horizontal heads and sills. *(The Appraisal of the Ulltraclad® Cavity System relies on the joinery meeting the requirements of NZS 4211 for the relevant Building Wind Zone.)*

Building Regulations

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, the Ulltraclad® Cavity System if designed, used, installed and maintained in accordance with the statements and conditions of this Certificate, will meet the following provisions of the NZBC:

Clause B1 STRUCTURE: Performance B1.3.1, B1.3.2 and B1.3.4. The Ulltraclad® Cavity System meets the requirements for loads arising from self-weight, wind and impact [i.e. B1.3.3 (a), (h) and (j)]. See Paragraphs 9.1 - 9.3.

Clause B2 DURABILITY: Performance B2.3.1 (b), 15 years. The Ulltraclad® Cavity System meets this requirement. See Paragraphs 10.1 and 10.2.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. The Ulltraclad® Cavity System meets this requirement. See Paragraphs 14.1 - 14.5.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. The Ulltraclad® Cavity System meets this requirement and will not present a health hazard to people.

3.2 This Certificate appraises an **Alternative Solution** in terms of New Zealand Building Code compliance.

Technical Specification

4.1 System components and accessories for the Ulltraclad® Cavity System, which are supplied by Ullrich Aluminium Co Ltd, are:

Ulltraclad® Weatherboards

- Ulltraclad® weatherboards are produced in a rusticated weatherboard profile, with either a smooth (Standard), corrugated (Baby Corro) or grooved (Tee Board and Vertical Plank) face and are powder coated on the exposed surfaces. When installed, the cladding is effectively 15 mm thick. Standard and Baby Corro and Vertical Plank weatherboards are available 190 mm wide and are supplied 5 m and 6 m long. Tee Boards are available 150 mm wide and are supplied 5 m and 6 m long.
- Ulltraclad® weatherboards are manufactured from 6060 T5 grade aluminium alloy. The boards are extruded, cut to length and are then coated with a 100% polyester powder coating.

Accessories

- Cavity vent strip - a folded aluminium profile punched with 5 mm square holes in the bottom face to provide ventilation for the wall cavity and prevent the ingress of vermin. The cavity vent strip is available in 2.4 m lengths.
- Starter strips - extruded aluminium profiles used to locate and secure the bottom of the first course of weatherboards. The starter strips are powder coated and are available in 5 m lengths.
- External and internal corner moulding - extruded aluminium 90° two-piece internal corner mould and 90° two-piece external corner mould. The mouldings are powder coated and are available in 5 m lengths.
- Board jointer - extruded aluminium 'H' jointer for jointing lengths of Ulltraclad® weatherboard. The jointer is powder coated and is available in 5 m lengths.
- Board locator - an extruded aluminium locator used to locate the bottom edge and secure the top edge of individual weatherboard courses. The board locators are 50 mm long and are predrilled for fixing.
- Ulltraclad® head and jamb flashings - extruded aluminium to suit the window or door trim opening. The flashings are powder coated and are available in 5 m lengths.
- Inter-storey joint flashing - extruded aluminium. The flashing is powder coated and is available in 5 m lengths.

- Ulltraclad® weatherboard fixings - 50 x 3.3 mm AISI-302Cu stainless steel screws.
- 4.2 Accessories used with the Ulltraclad® Cavity System, which are supplied by the building contractor, are:
- Building wrap - paper or wrap complying with NZBC Acceptable Solution E2/AS1, Table 23, or breather-type membranes covered by a valid BRANZ Appraisal Certificate for use as wall wraps.
 - Flexible sill and jamb flashing tape - flexible flashing tapes complying with NZBC Acceptable Solution E2/AS1, Paragraph 4.3.11, or flexible flashing tapes covered by a valid BRANZ Appraisal Certificate for use around window and door joinery openings.
 - Cavity battens - nominal 50 mm wide by 25 mm thick (minimum finished size of 45 mm wide by 18 mm thick) timber treated to Hazard Class H3.1 with non-copper based treatments.
 - Separation strip - 50 mm wide strip of roof underlay complying with NZBC Acceptable Solution, Table 23.
 - Building wrap support - polypropylene strap, 75 mm galvanised mesh, galvanised wire, or additional vertical battens for securing the building wrap in place and preventing bulging of the bulk insulation into the drainage cavity. (*Note: mesh and wire galvanising must comply with AS/NZS 4534.*)
 - Cavity batten fixings - 40 x 2.5 mm flat head hot-dipped galvanised nails.
 - Window corner soaker and parapet flashing - folded from aluminium.
 - Head flashing - folded from aluminium to suit the window or door joinery opening.
 - Window and door trim cavity air seal - air seals complying with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.6, or self-expanding, moisture cure polyurethane foam air seals covered by a valid BRANZ Appraisal Certificate for use around window, door and other wall penetrations.
 - Flexible sealant - sealant complying with NZBC Acceptable Solution E2/AS1, or sealant covered by a valid BRANZ Appraisal Certificate for use as a weather sealing sealant for exterior use.

