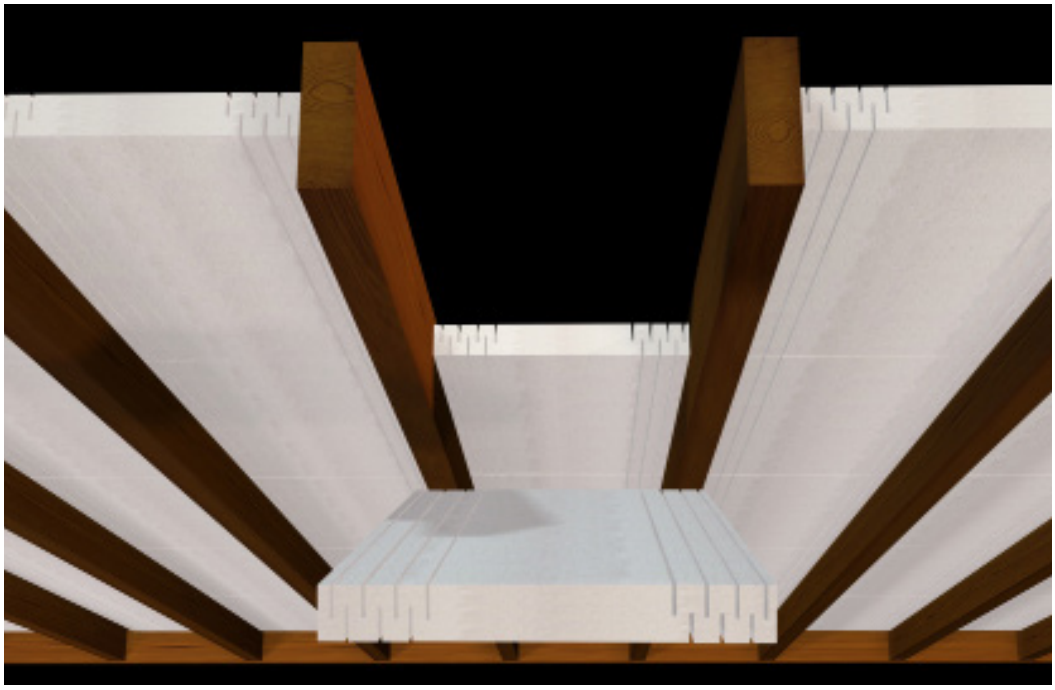
BRANZ Appraised

Appraisal No. 256 [2020]

EXPOL UNDERFLOOR INSULATION



Appraisal No. 256 (2020)

Amended 29 August 2023

BRANZ Appraisals

Technical Assessments of products for building and construction.

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Product

1.1 EXPOL Underfloor Insulation is an expanded polystyrene (EPS) foam board for use as a thermal insulation for timber-framed floors. The insulation is pre-cut and compressed 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; and,
- for use under floors which have an enclosed perimeter foundation as defined in NZS 4246; or,
- for use under floors exposed to wind wash when clips are used to secure the insulation.

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 (b) not less than 15 years, and B2.3.1 (c) 5 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.

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 14.1.

Technical Specification

4.1 Components and accessories supplied by EXPOL Limited are as follows:

- **EXPOL Underfloor Insulation** is expanded polystyrene (EPS) foam boards with pre-cut concertina cuts to both edges. It is manufactured from flame retardant bead to meet the manufacturing requirements of AS 1366.3. EXPOL Underfloor Insulation is white in colour and is supplied in colour coded packaging to identify the different widths. EXPOL Underfloor Insulation is available as set out in Table 1.

Table 1: EXPOL Underfloor Insulation product range

R-value	Nominal thickness (mm)	Width (mm)	Length (mm)
R2.5	100	360, 410, 470 or 560	1,200

- **EXPOL Z clips** are manufactured from non-corrosive nylon and are designed as a push fit bracket between the panel and the joist in existing floors
- **EXPOL Joist Saddles** are manufactured from non-corrosive nylon and are designed to sit over joists in new floors.

4.2 Accessories used with EXPOL Underfloor insulation, which are supplied by the insulation installer, are stainless steel nails as an optional method of fixing.

Handling and Storage

5.1 EXPOL Underfloor Insulation must be stored under cover and out of sunlight. Heavy objects must not be stacked on the packs.

