



BRANZ Appraised

Appraisal No. 705 [2016]

BOSTIK MS SAFE SEAL

Appraisal No. 705 [2016]

This Appraisal replaces BRANZ Appraisal No. 705 [2010].



BRANZ Appraisals

Technical Assessments of products for building and construction.



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Product

- 1.1 Bostik MS Safe Seal is a weatherproofing sealant for exterior use and a general purpose gap-filling sealant for exterior and interior use.

Scope

- 2.1 Bostik MS Safe Seal has been appraised for use as an exterior sealant in buildings within the following scope:
 - the scope limitations of NZBC Acceptable Solution E2/AS1 Paragraph 1.1.
- 2.2 Bostik MS Safe Seal has also been appraised for use as internal and external sealants in buildings subject to specific design within the following scope:
 - in joints with a minimum depth of 5 mm; and,
 - in joints with a minimum width of 5 mm and maximum width of 40 mm; and,
 - with substrates of:
 - timber [unpainted and unstained] – particleboard, fibreboard, untreated pine, boron treated pine, tanalised pine, New Zealand natives or untreated Cedar or Douglas Fir; or,
 - plastics - PVC, melamine sheet, fibreglass [gelcoat side only], polyurethane coatings, epoxy and polyester coatings or epoxy mortars; or,
 - mineral - concrete, mortar, plaster, blockwork, brickwork, fibre cement sheeting, unglazed tiles, earthenware [clay], glazed ceramic tiles, stoneware [e.g. Hinuera stone and Oamaru stone], marble or granite; or,
 - metal – stainless steel, copper, brass, aluminium-zinc, zinc bronze, lead, tin, galvanised steel, mild steel, cast iron or aluminium [milled, anodised or powder coated]; or,
 - stoved enamel.

Note: Substrates or materials other than those specified above have not been assessed and are outside the scope of this Appraisal. Bostik New Zealand Limited must be consulted when proposing the sealing of material not specifically covered by this Appraisal.

Building Regulations

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, Bostik MS Safe Seal, if used, designed, 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 and B2.3.1 [c], 5 years. Bostik MS Safe Seal meets these requirements. See Paragraphs 8.1 - 8.4.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. When used as part of the cladding system, Bostik MS Safe Seal will contribute to meeting this requirement. See Paragraphs 12.1 - 12.2.

Clause E3 INTERNAL MOISTURE: Performance E3.3.3, E3.3.4, E3.3.5 and E3.3.6. When used as part of the substrate lining or finishing system, Bostik MS Safe Seal will contribute to meeting these requirements. See Paragraph 13.1.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1 Bostik MS Safe Seal meets this requirement and will not present a health hazard to people.

3.2 This is an Appraisal of an **Acceptable Solution** in terms of New Zealand Building Code compliance as follows:

- Sealant complying with Type F, Class 25LM of ISO 11600 in accordance with NZBC Acceptable Solution E2/AS1.

3.3 This is an Appraisal of an **Alternative Solution** in terms of New Zealand Building Code compliance as follows:

- Weathertightness of the building envelope in accordance with Paragraph 2.2 of this Appraisal; and,
- general sealant for exterior and interior wet areas.

Technical Specification

4.1 Products and accessories supplied by Bostik New Zealand Limited are as follows:

Bostik MS Safe Seal

- A one part, low modulus [LM], solvent free sealant based on silyl modified polymer [SMP]. It is available in white, grey and black and supplied in 900 g sausages and 430 g cartridges.

Bostik/Simpson Prep P

- A film forming primer for concrete and other porous materials. Also suitable for specific metal substrates.

Bostik/Simpson Prep G

- A primer for all glass surfaces to prevent UV attack to the glass/sealant interface.

Bostik No. 2 Solvent

- A solvent based cleaner for removing uncured materials and for degreasing surfaces prior to the application of sealant.

Handling and Storage

5.1 The handling and storage of Bostik MS Safe Seal on site is the responsibility of the installer. Bostik MS Safe Seal has a shelf life of 12 months from the date of production if stored in unopened packaging under dry, cool conditions at temperatures of between 5°C and 25°C. The product must be stored out of direct sunlight.

Technical Literature

- 6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for Bostik MS Safe Seal. 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.

In particular, the detail of limitations in the Technical Literature for use should be referred to.

