An Insider's Guide to Waterproofing

Materials & Systems

Karen Amery

Senior Consultants

ACOR Consultants

An Insider’s Guide to Waterproofing

- Waterproofing system selection
  - Waterproofing systems
  - Membranes
  - Waterproofing system components

- Avoiding waterproofing defects

The Basics

Guide to the selection of a waterproofing system.

Waterproofing systems

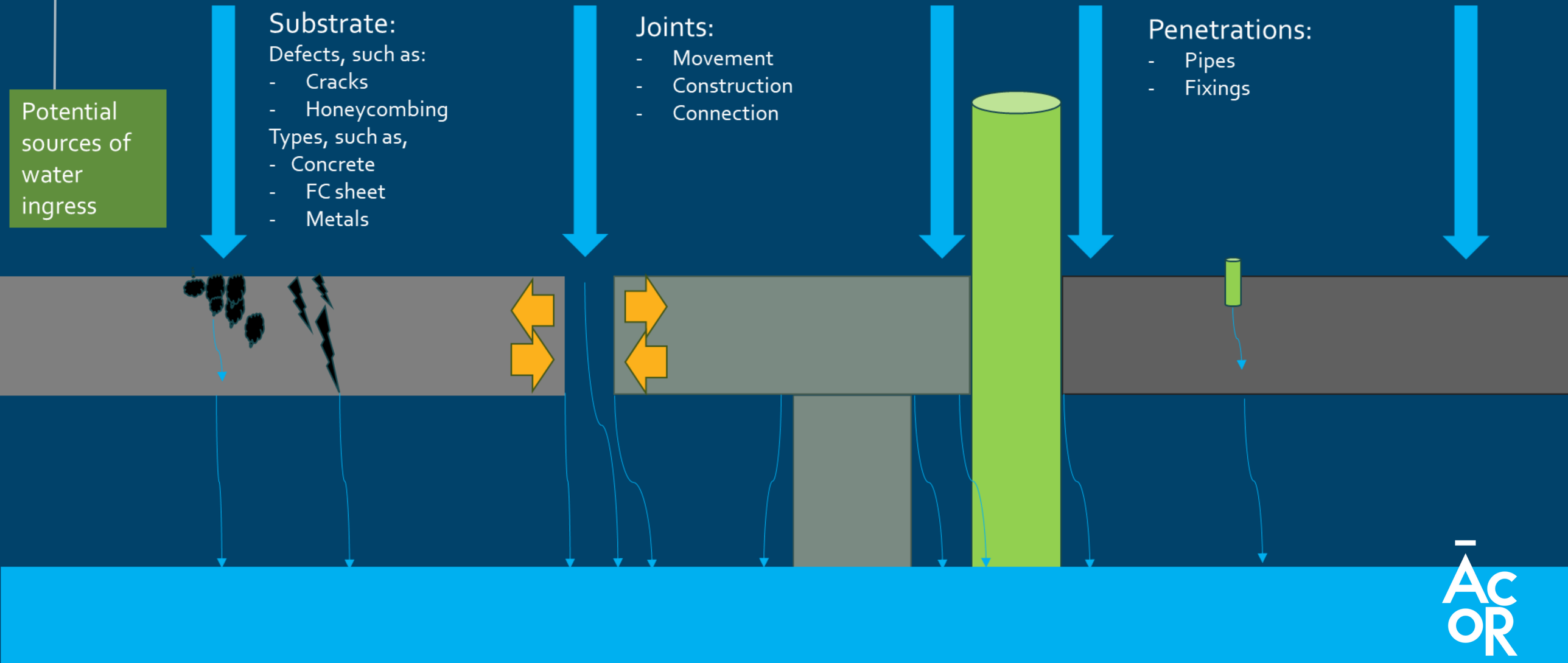
Potential sources of water ingress

Substrate:
Defects, such as:
- Cracks
- Honeycombing

Types, such as,
- Concrete
- FC sheet
- Metals

Joints:
- Movement
- Construction
- Connection

Penetrations:
- Pipes
- Fixings



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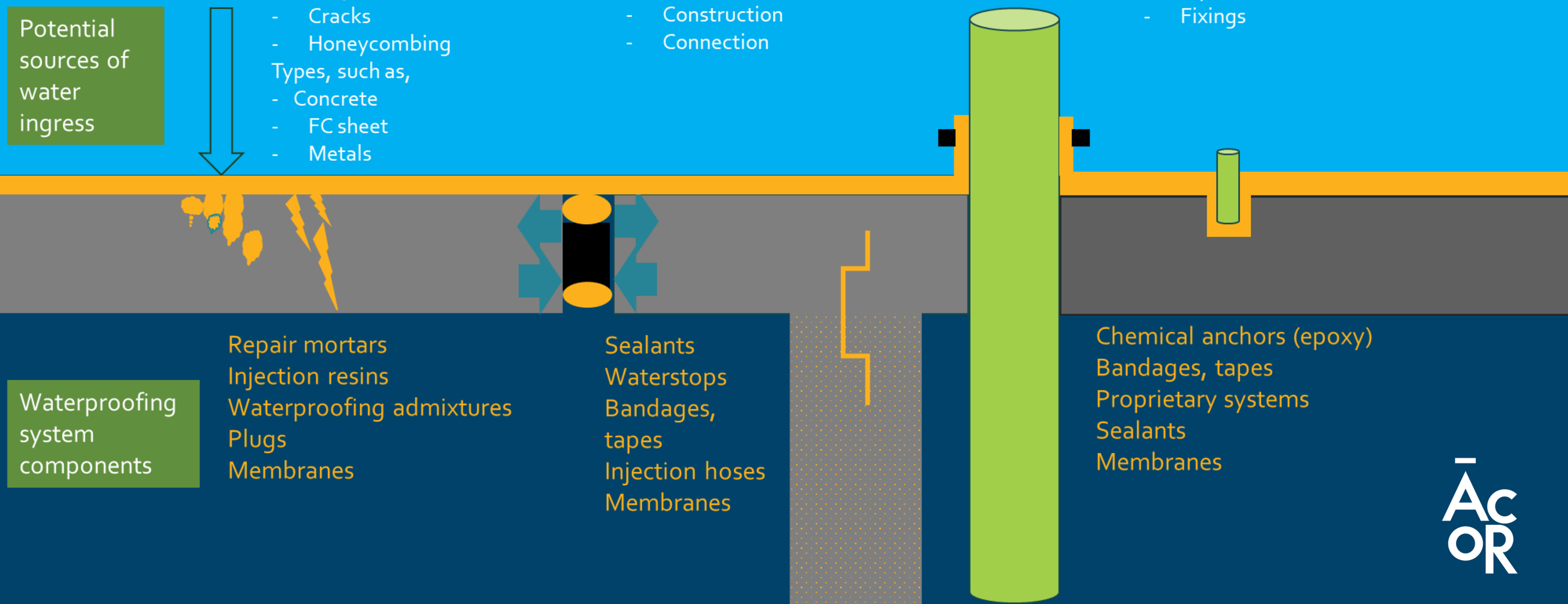


Waterproofing system components

Repair mortars
Injection resins
Waterproofing admixtures
Plugs
Membranes

Sealants
Waterstops
Bandages, tapes
Injection hoses
Membranes

Chemical anchors (epoxy)
Bandages, tapes
Proprietary systems
Sealants
Membranes

What is a Waterproofing System?

- NCC Glossary
  - A combination of elements that are required to achieve a waterproof barrier as required by H4D2 and H4D3 including substrate, membrane, bond breakers, sealants, finishes and the like.
- AS4654.1: Clause 1.3.2 External waterproofing membrane systems
  - A combination of membrane-associated products used in membrane installation, such as primers, mechanical fasteners, waste outlets and flashings that form a waterproof barrier.
- AS3740: Clause 1.3.41
  - Combination of elements that are required to achieve a waterproof barrier as required by this document. Note 1 to entry: For example, substrate, membrane, bond breakers, waterstops, sealants and finishes.

Membranes

Guide to the selection of a waterproofing system.

Waterproofing System Selection Criteria

- Evidence of suitability, performance & compliance
- Application methods, installation, detailing & QA requirements
- Durability, service & design life
- Construction methods & access for applications/ installation
- Supply, technical support & warranty (Service, before & after sales)
- Lifecycle Costs & Sustainability: installation, maintenance, repairs & replacement
- Compatibility of components:
  - Substrates & underlays
  - Finishes & overlays
  - Exposure conditions
  - Detailing accessories
- Appearance
- Limitations

Compliance NCC 2022: Membranes

- Volume One> Section F Health and Amenity > Part 1 Surface water management, rising damp and external waterproofing> F1D5 External waterproofing membranes

  A roof, balcony, podium or similar horizontal surface part of a building must be provided with a waterproofing membrane

  (a) consisting of materials complying with **AS 4654.1**; and

  (b) designed and installed in accordance with AS 4654.2.

