

An introduction to Acceptable Solution E2/AS1

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The Building Code clause E2 External Moisture requires that buildings must be built to resist leaks, damp or the accumulation of external moisture in concealed spaces.

E2 External moisture (<https://www.building.govt.nz/building-code-compliance/e-moisture/e2-external-moisture/>) has the Acceptable Solution.

E2/AS1 is an Acceptable Solution for Building Code clause E2 External Moisture. Following E2/AS1 provides one way of complying with Building Code clause E2, but you can also use other methods.

The scope of E2/AS1 is aligned to NZS 3604. It is limited to timber-framed buildings up to three storeys high, with a maximum height from the ground to the highest point of the roof of 10m.

It sets out design solutions for the external building envelope using conventional materials appropriate to New Zealand's climate and conditions.

Most leaks are associated with junctions within, and penetrations through, the building envelope. Serious problems are associated with claddings that have limited capacity to drain and dry out any water that gets behind them when a leak occurs.

E2/AS1 addresses these problems in two ways:

- providing details for common junctions and penetrations of the building envelope
- classifying buildings by their weathertightness risk, and requiring particular cladding solutions depending on the risk score.

Building consent authorities (BCAs) use E2/AS1 as their benchmark for low rise buildings when assessing alternative solutions or specific designs for compliance with Building Code clause E2. This makes it a useful foundation document when preparing building consent applications proposing alternative solutions. It can be used for comparison and to identify areas where plans depart from the Acceptable Solution.

[External moisture – a guide to using the risk matrix \(https://www.building.govt.nz/building-code-compliance/e-moisture/e2-external-moisture/external-moisture-guide-to-e2as1-risk-matrix/\)](https://www.building.govt.nz/building-code-compliance/e-moisture/e2-external-moisture/external-moisture-guide-to-e2as1-risk-matrix/) is a companion guide to E2/AS1. It provides help in assessing a building design for weathertightness using further explanation and worked examples.

The design, installation and alteration of walls (cladding) and roofs is usually restricted building work that must be undertaken by a licensed building practitioner.

[Restricted building work \(https://www.building.govt.nz/projects-and-consents/planning-a-successful-build/scope-and-design/choosing-the-right-people-for-your-type-of-building-work/use-licensed-people-for-restricted-building-work/restricted-building-work/\)](https://www.building.govt.nz/projects-and-consents/planning-a-successful-build/scope-and-design/choosing-the-right-people-for-your-type-of-building-work/use-licensed-people-for-restricted-building-work/restricted-building-work/) has more information.

Scope of E2/AS1

The scope of E2/AS1 is aligned to the structural requirements of NZS 3604 and limited to timber-framed buildings up to three storeys high.

The following wall claddings are included in E2/AS1:

- masonry veneer
- stucco
- timber weatherboards
- fibre cement weatherboards
- profiled metal wall claddings
- fibre cement sheet

- plywood sheet
- EIFS.

Also consider:

- Attached garages are included, but outbuildings and stand-alone garages are not.
- Aluminium external joinery is covered, while other types will require alternative information from the manufacturer.
- An installation method is given for hinged windows and doors. Currently bifold, sliding and other non-hinged profiles are not included and require specific design.
- Steel framing is currently out of scope.

See part 1.0 of the E2/AS1 document for more detail.

Building designs outside of this scope will require specific design. Note that other supporting documents for E2 include:

- E2/VM1 – calculations and test methods relating to cladding systems including junctions with windows, doors and other penetrations.
- E2/AS2 – modifications to NZS 4299 for earth buildings.
- E2/AS3 – concrete and concrete masonry buildings.

Overview of E2/AS1 contents

The first section of E2/AS1 sets out general requirements to ensure any materials you use:

- meet requirements of Building Code clause B2 Durability
- are suitable for their end-use, location and environment
- and are compatible with adjoining materials.

Next, E2/AS1 helps you work out the weathertight risk factors for the building and what claddings you should choose.

It then provides design details with drawings and tables for:

- common junctions and penetrations:
 - flashings
 - gutters, barges, fascia and soffits
 - parapets
 - decks and pergolas.
- roof claddings:
 - general solutions (for example for roof penetrations, etc)
 - solutions for specific roofing material types (for example for small roof penetrations, etc.)
- wall claddings
 - general rules (for example for drained cavities, windows and doors)
 - solutions for specific cladding material types (for example for drained cavities, windows and doors).

Any design details not included in E2/AS1 will require specific design. Similarly, any variations to a given design detail (such as different fixings) will require specific design.

The Table of Contents at the start of E2/AS1 includes a full listing of the drawings and tables for cross referencing.

E2/AS1 also sets out acceptable levels for construction moisture to ensure it does not damage the building elements.

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