



BRANZ Appraised

Appraisal No. 488 [2021]

STOARMAT RENDER SYSTEM

Appraisal No. 488 [2021]

This Appraisal replaces BRANZ Appraisal No. 488 [2006]



BRANZ Appraisals

Technical Assessments of products for building and construction.



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Product

- 1.1 The StoArmat Render System is a jointing and exterior render system for use as a finishing system for EasyLap™ Panel.
- 1.2 The system consists of a 2.5-3.5 mm thick fibreglass mesh reinforced synthetic resin bond coat render, and an approximate 1-3 mm thick coat of coloured finishing render. The render system is finished with a Sto coating.

Scope

- 2.1 The StoArmat Render System has been appraised for use as a jointing and exterior render system for EasyLap™ Panel on buildings within the following scope:
 - the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1; and,
 - with a risk score of 0-20, calculated in accordance with NZBC Acceptable Solution E2/AS1, Table 2; and,
 - situated in NZS 3604 Wind Zones up to, and including, Extra High.
- 2.2 The StoArmat Render System has also been appraised for use as a jointing and exterior render system for EasyLap™ Panel on buildings subject to specific design up to an ultimate limit state [ULS] wind pressure of 2.5 kPa; and,
 - within the scope limitations of BRANZ Appraisal No. 466 EasyLap™ Panel for Texture Coating.
- 2.3 EasyLap™ Panel must be used, designed and installed as described in BRANZ Appraisal No. 466 and the EasyLap™ Panel Technical Literature.
- 2.4 Installation of components and accessories supplied by Stoanz Limited and Sto registered contractors must be carried out only by Sto registered contractors.



Building Regulations

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, the StoArmat Render System, if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet the following provisions of the NZBC:

Clause B2 DURABILITY: Performance B2.3.1 (b) 15 years, B2.3.1 (c) 5 years and B2.3.2. The StoArmat Render System meets these requirements. See Paragraphs 10.1 and 10.2.

Clause C3 FIRE AFFECTING AREAS BEYOND THE FIRE SOURCE: Performance C3.7. The StoArmat Render System meets this requirement. See Paragraph 13.2.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. The StoArmat Render System when used to finish EasyLap™ Panel meets this requirement. See Paragraphs 8.1-8.3, 14.1 and 14.2.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. The StoArmat Render System meets this requirement.

Technical Specification

4.1 System components and accessories supplied by Stoanz Limited are as follows:

Primers

- **Sto Putzgrund** is a pigmented, gritty, ready-to-use, acrylic-based primer. It is used to seal the face of the EasyLap™ Panels and sheet joints prior to rendering. Sto Putzgrund is supplied in 25 kg pails.

Renderers

- **StoArmat Classic** is a plasticiser-free, tintable, ready-to-use, polymer-modified, cement-free reinforcement render comprising granulated quartz sands, calibration grain, polypropylene fibre and additives. It is supplied in 23 kg pails, and after diluting with water as necessary and mixing, is ready for use. It is trowel-applied to the joints of the EasyLap™ Panels. It is also trowel-applied as the bond coat in a 1.5-2 mm thick layer followed by the embedment of fibreglass mesh reinforcement in the outer surface. Once dry, a further coat of StoArmat Classic approximately 1 mm thick is applied to cover the mesh and leave a flat, even surface.
- **Stolit K** is a plasticiser-free, tintable, ready-to-use, polymer-modified, cement-free finishing render with a 1, 1.5, 2 or 3 mm grain size. It is supplied in 25 kg pails and is trowel-applied to an approximate thickness of 1-3 mm, gauging to the thickness of the aggregate size.
- **Stolit MP and MP Natural** are plasticiser-free, tintable, ready-to-use, polymer-modified, cement-free finishing renders. They are supplied in 25 kg pails, are trowel-applied in two coats and are either float finished, or lightly sponged to the selected pattern.
- **Stolit Milano** is a smooth, plasticiser-free, tintable, ready-to-use, polymer-modified, cement-free finishing render. It is supplied in 25 kg pails, is trowel-applied in two coats and is either steel troweled, floated, or lightly randomly sponged to the selected pattern.
- **Sto Flexyl** is a cementitious waterproof paste. It is mixed on site with a 1:1 ratio of fresh cement and is used as a waterproofing membrane over rendered balustrades and fixing blocks. Sto Flexyl is supplied in 18 kg pails.

