



**SPECIFY WITH
CONFIDENCE**

BRANZ Appraisals

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

**BRANZ
APPRAISAL
CERTIFICATE
No. 459 (2004)**

**NU-AGE
NU-LITE**

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Product

1.1 Nu-Age NU-LITE is a cavity-based monolithic plaster wall cladding. 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 4.5 mm thick fibre cement sheets fixed over timber battens to form the cavity. The coating system consists of a 10 mm thickness of polystyrene bead saturated polymer-modified, cement-based plaster applied to the fibre cement sheets, a 2-3 mm coat of Adhesive Mortar reinforced with fibreglass mesh, and a 3-5 mm thick coat of Adobe or Sponge finish plaster. The plaster system is finished with a latex paint system.

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. The cavity allows for any occasional ingress of water that may get past the external skin to drain to the exterior of the building, and any remaining moisture to dry by evaporation.



Scope

2.1 Nu-Age NU-LITE has been appraised as an external wall cladding system for buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1 (Third Edition June 2004), 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 (Third Edition June 2004), Table 2; and,
- situated in NZS 3604 Building Wind Zones up to, and including 'Very High'.

2.2 Nu-Age NU-LITE must only be installed on vertical surfaces (except for tops of parapets, sills and balustrades, which must have a minimum 15° slope and be waterproofed in accordance with the Technical Literature).

2.3 The 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 Nu-Age NU-LITE relies on the joinery meeting the requirements of NZS 4211 for the relevant Building Wind Zone.*)

2.4 The system must be installed in accordance with the details set out in the Nu-Age NU-LITE Technical Literature, refer to Paragraph 6.1.

2.5 Installation of components and accessories supplied by Nu-Age Plaster Limited and approved applicators must be carried out only by Nu-Age Plaster Limited approved applicators.

Building Regulations

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, Nu-Age NU-LITE if designed, used, installed and maintained in accordance with the statements and conditions of this Certificate, will meet or contribute to meeting the following provisions of the NZBC:

Clause B1 STRUCTURE: Performance B1.3.1, B1.3.2 and B1.3.4. Nu-Age NU-LITE meets the requirements for loads arising from self-weight, earthquake, wind, human impact and creep [i.e. B1.3.3 (a), (f), (h), (j) and (q)]. See Paragraphs 10.1 - 10.4.

Clause B2 DURABILITY: Performance B2.3.1 (b), 15 years. Nu-Age NU-LITE meets this requirement. See Paragraph 11.1.

Clause C3 SPREAD OF FIRE: Performance C3.3.5. Nu-Age NU-LITE meets this requirement. See Paragraph 13.1.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. Nu-Age NU-LITE meets this requirement. See Paragraphs 15.1 - 15.5.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Nu-Age NU-LITE 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 supplied by Nu-Age Plaster Limited are as follows:

Plasters

- *Liteweight Plaster* is a polymer-modified, cement-based plaster comprising coarse sand, polypropylene fibres, polystyrene beads and adhesives. The plaster is supplied in 25 kg bags and mixed on site with clean drinking water. It is trowel or pump applied as a base coat in a 10 mm thick layer.
- *Adhesive Mortar* is a polymer-modified, cement-based plaster comprising a fine or very fine sand and additives. It is supplied in 25 kg bags and mixed on site with clean drinking water. It is trowel or pump applied in a 2-3 mm thick layer followed by the embedment of fibreglass mesh reinforcement in the outer surface.
- *Adobe Finish* is a polymer-modified, cement-based plaster comprising a fine or very fine sand and additives. It is supplied in 25 kg bags and mixed on site with clean drinking water. It is trowel applied to give a sculptured undulating finish, 3-5 mm in thickness.
- *Sponge Finish* is a polymer-modified, cement-based plaster comprising a fine sand, hydrated lime and additives. It is supplied in 25 kg bags and mixed on site with clean drinking water. It can be trowel or pump applied to a thickness of 3 mm.