Design Information

General

- 7.1 Bostik MS Safe Seal is designed to be used as an expansion joint, control joint and gap-filling sealant in building construction joints for the exclusion of moisture. It may be used in both interior and exterior locations, and along with its high elasticity and good adhesion, it is suitable for use with a wide range of substrates. Compatibility tests on some porous stones are required as staining can occur in some instances, refer Bostik New Zealand Limited for further advice.
- 7.2 The design of weathertight joints and detailing for all applications must be in accordance with good design principles. In most situations, joint design should see the sealant used as a first line of defence, in conjunction with flashings (second line of defence) which drain to the building exterior. Other good design principles include the optimum width to depth ratio, correct sealant profile, and use of a bond breaker system. Refer to BRANZ Bulletin No. 584 and 441 for further information.
- 7.3 Bostik New Zealand Limited recommends the following joint width to depth ratios for Bostik MS Safe Seal:
- Joints up to 12 mm wide: 1:1.
 - Joints over 12 mm to 40 mm and over wide: 2:1.
- 7.4 A bond breaker is required in all joints, and with shallow joints the bond breaker may be a self-adhesive polyethylene tape. In deeper joints, a backer rod must be used to act as the bond breaker and at the same time set the joint depth and support the sealants.
- 7.5 The performance of Bostik MS Safe Seal makes it a suitable sealant for weather sealing exterior wall constructions. It is important, however, that the sealant/bond breaker and rain screens are backed up by a waterstop or air seal so that a free-draining enclosed joint cavity is formed. This is particularly important for walls that extend over one storey in height. In weather sealing applications, the bottom of vertical joints must be open to allow water drainage. Horizontal joints between thin sheet materials, e.g. plywood or fibre cement, should be weather sealed with Z flashings and not a sealant. Horizontal joints in other materials must be rebated and the seal formed at or near the top of the rebate. All joints must be designed to drain to the exterior of the building.
- 7.6 For optimum adhesion and in areas of critical, high performance applications (such as in multi storey building work), high stress joints and extreme weather exposure, it is important that preliminary adhesion tests be conducted to ensure adequate performance. Bostik New Zealand Limited must be consulted where doubt arises. Epoxy, polyurethane and polyester surface coatings must be abraded with fine grit paper then cleaned with Bostik No. 2 Solvent before testing. Any other treatments must be undertaken in accordance with the instructions of Bostik New Zealand Limited.
- 7.7 Once cured, Bostik MS Safe Seal can be painted with waterbased paint, however over coating with a rigid coat may inhibit joint movement capabilities and is not recommended.

Durability

- 8.1 Assessment of durability to meet the NZBC is based on difficulty of access and replacement of the sealant, and the ability to detect failure of the sealant both during normal use and maintenance of the building. Therefore durability requirements for the sealant will vary according to the situations in which it is used [e.g. exterior and interior use, exposed or covered].
- 8.2 Bostik MS Safe Seal meets code compliance with NZBC Clause B2.3.1 [b], 15 years for exterior use, and code compliance with NZBC Clause B2.3.1 [c], 5 years for internal use.

Serviceable Life

- 8.3 When used and applied in accordance with the Technical Literature and this Appraisal, it is expected that weathertightness or gap-filling seals undertaken with Bostik MS Safe Seal will remain serviceable for 15 years or more in exterior environments.
- 8.4 In dry interior environments where the product is inaccessible and completely sheltered from exposure to chemicals, solvents, temperature extremes and excessive movement, a serviceable life of up to 50 years or more may be expected.

Maintenance

- 9.1 In accessible areas, inspections must be carried out annually to check for cracks or gaps between the sealant and substrate. Where this has occurred, the unsound sealant must be raked out, the substrate prepared and the joint filled with fresh sealant.

Prevention of Fire Occurring

- 10.1 Separation or protection must be provided to Bostik MS Safe Seal from heat sources such as fire places, heating appliances, flues and chimneys. Part 7 of NZBC Acceptable Solutions C/AS1 – C/AS6 and NZBC Verification Method C/VM1 provide methods for separation and protection of combustible materials from heat sources.