StoColor Paints and Clear Sealers

- **StoColor Maxicryl** is a ready-to-use, tintable, matt, acrylic exterior paint for application over finishing renders. It is supplied in 15 L pails, and may be brush, roller or spray applied. The paint colour selected must have a light reflectance value [LRV] of 35% minimum.
- **StoColor Lotusan** is a ready-to-use, tintable, special dirt and algae resistant mineral silicone resin exterior paint for application over finishing renders. It is supplied in 15 L pails, and may be brush, roller or spray applied. The paint colour selected must have a LRV of 35% minimum.

- **StoColor Lastic** is a ready-to-use, tintable, satin matt, acrylic exterior paint for application over finishing renders. It is supplied in 15 L pails, and may be brush, roller or spray-applied. The paint colour selected must have an LRV of 35% minimum.
- **StoColor X-Black** is a ready-to-use, tintable, matt, heat reflective acrylic exterior paint for application over finishing renders. It is supplied in 15 L pails, and may be brush, roller or spray-applied. The paint colour selected must have an LRV of 25% minimum.
- **S-Protect SC** is an invisible, silane-based, hydrophobic sealer for application over Stolit MP, Stolit MP Natural and Stolit Milano finishing renders. It is supplied in 10 and 20 L pails, and is applied in a flood coat using a low pressure sprayer and Sto block brush.
- **StoPur WV200** is a two-component PUR, water-based, matt transparent sealer for application over Stolit Milano finishing render. It is applied by brush and Sto Micro roller.

Accessories

- **Reinforcing mesh** - alkali-resistant fibreglass mesh with a nominal mesh size of approximately 7 x 7 mm or 4 x 4 mm and an approximate weight of 165 g/m².
 - **Sto pre-meshed corner beads** - uPVC and fibreglass mesh corner mouldings.
 - **uPVC flashings** - flexible control joint, StoArmat Clip-On Foot Tray, vermin tray, vented window head tray, joinery flashings.
 - **Sto Joint Sealing Tape 2D** - black, compressed polyurethane foam. The foam is coated on one side with a pressure sensitive adhesive, which is covered by a release paper. The tape is available 2 and 5 mm thick, expanding to maximum 6 and 12 mm thick after installation, and is supplied in rolls 15 mm wide and 18 and 9 m long respectively.
- 4.2 Accessories used with the system which are supplied by the Sto registered contractor are:
- **Flexible sealant** - sealant complying with NZBC Acceptable Solution E2/AS1, or sealant covered by a valid BRANZ Appraisal for use as a weather sealing sealant for exterior use.

Handling and Storage

- 5.1 Handling and storage of all materials supplied by Stoanz Limited or the Sto registered contractor, whether on-site or off-site, is under the control of the Sto registered contractor. Dry storage must be provided on-site for the fibreglass mesh and pails of render and coating. uPVC flashings and profiles must be protected from direct sunlight and physical damage, and should be stored flat and under cover. Liquid components must be stored in frost-free conditions.
- 5.2 Handling and storage of all materials supplied by the building contractor, whether on-site or off-site, is under the control of the building contractor. Materials must be handled and stored in accordance with the relevant manufacturer's instructions.
- 5.3 Render must be used within the designated shelf life from the date of manufacture.

Technical Literature

- 6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the StoArmat Render System and EasyLap™ Panel. 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

Fibre Cement Substrate

- 7.1 EasyLap™ Panel must be designed and installed in accordance with BRANZ Appraisal No. 466 and the EasyLap™ Panel Technical Literature.

