



BRANZ Appraised

Appraisal No.256 [2014]

BRANZ Appraisals

Technical Assessments of products
for building and construction

**BRANZ
APPRAISAL
No. 256 (2014)**

This Appraisal replaces Appraisal
No. 256 (2009).

**EXPOL UNDERFLOOR
INSULATION**

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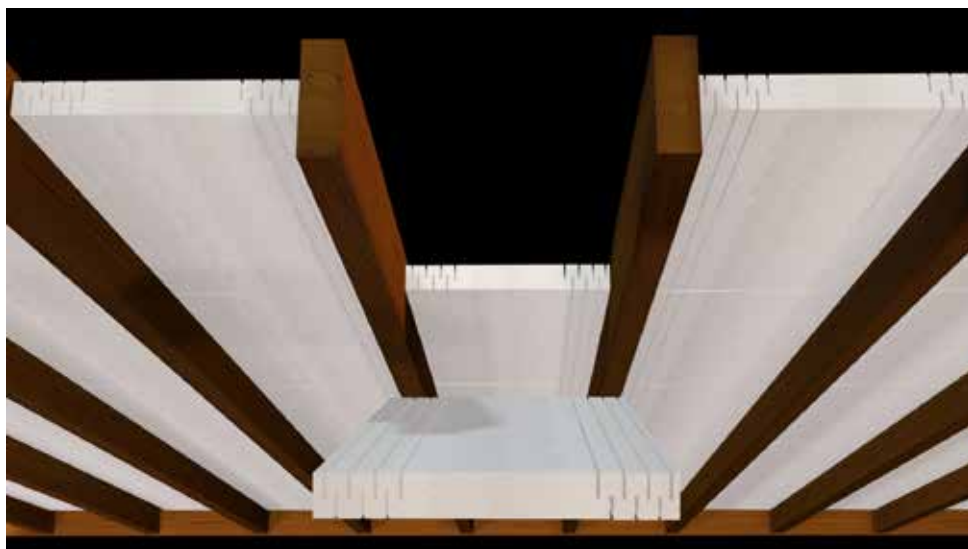


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Product

1.1 EXPOL Underfloor Insulation is an Expanded Polystyrene (EPS) foam board for use as thermal insulation for timber frame floors. The insulation is pre-cut to fit a range of flooring joist spacings.



Scope

2.1 EXPOL Underfloor Insulation has been appraised as a thermal insulation material for timber framed floors in new or existing domestic and commercial buildings.

Building Regulations

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, EXPOL Underfloor 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. EXPOL Underfloor Insulation will meet these requirements. See Paragraphs 8.1 and 8.2.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. EXPOL Underfloor Insulation meets this requirement and will not present a health hazard to people.

Clause H1 ENERGY EFFICIENCY: Performance H1.3.1 (a) and H1.3.2 E. EXPOL Underfloor Insulation will contribute to meeting these requirements. See Paragraph 13.1.

3.2 This is an Appraisal of an **Acceptable Solution** in terms of New Zealand Building Code compliance. EXPOL Underfloor Insulation thermal resistance (R-value) has been determined by testing to AS/NZS 4859.1 which is an acceptable method.

Technical Specification

Description

4.1 EXPOL Underfloor Insulation is Expanded Polystyrene (EPS) foam boards with pre-cut concertina cuts to both edges. EXPOL Underfloor Insulation is available as set out in Table 1.

4.2 EXPOL Underfloor Insulation is white in colour and is supplied in colour coded packaging to identify the different widths with labelling in compliance with AS/NZS 4859.1.

4.3 EXPOL Underfloor Insulation is manufactured from flame retardant bead to meet the manufacturing requirements of AS 1366.3.

4.4 Nylon brackets and stainless steel nails are available as an optional method of fixings.

Table 1: EXPOL Underfloor Insulation product range.

R-value	Nominal Thickness (mm)	Width (mm)	Length (mm)	Pieces per Bag
R1.4	60	360	1200	12
R1.4	60	410	1200	11
R1.4	60	470	1200	10
R1.4	60	560	1200	9

Handling and Storage

5.1 On site, EXPOL Underfloor Insulation must be stored under cover and out of sunlight.

5.2 EXPOL Underfloor Insulation is able to get wet during the installation process, but it is recommended that the product is dry before installation against the underfloor or before flooring is fitted.

Technical Literature

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for EXPOL Underfloor Insulation. 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

General

7.1 EXPOL Underfloor Insulation is intended for use as thermal insulation to floors, compression fitted between floor joists with the option of being clipped in place with a bracket. The panels are supplied in widths to suit most installations.

7.2 EXPOL Underfloor insulation has an R-value of 1.4 m²C/W. It can be used to meet the minimum schedule method R-values of NZBC Verification Method H1/VM1 or NZBC Acceptable Solution H1/AS1. For construction R-values, refer to BRANZ House Insulation Guide.

7.3 The building envelope must be constructed to ensure the insulation remains dry throughout the life of the building.

7.4 EXPOL Underfloor Insulation, when installed following the Technical Literature, is suitable for use in exposed underfloors without a lining. Clips should be used in wind exposed situations.