Handling and Storage

5.1 Handling and storage of all materials supplied by Ullrich Aluminium Co Ltd or the building contractor, whether on site or off site, is under the control of the building contractor. Ulltraclad® weatherboards must be stacked flat, off the ground and supported on a level platform. They must be kept dry either by storing under cover or providing waterproof covers to the stack. Care must be taken to avoid damage to powder coated surfaces. Weatherboards must always be carried on edge.

5.2 Cavity battens and other accessories must be stored so they are kept clean, dry and undamaged. All accessories must be used within the maximum storage period recommended by the manufacturer.

Technical Literature

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the Ulltraclad® Cavity System. The Technical Literature must be read in conjunction with this Certificate. All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Certificate must be followed.

Framing

Timber Treatment

7.1 Timber wall framing behind the Ulltraclad® Cavity System must be treated as required by NZS 3602.

Timber Framing

7.2 Timber framing must comply with NZS 3604 for buildings or parts of buildings within the scope limitations of NZS 3604. Buildings or parts of buildings outside the scope of NZS 3604 must be to a specific design in accordance with NZS 3603 and NZS 4203. Where specific design is required, the framing must be of at least equivalent stiffness to the framing provisions of NZS 3604. In all cases studs must be at maximum 600 mm centres, with dwangs fitted flush between the studs at maximum 800 mm centres.

7.3 Timber wall framing and cavity battens must have a maximum moisture content of 24% at the time of the cladding application.

7.4 Additional framing will be required at soffits, internal and external corners and window and door openings for the support and fixing of Ulltraclad® weatherboards.

General

8.1 Punchings in the cavity vent strip provide a minimum ventilation opening area of 1000 mm² per lineal metre of wall in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.3(b).

8.2 The ground clearance to finished floor levels as set out in NZS 3604 must be adhered to at all times. At ground level paved surfaces, such as footpaths, must be kept clear of the bottom edge of the cladding system by a minimum of 100 mm, and unpaved surfaces by 175 mm in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Table 18.

8.3 At deck or low pitch roof/wall junctions, the bottom edge of the Ulltraclad® weatherboards must be kept clear of any adjacent surface, or above the top surface of any adjacent roof flashing by a minimum of 35 mm in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.3.6.

8.4 All buildings must have barriers to airflow in the form of interior linings with all joints stopped, or alternatively, unlined gables and walls must incorporate a rigid sheathing or an air barrier which meets the requirements of NZBC Acceptable Solution E2/AS1, Table 23. Where rigid sheathings are used, the fixing length must be increased by a minimum of the thickness of the sheathing.

8.5 Where penetrations through the Ulltraclad® Cavity System are wider than the cavity batten spacing, allowance must be made for airflow between adjacent cavities. A minimum 10 mm gap must be left between the bottom of the vertical cavity batten and the flashing to the opening.

8.6 Inter-storey junctions must be provided for walls over 2 storeys in height in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.9.4(b). Inter-storey junctions must be constructed in accordance with the Technical Literature.

8.7 Where the Ulltraclad® Cavity System abuts other cladding systems, designers must detail the junction to meet their own requirements and the performance requirements of the NZBC. Details not included with the Technical Literature have not been assessed and are outside the scope of this Certificate.

