Verification Method

E2/VM2

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Effective until 2 November 2022
Replaced by E2/VM2 Second Edition

Cladding systems for buildings up to 25 m in height – including junctions with windows, door and other penetrations.

E2/VM2 is a means of testing and demonstrating that a wall *cladding system* will prevent the penetration of water to the extent required by clause E2.3.2 of the Building Code.

Test specifications

BRANZ EM7 is a means of demonstrating that a wall *cladding system* meets the performance requirements of New Zealand Building Code (NZBC) clause E2.3.2.

For E2/VM2 to be used, the building must fit within the scope of BRANZ EM7.

E2/VM2 testing must be carried out by a facility that has IANZ or equivalent accreditation for AS/NZS 4284:2008 testing procedures.

Supporting Information

Effective use

BRANZ EM7 involves carrying out a series of tests from AS/NZS 4284:2008.

BRANZ EM7 applies to buildings of certain height, forms of construction and structural behaviour.

It also has limitations on inter-storey deflections and peak positive wind pressures on the *cladding system*. Building Consent Authorities should accept building consent applications from designers who can demonstrate that the building in the application falls within those limitations.

BRANZ EM7 does not have any limits on the negative pressure on the *cladding system*.

Avoiding problems

Windows and exterior doors are excluded

E2/VM2 **does not** assess the water penetration resistance of the window and exterior door units used with the wall *cladding system*. BRANZ EM7 assesses the junctions of window and exterior door units with other elements of the *cladding system*, but not the units themselves. Instead it relies on the units having been manufactured to resist water penetration when subject to the relevant design parameters for the building.

Although there is currently no Verification Method or Acceptable Solution for the window and exterior door units for mid-rise buildings, window suppliers may be able to demonstrate, through testing, water penetration resistance of the windows when subject to:

- Peak positive and peak negative wind pressures acting on the window or exterior door unit (typically calculated in accordance with AS/NZS 1170.2 including all local pressure factors and internal pressures relevant to the location of the window on the building); and
- The maximum in-plane horizontal movement to which the window or exterior door could be subject.

Other requirements of clause E2

E2/VM2 is a means of demonstrating that a wall *cladding system* will prevent the penetration of water to the extent required by clause E2.3.2 of the Building Code.

> *E2.3.2 Roofs and exterior walls must prevent the penetration of water that could cause undue dampness, damage to building elements, or both.*

Users of E2/VM2 will also need to identify how the building work addresses the following requirements of clause E2:

- Requirements for roof *cladding systems*, including requirements for shedding water (E2.3.1) and water penetration (E2.3.2).
- Requirements to address moisture absorbed or transmitted due to ground contact or proximity (E2.3.3).
- Requirements to address the effects of moisture in subfloor spaces (E2.3.4).
- Requirements to prevent moisture problems in concealed spaces (E2.3.5).
- Requirements to address construction moisture (E2.3.6).

Other Building Code clauses may be relevant, including:	• B1 Structure (for the *cladding system* as well as the building's primary structure) • B2 Durability • C1 – C6 Protection from fire • E3 Internal moisture • F2 Hazardous building materials • G6 Airborne and impact sound • H1 Energy efficiency Technical information provided by the suppliers of wall *cladding systems* should include information that explains how compliance can be achieved. Building Consent Authorities should accept building consent applications from designers who can demonstrate that the requirements of all relevant NZBC clauses have been integrated into the design proposal for a *cladding system*.
Construction quality assurance	E2/VM2 does not advise quality assurance or inspection procedures to be followed during construction. As with other building work, a Building Consent Authority should approve appropriate inspection procedures when issuing a building consent for *cladding systems* whose compliance is based on E2/VM2.

REFERENCES

For the purposes of New Zealand Building Code (NZBC) compliance, the Standards and documents referenced in this Verification Method must be the editions, along with their specific amendments, listed opposite.

PUBLISHER	AND DOCUMENT NAME/NUMBER
Standards New Zealand	AS/NZS 4284:2008 Testing of building facades
Building Research Association of New Zealand	BRANZ EM7 [version 2, May 2019] Evaluation Method 7 – Performance of mid-rise cladding systems.

DEFINITIONS

Within this Verification Method, words and terms that are italicised in the text have the meaning given in this section.

TERM	DEFINITION
Cladding	The exterior weather-resistant surface of a building. It includes any supporting substrate and, if applicable, surface treatment.
Cladding system	The outside or exterior weather-resistant surface of a building; including roof *cladding* and roof underlays, wall *cladding* and wall underlays, and cavity components, rooflights, windows, doors and all penetrations, flashings, seals, joints and junctions. This Verification Method requires the *cladding system* to include a drained cavity.

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