



BRANZ Appraised
Appraisal No. 301 [2023]

BRADFORD™ GOLD INSULATION

Appraisal No. 301 [2023]

This Appraisal replaces BRANZ Appraisal No. 301 [2016]



BRANZ Appraisals

Technical Assessments of products for building and construction.



CSR Building Products (NZ) Limited

PO Box 188
Takanini
Auckland

Tel: 0800 CSR 123

Email: bradford@csr.co.nz

Web: www.bradfordinsulation.co.nz



BRANZ

BRANZ

1222 Moonshine Rd,
RD1, Porirua 5381
Private Bag 50 908
Porirua 5240,
New Zealand
Tel: 04 237 1170
branz.co.nz



Product

- 1.1 Bradford™ Gold Insulation is a resin bonded, fibrous glass insulating material for use in framed walls, ceilings and roofs of buildings. Bradford™ Gold Insulation is pre-cut to suit a range of framing spacings.

Scope

- 2.1 Bradford™ Gold Insulation has been appraised as a thermal insulation material for framed or part-framed walls ceilings and roofs of domestic and commercial buildings.

Building Regulations

New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, Bradford™ Gold Insulation, 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 B2 DURABILITY: Performance B2.3.1 (a) not less than 50 years and B2.3.1 (b) 15 years. Bradford™ Gold Insulation meets these requirements. See Paragraphs 8.1 and 8.2.

Clause E3 INTERNAL MOISTURE: Performance E3.3.1. Bradford™ Gold Insulation contributes to meeting this requirement. See Paragraphs 13.1 and 13.2.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Bradford™ Gold Insulation meets this requirement.

Clause H1 ENERGY EFFICIENCY: Performance H1.3.1 (a) and H1.3.2 E. Bradford™ Gold Insulation contributes to meeting these requirements. See Paragraphs 14.1 and 14.2.

Technical Specification

4.1 Bradford™ Gold Insulation is a resin bonded, fibrous glass insulation manufactured from recycled and/or virgin glass and phenol-formaldehyde resin. Bradford™ Gold Insulation is available as set out in Table 1.

Table 1: Bradford™ Gold Insulation Product Range

R-value	Nominal Thickness [mm]	Width [mm]	Length [mm]	Density [kg/m ³]
Wall Segments				
1.8	90	580	1,160	8.5
2.2	90	580	1,160	13.2
2.4	90	580	1,160	18.8
2.6	90	580	1,160	24.0
2.8	90	580	1,160	34.0
3.5	140	580	1,160	13.6
4.0	140	580	1,160	22.7
Ceiling Segments				
1.8	90	430	1,160	8.5
1.8	95	430	1,160	7.1
2.7	145	430	1,160	7.5
2.9	145	430	1,160	7.5
3.3	165	430	1,160	7.8
3.6	185	430	1,160	8.0
4.0	215	430	1,160	7.3
5.0	210	430	1,160	13.4
5.2	240	430	1,160	9.2
6.0	260	430	1,160	12.3
6.3	260	430	1,160	11.6
7.3	290	430 or 450	1,160	13.1
Blankets				
1.0	45	1,200	30,000	11.3
1.3	60	1,200	30,000	9.8
1.8	80	1,200	15,000	11.3
2.2	90	1,200	15,000	13.1
2.3	100	1,200	15,000	11.3
2.6	120	1,200	10,000	10.1
2.9	115	1,200	8,000	13.5
3.3	145	1,200	10,000	10.7
3.6	165	1,200	6,000	10.7
Roof and wall, DIY pack				
2.4	90	580	7,000	16.7

4.2 Bradford™ Gold Insulation is straw coloured and is packaged in yellow and green compression packaging or gold and green compression packaging for the Bradford™ Gold High Performance Insulation range. Each package is supplied with labelling in compliance with AS/NZS 4859.1.

4.3 Accessories used with Bradford™ Gold Insulation, which are supplied by the insulation installer, are plastic strapping and fixings.

Handling and Storage

- 5.1 Bradford™ Gold Insulation must be stored under cover and in dry conditions. Heavy objects must not be stacked on the packs. The packs must be stored in an orientation that avoids excessive compression of the product.
- 5.2 In general, insulation products are sensitive to the length of time they are stored in compression packaging. Product that does not recover to its nominal thickness may not achieve the stated thermal performance [R-value].