Structure

9.1 The mass of the Ulltraclad® Cavity System when installed on the wall is approximately 5 kg/m². The Ulltraclad® Cavity System is therefore considered a light wall cladding in terms of NZS 3604.

Impact Resistance

9.2 The Ulltraclad® Cavity System has good resistance to hard and soft body impacts likely to be encountered in normal residential use, although some chipping of the finish could occur. The likelihood of impact damage to the system when used in light commercial situations should be considered at the design stage, and appropriate protection such as the installation of bollards and barriers should be considered for vulnerable areas.

Wind Zones

9.3 The Ulltraclad® Cavity System is suitable for use in all Building Wind Zones of NZS 3604, up to, and including 'Very High'.

Durability

Serviceable Life

10.1 The Ulltraclad® Cavity System is expected to have a serviceable life of at least 25 years provided the system is maintained in accordance with this Certificate.

10.2 On exposure to the environment, the powder coating will gradually lose gloss and coloured coatings will slowly fade. A faster reduction in appearance and a reduction in serviceable life can be anticipated in severe industrial, geothermal, and marine exposures.

Maintenance

11.1 Regular maintenance is essential for Ulltraclad® Cavity System installations to continue to meet the NZBC durability performance provision and to maximise their serviceable life.

11.2 Annual inspections must be made to ensure that all aspects of the cladding system, including flashings and any sealed joints remain in a weathertight condition. Any damaged areas or areas showing signs of deterioration which would allow water ingress, must be repaired immediately. Sealant and the like must be repaired in accordance with the sealant manufacturer's instructions. Regular cleaning (at least every 6 months) of the powder coating with water and a mild detergent is required to remove grime, dirt and organic growth, to maximise the life and appearance of the cladding. Repainting of the powder coating may be considered necessary after 10 years in order to restore the appearance of the cladding. Repainting must be carried out in accordance with the paint manufacturer's instructions for treatment of aged powder coated aluminium.

11.3 Minimum ground clearances as set out in this Certificate must be maintained at all times during the life of the cladding. *(Failure to adhere to the minimum ground clearances given in this Certificate and the Technical Literature will adversely affect the long term durability of the Ulltraclad® Cavity System.)*

Control of External Fire Spread

12.1 The Ulltraclad® Cavity System is suitable for use as an external wall cladding on all buildings in accordance with NZBC Acceptable Solution C/AS1 Part 7, Paragraph 7.11.2(a).

Outbreak of Fire

13.1 Ulltraclad® weatherboard is considered a non-combustible material and need not be separated from flues and chimneys. However, when used in conjunction with, or attached to heat sensitive materials, the heat sensitive material must be separated from chimneys and flues in accordance with the requirements of NZBC Acceptable Solution C/AS1 Part 9 for the protection of combustible materials.

External Moisture

14.1 The Ulltraclad® Cavity System, when installed in accordance with this Certificate and the Technical Literature prevents the penetration of moisture that could cause undue dampness or damage to building elements.

14.2 The cavity must be sealed off from the roof and sub-floor space to meet compliance with NZBC Clause E2.3.5.

14.3 The Ulltraclad® Cavity System allows excess moisture present at the completion of construction to be dissipated without permanent damage to building elements to meet compliance with NZBC Clause E2.3.6.

14.4 The details given in the Technical Literature for weather sealing are based on the design principle of having a first and second line of defence against moisture entry for all joints, penetrations and junctions. The ingress of moisture must be excluded by detailing joinery and wall interfaces as shown in the Technical Literature. Weathertightness details that are developed by the designer are outside the scope of this Certificate and are the responsibility of the designer for compliance with the NZBC.

14.5 The use of the Ulltraclad® Cavity System where there is a designed cavity drainage path for moisture that penetrates the cladding, does not reduce the requirement for junctions and penetrations to remain weather resistant.

Installation Information

Installation Skill Level Requirements

15.1 Installation of Ulltraclad® weatherboards and accessories supplied by Ullrich Aluminium Co Ltd and the building contractor must be completed in accordance with instructions given within the Ulltraclad® Cavity System Technical Literature and this Certificate by tradespersons who have been trained by Ullrich Aluminium Co Ltd and have an understanding of cavity construction.