Accessories

- Reinforcing mesh - alkali-resistant fibreglass mesh with a nominal mesh size of approximately 4 mm square and a weight of 150 g/m², or alkali-resistant fibreglass mesh with a nominal mesh size of approximately 6 mm square and a weight of 150 g/m² for use in domestic and light commercial situations.
- uPVC components - starter strip, jamb mould, sill mould, vermin tray acting as a ventilated cavity closure and control joint.
- Stainless steel components - Widra corner bead.

4.2 Accessories used with the system which are supplied by the approved applicator are:

- Waterproof membrane tapes - tapes covered by a valid BRANZ Appraisal Certificate for use as waterproofing membranes over tops of plastered balustrades, fixing blocks and the like.
- Flexible sealant – sealant complying with NZBC Acceptable Solution E2/AS1 (Third Edition June 2004), or sealant covered by a valid BRANZ Appraisal Certificate for use as a weather sealing sealant for exterior use.

4.3 Accessories used with the system which are supplied by the building contractor are:

- Building wrap - paper or wrap complying with NZBC Acceptable Solution E2/AS1 (Third Edition June 2004), Table 23, or breather-type membranes covered by a valid BRANZ Appraisal Certificate for use as wall wraps.
- Building wrap support - polypropylene strap for securing the building wrap in place and preventing bulging of the bulk insulation into the drainage cavity. (Note: additional vertical battens may also be installed to provide support.)
- Flexible sill and jamb flashing tape - flexible flashing tapes complying with NZBC Acceptable Solution E2/AS1 (Third Edition June 2004), 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 20 mm thick (minimum 18 mm) by 45 mm wide timber treated to Hazard Class H3.1.
- Cavity batten fixings - 30 x 2.5 mm hot-dip galvanised flat head nails.
- Fibre cement sheet - 4.5 mm Hardibacker® (James Hardie Building Products Ltd), 4.5 mm CSR Stuccobacker (CSR Building Materials (NZ) Ltd), 4.5 mm BGC Durabacker (BGC Fibre Cement NZ) or 4.5 mm Eterpan (Progressive Building Systems Ltd).
- Fibre cement sheet fixings - 60 x 2.80 mm hot-dip galvanised flat head fibre cement nails. (Note: Hot-dip galvanising must comply with AS/NZS 4680.)
- Joinery head flashings - as supplied by the joinery manufacturer or contractor.
- Window and door trim cavity air seal – air seals complying with NZBC Acceptable Solution E2/AS1 (Third Edition June 2004), 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 penetration openings.

Paint System Specification

4.4 Paint systems are not supplied by Nu-Age Plaster Limited and have not been assessed, therefore are outside the scope of this Certificate.

4.5 A latex exterior paint system complying with any of Parts 7, 8, 9 or 10 of AS 3730 must be used over the finishing plasters to make the system weathertight and give the desired finish colour to exterior walls. Paint colours must have a light reflectance value of 40% minimum regardless of gloss value.

Handling and Storage

5.1 Handling and storage of all materials supplied by Nu-Age Plaster Limited or the approved applicator, whether on or off site, is under the control of Nu-Age Plaster Limited approved applicators. Dry storage must be provided on site for the fibreglass mesh and bags of plaster mix. uPVC flashings and profiles must be protected from direct sunlight and physical damage, and should be stored flat and under cover.

5.2 Handling and storage of all materials supplied by the building contractor, whether on or off site, is under the control

of the building contractor. Materials must be handled and stored in accordance with the relevant manufacturer's instructions.

5.3 Bags of Nu-Age plaster must be used within the designated shelf life of six months from the date of manufacture.

Technical Literature

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the Nu-Age NU-LITE 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.

Design Information

Framing

Timber Treatment

7.1 Timber wall framing behind the Nu-Age NU-LITE system must be treated as required by NZS 3602.

Timber Framing

7.2 Timber framing must comply with NZS 3604. Studs must be at maximum 600 mm centres, with nogs fitted flush between the studs at maximum 800 mm centres.

