



[JULY 2011]



BEAL Appraisal Certificate

Super Quilt Multi Layered Blanket - for Walls & Roofs



Product

1.1 SUPER QUILT Multi Layered Blanket - for Walls and Roofs (SUPER QUILT MLB) is a thin, flexible multi-layered foil and foam based thermal insulation material that eliminates the need for deep cavities in which to place the insulation required for walls and especially for skillion roofs.

Building Regulations

- 2.1 In the opinion of BEAL, the SUPER QUILT MLB, if designed, installed and maintained in accordance with the statements and conditions of this Appraisal Certificate, will meet the following provisions of the NZBC.
- 2.2 Clause B2 DURABILITY
Performance B2.3.1 (b), 15 years. The SUPER QUILT MLB insulation meets this requirement. See paragraphs 8.1 & 8.2.
- 2.3 Clause E3 INTERNAL MOISTURE
Performance E3.3.1. The SUPER QUILT MLB insulation will contribute towards meeting this requirement. See Paragraph 10.1.
- 2.4 Clause F2 HAZARDOUS BUILDING MATERIALS
Performance F2.3.1. The SUPER QUILT MLB insulation meets this requirement and will not present a health hazard to people.
- 2.5 Clause H1 ENERGY EFFICIENCY
Performance H1.3.1(a) and H1.3.2E. The SUPER QUILT MLB will contribute towards meeting these requirements. See paragraph 5.6 and Table 1.
- 2.6 The SUPER QUILT MLB product has been appraised as an **Alternative Solution** in terms of New Zealand Building Code compliance, for use as a thermal insulation material in walls, roofs and ceilings. Compliance has been determined by way of testing to DIN 52611-1, and the results used in calculations in accordance with NZS4214 described in H1/VM1. (H1/VM1, paragraph 1.4.1)

Scope and Limitations

- 3.1 SUPER QUILT MLB insulation has been appraised for use as a thermal insulation material in walls, roofs (greater than 18° pitch) and ceilings of buildings within the following scope;
- Framed walls (dressed with wall wrap) or lined ceiling space in new or existing constructions (domestic or commercial);
 - Installed in areas where the insulation will remain dry and protected during its serviceable life.

Applicant:



Home Insulation (Christchurch) Ltd

476 St. Asaph Street
Christchurch, 8011
TEL: 03 381 11 11
E-Mail: info@home-insulation-christchurch.co.nz
www.home-insulation-christchurch.co.nz

Appraiser:



BEAL

2A Plimmerton Drive
Plimmerton, Porirua, NZ
Tel: +64 233 6661
Fax: +64 233 6662
E-Mail: sales@beal.co.nz
www.beal.co.nz



The most up to date version of this BEAL Appraisal Certificate can be viewed at www.beal.co.nz



3.2 SUPER QUILT MLB insulation must be installed in accordance with the Technical Literature to produce the thermal performance rating/s as determined within this Appraisal Certificate.

3.3 Installation of the SUPER QUILT MLB product must be carried out by an applicator licensed by Home Insulation (Christchurch) Ltd.

3.4 In order for a building to comply with the performance requirements of Clause H1 using SUPER QUILT MLB insulation, a building needs to comply with the performance requirement of Clause E3 (e.g. E3/AS1 para 1.2.1) which in turn requires compliance with Clause G4 (e.g. G4/AS1 para G4.3.1). Note that reliance on opening windows is not a means of achieving compliance with this performance requirement.

Technical Literature

4.1 Refer to the SUPER QUILT MLB Technical Literature. The Technical Literature must be read in conjunction with this Appraisal Certificate. All aspects of design, use, installation and maintenance contained within the Technical Literature and scope of this Appraisal Certificate must be followed.

4.2 For a copy of this Technical Literature and any subsequent updates please refer to:
www.home-insulation-christchurch.co.nz

Technical Specification

5.1 SUPER QUILT MLB is a multi-layered thin, flexible blanket form of insulation, made from layers of reflective foil and foam. The tear resistant blanket incorporates a unique method of stitching which is claimed to reduce cold bridging seen in similar forms of blankets.

