



BRANZ Appraised
Appraisal No.454 [2012]

BRANZ Appraisals

Technical Assessments of products
for building and construction

**BRANZ
APPRAISAL
No. 454 (2012)**

This Appraisal replaces BRANZ
Appraisal No. 454 (2005) issued
30 August 2005.

**ULLTRACLAD®
ALUMINIUM
CLADDING**

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Product

1.1 Ulltraclad® Aluminium Cladding is an 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 consists of horizontally fixed Ulltraclad® weatherboards (Standard, Baby Corro, Tee Board, Traditional and Shadoline), internal and external corner mouldings, starter strips, board jointers, board locators, joinery flashings and accessories.

1.3 The system is applied direct to the external wall framing over an absorbent building underlay and incorporates head, sill and jamb flashings for window and door penetrations.



Scope

2.1 Ulltraclad® Aluminium Cladding using Standard, Baby Corro, Tee Board, Traditional and Shadoline 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 0-12, calculated in accordance with NZBC Acceptable Solution E2/AS1, Table 2; and,
- situated in NZS 3604 Wind Zones up to, and including 'Very High'.

2.2 Standard, Baby Corro, Tee Board, Traditional and Shadoline weatherboards must only be installed horizontally on vertical, flat surfaces.

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

Building Regulations

New Zealand Building Code (NZBC)

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

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

Clause B2 DURABILITY: Performance B2.3.1 (b), 15 years and B2.3.2. Ulltraclad® Aluminium Cladding meets these requirements. See Paragraphs 10.1 and 10.2.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. Ulltraclad® Aluminium Cladding meets this requirement. See Paragraphs 14.1 – 14.3.

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

3.2 This is an Appraisal of an **Alternative Solution** in terms of New Zealand Building Code compliance.

Technical Specification

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

Ulltraclad® Weatherboards

- Horizontally fixed Ulltraclad® weatherboards are produced in a rusticated weatherboard profile, with either a smooth (Standard), corrugated (Baby Corro) or grooved (Tee Board) face, in a bevelback weatherboard profile (Traditional), or a flat face with negative joint detail (Shadoline) and are powder coated on the exposed surfaces. When installed, the cladding is effectively 15 mm thick. Standard and Baby Corro weatherboards are available 190 mm wide, Tee Boards are available 150 mm wide, Traditional weatherboards are available 157 mm wide and Shadoline weatherboards are available 205 mm wide. The weatherboards are supplied in 5 m and 6 m lengths.
- All 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

- Ulltraclad® starter strip – an extruded aluminium profile used to locate and secure the bottom of the first course of Ulltraclad® weatherboards. The starter strip is powder coated and is 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.
- Head, sill 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.
- Ulltraclad® weatherboard fixings – 30 x 3.3 mm AISI-302Cu stainless steel screws.

4.2 Accessories used with Ulltraclad® Aluminium Cladding, which are supplied by the building contractor, are:

- Flexible wall underlay – building paper complying with NZBC Acceptable Solution E2/AS1 Table 23, or breather-type membranes covered by a valid BRANZ Appraisal for use as wall underlays behind non-absorbent, metal-based claddings.
- Rigid wall underlay – Plywood or fibre cement sheet complying with NZBC Acceptable Solution E2/AS1 Table 23, or rigid sheathing covered by a valid BRANZ Appraisal for use as rigid air barrier systems behind non-absorbent, metal-based claddings.
- 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 for use around window and door joinery openings.
- Inseal® 3109 tape – black, compressible, low density PVC foam. The foam is coated on one side with pressure sensitive acrylic adhesive and the other face is covered by a silicone release paper. The tape is 19 mm thick and is supplied in rolls 10 mm wide and 12 m long.

- 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 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 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 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 Ulltraclad® Aluminium Cladding. The Technical Literature must be read in conjunction with this Appraisal. All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

Design Information

Framing

Timber Treatment

7.1 Timber wall framing behind Ulltraclad® Aluminium Cladding must be treated as required by NZBC Acceptable Solution B2/AS1.

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 AS/NZS 1170. 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 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 At ground level the bottom edge of the Ulltraclad® weatherboards must be kept clear of paved surfaces, for example footpaths, 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. The ground clearances to finished floor levels as set out in NZS 3604 must be adhered to.

8.2 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.

8.3 All external walls of buildings must have barriers to airflow in the form of interior linings with all joints stopped for wind zones up to and including Very High. 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. For attached garages, wall underlays must be selected in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.3.4. Where rigid underlays are used, the fixing lengths must be increased by a minimum of the thickness of the underlay.

8.4 Where Ulltraclad® Aluminium Cladding abuts other cladding systems, designers must detail the junction to meet their own requirements and the performance requirements of the NZBC. These details are outside the scope of this Appraisal.

Structure

Mass

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

Impact Resistance

9.2 Ulltraclad® Aluminium Cladding has good resistance to hard 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 Ulltraclad® Aluminium Cladding is suitable for use in all Wind Zones of NZS 3604, up to, and including 'Very High'.

Durability

Serviceable Life

10.1 Ulltraclad® Aluminium Cladding is expected to have a serviceable life of at least 15 years provided the system is maintained in accordance with this Appraisal.

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.

10.3 Microclimatic conditions, including geothermal hot spots, industrial contamination and corrosive atmospheres, and contamination from agricultural chemicals or fertilisers can convert mildly corrosive atmosphere into aggressive environments for fasteners. The fixing of Ulltraclad weatherboards and accessories in areas subject to microclimatic conditions requires specific design in accordance with NZS 3604 Paragraph 4.2.4, and is outside the scope of this Appraisal.