7.3 Timber framing must have a maximum moisture content of 24% at the time of the cladding application. *(If sheets are fixed to framing with a moisture content of greater than 24% problems may occur at a later date due to excessive timber shrinkage.)*

7.4 Wall framing behind cavity battens where fibre cement sheets are joined must be nominal 50 mm thickness (i.e. 45 mm minimum finished thickness).

Fibre Cement Sheet Setout

7.5 All vertical fibre cement sheet edges must be supported and fixed through the cavity battens to the framing. Horizontal sheet edges must be supported at fixing locations with cavity spacers 100 mm long maximum in accordance with NZBC Acceptable Solution E2/AS1 (Third Edition June 2004), Paragraph 9.1.8.2(f). At the base of the wall, the fibre cement sheets must hang 50 mm below the supporting framing.

7.6 Additional framing will be required at soffits, internal and external corners and window and door openings for the support and fixing of sheet edges.

General

8.1 Punchings in the vermin tray provide a minimum ventilation opening area of 1000 mm² per lineal metre of wall in accordance with NZBC Acceptable Solution E2/AS1 (Third Edition June 2004), Paragraph 9.1.8.3(b).

8.2 At ground level, the bottom edge of the Nu-Age NU-LITE system must be kept clear of paved surfaces, such as footpaths and mowing strips, by a minimum of 100 mm and unpaved surfaces by 175 mm in accordance with NZBC Acceptable Solution E2/AS1 (Third Edition June 2004), Table 18. The ground clearances to finished floor levels as set out in NZS 3604 must be adhered to at all times.

8.3 At roof/wall junctions, the bottom edge of the Nu-Age NU-LITE system must be kept above the top surface of any adjacent roof flashing by a minimum of 35 mm in accordance with NZBC Acceptable Solution E2/AS1 (Third Edition June

2004), Paragraph 9.1.3.6. At balcony or deck junctions, the bottom edge of the system must be kept clear of any adjacent surface by a minimum of 50 mm.

8.4 Unlined gables and walls must incorporate a rigid sheathing or an air barrier which meets the requirements of NZBC Acceptable Solution E2/AS1 (Third Edition June 2004), Table 23.

8.5 Where the system 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 Certificate.

Control Joints

9.1 Control joints must be constructed in accordance with the Technical Literature, and be provided as follows:

- Horizontal control joints - at maximum 5 m centres and at all inter-storey floor levels.
- Vertical control joints - at maximum 5.4 m centres; aligned with any control joint in the structural framing; where the system abuts different cladding types, or where the system covers different structural materials.

(Note: Horizontal and Vertical Control joints must be located over structural supports. The design of vertical control joints where the system abuts different cladding types is outside the scope of this Certificate and is the responsibility of the designer - see Paragraph 8.5.)

Structure

Mass

10.1 The mass of the Nu-Age NU-LITE system is approximately 19.5 kg/m² at equilibrium moisture content, therefore it is considered a light wall cladding in terms of NZS 3604.

Impact Resistance

10.2 The system has adequate resistance to human impact loads likely to be encountered in normal residential use. 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

10.3 The system is suitable for use in all Building Wind Zones of NZS 3604, up to, and including, Very High.

(Note: Stuccobacker is not suitable for use with Nu-Age NU-LITE in Very High Building Wind Zones.)

Fibre Cement Sheet Fixing

10.4 Fibre cement sheets must be fixed through the cavity battens and cavity spacers to the wall framing at maximum centres as specified in Table 1.

Table 1: Fibre Cement Sheet Fixing Centres

NZS 3604 Building Wind Zone	Fibre cement sheet	Fixing centres for sheet edges and body of sheet
Low/Medium/High/ Very High	Hardibacker	200
	Eterpan	150
	Durabacker	150
Low/Medium/High	Stuccobacker	200

Durability

Serviceable Life

11.1 Nu-Age NU-LITE is expected to have a serviceable life of at least 30 years provided the system is maintained in accordance with this Certificate, and the fibre cement sheets, fixings and plaster are continuously protected by a weathertight coating and remain dry in service.