External Moisture

- 11.1 Bostik MS Safe Seal complies with Type F Class 25LM of ISO 11600 and therefore may be used whenever a sealant of this type is specified in NZBC Acceptable Solution E2/AS1.
- 11.2 Bostik MS Safe Seal can be used with a range of exterior construction methods and materials to meet the requirements of NZBC Clause E2.3.2. It can be used, for example, in the control joints of masonry veneer, to weatherproof the joints between fibre cement weatherboards, to seal around pipes and penetrations, to weatherproof joints between flashings and claddings, or act as an air seal around window, door and other penetrations.
- 11.3 It is the responsibility of the designer, builder or contractor to ensure sound joint design principles are followed. Designers, builders or contractors must ensure that second line of defence flashings drain to the building exterior, that they are suitable for the particular application under consideration, and that they are installed correctly.

Internal Moisture

- 12.1 Bostik MS Safe Seal can be used to form an impervious joint between sheet lining materials and also a joint between fixtures and lining materials in accordance with NZBC Acceptable Solution E3/AS1, Paragraph 3.2.2 to prevent water splash penetrating behind linings or into concealed spaces.

Installation Information

Installation Skill Level Requirements

- 13.1 Bostik MS Safe Seal is for use by general tradespersons and handypersons in straight-forward applications. However, for more technically difficult applications, especially on larger commercial and industrial type buildings, application should be undertaken only by those experienced in the application of sealants to expansion and construction joints. All installations must be in accordance with the instructions given within the Technical Literature and this Appraisal.

General

- 14.1 Before the application of sealant, substrate surfaces must be clean, dry and free from any surface contaminants such as dirt, dust, oil or existing coatings and paints.
- 14.2 Cure rates will slow down as temperatures decrease.
- 14.3 Sealant application must be carried out when the sealant and substrate temperature is within the range of 5°C to 40°C.
- 14.4 Installation of the sealant can be undertaken using a hand or pneumatically operated caulking gun at an angle to eliminate the inclusion of air pockets. The sealant should be tooled off to achieve a smooth finish and to compress it, promoting adhesion to the joint walls. Clean-up can be carried out using Bostik No. 2 Solvent immediately after application. [Methylene chloride paint strippers can aid the removal of cured sealant.]

Health and Safety

- 15.1 Safe use and handling procedures for Bostik MS Safe Seal is provided in the Material Safety Data Sheets available from Bostik New Zealand Limited.

Basis of Appraisal

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

Tests

- 16.1 The following testing of Bostik MS Safe Seal has been undertaken by:
 - Polymer Institut, Germany, as meeting the requirements ISO 11600 - F - Class 25LM, Building Construction - Sealants - Classification and Requirements.
 - BRANZ, testing to ASTM G154 for accelerated weathering, with analysis of colour and tensile adhesion performance being carried out before, after and during the exposure.

Other Investigations

- 17.1 Site inspections have been carried out by BRANZ to confirm practicability of installation and completed installations.
- 17.2 Technical data sheets and Material Safety Data Sheets for Bostik MS Safe Seal have been obtained by BRANZ and found to be satisfactory.
- 17.3 A durability opinion has been given by BRANZ technical experts.

Quality

- 18.1 The manufacture of the product has not been examined by BRANZ, but details of the quality and composition of the materials used were obtained and found to be satisfactory.
- 18.2 Quality of supply of the product to the market is the responsibility of Bostik New Zealand Limited.
- 18.3 Quality of installation of the product on site is the responsibility of the sealant installer.
- 18.4 The quality of installation of the substrates in accordance with the manufacturer's instructions is the responsibility of the substrate installer.
- 18.5 Building designers are responsible for the design of the joints, and for the incorporation of the sealant into their design in accordance with the instructions of Bostik New Zealand Limited.
- 18.6 Building owners are responsible for the maintenance of the sealed joint.

Sources of Information

- BRANZ Bulletin No. 584 Sealed-joint design - claddings.
- BRANZ Bulletin No. 441 Sealed joints in external claddings - 2. Sealants.
- Compliance Document for New Zealand Building Code External Moisture Clause E2, Department of Building and Housing, Third Edition July 2005 [Amendment 6, 14 February 2014].
- Ministry of Business, Innovation and Employment Record of Amendments for Compliance Documents and Handbooks.
- The Building Regulations 1992.



In the opinion of BRANZ, **Bostik MS Safe Seal** 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 **Bostik New Zealand 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. **Bostik New Zealand 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 **Bostik New Zealand 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 **Bostik New Zealand Ltd** or any third party.

For BRANZ



Chelydra Percy

Chief Executive

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20 May 2016