



BRANZ Appraised

Appraisal No.468 [2005]

BRANZ Appraisals

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

**BRANZ
APPRAISAL
No. 468 (2005)**

Amended 19 December 2008.

**STO LITE CLADDING
SYSTEM**

Stoanz Ltd

72 Abel Smith Street
Wellington

Tel: 04 801 7794

Fax: 04 384 9828

Internet: www.sto.co.nz



BRANZ

**BRANZ Limited
Private Bag 50 908
Porirua City
New Zealand
Tel: +64 4 237 1170
Fax: +64 4 237 1171
www.branz.co.nz**



Product

1.1 Sto 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 minimum 4.5 mm thick fibre cement sheets fixed over timber battens to form the cavity. The coating system consists of an 8 - 10 mm thickness of polystyrene bead saturated polymer-modified, cement-based plaster applied to the fibre cement sheets, an approximate 2.5 mm thick coat of meshed reinforcement plaster, and an approximate 1-3 mm thick coat of coloured render. The plaster is finished with a Sto coating.

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 Sto 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, 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 Sto Lite has also been appraised for weathertightness and structural wind loading when used on buildings subject to specific design up to a differential design ultimate limit state (ULS) wind pressure of 2500 Pa.

2.3 Sto Lite must only be installed on vertical surfaces (except for tops of parapets, sills and balustrades, which must have a minimum 10° slope and be waterproofed in accordance with the Technical Literature).

2.4 The system is appraised for use with aluminium window and door joinery that is installed with vertical jambs and horizontal heads and sills. *(It is expected that the joinery will meet the requirements of NZS 4211 for the relevant Building Wind Zone, or be specifically designed for use in specifically designed buildings.)*

2.5 Installation of components and accessories supplied by Stoanz Ltd and approved applicators must be carried out only by Stoanz Ltd approved applicators.

Building Regulations

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, Sto Lite if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, 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. Sto Lite meets the requirements for loads arising from self-weight, wind, impact and creep [i.e. B1.3.3 (a), (h), (j) and (q)]. See Paragraphs 10.1 - 10.4.

Clause B2 DURABILITY: Performance B2.3.1 (b), 15 years. Sto Lite meets this requirement. See Paragraph 11.1.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. Sto Lite meets this requirement. See Paragraphs 15.1 - 15.5.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Sto Lite 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 supplied by Stoanz Ltd are as follows:

Plasters

- Levellite 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 water. It is trowel or pump-applied as a base coat in an 8 - 10 mm thick layer.
- StoArmat RFP is a plasticiser free, tintable, ready-to-use, polymer-modified, cement free reinforcement plaster comprising granulated quartz sands, calibration grain, polypropylene fibre and additives. It is supplied in 23 kg pails, and after diluting with water as necessary and mixing, is ready for use. It is trowel-applied in a 2.5 mm thick layer followed by the embedment of fibreglass mesh reinforcement in the outer surface.
- Stolit K is a plasticiser free, tintable, ready-to-use, polymer-modified, cement free finishing plaster with a 1, 1.5, 2 or 3 mm grain size. It is supplied in 25 kg pails and is trowel-applied to an approximate thickness of 1 - 3 mm.
- Sto Flexyl is a cementitious waterproof paste. It is used as a waterproofing membrane over plastered balustrades and fixing blocks. Sto Flexyl is supplied in 18 kg pails.

Sto Lite Paints

- Sto Silco Color G is a ready-to-use, tintable, special dirt and algae resistant mineral silicone resin exterior paint system for application over finishing plasters. It is supplied in 15 litre pails, and may be brush, roller or spray applied. The paint colour selected must have a light reflectance value (LRV) of 40% minimum regardless of gloss value.
- StoLastic Color is a ready-to-use, tintable, satin matt, acrylic exterior paint system paint for application over finishing plasters. It is supplied in 15 litre pails, and may be brush, roller or spray applied. The paint colour selected must have an LRV of 40% minimum regardless of gloss value.
- StoColour Maxicryl is a ready-to-use, tintable, matt, acrylic exterior paint system paint for application over finishing plasters. It is supplied in 15 litre pails, and may be brush, roller or spray applied. The paint colour selected must have an LRV of 40% minimum regardless of gloss value

Accessories

- Reinforcing mesh - alkali-resistant fibreglass mesh with a nominal mesh size of approximately 7 x 7 mm and an approximate weight of 165 g/m², or with a nominal mesh size of approximately 4 x 4 mm and an approximate weight of 165 g/m².
- Sto premeshed corners - uPVC and fibreglass mesh corner mouldings.
- uPVC components – foot tray, vermin tray acting as a ventilated cavity closure, head flashing, jamb flashing, sill flashing and control joint mouldings.

