



**SPECIFY WITH
CONFIDENCE**

BRANZ Appraisals

**Technical Assessments of
products for building and
construction**

**BRANZ
APPRAISAL
CERTIFICATE
No. 462 (2004)**

SHELTERSEAL 3000X AND SHELTERSEAL HD DAMP-PROOF MEMBRANES

Ardex NZ Ltd
P O Box 19549
Christchurch
Tel: 03 384 3029
Fax: 03 384 9779



BRANZ Limited
Private Bag 50 908
Porirua City
New Zealand
Tel: +64 4 237 1170
Fax: +64 4 237 1171
www.branz.co.nz

BRANZ Pty Ltd
P O Box 99
Collaroy
NSW 2097
Australia
Tel: +61 2 9972 9366
Fax: +61 2 9972 9322
www.branz.com.au



Product

1.1 Shelterseal 3000X and Shelterseal HD are 'peel and stick' single or two layer damp-proof membrane (DPM) systems. They are designed to be applied to the exterior face of basement retaining walls to prevent water or water vapour penetrating to the interior face in spaces where moisture may cause damage.

1.2 The products are supplied as self-adhering, cold-applied, rubber modified-polymer bitumen sheets in roll form.



Typical waterproofing using Shelterseal

Scope

2.1 Shelterseal 3000X and Shelterseal HD have been appraised for use as damp-proof membrane systems on basement walls within the following scope:

- within the scope limitations of NZBC Acceptable Solution E2/AS1 Third Edition June 2004, Section 12; and,
- with dry, clean and sound substrates of reinforced concrete or concrete masonry; and,
- where the membranes are adequately protected against damage during backfilling and in service; and,
- where subsoil drainage and free draining granular backfill has been placed behind basement walls; and,
- where they are not subject to hydrostatic pressure.

2.2 The products must be installed in accordance with the Ardex NZ Ltd Technical Literature referred to in Paragraph 6.1.

Building Regulations

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, Shelterseal 3000X and Shelterseal HD if designed, used, installed and maintained in accordance with the statements and conditions of this Certificate, will meet or contribute to meeting the following provisions of the NZBC:

Clause B2 DURABILITY: Performance B2.3.1 (a) not less than 50 years. Shelterseal 3000X and Shelterseal HD meet this requirement. See Paragraph 10.1.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.3. Shelterseal 3000X and Shelterseal HD meet this requirement. See Paragraphs 12.1 – 12.3.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Shelterseal 3000X and Shelterseal HD meet this requirement and will not present a health hazard to people.

3.2 This Certificate appraises Shelterseal 3000X and Shelterseal HD as an Acceptable Solution in terms of New Zealand Building Code compliance. The membranes comply with NZBC Acceptable Solution E2/AS1 Third Edition June 2004, Paragraph 12.2.1 (a), (b) and (c), and Paragraph 12.2.2 (b).

Technical Specification

4.1 Materials supplied by Ardex NZ Ltd are as follows:

Shelterseal 3000X and Shelterseal HD

- The membranes are manufactured from a bituminous asphalt compound modified with SBS (styrene-butadiene-styrene) rubber and high tack resins. The self-adhesive inner face is protected by a release paper with the outer surface protected by either a layer of cross-laminated high-density polyethylene film (Shelterseal 3000X) or a layer of polypropylene mesh (Shelterseal HD). Shelterseal HD is designed for use where a more robust system is required.
- The membranes are 1.5 mm thick, and supplied in rolls 1 metre wide by 20 metres long. The roll weight is approximately 30 kg.

Shelter Primer

- A solvent-based, bitumen modified primer available in 5 and 20 litre cans.

Handling and Storage

5.1 Handling and storage of all materials whether on or off site is under the control of the installer. Dry storage must be provided for all products and the membranes must be protected from sunlight and UV radiation. Rolls of membrane must be stored on end.

Technical Literature

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the Shelterseal membranes. The Technical Literature must be read in conjunction with this Certificate. All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Certificate must be followed.

Design Information

Substrate Design

7.1 Substrate design must be in accordance with the NZBC to a relevant standard, such as NZS 3101 for concrete and NZS 4230 or NZS 4229 for concrete masonry.

7.2 The substrate must have a surface finish that is smooth, clean and free from defects or irregularities which may damage the membrane.

Control Joints

8.1 Where control or construction joints are formed in the substrate, Ardex NZ Ltd must be consulted for use of the membranes over these joints.

Backfilling and Drainage

9.1 The membrane must be protected against damage by the placement of a protection material between the membrane and the granular fill.

9.2 Backfilling, drainage and the backfill capping must be in accordance with NZBC Acceptable Solution E2/AS1 Third Edition June 2004, Section 12.

9.3 Backfilling must be undertaken with granular, free-draining material. The top of the backfill must be capped with an impervious clay fill and may be covered with topsoil if required. The impervious capping and topsoil must slope at a minimum of 1:30 fall away from the wall.

9.4 A minimum 100 mm diameter perforated drainage pipe must be installed at the bottom of the wall in accordance with Figure 133 of NZBC Acceptable Solution E2/AS1 Third Edition June 2004. The pipe must be covered with a geotextile filter fabric, be laid at a minimum 1:200 fall and discharge to a drainage outlet. Provision for cleaning the pipe must also be provided.

Durability

Serviceable Life

10.1 Shelterseal 3000X and Shelterseal HD are suitable DPM materials as set out in NZBC Acceptable Solution E2/AS1 Third Edition June 2004, Paragraph 12.2.2 (b), therefore they are expected to have a serviceable life of at least 50 years provided they are installed and maintained in accordance with this Certificate and are continually protected from sunlight and UV radiation.