- ABCB Housing Provisions > 10 Health and amenity> Part 10.2 Wet area waterproofing> 10.2.8 Materials — waterproof

  The following materials used in waterproofing systems are deemed to be waterproof:

  (a) Stainless steel.

  (b) Flexible waterproof sheet flooring material with waterproof joints.

  (c) Membranes complying with **AS/NZS 4858**.

  (d) Waterproof sealant.

Evidence of Suitability: NCC 2022

A5G3 Evidence of suitability - Vol 1 & 2

(1) Subject to A5G5, A5G6, A5G7 and A5G9, evidence to support that the use of a material, product, form of construction or design meets a Performance Requirement or a Deemed-to-Satisfy Provision may be in the form of any one, or any combination of the following:

(a) A current CodeMark Australia or CodeMark Certificate of Conformity

(b) A current Certificate of Accreditation.

(c) A current certificate, other than a certificate described in (a) and (b), issued by a certification body stating that the properties and performance of a material, product, form of construction or design fulfil specific requirements of the BCA.

(d) A report issued by an Accredited Testing Laboratory that—

(i) demonstrates that a material, product or form of construction fulfils specific requirements of the BCA; and

(ii) sets out the tests the material, product or form of construction has been subjected to and the results of those tests and any other relevant information that has been relied upon to demonstrate it fulfils specific requirements of the BCA.

(e) A certificate or report from a professional engineer or other appropriately qualified person that –

(i) certifies that a material, product, form of construction or design fulfils specific requirements of the BCA; and

(ii) sets out the basis on which it is given and the extent to which relevant standards, specifications, rules, codes of practice or other publications have been relied upon to demonstrate it fulfils specific requirements of the BCA.

(f) Another form of documentary evidence, such as but not limited to a Product Technical Statement, that—

(i) demonstrates that a material, product, form of construction or design fulfils specific requirements of the BCA; and

(ii) sets out the basis on which it is given and the extent to which relevant standards, specifications, rules, codes of practice or other publications have been relied upon to demonstrate it fulfils specific requirements of the BCA.

Evidence of Suitability: CodeMark

CodeMark Certificate of Conformity

Properties and performance fulfill specific requirements on the NCC.

NCC 2022 Volume One> Schedule 1 Definitions > Glossary

Test report

Assessment of a waterproofing membrane product for AS4654.1 and/or AS4858.

NCC 2022 Volume One> Schedule 1 Definitions> Glossary

Certificate of Conformity

CodeMark

Certification body:

Certificate number: CM70138

THIS TO CERTIFY THAT

SOPREMA Waterproofing Membrane System

Type and/or use of product:
SOPRENA Waterproofing Maintenance Systems provide a waterproofing system, on new and existing roofs, post construction to a roof or slab.
SOPRENA Waterproofing Maintenance Systems may be installed on a cold roof with insulation laid first below the membrane, or as a warm roof with PIR or Mineral Wool insulation laid first above the membrane. A system incorporating a roof mounted cap sheet can be used for green roofs.

Description of product:
SOPRENA Waterproofing Membrane Systems are reinforced, double layer bituminous waterproofing membranes, consisting of a base sheet (G) and High Tack, SOPRALENE V and SOPRALENE Used with a base sheet Elastocap Plus 3 and DekoTack Mop. DekoTack is also marketed as Sopranolin Vent Tack Plus (VT).

COMPLIES WITH THE FOLLOWING BCA PROVISIONS AND STATE OR TERRITORY VARIATION(S) BCA 2022

	Volume One		Volume Two	
Performance Requirement(s)	FP1	Weatherproofing	H2P2	Weatherproofing
Deemed-to-Satisfy Provision(s)	N/A		N/A	
State or territory variation(s)	N/A		N/A	

SUBJECT TO THE FOLLOWING LIMITATIONS AND CONDITIONS AND THE PRODUCT TECHNICAL DATA IN APPENDIX A AND EVALUATION STATEMENTS IN APPENDIX B

Limitations and conditions:
1. The system shall be installed in accordance with the Supreme Roofers Guide Bituminous Membranes – 2021 Edition
2. Soprema Waterproofing membranes are certified for use on building subject to the following design parameters:
   - Subject to structural design wind loads up to a maximum ULS wind design pressure of 0.9 kPa, or higher subject to the manufacturer's site specific fastening requirements to resist wind forces as determined by AS/NZS 1170
   - Where the finished fall is not less than 1:80 for roofs, podiums and decks, and not less than 1:100 for gutters