System Installation

Building Wrap and Flexible Sill and Jamb Tape Installation

16.1 The selected building wrap and flexible sill and jamb tape system must be installed by the building contractor in accordance with the wrap and tape manufacturer's instructions prior to the installation of the cavity battens and the rest of the Ulltraclad® Cavity System. Building wrap must be installed horizontally and be continuous around corners. The wrap must be lapped 75 mm minimum at horizontal joints and

150 mm minimum over studs at vertical joints. Particular attention must be paid to the installation of the building wrap and sill and jamb tapes around window and door openings to ensure a continuous seal is achieved and all exposed wall framing in the opening is protected.

Cavity Battens

16.2 Cavity battens must be installed over the building wrap to the wall framing at maximum 600 mm centres where the studs are at maximum 600 mm centres or at 400 mm centres where the studs are at 400 mm centres. The battens must be fixed in place with 40 x 2.5 mm hot-dipped galvanised flat head nails at maximum 800 mm centres.

16.3 When the cavity battens are installed at greater than 450 mm centres, the building wrap must be supported between the battens to prevent the wrap bulging into the cavity space when bulk insulation is installed in the wall frame cavity.

Aluminium Joinery Installation

16.4 Aluminium joinery and associated head flashings must be installed by the building contractor in accordance with the Technical Literature. A 7.5 - 10 mm nominal gap must be left between the joinery reveal and the wall framing so a PEF rod and air seal can be installed after the joinery has been secured in place.

Ulltraclad® Aluminium Weatherboard Installation

16.5 Ulltraclad® weatherboards may be cut on site by power saw fitted with an aluminium cutting blade. Holes and cut-outs may be formed by drilling a number of holes around the perimeter of the opening required, or by using a holesaw suitable for cutting aluminium. When cutting the weatherboards on site, a strip of masking tape must be applied to each side of the cut line to prevent the weatherboard finish from being damaged.

16.6 Ulltraclad® weatherboards must be installed starting at the bottom of the wall. The first course of weatherboards must overhang the bottom plate by a minimum of 50 mm.

16.7 Before the weatherboards and starter strip are installed, the corner mouldings must be fixed in place. The corner mouldings must be continuous in length from the underside of the first weatherboard course to the soffit or top of the wall.

16.8 When the wall being clad is longer than 6 m, a board jointer must be fixed in place over a cavity batten directly over a stud. The jointer must be fixed plumb and must be continuous from the underside of the first weatherboard course to the soffit or top of the wall.

16.9 The starter strip must be fixed through the cavity battens to the wall framing behind the first course of weatherboards. The starter strip for the Standard, Baby Corro and Tee Board weatherboards must be fixed level and a 20 mm gap must be maintained between each end of the starter strip and the corner moulds or board jointer. The starter strip for the Vertical Plank must be fixed level and 3 mm diameter holes must be drilled in the base of the channel at 600 mm centres to allow for drainage.

16.10 Ulltraclad® weatherboards are cut to length allowing a 4 mm gap at each end of the board for expansion. The first course of Standard, Baby Corro and Tee Board weatherboards must be locked into the tongue of the starter strip and must then be secured at the top of the board with board locators fixed through the cavity battens to the stud. The first course of Vertical Plank is a half board and is fitted into the Vertical Plank starter strip channel. The top of the board is fixed through the board

upstand, through the cavity battens to the stud.

16.11 Subsequent courses of Standard, Baby Corro and Tee Board weatherboards must be installed over the tongue of the board locator from the course below, and must be secured at the top of the board with locators fixed through the cavity batten to the stud at maximum 600 mm centres. Subsequent courses of Vertical Plank must be installed by inserting the ball section of the board into the socket of the previous board, and must be secured at the top by fixing through the board upstand, through the cavity battens to the stud at maximum 600 mm centres.

16.12 Board fixing is carried out using 50 x 3.3 mm stainless steel screws.

16.13 Window and door joinery head and jamb flashings must be installed in accordance with the Technical Literature.

Finishing

16.14 The Ulltraclad® Cavity System is pre-finished and does not require painting at the completion of installation. Touch up of scratches and the like must be completed in accordance with the instructions of Ullrich Aluminium Co Ltd.

