



When compatibility tables clash



BY BRUCE SEDCOLE, ANZIA, BRANZ TECHNICAL WRITER

A recent caller to the BRANZ helpline scratched the surface of a problem that sometimes crops up on building sites – differing views on best practice for material compatibility.

Acceptable Solution E2/AS1

EXTERNAL MOISTURE

Table 21: Compatibility of materials in contact
 This table shall be read in conjunction with Table 20 and Table 22.
 Refer relevant cladding and flashings paragraphs for material and coating specifications.
 Paragraphs 2.2, 4.2.2, 4.5.2, 8.2.4, 8.4.11, 8.4.11.1 and 9.6.7

Amend 5
Aug 2011

	Aluminium, anodised or mill-finish	Aluminium, coated (1)	Butyl rubber & EPDM	CCA-treated timber (2)	Cedar	Cement plaster (uncoated)	Ceramic tiles (cement grout)	Clay bricks (cement mortar)	Concrete old (unpainted)	Concrete green (unpainted)	Copper/brass	Glass	Glazed roof tiles	Lead (including lead-edged) unpainted	Plastics	Stainless steel	Steel, galvanised coil-coated	Steel, galvanised (unpainted)	Zinc	Zinc-aluminium-magnesium (combinations), coated (1)	Zinc-aluminium-magnesium (combinations), (unpainted)	
Aluminium, anodised or mill-finish	✓	✓	✓	x	✓	x	x	x	✓	x	x	✓	✓	✓	x	✓	B	✓	✓	✓	✓	✓
Aluminium, coated (1)	✓	✓	✓	B	✓	x	x	x	✓	x	x	✓	✓	✓	B	✓	B	✓	✓	✓	✓	✓
Butyl rubber & EPDM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	x	x
CCA-treated timber (2)	x	B	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	x	x

Amend 6
Feb 2014

AN ARCHITECT had designed a reasonably large-scale, low-rise, inner-city medium-density housing project. The plans were approved and consented by council, the project tendered, the contract awarded and work was well under way.

Divergent views on material compatibility

During a site visit, however, a cladding subcontractor challenged one of the architect's flashing details – part of the approved building consent and signed contract documentation.

The issue was the contact of two dissimilar materials – cedar and aluminium – and the suitability for water run-off from one onto the other.

The architect had designed the detail in compliance with Building Code Acceptable Solution E2/AS1 Table 21 *Compatibility of materials in contact* and Table 22 *Compatibility of materials subject to run-off*.

The subcontractor referred to material compatibility Table 4.10.3C from the *NZ Metal Roof and Wall Cladding Code of Practice v3.0*. Produced by the New Zealand Metal Roofing Manufacturers Association (NZMRM), this warns against using these materials in contact.

The subcontractor was unwilling to use the products in contravention of the best-practice advice of their industry body and sought assurance that the architect would indemnify the work if he proceeded.

Dilemma – compliance vs best practice

In this scenario, the architect was confident that the E2/AS1 detail was compliant and to deviate from the consented documentation would cause unnecessary delays and additional costs.

The subcontractor believed he would leave himself vulnerable to future action if he followed the building consent and contract documentation and a failure later occurred.

Why the difference?

At first blush, this apparent incompatibility of the tables raises questions. What is the solution? Or importantly, what is the cause of this dispute?

The answer requires us to step back a little from the problem.

E2/AS1 for structural durability

Building consent authorities use E2/AS1 as their benchmark for low-rise buildings when assessing compliance with Building Code clause E2 *External moisture*. More specifically, MBIE states that the scope of E2/AS1 (and hence its compatibility tables) is aligned to the structural requirements of NZS 3604:2011 *Timber-framed buildings*.

Hence, the E2/AS1 tables could be interpreted to emphasise the structural durability risk from the contact of the two dissimilar materials. Understandably, the architect was confident that the detail design was robust and compliant and would not fail.

Code of Practice also considers aesthetics

Contrast this with the NZMRM Code of Practice, which the cladding subcontractor was referencing. The Code of Practice notes that the details included exceed the minimum Building Code requirements.

Table 4.10.3C states that the combination of cedar and aluminium is not suitable. However, the criteria for compatibility is different from the E2/AS1 table. The Code of Practice extends beyond just durability considerations to also warn that the cedar and aluminium combination 'may cause staining'.

The cladding subcontractor may have been concerned that the flashing detail and potential water contact between the cedar and aluminium could lead to staining and possible dissatisfaction from the owner, end user or occupant. This may not affect the performance or longevity of the flashing but could be a potential aesthetic issue, depending on the project, position or visibility of the flashing junction.

Lessons for designers and contractors

With the differing criteria of evaluation and alternative interpretations of what constitutes failure, it is almost inevitable that these differently sourced compatibility tables will throw up incongruities.

When aesthetic considerations such as ageing and weathering of finishes and development of patina effect are important, the architect should look beyond the E2/AS1 evaluations of compatibility and what might constitute failure when designing details.

In addition, the tenderers, contractors and subcontractors should know the full details of the work they are pricing and are agreeing to provide when they sign up for the contract. If they are not happy with a detail, that ideally is the time to raise it with the architect – not on site in the middle of the work programme.

Communication early is critical

Building sites are not the place for delays, debates or stand-offs over which standards are to be applied to some aspect of the work, especially if the difference of opinions results in an impasse.

This example illustrates the importance of communication between all participants in the building process, at all levels and with differing roles. This needs to cover everything, be detailed and as early in the process as possible. ◀

Note ▶ The NZ Metal Roof and Wall Cladding Code of Practice is available at www.metalroofing.org.nz/cop. Download the Building Code from www.building.govt.nz.

Help improve Building Code

Building Code Acceptable Solutions and Verification Methods are published by MBIE and are amended twice yearly (see page 96).

If you think an Acceptable Solution or Verification Method contains an error, is out of date or could be improved, the suggested change, with reasons for the change, can be emailed to MBIE at info@building.govt.nz. ▶