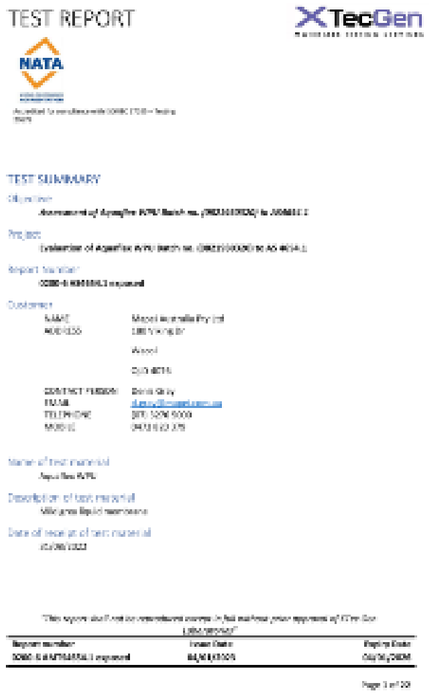
Building Classification/s:
Volume 1 – Class 2 to Class 9 buildings
Volume 2 – Class 1 and Class 10 buildings

Sam Guindi – Product Certification Manager
Bureau Veritas Australia Pty Ltd

Harley Parker - Unrestricted Building Certifier
Jensen Hughes Pty Ltd

Date of issue: 17 December 2024
Date of expiry: 15 December 2027

Certificate number: CM70138 This certificate is only valid when reproduced in its entirety. Page 1 of 7



TEST REPORT

XTecGen

NATA

TEST SUMMARY

Assessment of Mapelastic AquaDefense to AS 4654.1:2012 Waterproofing membranes for external above-ground use Part 1: Materials

BRANZ

SGS

ITA Independent Testing Australia

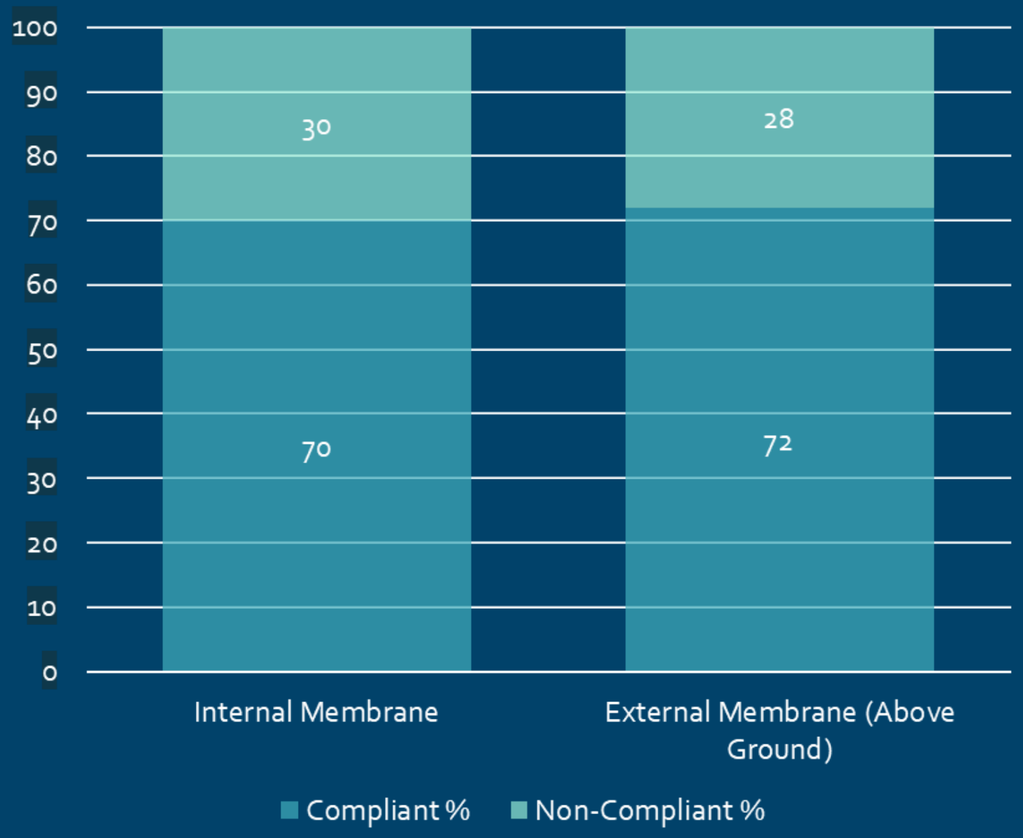
ĀCOR

AS4654.1 & AS4858 Testing

Selected key assessments:

- Elongation at break & membrane classification
- Moisture vapour transmission rate
- Water absorption
- Acceptance of cyclic movement
- Durability: chemical exposure & heat aging
- Resistance to UV, abrasion, root damage (applicable to external only).

Evidence of Suitability: Waterproofing Membrane Compliance



What is compliance?

Codemark Certificate or AS4858 / AS4654.1 Test Report to demonstrate compliance to the relevant NCC clauses and/or for intended application as stated on the data sheet.

Data source: Survey of 16 different waterproofing manufacturers/ suppliers which represents >150 waterproofing membrane products that are currently sold in Australia.

A membrane product used for both internal and external waterproofing will be counted separately in each category.

Evidence of Suitability: Top 10 Issues

1. The product name on test report and data sheet are different.
2. Test report has passed expiry date.
3. Dry film thickness on the test report is different to data sheet (usually it is higher).
4. Dry film thickness of membrane tested is omitted on test report.
5. The membrane requires the use of a reinforcement according to the data sheet but has not been included in the testing.
6. Membranes designed to be exposed (not protected) and do not have testing for traffic type.
7. Membranes designed for planter boxes and do not have testing for root resistance.
8. The test report conflicts with information on the data sheet and vice versa.
9. The data sheet claims AS compliance and the membrane compliance cannot be verified.
10. The data sheet does not claim AS compliance and the manufacturer does not believe that they need to have the membrane tested for compliance.

Data Sheets

Must Haves

- Intended purpose & applications.
- Limitations.
- Compatible substrates, materials & detailing accessories.
- Service & storage conditions.
- Information for QA:
  - Substrate requirements & preparation instructions
  - Wet and dry film thickness
  - Recoat times, mixing requirements
  - Min/ maxi application temperatures

Proceed with Caution

- Lack of performance data.
- Unclear application instructions.
- No references to AS4654.1 &/or AS4858.
- Data sheet not maintained – look for the date last updated.
- Data sheet not prepared for local Standards and conditions.

Evidence of Suitability: Limitations

- **Change management related to the design and manufacturing**

  Product Design | Manufacturing | Raw Materials

- **Long term performance & durability**

  Service Life | Design Life | Maintenance & Repair

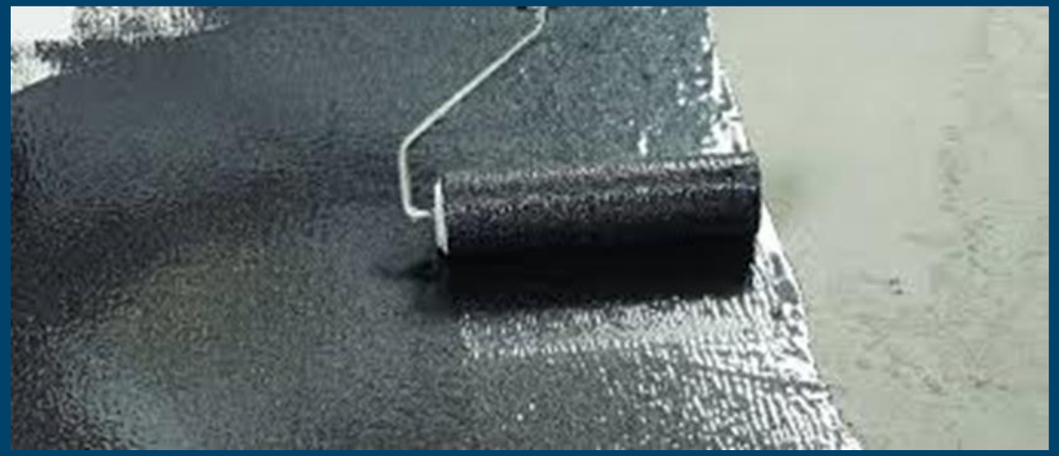
- **AS Standards are only for some of the membranes**

  AS4858 for internal wet areas and AS4654.1 for external above ground only.

  Excludes below ground membranes and other waterproofing system components.