Technical Literature

- 6.1 This Appraisal must be read in conjunction with:
 - Bradford Glasswool Building Blanket – Plain – Product Technical Statement, Issue: D, 8/2023.
 - Bradford Gold & Gold Hi-Performance – Product Technical Statement, Issue: D, 8/2023.
 - Bradford Wall Insulation – Installation Instructions, Issue B, 5/2021.
 - Bradford R7.3 Ceiling Insulation, Spill-over Batt – Ceiling Batt Installations Guide, Issue: A, 7/2023.
- 6.2 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

General

- 7.1 Bradford™ Gold Insulation is intended for use as thermal insulation to meet the requirements of the NZBC. Bradford™ Gold Insulation can be used to meet the minimum schedule method R-values of the NZBC Verification Methods H1/VM1, H1/VM2, NZBC Acceptable Solutions H1/AS1 or H1/AS2. Greater construction R-values can be achieved where specific design is used. For construction R-values, refer to the BRANZ House Insulation Guide. Product R-values and dimensions are given in Table 1.
- 7.2 Bradford™ Gold Insulation R-values have been determined by testing to AS/NZS 4859.1, which is an acceptable method in NZBC Acceptable Solution H1/AS1.
- 7.3 Bradford™ Gold Insulation is intended to be friction-fitted between wall, ceiling or roof framing. Bradford™ Gold Insulation can also be laid directly over ceiling linings, over ceiling battens or joists/truss chords. In other horizontal situations, it must be adequately supported by galvanised wire netting or some other suitable durable material.
- 7.4 For new and existing buildings, the R7.3 ceiling product is designed to be friction-fitted between timber framing and spill above the timber framing to form a uniform insulation layer on the top.
- 7.5 When insulation is installed in a double layer over new or existing insulation, the possibility of compression of the bottom layer must be avoided, or reduction of R-values for the bottom layer of the formed system must be taken into account.
- 7.6 Where the insulation is installed in exterior walls, the thickness of the insulation material must be selected to provide a snug close fit which touches all sides of the insulation cavity between the wall underlay and the interior wall lining.
- 7.7 Where the insulation is retrofitted in external walls without a wall underlay, and with direct-fixed claddings, the insulation must be at least 20 mm thinner than the framing to allow a gap of at least 20 mm between the insulation and the wall cladding. Horizontal straps must be stapled into the sides of the wall studs at 300 mm centres maximum as support before the insulation is installed. Refer also to NZS 4246, Section 5.4.2.
- 7.8 When the insulation is installed in a wall with a drained cavity, it is recommended that specific wall products with a controlled nominal thickness be used. Where the stud spacings are greater than 450 mm, an intermediate means of restraining the insulation from bulging into the cavity must be installed in accordance with NZBC Acceptable Solution E2/AS1 Paragraph 9.1.8.5.

- 7.9 To prevent moisture transfer and to provide roof ventilation, a separation of 25 mm minimum is required between the insulation and any rigid substrate or flexible roof underlay.
- 7.10 The building envelope must be constructed to ensure the insulation remains dry during installation and throughout the life of the building.
- 7.11 The clearance requirements for heating appliances and downlights must be met and reference made to the manufacturer's instructions and NZS 4246. See Paragraphs 10.1-10.3.

Durability

- 8.1 The durability assessment of Bradford™ Gold Insulation to meet the requirements of the NZBC is based on the difficulty of access and replacement, and the ability to detect failure of the insulation, both during normal use and maintenance of the building.

Serviceable Life

- 8.2 Where the building is maintained so that provisions of the NZBC E2 and E3 Clauses are met, and where the insulation is not crushed or exposed to conditions that will diminish its thermal performance, Bradford™ Gold Insulation can expect to have a serviceable life of at least 50 years.

Maintenance

- 9.1 Insulation that has become damp must be removed and the cause of dampness repaired. Cavities must be clean and dry before fitting new insulation of an equivalent thermal rating. NZS 4246 gives guidance on thermal insulation maintenance due to water damage.

Prevention of Fire Occurring

- 10.1 Separation or protection must be provided to Bradford™ Gold Insulation from heat sources such as fireplaces, heating appliances, flues and chimneys. Part 7 of NZBC Verification Method C/VM1 and Acceptable Solution C/AS1, and Acceptable Solution C/AS2 provide methods for separation and protection of combustible materials from heat sources.

Downlights

- 10.2 Recessed luminaires shall be one of the specified luminaire types and installed in accordance with NZBC Verification Method C/VM1 and NZBC Acceptable Solution C/AS1, Section 7.4.
- 10.3 Insulation materials must maintain a clearance of 100 mm to undefined recessed luminaires in existing buildings.

Control of Internal Fire and Smoke Spread

- 11.1 Bradford™ Gold Insulation has not been assessed for use in locations where a Fire Resistance Rating (FRR) is required.

External Moisture

- 12.1 The total building envelope must be weathertight and comply with the requirements of NZBC Clause E2 to ensure that the insulation remains dry in use.
- 12.2 The moisture content of the construction materials at the time of installing and enclosing the insulation must meet the requirements of NZBC Acceptable Solution E2/AS1 Paragraph 10.2 a), or a lower moisture content moisture content if required by the lining manufacturer.

