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Appraisals

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TECHNICAL ASSESSMENT 296

April 2002

ASTEC Paints Australasia

Ure-Plex

Waterproofing Membrane System

PURPOSE

Waterproofing wet areas including shower recess bases (membrane forms a shower tray) and associated floors and walls all of which are to be subsequently tiled

APPLICANT

Astec Paints Australasia Pty Ltd, (ACN 120 962 245),
22-24 Pinn Street, St. Marys, South Australia 5042



TECHNICAL OPINION

In the opinion of CSIRO Appraisals, Ure-Plex Waterproofing Membrane system will satisfy the requirements of Australian Standard, AS 3740-1994 'Waterproofing of wet areas within residential buildings' (Amdt 1 - Sept 1995) for waterproofing wet areas including shower recess bases (membrane forms a shower tray) and associated floors and walls all of which are to be tiled provided that:

1. The system is installed in accordance with the instructions in the Astec Paints Technical Bulletin, 'Polyurethane wet area membrane, Ure-Plex' (Revised Edition July 2000).
Note: These instructions are available from Astec Paints Australasia Pty Ltd, (ACN 120 962 245), 22-24 Pinn Street, St. Marys, S.A. 5042 (Facsimile (08) 8297 2555).
2. Where required by the relevant State regulatory authority, the membrane is installed by licensed installers.
3. The system is fully supported by the substrate which surface is in a sound, clean and dry condition.
4. Substrates are one or more of the following for
 - (a) General wet areas and shower recess walls - concrete, compressed fibre cement sheets, water-resistant plasterboard sheets, cement render or masonry.
 - (b) Shower recess floors - concrete, compressed fibre cement sheets, plywood flooring, ceramic tile underlay or mortar bed (screed).
5. The floor waste, for substrates other than concrete is,
 - (a) fitted through a neat hole in the substrate, such that there is no more than a 5 mm gap between the pipe work and the substrate, and
 - (b) fixed securely to the substrate with a flanged fitting.
6. The floor tiles in a shower recess are laid on a mortar bed that has a minimum slope to drainage outlets in accordance with local statutory requirements.
7. The membrane is not covered by tiles until it has been allowed to cure for not less than twenty-four hours.
Note: Curing time will depend on weather conditions and ventilation. In confined areas, the effective drying of the membrane will take longer.
8. The system is not used as a water vapour barrier.
9. When used in hobless showers, the membrane is extended for not less than 75 mm up the walls from the finished floor level.

BUILDING CODE of AUSTRALIA 1996

In the opinion of CSIRO Appraisals, the system described in this Technical Assessment and installed under the conditions listed herein will satisfy the relevant requirements of Clause FP1.7 (Volume 1 - Class 2 to Class 9 Buildings) and Clause P2.4.1 (Volume 2 - Class 1 and Class 10 Buildings Housing Provisions) of the Building Code of Australia 1996 (including all Amendments up to 10).

Note:

- (i) While the membrane provides the waterproof sealing requirements of the BCA, it is reliant on being supported by a suitable substrate and protected by an overlaying wearing surface.
- (ii) The inclusion of this clause with reference to the BCA is aimed at assisting those involved in the building approval/permit process relate the Appraisal to the relevant regulations.
- (iii) Any changes made to the BCA will be reviewed during the term of validity of this Technical Assessment and, where necessary, any amendment required will be published in the annual CSIRO Appraisals Directory.

RELATED INFORMATION

VALIDITY OF THE ASSESSMENT

Condition:

This Technical Assessment applies only to the use of Astec Paints Ure-Plex Waterproofing Membrane system as described herein.

Withdrawal:

This Technical Assessment will be withdrawn or amended if CSIRO Appraisals considers that a change in design or manufacturing quality renders the basis of appraisal invalid, or if reported field experience convinces CSIRO Appraisals of unsatisfactory quality or performance.

Term of Validity:

This Technical Assessment will lapse three years after the date of issue unless revalidation has been requested and granted.

RELEVANT DOCUMENTS

Astec Paints Technical Bulletin, 'Polyurethane wet area membrane, Ure-Plex' (Revised Edition July 2000).
Standards Australia, AS 3740-1994 'Waterproofing of wet areas within residential buildings' (Amdt 1 – Sept. 1995)

APPROVED ASSESSMENT EXTRACT

The Ure-Plex Waterproofing Membrane system as distributed by Astec Paints Australasia Pty Ltd, (ACN 120 962 245), Netley, South Australia, is suitable for use as a waterproofing membrane for shower recess bases (membrane forms a shower tray), and associated walls and floors which are to be subsequently tiled when the conditions listed in CSIRO Appraisals Technical Assessment 296 are fulfilled.

APPRAISAL

DESCRIPTION

This description is based on information supplied by the applicant.

General:

The Ure-Plex Waterproofing Membrane system is a single component polyurethane membrane system that cures to a flexible and elastic waterproof skin. The cured membrane is overlaid with ceramic or stone tiles.

