

Comprehensive Waterproofing Instructions Preparation & Application

Surface Preparation

Proper surface preparation is essential for effective waterproofing. Follow these steps to ensure optimal membrane adhesion and performance:

- **BCA Requirements:** Ensure the substrate design complies with BCA standards.
- **Clean Surfaces:** All surfaces must be free of contaminants, including dirt, dust, grease, oil, cement laitance, and mildew. Use suitable chemical cleaners or mechanical processes to remove these impurities.
- **Dust Removal:** For ground surfaces, vacuum and pressure wash to remove dust and fine particles. Residual dust can affect membrane adhesion, causing delamination.
- **Acid Neutralisation:** If the surface has been acid-etched, neutralise it using a solution of bicarbonate of soda (500g to 9L of water), followed by pressure washing. Failure to neutralise acid will weaken the substrate and compromise adhesion.
- **Surface Soundness:** Ensure surfaces have a light, even texture. Repair any blow-holes, honeycombing, or surface defects with modified cement mortar, trowelled to a smooth finish.
- **Moisture Testing:** Use an electronic moisture meter to confirm the substrate is dry before membrane application. Moist surfaces can lead to blistering or bubbling.
- **Rising Damp & Damp Surfaces:** Apply two coats of water-based epoxy sealer on damp surfaces or those subject to rising damp.
- **Joints & Intrusions:** Install appropriate puddle flanges, coving, and sealant fillets at wall-to-wall and wall-to-floor joints. These areas are prone to leaks if not properly detailed.
- **Surface Priming:** Prime surfaces to improve membrane adhesion and ensure optimal curing rates.

Choosing the Right Waterproofing System

Select the correct waterproofing membrane based on the substrate and environmental conditions:

- **Membrane Compatibility:** Ensure the membrane is suitable for both positive and negative hydrostatic pressure. Using the wrong type of membrane may cause delamination.
- **Product Data Sheets:** Always consult the latest product data sheet for accurate information on membrane performance.
- **UV Exposure:** For areas exposed to UV rays, such as roofs, use UV-stable membranes.
- **Tiling Applications:** Choose a membrane compatible with tile adhesives, such as shower waterproofing membranes. Avoid using products like water-based bitumen paints in tiled areas.

When to Apply Waterproofing

Ensure the conditions are right for waterproofing to maximise performance:

- **Dry Substrates Only:** Apply waterproofing only when the substrate is completely dry. Moisture during the curing phase can cause blistering and bubbling.
- **Favourable Weather Conditions:** Apply membrane during periods of suitable weather, ensuring adequate airflow for curing. Avoid application in extreme heat or cold.
- **Optimal Timing:** Apply membrane in the late morning to early afternoon, once the substrate has dried and surpassed the dew point.
- **Avoid Rain:** Do not apply waterproofing if rain or high humidity is expected during the curing process, as this can affect membrane adhesion and cause re-emulsification.

Waterproofing Membrane Application

Follow these steps for proper membrane application:

- **Ensure Dryness:** Verify the substrate is dry (see When to Apply Waterproofing).
- **Trial Patch:** Conduct a test patch to check for adhesion on a variety of substrates.
- **Recommended Coverage:** Apply membrane at the specified coverage rates. Under-application can cause leaks and blisters, while over-application may result in non-curing or cracking.
- **Airflow:** Ensure sufficient airflow for proper curing.
- **Moisture Protection:** Protect the membrane from moisture during the curing phase.
- **Pond Testing:** Follow manufacturer guidelines for pond testing, removing all water and drying the surface afterward.
- **Backfilling Protection:** If backfilling is required, use protection board to prevent damage to the membrane.
- **Inspect for Damage:** Regularly inspect the membrane after tradespeople have completed their work. Any damage or penetrations should be repaired before continuing.
- **Maintenance:** Clean exposed membranes regularly, remove contaminants, and recoat any damaged areas.

Moisture-Related Issues

Avoid common moisture-related problems during waterproofing:

- **Blisters / Bubbles:** Excess moisture in the substrate can cause bubbles or blisters under the membrane. Allow the surface to dry completely before reapplying the membrane.
- **Delamination:** Delamination occurs due to surface contaminants or laitance that prevent the membrane from bonding to the surface. Clean thoroughly and reapply the membrane.
- **Friable Substrates:** For weak or friable substrates, use a densifier to strengthen the surface before reapplying the membrane.

Glossary of Key Waterproofing Terms

- Contaminants: Substances or impurities that reduce the adhesion of the waterproofing membrane.
- Laitance: Fine particles that accumulate on the surface of freshly poured concrete.
- Initial Cure Phase: The time between membrane application and full film formation.
- Carrier Solvent: A liquid used to dissolve other substances in waterproofing products.
- Friable Substrate: A weak, crumbly, or soft surface that may affect membrane adhesion.

Common Waterproofing Problems and Solutions

- Problem: **Bubbles / Blisters**
- Solution: Occurs due to moisture present in the substrate or exposure to moisture during curing. Allow the surface to dry fully; if blisters remain, cut out and remove the blisters. Once dry, reapply the membrane according to recommended coverage rates.
- Problem: **Delamination Between Coats**
- Solution: Delamination is caused by incompatible coatings or contamination (dust, moisture, etc.) between coats. Remove the membrane completely, clean the surface, and reapply as per the manufacturer's instructions.
- Problem: **Delamination from Substrate**
- Solution: Typically caused by poor surface preparation or moisture present in the substrate during application. Remove the membrane, repair the substrate, and reapply.
- Problem: **Cracking**
- Solution: Cracking results from under-application or over-application of the membrane. Remove the affected areas and reapply at the correct coverage rate.
- Problem: **Disintegration of Exposed Membrane**
- Solution: Happens when a non-UV stable membrane is applied in UV-exposed areas. Remove the membrane, clean the substrate, and reapply using a UV-stable product.
- Problem: **Poor Tile Adhesive Bond**
- Solution: This occurs when an incompatible membrane or tile adhesive is used. Remove the membrane, clean the substrate, and reapply using compatible products.