Maintenance

12.1 Regular maintenance is essential to ensure the performance requirements of the NZBC are continually met and to ensure the maximum serviceability of the system.

12.2 Annual inspections must be made to ensure that all aspects of the cladding system, including the paint coating system, plaster, flashings and any sealed joints remain in a weatherproof condition. Any cracks, damaged areas or areas showing signs of deterioration which would allow water ingress, must be repaired immediately. Sealant, paint coatings and the like must be repaired in accordance with the instructions of Nu-Age Plaster Limited.

12.3 Regular cleaning (at least annually) of the paint coating is required to remove grime, dirt and organic growth and to maximise the life and appearance of the coating. Grime may be removed by brushing with a soft brush, warm water and detergent. Paint systems must be recoated at approximately 5-10 yearly intervals in accordance with the paint manufacturer's instructions.

12.4 Minimum ground clearances as set out in this Certificate and the Technical Literature must be maintained at all times during the life of the system. *(Failing to adhere to the minimum ground clearances given in this Certificate and the Technical Literature will affect the long term durability of the Nu-Age NU-LITE system.)*

Control of External Fire Spread

13.1 The Nu-Age NU-LITE system is considered to meet the performance provisions of NZBC C3.3.5 for use as an external wall cladding when restricted to:

- Single storey buildings 1 m or more from the boundary for all purpose groups.
- Buildings up to 7 m high, 1 m or more from the boundary, for all purpose groups other than SC and SD.
- Fully sprinklered buildings up to 10 m high, 1 m or more from the boundary for all purpose groups other than SC, SD, SA and SR.
- Buildings containing purpose group SH, with a building height less than 10 m and located 1 m or more from the boundary.

(Note: The scope of this Certificate limits building heights to 10 m in accordance with the limitations of NZBC Acceptable Solution E2/AS1 (Third Edition June 2004), Paragraph 1.1 (a).)

Outbreak of Fire

14.1 Nu-Age NU-LITE need not be separated from chimneys and flues. 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

15.1 Nu-Age NU-LITE, 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.

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

15.3 The Nu-Age NU-LITE system allows excess moisture present at the completion of construction to be dissipated without permanent damage to building elements to meet code compliance with Clause E2.3.6.

15.4 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.

15.5 The use of Nu-Age NU-LITE where there is a designed cavity drainage path for moisture that penetrates the cladding, does not reduce the requirement for junctions, penetrations, etc to remain weather resistant.

Internal Moisture

16.1 NZBC Acceptable Solution E3/AS1 Paragraph 1.1.1(a) requires a minimum wall R-value of 1.5 for framed cavity wall construction. For Housing, the wall frame cavity must be insulated to meet NZBC Acceptable Solution E3/AS1.

Water Vapour

16.2 Nu-Age NU-LITE is not a barrier to the passage of water vapour, and when installed in accordance with this Certificate will not create or increase the risk of moisture damage resulting from condensation.

Installation Information

Installation Skill Level Requirements

17.1 Installation and finishing of components and accessories supplied by Nu-Age Plaster Limited and the approved applicator must be completed by trained applicators, approved by Nu-Age Plaster Limited.

17.2 Installation of the accessories supplied by the building contractor must be completed by tradespersons with an understanding of cavity construction and fibre cement sheet installation, in accordance with instructions given within the Nu-Age NU-LITE Technical Literature and this Certificate.

System Installation

Building Wrap and Flexible Sill and Jamb Flashing Tape

17.3 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 Nu-Age NU-LITE system. 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.

Aluminium Joinery Installation

17.4 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.

Fibre Cement Sheets

17.5 The fibre cement sheets must be installed by the building contractor in accordance with the relevant manufacturer's Technical Literature, except where varied by the Nu-Age NU-LITE Technical Literature and this Certificate. The Nu-Age NU-LITE Technical Literature contains full details for the installation of the system that must be followed.