The membrane can be used on the following substrates - concrete slab, cement render, concrete and masonry blocks, fibre-reinforced cement sheeting, water resistant plaster sheeting, plywood flooring and particleboard flooring.

Components:

Ure-Plex

Ure-Plex is a yellow, one-part polyurethane compound. It is an elastomeric setting compound used both for priming and as a top-sealing coat. Ure-Plex is applied by brush or trowel at a coverage rate of 1 square metre per 1 litre at 1 mm thickness or 0.75 square metre per 1 litre at 1.3 mm thickness at temperatures between 5°C to 40°C. When applying Ure-Plex as an integral waterproofing membrane, a continuous depth of at least 1 mm is required. The membrane cures in 24 hours at 25°C.

A 'primer' product is not usually required except where reverse moisture migration is possible and the applicant recommends the use of Astec Rivett as a vapour barrier. Ure-Plex is available in 15 litre pails. It has a shelf life of 12 months from date of shipment when stored at or below 27°C in sealed containers.

Astec Rivett

Astec Rivett is a clear solvent based acrylic solution used for most construction materials. The product is designed to penetrate the substrate and bind any loose surface particles to a hard finish prior to coating application. It is applied by brush, spray or roller at a coverage rate of no more than 8 square metres per 1 litre allowing the product to dry between coats. It can be applied at temperatures between 5°C to 40°C. The surface can be recoated within one hour at 25°C.

Bond breaker

An oversized (greater than the gap) closed cell foam rod is used and then sealed with Astec Ure-seal (a fast cure polyurethane sealant). A polyester reinforced tape is used over the rod and sealant for cracks and gaps greater than 3 mm.

Astec Ure-seal

Astec Ure-seal is a single part polyurethane sealing and adhesive compound which cures by reaction with atmospheric moisture and offers a tough, rubbery, highly elastic finish which can be painted if required. The product comes in a ready to use package with no mixing required. It is suitable for sealing both internal and external joints and a wide variety of materials including wood, most metals, enamelled substrates, concrete, masonry, brick and many plastics. Application is by cartridge gun at the specified dimensional proportions. It can be applied at temperatures between 5°C to 35°C. The temperature of the sealant should not be lower than 10°C. When necessary the cartridge may be warmed in a water bath to a temperature of 15°C to 20°C.

Polyester Tape

Astec polyester tape is provided as bonded (Deckweb) and spun (Sontara Tape). Both products are textile material composed of staple fibres woven to form a strong reinforcing fabric for use with liquid membrane coatings. Sontara is recommended for detailing due to its conformability and its ability to wet up easily during application. Deckweb is recommended for use on flat or curved surfaces that are reasonably smooth and even. Both products are supplied in different lengths and widths and vary from 40 (Deckweb) to 44 (Sontara Tape) grams per square meter.

Note: Instructions on the use of all components are available from Astec Paints Australasia Pty Ltd, (ACN 120 962 245), 22-24 Pinn Street, St. Marys, S.A. 5042 (Facsimile (08) 8297 2555).

Installation:

General

Installation instructions are given in Astec Paints Technical Bulletin, 'Polyurethane wet area membrane, Ure-Plex' (Revised Edition July 2000) and are summarised below.

Note: These instructions are available from Astec Paints Australasia Pty Ltd, (ACN 120 962 245), 22-24 Pinn Street, St. Marys, S.A. 5042 (Facsimile (08) 8297 2555).

Surface preparation

The surface must be smooth, dry, clear of dust, oil, grease, wax, anti-rust treatments and all loose material. New concrete must have cured for 28 days. To check the moisture content of fresh concrete, the applicant recommends a four-hour rubber mat test where the rubber mat is sealed to the concrete for four hours and no moisture is to be visible on the under side of the mat.

Waste outlets

Two methods are used. In one, the floor waste is installed prior to the membrane installation and the membrane is sealed to the waste flange. In the other, the tray material is turned down into the waste pipe that has been trimmed flush with the substrate. The waste grate is set to the floor tile level.

Bond breaker application

The oversized closed cell foam rod is applied to the gap between the wall sheet and the floor and then sealed with Astec Ure-seal (a fast cure polyurethane sealant). All other wall/floor corners and internal vertical corners, expansion/isolation joints and cracks in the flooring are also covered with polyester reinforced tape.

Flashing and Cove treatment

Vertical surfaces such as drains, pipes and walls are flashed by coating both the vertical and horizontal surface for at least 150 mm with 1 to 1.2 mm of Astec Ure-Plex membrane. Metal flashings rings, collars, drains, etc are treated in the same manner. When the flashing coat is dry, it is recoated with a 1 mm coat of Ure-Plex.

Crack treatment

Minor cracks are filled with an application of Ure-Plex until no crack remains. Cracks greater than 3 mm and expansion joints are filled with an appropriate sized backer rod then coated with Astec Ure-Plex, 70 mm either side of the crack, while embedding the 100 mm polyester matt centred over the crack.

