



BRANZ Appraised

Appraisal No. 609 [2017]

DAVCO K10 PLUS, K10 RAPID AND DAVCO K12 WET AREA MEMBRANES

Appraisal No. 609 [2017]

This Appraisal replaces BRANZ
Appraisal No. 609 [2008]

Amended 22 September 2020.



BRANZ Appraisals

Technical Assessments of products
for building and construction.



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Product

- 1.1 Davco K10 Plus, K10 Rapid and Davco K12 are liquid-applied waterproofing membranes for use under ceramic or stone tile finishes in internal wet areas.

Scope

- 2.1 Davco K10 Plus, K10 Rapid and Davco K12 have been appraised for use as waterproofing membranes for internal wet areas of buildings, within the following scope:
- on floor substrates of concrete, flooring grade particleboard, plywood, compressed fibre cement sheet and fibre cement sheet tile underlay, and on wall substrates of concrete, concrete masonry, wet area fibre cement sheet lining systems and wet area plasterboard lining systems; and,
 - when protected from physical damage by ceramic or stone tile finishes; and,
 - where floors are designed and constructed such that deflections do not exceed 1/360th of the span.
- 2.2 The use of Davco K10 Plus, K10 Rapid and Davco K12 on concrete slabs and walls where hydrostatic or vapour pressure is present is outside the scope of this Appraisal.
- 2.3 Movement and control joints in the substrate must be carried through to the tile finish. The design and construction of the substrate and movement and control joints is specific to each building, and therefore the responsibility of the building designer and building contractor and is outside the scope of this Appraisal.
- 2.4 Ceramic or stone tile finishes are outside the scope of this Appraisal.
- 2.5 The membranes must be installed by Sika Australia Pty Ltd approved and trained applicators.

Building Regulations

New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, Davco K10 Plus, K10 Rapid and Davco K12 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. Davco K10 Plus, K10 Rapid and Davco K12 meet this requirement. See Paragraph 9.1.

Clause E3 INTERNAL MOISTURE: Performance E3.3.6. Interior wet area floors and walls incorporating Davco K10 Plus, K10 Rapid and Davco K12 will meet this requirement. See Paragraphs 11.1–11.7.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Davco K10 Plus, K10 Rapid and Davco K12 meet this requirement and will not present a health hazard to people.

Technical Specification

- 4.1 Materials supplied by Sika Australia Pty Ltd are as follows:
- **Davco K10 Plus** - a flexible [Class III as defined in AS/NZS 4858], single-pack, water-based polyurethane waterproofing membrane. It is supplied as a grey paste in 4 and 20 L pails or green paste in 4 and 20 L pails.
 - **Davco K10 Rapid** - a flexible [Class III as defined in AS/NZS 4858], single-pack, water-based polyurethane waterproofing membrane. It is supplied as a yellow paste in 5 and 15 L pails.
 - **Davco K12** - a flexible [Class III as defined in AS/NZS 4858], single-part, ready-to-use, water-based polyurethane waterproofing membrane. It is supplied as a blue liquid in 17 L containers.
 - **Ultraprime** - an acrylic-based multipurpose primer for all porous substrates. It is supplied as a blue liquid in 1, 5 and 20 L containers.
 - **Ultrabond** - a grey, flexible, two-part primer/bond enhancer for use over difficult or non-porous substrates. It is supplied as a kit made up of a 20 kg bag and a 5 L pail.

Handling and Storage

- 5.1 All materials must be stored inside, up off concrete floors, in dry conditions, out of direct sunlight and out of freezing conditions. The membrane products have a shelf life of 12 months from date of manufacture in the original unopened packaging. Once opened, the products must be used within 3 months.

Technical Literature

- 6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for Davco K10 Plus, K10 Rapid and Davco K12. 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 Davco K10 Plus, K10 Rapid and Davco K12 are for use in buildings where an impervious waterproof membrane is required to floors and walls to prevent damage to building elements and adjoining areas.
- 7.2 The membranes must be protected from physical damage by the application of ceramic or stone tile finishes.
- 7.3 Movement and control joints may be required depending on the shape and size of the building or room, and the tile finish specified. Design guidelines can be found in the BRANZ Good Practice Guide to Tiling.
- 7.4 Timber floor framing systems must comply with NZS 3604, or where specific engineering design is used, the framing shall be of at least equivalent stiffness to the framing provisions of NZS 3604, or comply with the serviceability criteria of NZS 4203. In all cases framing must be provided so that the maximum span of the substrate as specified by the substrate manufacturer is met and all sheet edges are fully supported. Timber framing systems supporting the substrates must be constructed such that deflections do not exceed $1/360^{\text{th}}$ of the span. Where NZS 3604 is used, the allowable joist spans given in Table 7.1 shall be reduced by 20%.