5.2 The blanket is supplied in approx 40mm thick 1.5m wide by 10m long rolls (13.5kg). The colour of SUPER QUILT MLB insulation is that of polished aluminium.

5.3 On site, the insulation material is mechanically fixed onto the wall battens or skillion roof space using staples with a minimum depth of 14mm to studs or rafters and battens to achieve the appropriate R- value. It is essential that the blanket be overlapped at edges by a minimum of 75mm. Edges are then sealed using the YBS 75mm Foil Tape.

5.4 Once the product has been fixed in place, counter-battens are placed over the SUPER QUILT MLB insulation in order to provide the air space needed to achieve the maximum thermal performance.

5.5 Labeling complying with AS/NZS 4859.1 is supplied with each installation.

5.6 The construction R-values for a number of wall and roof details using Super Quilt Multi Layer Membrane blanket were calculated based on methods in NZS 4214:2006. Refer **Table 1**.

5.7 Labeling complying with AS/NZS 4859.1 is supplied with each installation.

Handling and Storage

6.1 The insulation material must be stored under cover and kept dry.

Table 1: Calculated R-Values - refer technical manual for walls and technical manual for roofs

Use / Placement of insulation	Calculated R-Value
Brick Veneer on Timber Frame Wall	2.89
Concrete Block Wall	2.64
Dwarf Wall	2.63
Under Rafter Application on Skillion Tile Roof	2.54
Under Rafter Application on Skillion Metal Roof	2.55
Over Rafter Application on Skillion Tile Roof	2.56
Over Rafter Application on Skillion Metal Roof	2.64
Two Layer Application under Skillion Tile Roof	4.33
Two Layer Application under Skillion Metal Roof	4.34
Two Layer Application (Metal) - Steel Rafters	4.21
Two Layer Application (Tiled) - Steel Rafters	4.16



Design Information

General

7.1 The building envelope must be constructed to ensure the insulation material remains dry for the life of the building.

7.2 A 25mm air gap (minimum) is required between the SUPER QUILT MLB and the roof underlay or any lining.

7.3 Clearances specified in the Technical Literature, or those specified by the manufacturer of heating appliances or recessed down-light fittings must be met.

7.4 Where recessed down-lights are used in ceilings, in order to meet both energy efficiency and fire safety requirements, it is essential to incorporate an approved 'down-light heat barrier' meeting the appropriate performances. SUPER QUILT MLB Ltd allows the use of the 'InsulGuard Recessed Luminaries Heat Barrier', to meet this requirement. The Heat Barrier is designed to be fitted over recessed down-light fittings by a suitably trained tradesman. Other proprietary Heat Barriers that may be suitable have not been assessed and are outside the scope of this Appraisal Certificate.

7.5 Where SUPER QUILT MLB insulation is installed onto a wall with stud spacings that are greater than 600mm, a means of restraining the insulation from bulging into the drained cavity must be installed in accordance with NZBC Acceptable Solution E2/AS1 Paragraph 9.1.8.5.

Durability– Clause B2

8.1 When SUPER QUILT MLB insulation is used and installed in accordance with this Appraisal Certificate and Technical Literature, and the building is maintained so that the conditions of NZBC Clauses E2 and E3 are met, and the product is not crushed or exposed to external conditions (moisture and rain), then it is expected to have a serviceable life of at least 50 years.

Maintenance

8.2 The building must remain weatherproof at all times. Should evidence of the presence of moisture be discovered (e.g. leaking from the wall or roof), the condition of the insulation should be checked. Any leaks through the envelope or lining must be remedied and any wet or damp insulation must be replaced with new insulation as soon as practical. NZS 4246 Paragraph 3.3 provides further information on the maintenance of thermal insulation due to moisture damage.