Membrane installation

Two methods are used. In one, the membrane is applied above any levelling mortar layer and would be immediately below the intended tile system. In the other, the membrane is applied below any levelling mortar. The membrane is applied with a V-notch tile trowel or brush ensuring good contact with the substrate. It is smoothed with the flat side of the trowel at a 45° angle to a uniform thickness of 1- 2 mm.

The first coat is allowed to fully cure, (6 to 12 hours, depending on temperature and humidity) and, if necessary, a second coat is applied at the same rate to fill any voids, pinholes or air bubbles. The membrane is applied not less than 25 mm above the maximum water height from floor tile level and 1800 mm high x 100 mm wide on vertical corners.

When applying Ure-Plex as an integral waterproofing membrane, a continuous depth of at least 1 mm is required. For a thickness of 1 to 1.2 mm, the membrane cures in approximately 24 hours at 25°C. However, time will vary depending on thickness of the membrane, temperature and humidity.

Cleaning and Handling

Wet brushes and tools can be cleaned with Astec Ure-sol thinners. Eye protection and well ventilated areas for use are recommended.

Tiling and floor covering

This may be carried out after the membrane has been allowed to cure for a minimum of 24 hours, at a temperature of 25°C. Shower recesses must be tiled and tiles are laid sloping towards the drainage outlet. Floor areas are covered in accordance with local statutory regulations. A hydrocarbon solvent free tile adhesive suited to the substrate and compatible with the tile type should be used. It must be applied in strict compliance with its manufacturer's instructions.

DESIGN INFORMATION

General:

Based on information from the applicant, the Astec Paints Australasia – Ure-Plex Waterproofing Membrane system consists of a one-part flexible and elastic polyurethane compound. It cures to form a flexible, tough, lightweight and durable waterproof membrane bonded to the substrate. It can be used over the following surfaces that are to be subsequently tiled – concrete, masonry, plywood flooring, wet-area particleboard flooring, fibre-reinforced cement sheeting and wet-area plasterboard.

Thickness/Coverage rate:

Based on information from the applicant, the coverage rate is 1 square metre per 1 litre at 1 mm thickness.

Durability:

In the opinion of CSIRO Appraisals, the Astec Paints Australasia – Ure-Plex Waterproofing membrane system is designed to have a serviceability life compatible to that of the overlaying system.

BASIS OF APPRAISAL

CSIRO Appraisals has assessed the following aspects in undertaking this appraisal:

- (a) The system as fulfilling the requirements of Australian Standard, AS 3740-1994 'Waterproofing of wet areas within residential buildings' (Amdt 1 - Sept 1995).
- (b) The applicant's installation instructions.
- (c) The physical properties of the material.
- (d) The ability of the system to cope with movements that occur between joints in the substrate and at junctions between one substrate material and another.

The following documents and inspections were used in carrying out the appraisal.

Technical and Application Information:

1. Astec Paints Technical Bulletins:

These bulletins provide a summary of product information and installation instructions for use of Ure-Plex in wet areas.

'Polyurethane wet area membrane, Ure-Plex'
(Revised Edition July 2000)

'Rivett' (Revised Edition November 2000)

'Polyurethane joint sealant, Ure-Seal' (Revised Edition July 2000)

'Deckweb' (Revised Edition July 2000)

'Sontara' (Revised Edition July 2000).

2. Astec Paints Material Safety Data Sheets:

These data sheets contain product identification, health hazard information.

'Astec Ure-Plex' (August 1998)

'Rivett' (February 1993)

'Ure-Seal' (March 1998)

'Deckweb' (November 1998)

'Sontara' (November 1998).

3. Astec Paints Australasia Pty Ltd, Quality Manual (1 September 1996):

This manual details systems and procedures for quality assurance to AS/NZS ISO 9002. Reports covering test procedures carried out by the manufacturer to 'check product against release specifications' have also been provided.

Test reports:

The manufacturer has provided the following test reports covering the properties of the membrane.

1. Laboratory Test Report 1936 (15 November 1993):

The report covers tests to the following
Density ASTM D1875
Viscosity to ASTM D2196
Weight loss/Non-volatile matter to ASTM C836
Flash point to ASTM D3278
Cure time (Tack free) to ASTM C679
Hardness indentation to ASTM C661
Tensile strength to ASTM D412
Tensile modulus (100%) to ASTM D412
Break elongation to ASTM D412
Water vapour transmission to ASTM E96-80
Water absorption to ASTM D570 Modified (2 weeks immersion in water)
Bond strength (peel adhesion) to ASTM C794
The results were satisfactory.

2. Laboratory Test Report No 2742 (2 September 1997):

The report covers tests to the following
Mass per unit area and gravimetric thickness to AS 2324 -Appendix D
Tensile strength and elongation at break to AS 1145 - before and after immersion in bleach & detergent, and after UV exposure
Hardness (Shore A) and loss on heat ageing to AS 1526 - Appendix E
Loss on heating AS A121- Appendix J
Moving joint test
The results were satisfactory.

Inspections:

Inspections of installations have been undertaken by representatives of CSIRO Appraisals and found to be satisfactory.



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