Substrates

Plywood

- 8.1 Plywood must be a minimum of 17 mm thick complying with AS/NZS 2269, CD Grade Structural with sanded C face upwards and treated to H3 [CCA treated]. LOSP treated plywood must not be used. The plywood must be supported with dwangs or framing with a maximum span of 400 mm in each direction, fixed with 10 g x 50 mm stainless steel countersunk head screws at 150 mm centres on the edges and 200 mm through the body of the sheets.

Fibre Cement Compressed Sheet/ Fibre Cement Sheet Tile Underlay

- 8.2 Fibre cement compressed sheet must be manufactured to comply with the requirements of AS 2908.2 and must be specified by the manufacturer as being suitable for use as a wet area substrate. Installation must be in accordance with the instructions of the manufacturer.

Concrete and Concrete Masonry

- 8.3 Concrete and concrete masonry substrates must be to a specific engineering design meeting the requirements of the NZBC, such as concrete construction to NZS 3101 and NZS 3604, concrete slab-on-ground floors and concrete masonry to NZS 4229 and NZS 4230.

Wet Area Wall Linings

- 8.4 Plasterboard wall linings must be manufactured to comply with AS/NZS 2588, and be covered by a valid BRANZ Appraisal for use in internal wet areas.
- 8.5 Fibre cement sheet must be manufactured to comply with the requirements of AS 2908.2 and must be specified by the manufacturer as being suitable for use as a wet area lining. Installation must be in accordance with the instructions of the manufacturer.

Durability

Serviceable Life

- 9.1 Davco K10 Plus, K10 Rapid and Davco K12, when subjected to normal conditions of environment and use, are expected to have a serviceable life of at least 15 years and be compatible with ceramic or stone tile finishes with a design service life of 15-25 years.

Maintenance

- 10.1 No maintenance of the membranes will be required provided significant substrate movement does not occur and the tile finish remains intact. Regular checks must be made of the tiled areas to ensure they are sound and will not allow moisture to penetrate. Any cracks or damage must be repaired immediately by repairing the tiles, grouts and sealants.
- 10.2 In the event of damage to the membrane, the tiling must be removed and the membrane repaired by removing the damaged portion and applying a patch as for new work.
- 10.3 Drainage outlets must be maintained to operate effectively, and ceramic or stone tile finishes must be kept clean.

Internal Moisture

- 11.1 Davco K10 Plus, K10 Rapid and Davco K12 are impervious to water and when appropriately designed and installed will avoid the likelihood of water penetrating behind linings or entering concealed spaces.
- 11.2 Davco K10 Plus, K10 Rapid and Davco K12 are suitable for use to contain accidental overflow to meet NZBC Clause E3.3.2. A means of code compliance for overflow is given in NZBC Acceptable Solution E3/AS1, Paragraph 2.
- 11.3 Surfaces must be finished with ceramic or stone tile finishes. A means of code compliance to NZBC Clause E3.3.3 is given in NZBC Acceptable Solution E3/AS1, Paragraph 3.1.1 b) and 3.1.2 b).
- 11.4 Falls in showers and shower areas must be a minimum of 1 in 50. In unenclosed showers, falls must extend a minimum of 1,500 mm out from the shower rose. Floor wastes must be provided and the floor must fall to the outlet.

- 11.5 The waterproofing membrane must completely cover shower bases, and for unenclosed showers it must extend a minimum of 1,500 mm out from the shower rose. Further design guidance on waterproofing wet areas, including waterproofing walls and junctions can be obtained from AS 3740, the BRANZ Good Practice Guide to Tiling, and flooring and wallboard manufacturers.
- 11.6 Where water resistant wall finishes such as pre-finished sheet materials are used, they must flash over the membrane a minimum of 30 mm.
- 11.7 BRANZ recommends the entire floor be covered by a waterproof membrane for bath, shower and spa rooms where wood-based floors are used.

Installation Information

Installation Skill Level Requirement

- 12.1 Installation must always be carried out in accordance with the Davco K10 Plus, K10 Rapid and Davco K12 Technical Literature and this Appraisal by, or under the supervision of, a Licensed Building Practitioner [LBP] with the relevant Licence Class and an understanding of internal wet area construction.
- 12.2 Installation and finishing of components and accessories supplied by Sika Australia Pty Ltd and its approved applicators must be completed by trained applicators, approved by Sika Australia Pty Ltd.