Nu-Age NU-LITE Plaster System

17.6 Components and accessories supplied by Nu-Age Plaster Limited and the approved applicator must be installed in accordance with the Technical Literature by Nu-Age Plaster Limited approved applicators.

Inspections

17.7 The Technical Literature must be referred to during the inspection of Nu-Age NU-LITE installations by building consent authorities and territorial authorities.

Finishing

17.8 The paint coating manufacturer's instructions must be followed at all times for application of the paint finish. The plaster must be completely dry before commencing painting.

Health and Safety

18.1 Safe use and handling procedures for the components that make up the Nu-Age NU-LITE system are provided in the relevant manufacturer's Technical Literature.

Basis of Appraisal

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

Tests

19.1 The following testing has been completed by BRANZ:

- BRANZ expert opinion on NZBC E2 code compliance for Nu-Age NU-LITE was based on testing and evaluation of all details within the scope and as stated within this Certificate. The Nu-Age NU-LITE system and balustrade to wall junction details were tested to AS/NZS 4284 with a BRANZ-designed extension. The testing was completed in three stages; the first being the standard AS/NZS 4284 test, the second being the modified AS/NZS 4284 test with defects introduced in the test panel, and the third being the modified AS/NZS 4284 test with the internal linings and building wrap removed. The testing assessed the performance of the foundation detail, window head, jamb and sill details, vertical and horizontal control joints, internal and external corners and balustrade to wall junction with a plastered 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 (Third Edition June 2004) for drained cavity claddings.

- Uniform wind face load tests to simulate wind pressures on Hardibacker®, CSR Stuccobacker, BGC Durabacker and Eterpan fibre cement sheet were carried out by BRANZ, and the results were used in assessing the Nu-Age NU-LITE system.
- Tests to determine the bond strength of Liteweight Plaster to fibre cement sheet were carried out by BRANZ.

Other Investigations

20.1 Structural and durability opinions have been given 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 the Nu-Age NU-LITE system has been examined by BRANZ and found to be satisfactory.

Quality

21.1 The manufacture of the plasters has been examined by BRANZ, including methods adopted for quality control. 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 Nu-Age Plaster Limited is the responsibility of Nu-Age Plaster Limited. The quality control system of Nu-Age Plaster Limited has been assessed and registered as meeting the requirements of the Telarc Q-Based Code by Telarc Limited, Registration Number 631.

21.3 Quality on site is the responsibility of the Nu-Age Plaster Limited approved applicator.

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, airseals, joinery head flashings, cavity battens and fibre cement sheets in accordance with the instructions of Nu-Age Plaster Limited.

21.5 Building owners are responsible for the maintenance of Nu-Age NU-LITE in accordance with the instructions of Nu-Age Plaster Limited.

Sources of Information

- AS 3730 Guide to the properties of paints for buildings.
- AS/NZS 4284: 1995 Testing of building facades.
- AS/NZS 4680: 1999 Hot-dip galvanised (zinc) coatings on fabricated ferrous articles.
- NZS 3602: 2003 Timber and wood-based products for use in building.
- NZS 3604: 1999 Timber framed buildings.
- NZS 4211: 1985 Specification for performance of windows.
- Approved Document for New Zealand Building Code External Moisture Clause E2, Building Industry Authority, Third Edition June 2004.
- New Zealand Building Code Handbook and Approved Documents, Building Industry Authority, 1992.
- The Building Regulations 1992, up to, and including April 2003 Amendment.

In the opinion of BRANZ, Nu-Age NU-LITE is fit for purpose and will comply with the Building Code to the extent specified in this Certificate provided it is used, designed, installed and maintained as set out in this Certificate.

The Appraisal Certificate is issued only to the Certificate Holder, Nu-Age Plaster Limited, 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



J R Wanden



M E Reed

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