



BRANZ Appraised
Appraisal No. 440 [2022]

GORILLA EXPANDING FOAM AIR SEALS

Appraisal No. 440 [2022]

This Appraisal replaces BRANZ
Appraisal No. 440 [2017]



BRANZ Appraisals

Technical Assessments of
products for building and
construction.



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Product

- 1.1 Gorilla FLEXI, Gorilla PRO and Gorilla SMART Expanding Foams are one-part, self-expanding polyurethane foam air seals used around window and door penetrations and other cladding fenestration trim cavities to assist with weathertightness and energy efficiency.

Scope

- 2.1 Gorilla FLEXI, Gorilla PRO and Gorilla SMART Expanding Foams have been appraised for use as air seals around window and door penetrations and other cladding fenestration trim cavities in buildings within the following scope:
 - the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regard to building height and floor plan area; and,
 - situated in NZS 3604 Wind Zones up to, and including, Extra High.
- 2.2 Gorilla FLEXI, Gorilla PRO and Gorilla SMART Expanding Foams have also been appraised for use as air seals with window and door joinery that is designed and manufactured in accordance with NZS 4211, situated in NZS 3604 Wind Zones up to, and including, Extra High, and where the cladding is an Alternative Solution and/or the building is outside the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1. The weathertightness design of the window and door joinery penetrations and other cladding fenestration trim cavities in these situations has not been assessed and is outside the scope of this Appraisal.

Building Regulations

New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, Gorilla FLEXI, Gorilla PRO and Gorilla SMART Expanding Foams, 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) 15 years. Gorilla FLEXI, Gorilla PRO and Gorilla SMART Expanding Foams meet this requirement. See Paragraphs 8.1 and 8.2.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. When used as part of the cladding system, Gorilla FLEXI, Gorilla PRO and Gorilla SMART Expanding Foams contribute to meeting this requirement. See Paragraphs 10.1–10.4.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Gorilla FLEXI, Gorilla PRO and Gorilla SMART Expanding Foams meet this requirement.

Technical Specification

4.1 Products and accessories supplied by Soudal Ltd are as follows:

Air Seals

- **Gorilla PRO Expanding Foam** – a one-part, self-expanding, moisture-cure polyurethane foam available in 400 ml and 750 ml aerosol cans, and in 750 ml cans fitted with a 'Click n Fix' adaptor system.
- **Gorilla PRO Expanding Foam 'Aerosol'** – a one-part, self-expanding, moisture-cure polyurethane foam available in 400 ml and 750 ml cans fitted with a 'Click n Fix' adaptor system.
- **Gorilla FLEXI Expanding Foam** – a one-part, self-expanding, very elastic, moisture-cure polyurethane foam available in 750 ml cans fitted with a 'Click n Fix' adaptor system.
- **Gorilla SMART Expanding Foam** – a one-part, self-expanding, moisture-cure polyurethane foam available in 600 ml and 750 ml cans fitted with a Smart Gunless Applicator.

Accessories

- **Gorilla 'Click n Fix' Foam Gun.**
- **Gorilla Expanding Foam Cleaner** – available in 500 ml cans fitted with a 'Click n Fix' adapter system.
- **Gator PEF Backing Rod** – a closed cell polyethylene foam (PEF) backing rod complying with ASTM C1330.

Handling and Storage

- 5.1 The handling and storage of Gorilla PRO, Gorilla PRO Expanding Foam 'Aerosol', Gorilla FLEXI and Gorilla SMART Expanding Foams on-site is the responsibility of the installer.
- 5.2 Gorilla PRO, Gorilla PRO 'Click n Fix', Gorilla FLEXI, and Gorilla SMART Expanding Foams have a shelf life of 18 months and Gorilla PRO Expanding Foam 'Aerosol' has a shelf life of 15 months, if stored in unopened packaging under dry, cool conditions at temperatures of between 5°C and 25°C. The products must be stored out of direct sunlight.