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 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, or sealant covered by a valid BRANZ Appraisal 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, Table 23, or breather-type membranes covered by a valid BRANZ Appraisal 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 or a rigid underlay may also be used.)
- 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.
- 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.
- Cavity batten fixings - 30 x 2.5 mm hot-dip galvanised flat head nails.
- Fibre cement sheet - 4.5 mm Hardibacker® or 6 mm Hardiflex (James Hardie Building Products Ltd), or 4.5 mm or 6 mm Eterpan (Progressive Building Systems Ltd).
- Fibre cement sheet fixings - 60 x 2.8 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, 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 penetration openings.

Handling and Storage

5.1 Handling and storage of all materials supplied by Stoanz Ltd or the approved applicator, whether on or off site, is under the control of Stoanz Ltd approved applicators. Dry storage must be provided on site for the fibreglass mesh and bags and pails 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 Plaster must be used within the designated shelf life 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 Sto Lite system. 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 the Sto Lite 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 a building within the scope limitations of NZS 3604. Buildings or parts of a building outside the scope of NZS 3604 must be to a specific design in accordance with NZS 3603 and NZS 4203 (AS/NZS 1170). In all cases studs must be at maximum 600 mm centres for buildings designed to NZS 3604 and at maximum 400 mm centres for specifically designed buildings. Nogs must be fitted flush between the studs at maximum 800 mm centres.

7.3 Timber framing and battens must have a maximum moisture content of 24% at the time of the cladding application. *(Note: If sheets are fixed to framing or battens 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 in accordance with NZBC Acceptable Solution E2/AS1, 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 When the system is used for specifically designed buildings up to 2500 Pa differential design ULS wind pressure, only the weathertightness aspects of the cladding and maximum framing centres and sheet fixing centres are within the scope of this Appraisal. All other aspects of the building also need to be specifically designed and are outside the scope of this Appraisal.

8.2 Holes 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, Paragraph 9.1.8.3(b).

8.3 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.

8.4 At roof/wall junctions, the bottom edge of the 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, 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 45 mm.

8.5 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.

8.6 Where penetrations through the StoLite Cladding 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.

8.7 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 Appraisal.

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 Appraisal and is the responsibility of the designer - see Paragraph 8.7.)

Inter-storey Junctions

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

Structure

Mass

10.1 The mass of the Sto 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 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' where buildings are designed to meet the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 1.1, or up to 2500 Pa differential design ULS wind pressure where buildings are specifically designed.

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 for installations in up to, and including, 'Very High' Building Wind Zones.

Table 1: Fibre Cement Sheet Fixing Centres for Edges and Body of the Sheet

Fibre Cement Sheet Type	NZS 3604 Building Wind Zone - Up to 'Very High' with studs at maximum 600 mm centres	NZS 3604 Building Wind Zone - 'Very High' with studs at maximum 600 mm centres
Eterpan	150	150
Hardibacker	200	200

Fibre Cement Sheet Type	Specifically designed buildings up to 2500 Pa differential design ULS wind pressure with studs at maximum 400 mm centres	
	Vertical fixing centres	Horizontal fixing centres
Eterpan	100	200
Hardibacker	150	200

Durability

Serviceable Life

11.1 Sto Lite is expected to have a serviceable life of at least 30 years provided the system is maintained in accordance with this Appraisal, 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 Stoanz Ltd.

12.3 Although the paint system is designed as a special dirt and algae resistant type, regular cleaning (at least annually) is still recommended to remove any grime, dirt and organic growth that may have accumulated, and to maximise the life and appearance of the paint system. Grime may be removed by brushing with a soft brush, warm water and detergent. The paint system must be recoated at approximately 5-10 yearly intervals in accordance with Stoanz Ltd instructions.

12.4 Minimum ground clearances as set out in this Appraisal and the Technical Literature must be maintained at all times during the life of the system.

(Note: Failing to adhere to the minimum ground clearances given in this Appraisal and the Technical Literature will adversely affect the long term durability of the Sto Lite system.)