Maintenance

11.1 Annual inspections must be made of the membrane top edge seal and protection, the backfill capping, and the drainage pipe to ensure all are functioning as originally designed.

11.2 If required, the drainage pipe must be cleared to remove any sediment or silt build-up. The slope of the backfill capping must be maintained at all times.

External Moisture

12.1 Shelterseal 3000X and Shelterseal HD membranes, when installed in accordance with this Certificate and the Technical Literature, will prevent water or water vapour from penetrating to the interior face of basement retaining walls in spaces where moisture may cause damage. The membranes have a vapour flow resistance of not less than 90 MN s/g as required by NZBC Acceptable Solution E2/AS1 Third Edition June 2004, Paragraph 12.2.1 (a).

12.2 The membranes self-adhere, and can be used to form sealed joints and to seal penetrations as required by NZBC Acceptable Solution E2/AS1 Third Edition June 2004, Paragraph 12.2.1 (b). The top edge of the membrane must be sealed to the wall as set out in the Technical Literature, and protected.

12.3 Building designers must ensure junctions with other membranes, such as at the floor/wall junction, form a waterproof joint. Junctions have not been assessed and are outside the scope of this Certificate.

Installation Information

Installation Skill Level Requirement

13.1 Installation of the membranes must be completed by tradespersons who have experience in the application of self-adhesive membranes.

System Installation

Substrate Preparation

14.1 All surfaces must be checked to ensure they are dry, clean, smooth and free from sharp edges, loose or foreign materials, oil, grease or other deleterious material that may affect adhesion or may damage the membrane.

Priming

14.2 Prior to application of the membrane all prepared surfaces must be primed with Shelter Primer at a rate of 5-6 m² per litre, and allowed to dry.

Membrane Installation

14.3 Starting at the lowest point, the membrane must be installed in accordance with the Technical Literature. Sheet edges must be overlapped a minimum of 60 mm as marked on the sheets. End laps must be a minimum of 100 mm, with upper sheets lapped over lower sheets. Internal and external corners of single layer systems must be reinforced with an extra layer of membrane 300 mm wide. Where two layer systems are specified lap joints must be staggered. Protection material must be installed before backfilling. Backfilling must commence immediately after the membrane is installed to ensure the membrane is not left exposed to sunlight or UV radiation.

Inspections

14.4 The Technical Literature must be referred to during the inspection of membrane installations by building consent authorities and territorial authorities.

Health and Safety

15.1 Safe use and handling procedures for the membrane systems is provided in the Technical Literature.

Basis of Appraisal

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

Tests

16.1 The following testing of Shelterseal 3000X has been undertaken by the following organisations:

- Istituto Giordano S.p.A., Italy – Resistance to chemical agents, tensile properties, determination of dielectric strength, resistance to tearing, resistance to static perforation, resistance to dynamic perforation and resistance to hydrostatic pressure.
- Singapore Institute of Standards and Research – Thickness, dimensional stability, tensile properties, tensile strength at joints, puncture resistance, water absorption, pliability, water vapour transmission, hydrostatic head and resistance to leakage at joints.
- Isoltema, S.p.A., Italy – Adhesion to cement (concrete).

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

16.2 The following testing of Shelterseal HD has been

undertaken by the following organisations:

- Istituto Giordano S.p.A., Italy - Puncture resistance, tensile properties and elongation.
- Autostrade S.p.A., Italy – Tensile strength, elongation, resistance to dynamic perforation and cold flexibility.
- Isoltema, S.p.A., Italy – Adhesion to cement (concrete).

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

Other Investigations

17.1 A durability opinion has been given by BRANZ technical experts.

17.2 Practicability of installation has been assessed by BRANZ and found to be satisfactory.

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

Quality

18.1 The manufacture of the membranes and primer 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.

18.2 The quality management system of the membrane and primer manufacturer, Isoltema, S.p.A., Italy has been assessed and accredited as meeting the requirements of UNI EN ISO 9001: 2000 by SINCERT, Milan, Italy, Accreditation Number 16.

18.3 The quality of materials supplied by Ardex NZ Ltd is the responsibility of Ardex NZ Ltd.

18.4 Quality of installation on site is the responsibility of the installer.

18.5 Designers are responsible for the building design, and building contractors are responsible for the quality of construction of substrate systems in accordance with the instructions of Ardex NZ Ltd.

18.6 Building owners are responsible for the maintenance of the membrane systems in accordance with the instructions of Ardex NZ Ltd.

Sources of Information

- NZS 3101: 1995 The design of concrete structures.
- NZS 4229: 1999 Concrete masonry buildings not requiring specific engineering design.
- NZS 4230: 2004 Design of reinforced concrete masonry structures.
- Approved Document for New Zealand Building Code External Moisture Clause E2, Building Industry Authority, Third Edition June 2004.
- New Zealand Building Code Handbook and Approved Documents, Building Industry Authority, 1992.
- The Building Regulations 1992, up to, and including April 2003 Amendment.

In the opinion of BRANZ, Shelterseal 3000X and Shelterseal HD Damp-proof Membranes are fit for purpose and will comply with the Building Code to the extent specified in this Certificate provided they are designed, used, installed and maintained as set out in this Certificate.

The Appraisal Certificate is issued only to the Certificate Holder, Ardex NZ Ltd, and is valid until further notice, subject to the Conditions of Certification.

Conditions of Certification

1. This Certificate:
 - 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. The Certificate Holder:
 - 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.
3. The product and the manufacture are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ.
4. BRANZ makes no representation 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 the Certificate Holder.
5. Any reference in this Certificate to any other publication shall be read as a reference to the version of the publication specified in this Certificate.

For BRANZ



R I Burnett



M E Reed

Date of issue: 30 November 2004