Outbreak of fire – Clause C3

9.1 Though SUPER QUILT MLB is a fire resistant material, the product must be properly separated from sources of heat such as chimneys, fire places, flues and fuel burning appliances to ensure compliance in accordance with Clause C1.3.2 of the NZBC.

Internal Moisture - Clause E3

10.1 An adequate combination of thermal resistance, ventilation, and space temperature must be provided to all habitable spaces, bathrooms, laundries, and other spaces where moisture may be generated or may accumulate. Refer paragraph 3.4

Please note that the requirement of Para E3.3.1 of the Building code applies to all buildings except for the following: Communal Non-residential, Commercial, Industrial, Outbuildings or Ancillary buildings.

Energy Efficiency– Clause H1

Building Thermal Envelope

11.1 Verification Method H1/VM1 using the modeling method described in NZS 4218 section 3.3, can be used for verifying the compliance of Housing, Communal residential, Communal non-residential and Commercial buildings.

Building Performance Index

11.2 Compliance with NZBC Clause H1.3.2E (Building Performance Index or BPI) satisfies Clause H1.3.1(a).

Modeling of Large Buildings other than Housing

11.3 The modelling method described in NZS 4243.1 section 4.4 is a Verification Method for NZBC Clause H1.3.1(a) for buildings other than housing having a net lettable area greater than 300 m².

Determining Thermal Resistance

11.4 The thermal resistance (R-values) of 'parts of buildings' may be verified by using NZS4214. Refer Para 5.6.

Housing and Small Buildings

11.5 Construction in accordance with NZS 4218 sections 3.1 or 3.2 (as modified by Paragraphs 2.1.3 and 2.1.4) satisfies NZBC H1.3.1(a) for housing of any size

and all buildings having a net lettable area no greater than 300m².

11.6 Construction in accordance with NZS 4218 sections 3.1 or 3.2 (as modified by Paragraphs 2.1.3 and 2.1.4) satisfies NZBC Clause H1.3.2 (A and B, or C and D, or E, as appropriate) for housing of any size, including the external walls of multi-unit dwellings. (Note that common walls between household units of multi-unit dwellings need not comply with NZS 4218.)

Installation Information

Installation Skill Level Requirement

12.1 Installation of the SUPER QUILT MLB shall be by an applicator trained and approved by Home Insulation (Christchurch) Ltd.

General

13.1 Installation of the SUPER QUILT MLB material must be made in accordance with the manufacturer's Technical Literature and this Appraisal Certificate.

13.2 The areas to be insulated are to be inspected to ensure all timber or steel framing is complete, all plumbing and drainage service pipe-work is installed properly, all other mechanical service installation equipment are installed and electrical fittings protected.

13.3 SUPER QUILT MLB insulation is installed using hand tools once the walls or roofs described above are ready to receive the insulation.

13.4 SUPER QUILT MLB insulation is mechanically fixed onto unlined skillion roofs or unlined walls to produce the calculated R-value. Refer Table 1. Where staples are used these shall have a minimum depth of 14mm. Overlaps shall be a minimum of 70mm.

13.5 Once the blanket has been installed, the overlaps shall be taped using YBS 75mm Foil Tape to prevent heat loss.

Health and Safety

14.1 SUPER QUILT MLB insulation is made from non-hazardous recycled materials and is a non irritant to human skin. Safety equipment should be worn to protect the applicator accidentally cutting themselves.

Basis of Appraisal

BEAL use the compliance verification procedure to demonstrate compliance with the relevant clauses of the NZBC based on a risk analysis procedure. The following is a summary of the technical investigations carried out

Tests

15.1 The thermal conductivity and hence thermal resistance has been determined by way of testing to **DIN 52611-1**.

15.2 The resistance to tearing has been determined by way of testing to **ASTM D1938-08** 'Standard Test Method for Tear-Propagation Resistance (Trouser Tear) of Plastic Film and thin Sheeting by a Single-Tear Method.

