TECHNICAL BULLETIN – TB277

INSTALLATION OF WATERPROOFING MEMBRANES DIRECTLY ONTO CORE-FILLED PLASTIC (PVC) FORMWORK IN RETAINING WALL AND PLANTER BOX APPLICATIONS

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INTRODUCTION & SCOPE

The core-filled formwork system is based upon an exoskeleton of PVC plastic panels (1800-7950mm long) e.g. Dincel or AFS Rediwall with a proprietary locking system to hold the individual panels together. The internal cavity of the wall contains steel bars and is filled with poured concrete.

This technical bulletin lists the approved ARDEX products for the application of waterproofing membranes directly onto core filled plastic panel work e.g. Dincel or AFS Rediwall for retaining walls and planter box applications ONLY.

QUALIFICATIONS

This Technical Bulletin outlines the ARDEX waterproofing systems that have been assessed and observed to achieve satisfactory adhesion to the PVC panel surface. The information contained within this document is limited solely to the waterproofing systems specifically referenced and evaluated herein.

This bulletin does not provide guidance, recommendations, approvals, or warranties regarding the installation of the PVC panels themselves, nor does it address the suitability, compatibility, or performance of any waterproofing products or systems other than those expressly identified in this document. Any products, systems, or installation methods not specifically referenced should be independently assessed for suitability by the relevant manufacturer prior to use.

Furthermore, the application of cementitious renders, acrylic renders, texture coatings, or other rendering materials directly over this substrate is not recommended by ARDEX. The use of such materials may adversely affect adhesion, performance, or long-term durability and falls outside the scope of ARDEX system recommendations and warranties.

The panel joints are stated to be waterproof in their literature. Therefore, recommendations for waterproofing are only included in this bulletin, where the site specification requires a formal waterproofing system to be installed.

WATERPROOFING SYSTEMS

The waterproofing systems described in this document are using ARDEX WPM3000X, ARDEX Root Repell and ARDEX WPM188 systems **ONLY**. Installation must be in accordance with AS4654.2.

ARDEX WPM3000X

1. Surface Preparation
    - All surfaces to be treated must be clean, dry, and free from dust, debris, or any contaminants that may impair adhesion.
2. Priming
    - Prime using either ARDEX WPM 240 or ARDEX WA 98 adhesive.
    - Prime the concrete or screed floor with ARDEX WPM 240. If the substrate exhibits higher porosity, double-priming may be required.
    - If the floor is damp, apply two coats of ARDEX WPM 300 (HydrEpoxy) as a moisture barrier. Allow the ARDEX WPM 300 primer to thoroughly dry before proceeding with secondary priming with ARDEX WPM 240 or ARDEX WA 98 Adhesive.

3. Joint Detailing
    - Detail all joints, including those on vertical and horizontal surfaces of the panels and wall-to-floor junctions, using 300mm strips of ARDEX WPM 3000X.
4. Membrane Application
    - Apply ARDEX WPM 3000X from the lowest point of the surface to ensure that overlaps are oriented to effectively shed water. Plan the layout in advance to avoid placing overlaps at corners or around penetrations.
5. Lap Requirements
    - Side edge laps must be a minimum of 60 mm, guided by the overlap line printed on each roll.
    - End laps must be a minimum of 150 mm.
6. Installation Technique
    - Take care during application to avoid entrapping air bubbles or creating wrinkles in the membrane (a wooden float may assist in application of the sheet). Once installed, use an appropriate pressure roller to firmly press the membrane onto the prepared surface, with particular attention to overlaps, corners, terminations, and penetrations.
7. Sealing Penetrations
    - Around penetrations, use ARDEX Bituminous Roof Sealant (a bitumen-based sealant) as needed to achieve a complete and waterproof seal.
8. Critical Applications
    - In high-exposure or critical environments such as retaining walls and planter box applications, a second layer of ARDEX WPM 3000X must be installed. Ensure all laps in the second layer are staggered relative to those in the first layer.
9. Membrane Termination
    - The termination with an ARDEX Pressure Seal Strip shall be attached onto the wall using appropriate mechanical fixings at maximum 150mm centres. ARDEX RA 050 sealant shall be used along the top edge of the ARDEX Pressure Seal Strip to the waterproof wall. Membrane termination height to be in accordance with AS 4654 Appendix A.

NOTE: Make sure the sealant does not come into contact with the bitumen sheet, as the two materials are incompatible. The Pressure Seal should be positioned so the sealant is not exposed at the edge of the bitumen sheet, or alternatively, a small backing rod can be installed at the base of the Pressure Seal to maintain separation.

10. Membrane Protection
    - The membrane must be protected against potential damage by the placement of protection material between the membrane and granular backfill. A suitable protection board and drainage system should be used for effective drainage and membrane protection requirements.

NOTE: ARDEX WPM 3000X is not intended for extended UV exposure. If prolonged exposure is anticipated, please consult ARDEX Technical Services for guidance.

NOTE: Refer to ARDEX WPM 3000X TDS for further installation requirements.

NOTE: ARDEX accepts no responsibility for the panel installation, including any trapped moisture or water, or any water ingress occurring before, during, or after the installation process. For all other enquiries, please get in touch with ARDEX Technical Services.