General

- 8.1 Timber wall framing and cavity battens must have a moisture content of 20% or less at the time of the commencement of the StoArmat Render System.
- 8.2 At ground level, the bottom edge of the StoArmat Render System must be kept clear of paved surfaces, for example footpaths, by a minimum of 100 mm and unpaved surfaces by 175 mm in accordance with NZBC Acceptable Solution E2/AS1, Table 18. The bottom edge of the render system must be finished against the StoArmat Clip-On Foot Tray.
- 8.3 At balcony, deck or roof/wall junctions, the bottom edge of the StoArmat Render System must be kept clear of any adjacent surface, or above the top surface of any adjacent roof flashing by a minimum of 35 mm in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.3. The bottom edge of the render system must be finished against the StoArmat Clip-On Foot Tray.

Control Joints

- 9.1 Control joints in the StoArmat Render System must be constructed in accordance with the Technical Literature, and be provided as follows:
 - **Vertical control joints** - at maximum 5.4 m centres; aligned with any control joint in the fibre cement substrate, or where the cladding system abuts different cladding types.
 - **Horizontal control joints** - at maximum 5.4 m centres and at inter-storey floor levels.

Durability

- 10.1 The StoArmat Render System meets code compliance with NZBC Clause B2.3.1 [b] 15 years for the render system, and code compliance with NZBC Clause B2.3.1 [c] 5 years for the Sto coating system.

Serviceable Life

- 10.2 StoArmat Render System installations are expected to have a serviceable life of at least 15 years provided the coating system is maintained in accordance with this Appraisal.

Maintenance

- 11.1 Regular cleaning [at least annually] of the StoArmat Render System is required to remove grime, dirt and organic growth, and to maximise the life and appearance of the coating. Grime may be removed by brushing with a soft brush, warm water and detergent.
- 11.2 Annual inspections must be made to ensure that all aspects of the render and coating system remain in a sound and weatherproof condition. Any damaged areas or areas showing signs of deterioration which would allow water ingress, must be repaired immediately. Sealant, coatings or the render system must be repaired in accordance with the instructions of Stoanz Limited. Any damage to the substrate must be repaired and the advice of James Hardie New Zealand must be sought.
- 11.3 Recoating of the coating system will be necessary throughout the life of the render system. The interval between recoats depends on the paint colour, orientation and quality of the application, and will be at approximately 8-10 yearly intervals in accordance with the instructions of Stoanz Limited. Clear sealer systems require recoating at 5-7 yearly intervals.
- 11.4 Minimum ground clearances as set out in this Appraisal must be maintained at all times. *[Note: Failure to adhere to the minimum ground clearances given in this Appraisal and the Technical Literature will adversely affect the long term durability of the StoArmat Render System.]*

Prevention of Fire Occurring

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

Fire Affecting Areas Beyond the Fire Source

Vertical Fire Spread

- 13.1 This Appraisal only covers buildings 10 m or less in height. NZBC Functional Requirement C3.2 identifies that external vertical fire spread to upper floors only needs be considered for buildings with a building height greater than 10 m. Control of external vertical fire spread is therefore outside the scope of this Appraisal.

Horizontal Fire Spread

- 13.2 The StoArmat Render System has a peak heat release rate of less than 100 kW/m² and a total heat released of less than 25 MJ/m². Testing was carried out in accordance with the requirements of NZBC Verification Method C/VM2, Table 4.1, achieving a Type A classification. In accordance with NZBC Acceptable Solution C/AS1, Table 5.1 and NZBC Acceptable Solution C/AS2, Paragraph 5.8.1, the StoArmat Render System can therefore be used within 1 m of the relevant boundary.

External Moisture

- 14.1 The StoArmat Render System, when installed and maintained in accordance with this Appraisal and the Technical Literature will meet code compliance with NZBC Clause E2.3.2.
- 14.2 The detailing of junctions between the StoArmat Render System and external joinery, other wall penetrations, e.g. meter boxes, and other cladding and roofing junctions are the responsibility of James Hardie New Zealand for compliance with the NZBC. These details have not been assessed as part of this Appraisal but are covered by the EasyLap™ Panel Appraisal.