Control of External Fire Spread

13.1 The Sto Lite system has a performance level A in accordance with NZBC Acceptable Solution C/AS1, Table 7.5. The system is suitable for use as an external wall cladding system on buildings in all Purpose Groups, at any distance to the boundary.

Outbreak of Fire

14.1 Sto 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 Sto Lite, when installed in accordance with this Appraisal 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 Sto 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 Appraisal and are the responsibility of the designer for compliance with the NZBC.

15.5 The use of Sto Lite system 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 The StoLite Cladding System alone does not meet NZBC Acceptable Solution E3/AS1, Paragraph 1.1.1(a). Buildings must be constructed with an adequate combination of thermal resistance and ventilation, and space temperature must be provided to all habitable spaces, bathrooms, laundries and other spaces where moisture may be generated or may accumulate.

Water Vapour

16.2 Sto Lite 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

17.1 Installation and finishing of components and accessories supplied by Stoanz Ltd and the approved applicator must be completed by trained applicators, approved by Stoanz Ltd

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 Stoanz Ltd Technical Literature and this Appraisal.

System Installation

Building Wrap and Flexible Sill and Jamb Flashing Tape

18.1 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 Sto 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

18.2 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

18.3 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 Sto Lite Technical Literature and this Appraisal. The Sto Lite Technical Literature contains full details for the installation of the system that must be followed.

Sto Lite System

18.4 Components and accessories supplied by Stoanz Ltd and the approved applicator must be installed in accordance with the Technical Literature by Stoanz Ltd approved applicators.

18.5 The StoLite Cladding systems must only be applied when the air and substrate temperature is within the range of +5°C to 30°C.

Inspections

18.6 The Technical Literature must be referred to during the inspection of Sto Lite installations.

Health and Safety

19.1 Safe use and handling procedures for the components that make up the Sto 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

20.1 The following testing has been completed by BRANZ:

- BRANZ expert opinion on NZBC E2 code compliance for Sto Lite was based on testing and evaluation of all details within the scope and as stated within this Appraisal. The Sto Lite system and balustrade to wall junction details were tested to NZBC 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 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 NZBC Acceptable Solution E2/AS1 for drained cavity claddings.

- Uniform wind face load tests to simulate wind pressures on Hardibacker® and Eterpan fibre cement sheet were carried out by BRANZ, and the results were used in assessing the Sto Lite system.
- Tests to determine the bond strength of LevelLite Plaster to fibre cement sheet were carried out by BRANZ.
- Cone Calorimeter testing of the Sto Lite Plaster System. The testing was carried out in accordance with AS/NZS 3837.

Other Investigations

21.1 Structural and durability opinions have been given by BRANZ technical experts.

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

21.3 The Technical Literature for the Sto Lite system has been examined by BRANZ and found to be satisfactory.

Quality

22.1 The manufacture of the LevelLite base plaster 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. The quality control system of the LevelLite plaster manufacturer has been assessed and registered as meeting the requirements of the Telarc Q-Based Code by Telarc Limited, Registration Number 631.

22.2 The manufacture of the Sto RFP Armat plaster, Stolit K plaster, Sto Silco Garrant paint and Stoplex W primer has not been examined by BRANZ, but details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory. The quality management system of the manufacturer of these plasters, paint and primer, Sto AG, has been assessed and registered as meeting the requirements of ISO 9001: 2000 by IQNet, Registration Number 003651 QM.

22.3 The quality of materials, components and accessories supplied by Stoanz Ltd is the responsibility of Stoanz Ltd.

22.4 Quality on site is the responsibility of the Stoanz Ltd approved applicator.

22.5 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 Stoanz Ltd.

22.6 Building owners are responsible for the maintenance of Sto Lite in accordance with the instructions of Stoanz Ltd.

Sources of Information

- AS/NZS 1170: 2002 Structural design action - General principles.
- 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 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, Department of Building and Housing, Third Edition May 2007.
- The Building Regulations 1992, up to, and including June 2007 Amendment.

Amendment No. 1, dated 27 June 2008.

This Appraisal has been amended to include StoLastic Color and Sto Flexyl, to remove CSR Stuccobacker and BGC Durabacker as fibre cement substrates, and to update the Appraisal format.

Amendment No. 2, dated 19 December 2008

This Appraisal has been amended to include current cone calorimeter test results for the Sto Lite Cladding System.



BRANZ

In the opinion of BRANZ, Sto Lite Cladding System 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, Stoanz 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: 9 June 2005