Internal Moisture

- 13.1 Buildings must provide an adequate combination of thermal resistance, ventilation and space temperature to all habitable spaces, bathrooms, laundries and other spaces where moisture may be generated or may accumulate. This does not apply to Communal Non-residential, Commercial, Industrial, Outbuildings or Ancillary buildings.
- 13.2 Roofs and walls of housing complying with the Schedule Method for Compliance with Clause H1.3.2 E will have adequate thermal resistance. Other buildings may require more thermal insulation to satisfy the requirements of NZBC Acceptable Solution E3/AS1 than that to satisfy the energy efficiency provisions alone.

Energy Efficiency

- 14.1 Bradford™ Gold Insulation will contribute to meeting the requirements of NZBC Clause H1 Performance H1.3.1 (a) and H1.3.2 E by compliance with NZBC Verification Methods H1/VM1, H1/VM2, NZBC Acceptable Solutions H1/AS1 or H1/AS2. Refer to Paragraphs 7.1–7.7.
- 14.2 Bradford™ Gold Insulation R-values have been determined by BRANZ testing to AS/NZS 4859.1 and are given in Table 1.

Installation Information

Installation Skill Level Requirement

- 15.1 All design and building work must be carried out in accordance with the Bradford™ Gold Insulation Technical Literature and this Appraisal. All building work must be undertaken by competent and experienced tradespersons conversant with Bradford™ Gold Insulation.

General

- 16.1 Installation of Bradford™ Gold Insulation must be in accordance with the Technical Literature and this Appraisal. NZS 4246 should be used as a guide for installing insulation in residential buildings.
- 16.2 Bradford™ Gold Insulation must be installed only when the building is enclosed and when the construction materials have achieved the required maximum moisture content or less.
- 16.3 Bradford™ Gold Insulation must be released from the packaging and allowed to re-loft prior to installation. The time to loft will depend upon the length of time the product has been packaged and stored.
- 16.4 Bradford™ Gold Insulation is supplied in segment and blanket forms [see Table 1] to suit framing layouts. The product is able to be cut to suit wall cavities and when fitted between roof or ceiling framing. The insulation must be neatly friction-fitted between framing members so that the potential for gaps and convective heat loss is reduced. In wall cavities, the insulation must be neatly friction-fitted between framing members to prevent sagging. In ceilings or roofs, the insulation may be fitted between framing members or fitted over framing members and butted tightly. The insulation must extend to the external wall top plate. The insulation must not be folded, tucked, or compressed. A close even fit provides the most efficient thermal performance. Whenever possible, the insulation should be fitted beneath wiring or plumbing.
- 16.5 The clearance requirements for heating appliances and downlights must be followed. Refer also to NZS 4246.

Inspections

- 16.6 The Technical Literature, this Appraisal and NZS 4246 must be referred to during the inspection of Bradford™ Gold Insulation installations.

Health and Safety

- 17.1 Refer to the Technical Literature and NZS 4246 for guidance on health and safety requirements such as personal protective clothing and installation hazard assessment.

Basis of Appraisal

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

Tests

- 18.1 BRANZ has carried out thermal resistance testing of Bradford™ Gold Insulation in accordance with AS/NZS 4859.1.

Other Investigation

- 19.1 An assessment of the durability of Bradford™ Gold Insulation has been made by BRANZ technical experts.
- 19.2 The manufacturer's Technical Literature, including installation instructions, has been reviewed by BRANZ and found to be satisfactory.



Quality

- 20.1 The manufacture of Bradford™ Gold Insulation has been examined by BRANZ, including methods adopted for quality control. Details of the manufacturing processes, and quality and composition of the raw materials used were obtained and found to be satisfactory.
- 20.2 CSR Building Products [NZ] Limited is responsible for the quality of the product supplied.
- 20.3 Quality of the installation of the product on-site is the responsibility of the installer.
- 20.4 Quality of maintenance of the building to ensure the insulation material remains dry is the responsibility of the building owner.

Sources of Information

- AS/NZS 4859.1:2018 Thermal insulation materials for buildings.
- BRANZ House Insulation Guide [Sixth Edition], 2022.
- NZS 4246:2016 Energy efficiency - Installing bulk thermal insulation in residential buildings.
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.



In the opinion of BRANZ, **Bradford™ Gold Insulation** 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 **CSR Building Products [NZ] Limited**, 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. **CSR Building Products [NZ] Limited:**
 - 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 **CSR Building Products [NZ] Limited**.
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 **CSR Building Products [NZ] Limited** or any third party.

For BRANZ



Claire Falck

Chief Executive

Date of Issue:

11 September 2023