Installation Information

Installation Skill Level Requirements

- 15.1 Installation and finishing of components and accessories supplied by Stoanz Limited and the Sto registered contractor must be completed by trained applicators, approved by Stoanz Limited.
- 15.2 Installation of the accessories supplied by the building contractor must be carried out in accordance with the StoArmat Render System Technical Literature and this Appraisal by, or under the supervision of a Licensed Building Practitioner [LBP] with the relevant Licence Class.

System Installation

StoArmat Render System

- 16.1 The StoArmat Render System must be installed in accordance with the Technical Literature.
- 16.2 The StoArmat Render System must only be applied when the air and substrate temperature is within the range of 5°C to 30°C.

Inspections

- 17.1 The Technical Literature must be referred to during the inspection of StoArmat Render System installations.

Health and Safety

- 18.1 Safe use and handling procedures for the components that make up the StoArmat Render System are provided in the relevant manufacturer's Technical Literature.

Basis of Appraisal

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

Tests

The following testing has been completed by BRANZ:

- 19.1 The StoArmat Render System has been tested to BRANZ EM 4 over EasyLap™ Panel.
- 19.2 BRANZ expert opinion on NZBC Clause E2 code compliance for EasyLap™ Panel was based on testing and evaluation of all details within the scope of the EasyLap™ Panel Appraisal and as stated within this Appraisal. EasyLap™ Panel was tested to NZBC Acceptable Solution E2/VM1. The testing assessed the performance of the foundation detail, window head, jamb and sill details, meter box head, jamb and sill details, vertical and horizontal control joints, internal and external corners and balustrade to wall junction with a rendered cap. In addition to the weathertightness test, the details contained within the EasyLap™ Panel Technical Literature have been reviewed, and an opinion has been given by BRANZ technical experts that the system will meet the performance levels of NZBC Acceptable Solution E2/AS1 for drained cavity claddings.
- 19.3 The Sto Flexyl waterproofing membrane has been tested to AS/NZS 4858, Table 8, Parts (a) to (e), except that bleach and detergent immersion set out in Appendix A1 was not required.
- 19.4 Cone calorimeter testing of the StoArmat Render System was carried out in accordance with AS/NZS 3837.

Other Investigations

- 20.1 A durability opinion has been given by BRANZ technical experts.
- 20.2 Site inspections have been carried out by BRANZ to assess the practicability of installation, and to examine completed installations.
- 20.3 The Technical Literature for the StoArmat Render System has been examined by BRANZ and found to be satisfactory.

Quality

- 21.1 The manufacture of the Sto renders and finishes has not been examined by BRANZ, but details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory. The quality management system of the manufacturer, Sto SE & Co. KGaA, has been assessed and registered as meeting the requirements of ISO 9001.
- 21.2 The environmental management system of Sto SE & Co. KGaA has been assessed and registered as meeting the requirements of ISO 14001.
- 21.3 The quality of materials, components and accessories supplied by Stoanz Limited is the responsibility of Stoanz Limited.
- 21.4 Quality on-site is the responsibility of the Sto registered contractor.
- 21.5 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of framing systems and joinery, wall underlays, flashing tapes, air seals, joinery head flashings, cavity battens and EasyLap™ Panels in accordance with the instructions of James Hardie New Zealand.
- 21.6 Building owners are responsible for the maintenance of the StoArmat Render System in accordance with the instructions of Stoanz Limited.

Sources of Information

- AS/NZS 4858:2004 Wet area membranes.
- BRANZ Appraisal No. 466 EasyLap™ Panel for Texture Coating.
- NZS 3604:2011 Timber-framed 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, the **StoArmat Render System** 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 **Stoanz 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. **Stoanz 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 **Stoanz 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 **Stoanz Limited** or any third party.

For BRANZ



Chelydra Percy

Chief Executive

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