Electrical Cables

7.5 PVC cables must be prevented from direct contact with EXPOL Underfloor Insulation. Refer to Paragraph 15.6.

Durability

Serviceable Life

8.1 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, EXPOL Underfloor Insulation can expect to have a serviceable life of at least 50 years.

8.2 Expol nylon brackets must be used to achieve a 50 year serviceable life.

8.3 Nylon support brackets are required to support EXPOL Underfloor Insulation for underfloors that are subjected to wind exposure.

Maintenance

9.1 Insulation that has become damp must be removed and the cause of the dampness repaired. The insulation must be dry and the floor framing must be clean, dry and free from all contaminants and mould before refitting the insulation.

9.2 Regular inspections must be completed to insure that installation integrity is maintained and any dislodged panels are reinstalled.

Prevention of Fire Occurring

10.1 Separation or protection must be provided to EXPOL Underfloor Insulation from heat sources such as fire places, heating appliances, flues, chimneys and recessed luminaires (except classed IC - F). Refer to Part 7 of NZBC Acceptable Solutions C/AS1 - C/AS6 and NZBC Verification Method C/VM1.

Control of Internal Fire and Smoke Spread

11.1 Where the ceiling of an occupied space forms the underside of the thermal envelope, EXPOL Underfloor Insulation must be enclosed by an internal lining depending on the Risk Group. Refer to the relevant NZBC Acceptable Solutions C/AS1 - C/AS6 for specific internal surface finish and sub floor space requirements.

Internal Moisture

12.1 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.

Energy Efficiency

13.1 EXPOL Underfloor Insulation will contribute to meeting the requirements of NZBC Clause H1 Performance H1.3.1(a) and H1.3.2 E through compliance with NZBC Verification Method H1/VM1 or NZBC Acceptable Solution H1/AS1. Refer to Paragraph 7.2.

Installation Information

Installation Skill Level Requirements

14.1 Installation of EXPOL Underfloor Insulation must be completed by an installer with an understanding of insulation installation.

General

15.1 It is important to achieve a tight friction fit between the edge of the board and the joist. This is achieved by the compression of the pre-cut concertina cuts to the edges of the boards.

15.2 All gaps must be filled and a tight fit made at butt joints. Small gaps can be sealed with extra material, or a urethane foam.

15.4 EXPOL nylon brackets must be used, in line with the Technical Literature, to achieve a 50 year serviceable life.

15.5 EXPOL Underfloor Insulation must be separated from all sources of heat.

15.6 PVC cables must be prevented from direct contact with any EXPOL Underfloor Insulation. A physical separation must be provided by running cables around the insulation boards, or by wrapping the cables with separating material supplied by Expol Limited.

Inspections

15.7 The Technical Literature, this Appraisal and NZS 4246 must be referred to during the inspection of EXPOL Underfloor Insulation installations.

Health and Safety

16.1 NZS 4246 gives guidance for 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

17.1 BRANZ has carried out thermal resistance testing of EXPOL Underfloor Insulation in accordance with ASTM C518 as part of the material test evaluation to AS/NZS 4859.1.

Other Investigations

18.1 An assessment of the durability of EXPOL Underfloor Insulation has been made by BRANZ technical experts.

18.2 The Technical Literature including Installation Instruction have been reviewed by BRANZ and found to be satisfactory.

18.3 Site inspections have been undertaken by BRANZ to assess the practicability of installation and to examine completed installations.

Quality

19.1 The manufacture of EXPOL Underfloor Insulation has been examined by BRANZ, including methods adopted for quality control. Details of the manufacturing processes were obtained and found to be satisfactory.

19.2 Expol Limited is responsible for the quality of the product supplied.

19.3 Quality of installation of the product on site is the responsibility of the installer.

19.4 Maintenance of the building is the responsibility of the building owner.

Sources of Information

- AS 1366.3: 1992 Rigid cellular plastics sheets for thermal insulation - Rigid cellular polystyrene - Moulded.
- AS/NZS 4859.1: 2002 Materials for the thermal insulation of buildings.
- BRANZ House Insulation Guide, Fifth Edition 2014.
- NZS 4218: 2004 Energy efficiency - Small building envelope.
- NZS 4218: 2009 Thermal Insulation - Housing and small buildings.
- NZS 4243: 2007 Energy efficiency - Large buildings.
- NZS 4246: 2006 Energy efficiency - Installing insulation in residential buildings
- NZS 4214: 2006 Methods of determining the total thermal resistance of buildings.
- Compliance Document for New Zealand Building Code Energy Efficiency Clause H1, Department of Building and Housing, Third Edition October 2007 (including Amendment 2, October 2011).
- Ministry of Business, Innovation and Employment Record of Amendments for Compliance Documents and Handbooks.
- The New Zealand Building Regulations 1992.



BRANZ

In the opinion of BRANZ, **EXPOL Underfloor 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 **Expol 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. **Expol 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 **Expol 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 **Expol Limited** or any third party.

For BRANZ

C Percy
Chief Executive

Date of issue: 17 December 2014