Technical Literature

- 6.1 This Appraisal must be read in conjunction with:
- Soudal Gorilla Pro Expanding Foam Click n Fix Technical Data Sheet, Updated May 2019.
 - Soudal Gorilla Pro Expanding Foam Technical Data Sheet, Updated May 2019.
 - Soudal Gorilla Smart Expanding Foam Technical Data Sheet, Updated June 2022.
 - Soudal Gorilla Flexi Expanding Foam Click n Fix Technical Data Sheet, Updated May 2019.
- 6.2 Some installation instructions are also provided on the packaging. Note that the packaging labels also refer to uses outside the scope of 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 The use of air seals is critical to assist the weathertightness performance of window and door joinery installations at the trim cavities, and other wall penetrations. Air seals also assist energy efficiency by reducing heat loss through these cavities.
- 7.2 Gorilla FLEXI, Gorilla PRO and Gorilla SMART Expanding Foams are designed to be used as gap-filling air seals around window and door trim cavities and wall penetrations, e.g. plumbing pipes. They are designed for use in interior locations, and along with good gap-filling capacities, the products have excellent adhesion to most materials. Two exceptions are polyethylene and polypropylene, however, testing completed on window installations incorporating polyethylene wall underlays and polyethylene backed flashing tapes have shown that any potential lack of adhesion between Gorilla FLEXI, Gorilla PRO and Gorilla SMART Expanding Foams and the polyethylene will not affect their performance as an air seal.



- 7.3 Gorilla FLEXI, Gorilla PRO and Gorilla SMART Expanding Foams are designed to prevent air leakage at the interior face of the window and at door trim cavities and wall penetrations. This prevention of air leakage assists in achieving the overall airtightness requirements of the trim cavity.
- 7.4 Gator PEF backing rod must be used in all trim cavities and around wall penetrations to support the Gorilla FLEXI, Gorilla PRO and Gorilla SMART Expanding Foams. At the same time the backing rod prevents the trim cavity from being completely filled by restricting the depth of the air seal to a maximum of 45 mm.
- 7.5 Gorilla FLEXI, Gorilla PRO and Gorilla SMART Expanding Foams are not designed to overcome poor detailing and workmanship of window or door joinery, or wall penetration installations. They are designed to be used in conjunction with flashing systems, not as a substitute.

Durability

- 8.1 Assessment of durability to meet the NZBC is based on difficulty of access and replacement of the air seal, and the ability to detect failure of the air seal both during normal use and maintenance of the building.

Serviceable Life

- 8.2 When air seals are installed using Gorilla FLEXI, Gorilla PRO and Gorilla SMART Expanding Foams in accordance with this Appraisal [i.e. in dry, interior environments where the product is inaccessible, and completely sheltered from exposure to sunlight, chemicals, solvents and temperature extremes], they will remain serviceable for at least 15 years.

Prevention of Fire Occurring

- 9.1 Separation or protection must be provided to Gorilla FLEXI, Gorilla PRO and Gorilla SMART Expanding Foams 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.

External Moisture

- 10.1 Gorilla FLEXI, Gorilla PRO and Gorilla SMART Expanding Foams are self-expanding polyurethane foams complying with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.6.
- 10.2 When installed over Gator PEF backing rod complying with ASTM C1330 and used around window, door and other penetration openings in exterior walls, Gorilla FLEXI, Gorilla PRO and Gorilla SMART Expanding Foams can minimise the risk of airflows carrying water into the building wall.
- 10.3 Gorilla FLEXI, Gorilla PRO and Gorilla SMART Expanding Foams, when installed in accordance with this Appraisal, will assist the total cladding system in meeting the requirements of NZBC Acceptable Solution, Clause E2.
- 10.4 Buildings outside the scope of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 are the subject of specific weathertightness design. The designer must incorporate air seal details to meet their own requirements and the performance requirements of the NZBC. These details are outside the scope of this Appraisal.

Installation Information

Installation Skill Level Requirement

- 11.1 All design and building work must be carried out in accordance with Gorilla FLEXI, Gorilla PRO and Gorilla SMART Expanding Foams Technical Literature and this Appraisal by competent and experienced tradespersons conversant with Gorilla FLEXI, Gorilla PRO and Gorilla SMART Expanding Foams. Where the work involves Restricted Building Work [RBW], this must be completed by, or under the supervision of, a Licensed Building Practitioner [LBP] with the relevant License class.