ARDEX Root Repell

1. Surface Preparation
    - All surfaces to be treated must be clean, dry, and free from dust, debris, or any contaminants that may impair adhesion.
2. Priming
    - Prime the wall using either or ARDEX WA 98 adhesive.
    - Prime the concrete or screed with a 50/50 mix of ARDEX WA 98 Adhesive (cut 50% with WA 98 Solvent to thin etc.).
    - If the floor is damp, apply two coats of ARDEX WPM 300 (HydrEpoxy) as a moisture barrier. Allow the ARDEX WPM 300 primer to dry before proceeding with secondary priming with ARDEX WA 98 Adhesive.
3. Joint Detailing
    - Detail all joints, including those on vertical and horizontal surfaces of the panels and wall-to-floor junctions, using ARDEX Flashing Tape or ARDEX STB/STA Tape.
4. Membrane Application
    - Roll out ARDEX Root Repell™ and cut to the measured length. Smooth ARDEX Root Repell™ on contact to minimise air entrapment beneath the membrane. To ensure proper adhesion, compress the bonded portion of the sheet to the substrate with a pressure roller. Do not use a medium/hard bristle broom as this may partially remove the polypropylene fleece.
    - Without over-stretching the membrane, ensure the ARDEX Root Repell™ is laid tightly into all corners and transitions, this can be greatly assisted with the use of the ARDEX Brass Roller and the ARDEX Small Hand Roller. All transition substrate gaps must be filled appropriately to adequately support the ARDEX Root Repell™. Membrane shall be installed with a minimum 40mm overlap (both side and end laps) and heat welded using an approved hot-air welding unit.
    - Using a probe, ensure all seams and laps are welded properly, re-weld if necessary. It is highly suggested to use either a weighted roller or large water filled heavy roller once the membrane is installed to ensure uniform substrate adhesion.
    - Once the membrane system has been applied, the top edge termination of the membrane shall be secured in the following way.
    - ARDEX Pressure Seal mechanically fixed in position and sealed on the top edge, using an ARDEX appropriate sealant (in accordance with the ARDEX Root Repell TDS).
5. Membrane Protection
    - The membrane must be protected against potential damage by the placement of protection material between the membrane and granular backfill. A suitable protection board and drainage system should be used for effective drainage and membrane protection requirements. Terminating the ARDEX Protection Board or drainage cell 150mm above the FFL will assist in protecting the membrane from excessive UV exposure, while also protecting the membrane from mechanical damage.

NOTE: ARDEX Root Repell is not intended for extended UV exposure. If prolonged exposure is anticipated, please consult ARDEX Technical Services for guidance.

NOTE: Refer to ARDEX Root Repell TDS for further installation requirements.

NOTE: ARDEX accepts no responsibility for the panel installation, including any trapped moisture or water, or any water ingress occurring before, during, or after the installation process. For all other enquiries, please get in touch with ARDEX Technical Services.

ARDEX WPM188 (installed over ARDEX WPM 117 on PVC elements)

1. Surface Preparation
    - All surfaces to be treated must be clean, dry, and free from dust, debris, or any contaminants that may impair adhesion.
2. Priming
    - Prime using either ARDEX WPM 240 or ARDEX WA 98 adhesive.
    - Prime the concrete or screed floor with ARDEX WPM 240. If the substrate exhibits higher porosity, double-priming may be required.
    - If the floor is damp, apply two coats of ARDEX WPM 300 (HydrEpoxy) as a moisture barrier. Allow the ARDEX WPM 300 primer to dry before proceeding with secondary priming with ARDEX WPM 240 or ARDEX WA 98 Adhesive.
4. Joint Detailing
    - Detail all joints, including those on vertical and horizontal surfaces of the panels and wall-to-floor junctions, using 300mm strips of ARDEX WPM117.
6. Membrane Application
    - Apply the ARDEX WPM 117 sheet membrane to the prepared substrate.
    - Begin application from the lowest points of the structure and work upwards to the highest points.
    - Once the ARDEX WPM 117 bituminous sheet membrane has been installed, apply ARDEX WPM 188 over the top of the ARDEX WPM 117, following the same procedure outlined in the previous step.
    - Once ARDEX WPM188 is installed, the top (free) edge terminations shall be secured using a ARDEX Pressure Seal mechanically fixed into position including a suitable sealant to the top edge. Eg Ardex Bituminous Roof Sealant.
7. Membrane Protection
    - The membrane must be protected against potential damage by the placement of protection material between the membrane and granular backfill. A suitable protection board and drainage system should be used for effective drainage and membrane protection requirements.

NOTE: ARDEX WPM188 is not intended for extended UV exposure. If prolonged exposure is anticipated, please consult ARDEX Technical Services for guidance.

NOTE: Refer to ARDEX WPM188 TDS for further installation requirements.

NOTE: ARDEX accepts no responsibility for the panel installation, including any trapped moisture or water, or any water ingress occurring before, during, or after the installation process. For all other enquiries, please get in touch with ARDEX Technical Services.

Please refer to the ARDEX Australia Specification Hub https://ardexaustralia.com/specification-hub/ for comprehensive CAD details relating to terminations onto footings. The Specification Hub provides a full library of technical drawings, installation details, and system recommendations to assist with correctly designing and detailing termination points in accordance with ARDEX best practice.

IMPORTANT
This Technical Bulletin provides guideline information only and is not intended to be interpreted as a general specification for the application/installation of the products described. Since each project potentially differs in exposure/condition, specific recommendations may vary from the information contained herein. For recommendations for specific applications/installations, contact your nearest Ardex Australia Office.

DISCLAIMER
The information presented in this Technical Bulletin is to the best of our knowledge true and accurate. No warranty is implied or given as to its completeness or accuracy in describing the performance or suitability of a product for a particular application. Users are asked to check that the literature in their possession is the latest issue.

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