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

Technical Literature

6.1 This Appraisal must be read in conjunction with:

- Step by step Guide, Version 1.0, dated 18/8/2023.
- EXPOL R2.5 Underfloor Insulation – Technical Datasheet, Version 1.0, dated 21/8/2023.

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 EXPOL Underfloor Insulation is intended for use as thermal insulation to meet the requirements of the NZBC. EXPOL Underfloor 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 EXPOL Underfloor Insulation thermal resistance (R-value) has been determined by testing to AS/NZS 4859.1, which is an acceptable method in NZBC Acceptable Solution H1/AS1.

7.3 EXPOL Underfloor Insulation is designed to be compression fitted between floor joists with the option of being clipped in place with a EXPOL Z clips or joist saddles. The panels are supplied in widths to suit most installations, refer to Table 1 for dimensions.

7.4 EXPOL Underfloor Insulation, when installed following the Technical Literature, is suitable for use in suspended timber floors without a lining. EXPOL Z clips or joist saddles must be used in situations when the insulation is exposed to wind wash.

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

7.6 The clearance requirements for heating appliances and downlights must be met and reference made to the manufacturers instructions and NZS 4246.

Electrical Cables

7.7 PVC cables must be prevented from direct contact with EXPOL Underfloor Insulation. Refer to Paragraph 16.6.

Durability

8.1 Assessment of durability to meet the NZBC is based on difficulty of access and replacement, and the ability to detect failure of EXPOL Underfloor 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, EXPOL Underfloor Insulation can expect to have a serviceable life of at least 50 years.

8.3 EXPOL Z clips or joist saddles must be used to achieve a 50 year serviceable life.

8.4 EXPOL Z clips or joist saddles are required to support EXPOL Underfloor Insulation for underfloors that are exposed to wind wash.

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 dry 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 fireplaces, heating appliances, flues, chimneys and recessed luminaries (except class IC - F). Part 7 of NZBC Verification Method C/VM1 and Acceptable Solution C/AS1, and NZBC Acceptable Solution C/AS2 provide methods for separation and protection of combustible materials from heat sources.

Control of Internal Fire and Smoke Spread

11.1 Where the completed floor system is above an occupied space, the system, including the surface lining product enclosing the EXPOL Underfloor Insulation from the adjacent occupied space, must achieve the Group Number for internal surface finish requirements as specified in the relevant NZBC Acceptable Solution C/AS1 or C/AS2.

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 lower requirement of either the NZBC Acceptable Solution E2/AS1 Paragraph 10.2(a), or the flooring 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.

Energy Efficiency

14.1 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 Methods H1/VM1, H1/VM2, NZBC Acceptable Solutions H1/AS1 or H1/AS2. Refer to Paragraph 7.1.

Installation Information

Installation Skill Level Requirement

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

General

16.1 Installation of EXPOL Underfloor Insulation must be in accordance with the Technical Literature and this Appraisal. NZS 4246 should be used as a guide for installing insulation into residential buildings.

16.2 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.

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

16.4 EXPOL Z clips or joist saddles must be used, in line with the Technical Literature, in exposed floors subject to wind wash.

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

16.6 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

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

Health and Safety

17.1 Refer to the Technical Literature and NZS 4246 for guidance on heath 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 EXPOL Underfloor Insulation in accordance with ASTM C518 as part of the material test evaluation to AS/NZS 4859.1.

Other Investigations

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

19.2 The Technical Literature has been reviewed by BRANZ and found to be satisfactory.

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

Quality

20.1 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.

20.2 EXPOL Limited is responsible for the quality of the product supplied.

20.3 Quality of installation of the product on-site is the responsibility of the installer.

20.4 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 4859.1:2018 Thermal insulation materials for buildings.
- BRANZ House Insulation Guide (Sixth Edition), 2022.
- NZS 4246:2016 Energy efficiency - Installing bulk thermal insulation in residential buildings.
- NZS 4214:2006 Methods of determining the total thermal resistance of buildings.
- Ministry of Business, Innovation and Employment Record of Amendments for Compliance Documents and Handbooks.
- The New Zealand Building Regulations 1992.

Amendments

Amendment No. 1, dated 29 August 2023

This Appraisal has been amended to update Table 1, to add the Z clips and joist saddles, and to reflect building code updates relating to NZBC H1 Energy Efficiency.

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

Chelydra Percy
Chief Executive
Date of Issue:
28 February 2020