General

- 12.1 Before the installation of Gorilla FLEXI, Gorilla PRO and Gorilla SMART Expanding Foams, the installer must refer to the contract documentation, NZBC Acceptable Solution E2/AS1 and the cladding system manufacturer's Technical Literature for guidance on the specific installation requirements of air seals.
- 12.2 Substrate surfaces must be clean and free from any surface contaminants such as dust or grease that may cause loss of adhesion. Window and door joinery or wall penetrations must have been installed and firmly secured in place.
- 12.3 Substrate surfaces should be moistened with a mist of water before the installation of Gorilla FLEXI, Gorilla PRO and Gorilla SMART Expanding Foams. The moisture assists by accelerating the curing of the air seal and creating a more homogenous cell structure.
- 12.4 After installation of the Gator PEF backing rod, Gorilla FLEXI, Gorilla PRO and Gorilla SMART Expanding Foams must be extruded into the gap between the window or door reveal liner or wall penetration and the timber frame or wall underlay at the internal face of the cavity. Once extruded, it will expand to fill the gap and form a continuous air seal.
- 12.5 Gorilla FLEXI, Gorilla PRO and Gorilla SMART Expanding Foam that has spilled but not cured can be removed with Gorilla CLEAN 'Click n Fix' foam cleaner.
- 12.6 Gorilla FLEXI, Gorilla PRO and Gorilla SMART Expanding Foam that has cured can be trimmed with a sharp knife. For residual Gorilla Expanding Foam that can be separated from the area of the desired install, Gorilla Expanding Foam Remover can be used if the surface it is applied to is flat and non-porous. Care must be taken that the Gorilla Expanding Foam Remover does not come in contact with the foam applied for the desired use. The suitability of Gorilla Expanding Foam Remover to the surface finish has not been assessed by BRANZ and is outside the scope of this Appraisal.

Health and Safety

- 13.1 Safe use and handling procedures for Gorilla FLEXI, Gorilla PRO and Gorilla SMART Expanding Foams are provided on the cans. Extra care must be taken when using the products in areas where there is insufficient ventilation, and suitable respiratory equipment must therefore be worn. Additional information on the product is available in the Material Safety Data Sheet available from Soudal Ltd.

Basis of Appraisal

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

[Note: Gorilla FLEXI, Gorilla PRO and Gorilla SMART Expanding Foams are identical in formulation to SOUDAFOAM 'Click n Fix' products. These products are all manufactured by Soudal NV].

Tests

- 14.1 A BRANZ ad-hoc test was completed to confirm the suitability of Gorilla FLEXI, Gorilla PRO and Gorilla SMART Expanding Foams for use as air seals. The test results were reviewed by BRANZ experts and found to be satisfactory.
- 14.2 Cyclic and static pressure water leakage tests in accordance with AS/NZS 4284 were carried out by BRANZ on typical window installations to assess the practicability of expanding foam air seals.

Other Investigations

- 15.1 The practicability of installation was assessed by BRANZ and found to be satisfactory.
- 15.2 A product data sheet for SOUDAFOAM 'Click n Fix' and Material Safety Data Sheets for Gorilla FLEXI, Gorilla PRO and Gorilla SMART Expanding Foams have been reviewed by BRANZ and found to be satisfactory.
- 15.3 A durability opinion has been given by BRANZ technical experts for Gorilla FLEXI, Gorilla PRO and Gorilla SMART Expanding Foams when used as air seals.



Quality

- 16.1 The manufacture of the products has not been examined by BRANZ, but details of the quality and composition of the materials used were obtained and found to be satisfactory. Soudal NV is an ISO 9001 Certified manufacturer. BRANZ undertakes a review of quality on an inwards good basis.
- 16.2 The quality of supply to the market is the responsibility of Soudal Ltd.
- 16.3 The quality of installation of the product on-site is the responsibility of the installer.
- 16.4 Building designers are responsible for the design of the building, and for the incorporation of the air seal into their design in accordance with the instructions of Soudal Ltd.

Sources of Information

- AS/NZS 4284:2008 Testing of building facades.
- ASTM C1330-02 Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants.
- NZS 3604:2011 Timber-framed buildings.
- NZS 4211:2008 Specification for performance of windows.
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.



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02 August 2022

GORILLA EXPANDING FOAM
AIR SEALS



BRANZ

In the opinion of BRANZ, **Gorilla Expanding Foam Air Seals** are fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided they are used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to **Soudal Ltd**, 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. **Soudal Ltd**:
 - 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 **Soudal Ltd**.
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 **Soudal Ltd** or any third party.

For BRANZ

Chelydra Percy

Chief Executive

Date of Issue:

02 August 2022