Preparation of Substrates

- 13.1 Substrates must be dry, clean and stable before installation commences. Surfaces must be smooth and free from nibs, sharp edges, dust, dirt or other materials such as oil, grease or concrete formwork release agents.
- 13.2 Concrete substrates can be checked for dryness by using a hygrometer as set out in BRANZ Bulletin No. 585. The relative humidity of the concrete must be 75% or less before membrane application.
- 13.3 All voids, cracks, holes, joints and excessively rough areas must be filled to achieve an even and uniform surface. Junctions of substrate abutments, such as at wall/floor and wall/wall junctions must have a bond breaker joint system installed as set out in the Technical Literature.
- 13.4 If required, substrates must be primed with the appropriate primer and allowed to cure before the membrane is installed.

Membrane Installation

- 14.1 Installation must not be undertaken where the substrate surface temperature is below 5°C or above 35°C.
- 14.2 The membrane must be applied in two coats at the rates set out in the Technical Literature. The total finished system thickness of the Davco K10 Plus, K10 Rapid and Davco K12 must be a minimum of 1.2 mm.
- 14.3 Application can be made by roller [medium/long nap] or brush [long bristle].
- 14.4 Clean up may be undertaken with water while the membrane is still wet.

Tiling

- 15.1 The membrane must be fully cured before tiling. The cured membrane must be protected at all times to prevent mechanical damage, so may require temporary covers until the finishing is completed.
- 15.2 Tiling must be undertaken in accordance with AS 3958.1 and the BRANZ Good Practice Guide to Tiling. The compatibility of the tile adhesive must be confirmed with the adhesive manufacturer or Sika Australia Pty Ltd.

Inspections

16.1 Critical areas of inspection are:

- Construction of substrates, including crack control and installation of bond breakers and movement control joints.
- Moisture content of the substrate prior to the application of the membrane.
- Acceptance of the substrate by the membrane installer prior to application of the membrane.
- Installation of the membrane to the manufacturer's instructions, particularly installation to the correct thickness and use of reinforcement.
- Membrane curing and integrity prior to the installation of tiles including protection from mechanical damage during curing and prior to tile installation.

Basis of Appraisal

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

Tests

17.1 The testing on Davco K10 Plus, K10 Rapid and Davco K12 has been undertaken by various organisations:

- Testing to AS/NZS 4858: 2004 Appendix A including effect of heat aging, bleach, detergent and water on tensile and elongation, Water Vapour Transmission to ASTM E96-92 and cyclic movement.
- Adhesion to various substrates and low temperature flexibility.

Test methods and results were reviewed by BRANZ and found to be satisfactory.

Other Investigations

18.1 An assessment was made of the durability of Davco K10 Plus, K10 Rapid and Davco K12 by BRANZ technical experts.

18.2 Site inspections have been carried out by BRANZ to assess the practicability of installation and to examine completed installations.

18.3 The Technical Literature has been examined by BRANZ and found to be satisfactory.

Quality

19.1 The manufacture of the membrane has been examined by BRANZ, details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.

19.2 The quality management system of the membrane manufacturer has been assessed and found to be satisfactory.

19.3 The quality of supply of the membrane system materials to the market is the responsibility of Sika Australia Pty Ltd.

19.4 Quality on site is the responsibility of the Sika Australia Pty Limited approved and trained applicators.

19.5 Designers are responsible for the substrate design, and building contractors are responsible for the quality of construction of substrate systems in accordance with the instructions of the substrate manufacturer, Sika Australia Pty Ltd and this Appraisal.

19.6 Building owners are responsible for the maintenance of the tiling or stone finishing systems in accordance with the instructions of Sika Australia Pty Ltd.



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Sources of Information

- AS 2908.2: 2000 Cellulose-cement products – Flat sheet.
- AS 3740: 2010 Waterproofing of wet areas within residential buildings.
- AS 3958.1: 2007 Guide to the installation of ceramic tiles.
- AS/NZS 2269: 2012 Plywood – Structural.
- AS/NZS 2588:1998 Gypsum Plasterboard.
- AS/NZS 4858: 2004 Wet area membranes.
- BRANZ Good Practice Guide to Tiling, 2015.
- NZS 3101: 2006 Concrete Structures Standard.
- NZS 3604: 2011 Timber-framed buildings.
- NZS 4229: 2013 Concrete masonry buildings not requiring specific engineering design.
- NZS 4230: 2004 Design of reinforced concrete masonry structures.
- Ministry of Business, Innovation and Employment Record of amendments – Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.

Amendments

Amendment No. 1, dated 24 May 2018.

This Appraisal has been amended to include the Davco K10 Rapid Membrane.

Amendment No. 2, dated 22 September 2020.

This Appraisal has been amended to include the Davco K12 Membrane.



In the opinion of BRANZ, **Davco K10 Plus, K10 Rapid and Davco K12 Wet Area Membranes** 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 **Sika Australia Pty 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. **Sika Australia Pty 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 **Sika Australia Pty 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 **Sika Australia Pty Ltd** or any third party.

For BRANZ



Chelydra Percy

Chief Executive

Date of Issue:

17 January 2017