Liquid & Sheet Applied Membranes

4. Topcoat
3. Membrane
2. Membrane
1. Primer



2. Sheet
1. Adhesive or Primer

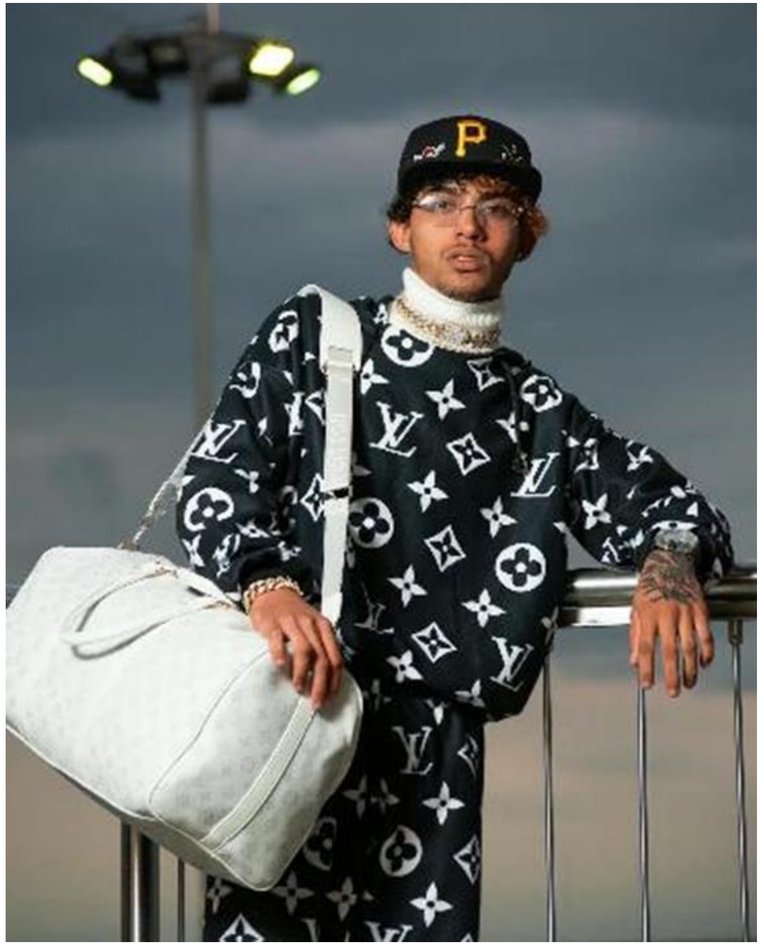
Waterproofing System Components

Guide to the selection of a waterproofing system.

Waterproofing System Components

Design & technical specification.

- Single source supply for systems where possible.
- The same material types cannot be assumed to have the same characteristics and performance.
- Ensure that the full system components are identified and have evidence of suitability.



Waterproofing System Components

- Evidence of suitability:
  - Compatibility.
  - Performance.
  - Compliance to international standards.
  - Other test reports, field studies, long term testing, benchmarking, etc.

Example: Waterstop

Water pressure | Joint Movement & Size

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  - Appearance
  - Limitations

Avoiding Waterproofing Defects

Top 10 common defects

10 Common Waterproofing Defects

1. Membrane not terminated into puddle flange.
2. Membrane not terminated into overflow.
3. Retained water, ponding or inadequate falls on a roof or balcony.
4. Inadequate surface preparation on an external surface/ roof.
5. Inadequate termination of membrane at sliding door.
6. Retained water, ponding or inadequate falls in the general bathroom area.
7. Retained water, ponding or inadequate falls in the shower area
8. No waterstop angle at a doorway to a wet area.
9. Puddle flange for an internal membrane is not recessed into substrate.
10. Incorrect fillet size at wall to floor junction.

Reference: Building Commission NSW, 2024, “Building Defects Library v1.0 – 28 March 2024”, NSW Government

Stay in touch

Karen Amery
Senior Consultants
kamery@acor.com.au

Karen Amery is a senior consultant in Waterproofing in the Remedial Engineering, Building Diagnostic and Façade team at ACOR Consultants.

She has spent 30+ years representing materials manufacturers serving in technical, product, specification and commercial roles.

Karen is the current President of the Australasian Concrete Repair and Remedial Building Association (ACRA).

She holds a Bachelor of Science (Hons) from UNSW and a Master of Business and Commerce (Distinction) from WSU.