Health and Safety

17.1 Hearing and eye protection must be worn while cutting Ulltraclad® weatherboards and accessories.

Basis of Appraisal

The following is a summary of the technical investigations carried out:

Tests

18.1 The following testing on the Ulltraclad® Cavity System has been completed by BRANZ:

- BRANZ expert opinion on NZBC E2 code compliance for the Ulltraclad® Cavity System was based on testing and evaluation of all details within the scope and as stated within this Certificate. The Ulltraclad® Cavity System was tested to E2/VM1. The testing assessed the performance of the foundation detail, window head, jamb and sill details, meter box head, jamb and sill details, vertical board joints, internal and external corners and parapet cap. In addition to the weathertightness test, the details contained within the Technical Literature have been reviewed, and an opinion has been given by BRANZ technical experts that the system will meet the performance levels of Acceptable Solution E2/AS1 for drained cavity claddings.

Other Investigations

19.1 Structural and durability opinions have been provided by BRANZ technical experts.

19.2 Site visits have been carried out by BRANZ to assess the practicability of installation, and to examine completed installations.

19.3 The Technical Literature for the Ulltraclad® Cavity System has been examined by BRANZ and found to be satisfactory.

Quality

20.1 The manufacture of Ulltraclad® weatherboards has been examined by BRANZ, and details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.

20.2 The quality of materials, components and accessories supplied by Ullrich Aluminium Co Ltd is the responsibility of Ullrich Aluminium Co Ltd. The quality control system of Ullexco (a division of Ullrich Aluminium Co Ltd) has been assessed and registered as meeting the requirements of ISO 9001: 2000 by Bureau Veritas Quality International, Certificate Number 129755.

20.3 Quality of installation on site of components and accessories supplied by Ullrich Aluminium Co Ltd and the building contractor is the responsibility of the installer.

20.4 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of framing systems and joinery, building wraps, flashing tapes, airseals, joinery head flashings and cavity battens in accordance with the instructions of Ullrich Aluminium Co Ltd.

20.5 Sub-trades are responsible for installation of penetrations, flashings etc that are relevant to their trade in accordance with the Ulltraclad® Cavity System Technical Literature.

20.6 Building owners are responsible for the maintenance of the Ulltraclad® Cavity System in accordance with the instructions of Ullrich Aluminium Co Ltd.

Sources of Information

- NZS 3602: 2003 Timber and wood-based products for use in building.
- NZS 3603: 1993 Timber Structures Standard
- NZS 3604: 1999 Timber framed buildings.
- NZS 4203: 1992 General structural design and design loadings for buildings.
- NZS 4211: 1985 Specification for performance of windows.
- Compliance Document for New Zealand Building Code External Moisture Clause E2, Department of Building and Housing, Third Edition July 2005.
- New Zealand Building Code Handbook and Approved Documents, Building Industry Authority, 1992.
- The Building Regulations 1992 up to, and including, October 2004 amendment.



BRANZ

In the opinion of BRANZ, the Ulltraclad® Cavity System is fit for purpose and will comply with the Building Code to the extent specified in this Certificate provided it is they are used, designed, installed and maintained as set out in this Certificate.

The Appraisal Certificate is issued only to the Certificate Holder, Ullrich Aluminium Co Ltd, and is valid until further notice, subject to the Conditions of Certification.

Conditions of Certification

1. This Certificate:
 - a) relates only to the product as described herein;
 - b) must be read, considered and used in full together with the technical literature;
 - c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
 - d) is copyright of BRANZ.
2. The Certificate Holder:
 - a) continues to have the product reviewed by BRANZ;
 - b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
 - c) abides by the BRANZ Appraisals Services Terms and Conditions.
3. The product and the manufacture are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ.
4. BRANZ makes no representation as to:
 - a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
 - b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
 - c) any guarantee or warranty offered by the Certificate Holder.
5. Any reference in this Certificate to any other publication shall be read as a reference to the version of the publication specified in this Certificate.

For BRANZ

P Robertson
Chief Executive

Date of issue: 21 December 2006