Maintenance

11.1 Regular maintenance is essential for Ulltraclad® Aluminium Cladding 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 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 Appraisal must be maintained at all times during the life of the cladding. *(Failure to adhere to the minimum ground clearances given in this Appraisal and the Technical Literature will adversely affect the long term durability of the Ulltraclad® System.)*

Control of External Fire Spread

12.1 Ulltraclad® Aluminium Cladding 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® weatherboards are considered non-combustible 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 Ulltraclad® Aluminium Cladding using Standard, Baby Corro, Tee Board, Traditional and Shadoline weatherboards, when installed in accordance with this Appraisal and the Technical Literature, on buildings with a risk score of 0-12, calculated in accordance with NZBC Acceptable Solution E2/AS1, Table 2, prevents the penetration of moisture that could cause undue dampness or damage to building elements.

14.2 Ulltraclad® Aluminium Cladding 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.

14.3 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 Appraisal and are the responsibility of the designer for compliance with the NZBC.

Internal Moisture

Water Vapour

15.1 Ulltraclad® Aluminium Cladding is not a barrier to the passage of water vapour, and when installed in accordance with this Appraisal will not create or increase the risk of moisture damage resulting from condensation.

Installation Information

Installation Skill Level Requirements

16.1 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® Aluminium Cladding Technical Literature and this Appraisal, by tradespersons who have been trained by Ullrich Aluminium Co Ltd.

System Installation

Building Underlay and Flexible Sill and Jamb Tape Installation

17.1 The selected building underlay and flexible sill and jamb tape system must be installed by the building contractor in accordance with the underlay and tape manufacturer's instructions prior to the installation of the rest of the Ulltraclad Aluminium Cladding system. Flexible building underlay must be installed horizontally and be continuous around corners. Underlay must be lapped 75mm minimum at horizontal joints and 150mm minimum over studs at vertical joints. Generic rigid sheathing materials must be installed in accordance with NZBC Acceptable Solution E2/AS1 and be overlaid with a flexible wall underlay. Proprietary systems shall be installed in accordance with the manufacturer's instructions. Particular attention must be paid to the installation of the building underlay 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.

Aluminium Joinery Installation

17.2 Aluminium joinery must be installed by the building contractor in accordance with the Technical Literature. A 7.5 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.

General

17.3 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.

Standard, Baby Corro, Tee Board, Traditional and Shadoline Weatherboard Installation

17.4 Standard, Baby Corro, Tee Board, Traditional and Shadoline 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.

17.5 Before the weatherboards and Ulltraclad® 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.

17.6 When the wall being clad is longer than 6 m, a board jointer must be fixed in place 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.

17.7 The starter strip must be fixed to the wall framing behind the first course of weatherboards. The starter strip 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.

17.8 The weatherboards are cut to length allowing a 4 mm gap at each end of the board for expansion. The first course 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 to the stud.

17.9 Subsequent courses of weatherboard 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 to the stud.

17.10 Board locator fixing is carried out using 30 x 3.3 mm stainless steel screws.

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

Finishing

17.12 Ulltraclad® Aluminium Cladding 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

18.1 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

19.1 The following testing on Ulltraclad® Aluminium Cladding has been completed by BRANZ:

- BRANZ expert opinion on NZBC E2 code compliance for Standard, Baby Corro, Tee Board, Traditional and Shadoline weatherboards was based on testing and evaluation of all details within the scope and as stated within this Appraisal. The Ulltraclad® Cavity System was tested to the version of E2/VM1 (as contained within NZBC Clause E2, Amendment 5, August 2011). The testing assessed the performance of the foundation detail, window head, jamb and sill details, internal and external corners. 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 NZBC Acceptable Solution E2/AS1 for direct fixed weatherboard claddings.
- Uniform wind face load tests to simulate wind pressures on Ulltraclad® Standard weatherboard were carried out by BRANZ, and the results were used in assessing the Ulltraclad® Aluminium Cladding system.
- A racking test was completed to examine the performance of Ulltraclad Aluminium Cladding when the system was subjected to both serviceability and ultimate level seismic racking deflections, taken to be ± 8 mm and ± 36 mm respectively. The system did not show signs of damage for the entire test program.

Other Investigations

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

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

20.3 The Technical Literature for Ulltraclad® Aluminium Cladding has been examined by BRANZ and found to be satisfactory.

Quality

21.1 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.

21.2 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: 2008.

21.3 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.

21.4 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 and airseals in accordance with the instructions of Ullrich Aluminium Co Ltd.

21.5 Building owners are responsible for the maintenance of the Ulltraclad® Aluminium Cladding in accordance with the instructions of Ullrich Aluminium Co Ltd.

Sources of Information

- AS/NZS 1170: 2002 Structural design actions.
- NZS 3602: 2003 Timber and wood-based products for use in building.
- NZS 3603: 1993 Timber Structures Standard.
- NZS 3604: 2011 Timber-framed buildings.
- NZS 4211: 2008 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 (Amendment 5, 1 August 2011).
- New Zealand Building Code Handbook Department of Building and Housing, Third Edition (Amendment 12, 10 October 2011).
- The Building Regulations 1992.

Reissue Note. 2 October 2012

The Ulltraclad® Aluminium Cladding system has been re-appraised to update all Basis-of-Appraisal information. This Appraisal replaces Appraisal No. 454 (2005) issued 30 August 2005.



BRANZ

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

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

Conditions of Appraisal

1. This Appraisal:
 - 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. **Ullrich Aluminium Co Ltd:**
 - 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.
 - d) Warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty 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 **Ullrich Aluminium Co Ltd**.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to **Ullrich Aluminium Co Ltd** or any third party.

For BRANZ

P Burghout
Chief Executive

Date of issue: 2 October 2012