15.3 The resistance to surface puncturing was determined by way of testing to **ASTM D4833-07** 'Standard

Test Method for Index Puncture Resistance of Geomembranes and Related Products'.

Other Investigations

16.1 An assessment of the durability of the SUPER QUILT MLB has been made by BEAL based on in-service history.

16.2 The manufacturer's Technical literature and Installation instructions have been assessed by BEAL and found to be satisfactory.

Quality

17.1 The manufacture of SUPER QUILT MLB has been assessed by BEAL, including quality control measures. Details of the manufacturing process, quality and composition of the raw materials used were obtained by BEAL and found to be satisfactory.

17.2 The quality of materials, components and accessories supplied by Home Insulation (Christchurch) Ltd is managed through the use of a **Building Product Quality Plan**.

17.3 The Home Insulation (Christchurch) Ltd's Building Product Quality Plan' ensures continuous conformance with the quality requirements from purchase to supply of components.

17.4 The Home Insulation (Christchurch) Ltd Building Product Quality Plan is audited periodically by BEAL to ensure continuous compliance with this Certificate.

17.5 Quality on site is the responsibility of the SUPER QUILT MLB Ltd licensed applicators.

17.6 Building owners are responsible for the maintenance of the building to ensure the SUPER QUILT MLB insulation remains protected from damage until Installed.

Sources of Information

- DIN 52611-1. Determination of thermal resistance of building elements; laboratory method
- ASTM D1938-08 'Standard Test Method for Tear-Propagation Resistance (Trouser Tear) of Plastic Film and thin Sheeting by a Single-Tear Method.
- ASTM D4833-07 'Standard Test Method for Index Puncture Resistance of Geomembranes and Related Products'
- AS/NZS 4859.1:2002 Materials for the thermal insulation of buildings.
- NZS 4214: 2006 Method of determining the total thermal resistance of parts of buildings.
- NZS 4218: 2004 Energy Efficiency - housing and small building envelope
- NZS 4243: 1996 Energy Efficiency - large buildings
- Compliance Document E3/AS1**
- Compliance Document G4/AS1**
- Compliance Document H1/AS1**
- ** Compliance documents published by the Department of Building and Housing
- The Building Regulations 1992, up to, and including October 2004 Amendment including the Building Code

Concluding statement

19.1 In the opinion of BEAL, the INSULATION PRODUCT material is fit for purpose and will comply with the NZBC to the extent specified provided that it is used, designed, installed and maintained as set out in this Appraisal Certificate.

The Appraisal Certificate is issued only to Home Insulation (Christchurch) Ltd, and is valid until further notification, subject to the conditions of this Appraisal.

Conditions of Appraisal

1. This Appraisal Certificate :

- A) Relates only to the SUPER QUILT Multi Layered Blanket as described herein;
- B) Must be read, considered and used in full together with the manufacturer's Technical Literature
- C) Does not address any legislation, regulations, codes or standards, not specifically named herein;
- D) Is copyright of BEAL

2. The Appraisal Certificate holder continues to meet the quality requirements of the Home Insulation (Christchurch) Ltd's Building Product Quality Plan and has the Certificate revalidated by BEAL annually.

3. Home Insulation (Christchurch) Ltd, shall notify BEAL and obtain approval of any changes in product specification or quality assurance prior to product being marketed including any trade literature, web site info or the like.

4. BEAL 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 Appraisal Certificate holder

5. BEAL's verification of the building product or system being able to comply with one or more above-mentioned criteria is given on the basis that the criteria used were those that were appropriate to demonstrate compliance with the NZBC at the date of this Appraisal Certificate. In the event that the criteria is withdrawn or amended at a later date, this Appraisal may no longer remain valid.

6. Any reference in this Appraisal Certificate to any other publication shall be read as a reference to the version of publication specified in this Appraisal Certificate.

Authorised Signatory



C R Prouse - Director
[JULY 2011]

