

In my opinion the confusion or anxiety around the need for compliance of the external cladding, is causing stakeholders to overlook a key issue. The lack of any Deemed to Satisfy (DTS) provisions for External Walls.

This oversight is caused in part by the (DTS) provisions of subclause C1.9 (e). The decision by the ABCB to retain the DTS provision C1.9 (e), which also in part allowed the use of bonded laminated materials, was flawed. Allowable use under this provision was possible if the product was deemed non-combustible under AS 1530.1, among other criteria.

Why was the decision flawed and why is it enabling external walls currently being constructed to breach the relevant NCC/BCA Performance Requirements regarding External Walls?

Compliance with the NCC/BCA

Firstly, at the risk of stating the obvious, I will paraphrase the path to compliance of the NCC/BCA Vol 1 - 2019

Compliance with the NCC/BCA Vol 1 –

1. How compliance with the NCC/BCA Vol 1 is achieved is prescribed in Part A2, Clause A2.0 – It is achieved by complying with the Governing Requirements of the NCC and critically the **Performance Requirements**
2. Clause A2.1 prescribes how a Performance Requirement is satisfied - Compliance with the Performance Requirements is satisfied by **ONLY** one of 3 pathways. A Performance Solution, a Deemed to Satisfy (DTS) solution, or a combination of both
3. **Performance Solution Pathway**
 - a. Clause A2.2 (1) prescribes characteristics of acceptability for a Performance Solution - A Performance Solution is acceptable if it complies with the relevant Performance Requirement or is at least equal to a DTS provision
 - b. Clause A2.2 (2) prescribes pathways (Assessment Methods) to achieve characteristics of acceptability for a Performance Solution – A Performance Solution **ONLY** achieves compliance with the relevant Performance Requirement through one or more of 4 # Assessment methods
 - i. Evidence of Suitability in accordance with A5
 - ii. A Verification Method – **PLEASE NOTE** a Verification Method is not a Performance Solution, merely a component of a Performance Solution.
 - iii. Expert Judgement
 - iv. Comparison with the DTS provision for that Performance Requirement.
4. **Deemed to Satisfy Pathway**
 - a. Clause A2.3 (1) prescribes characteristics of acceptability for a Deemed to Satisfy Solution – A DTS Solution is acceptable if it complies with the relevant DTS Provisions because the latter satisfies the Performance Requirements
 - b. Clause A2.3 (2) – prescribes pathways (Assessment Methods) to achieve characteristics of acceptability for a Deemed to Satisfy Solution - A DTS Solution **ONLY** achieves compliance with the relevant DTS provisions through one or more of the 2# Assessment Methods
 - i. Evidence of Suitability in accordance with A5
 - ii. Expert Judgement

5. Combination of Both

- a. Is as the title suggests

6. Fire Resistance, Performance Requirements applying to an External Wall.

- a. The relevant Performance Requirements that apply to an External Wall are:-
 - i. CP1 – Structural Stability During a Fire
 - ii. CP2 – Spread of Fire
 - iii. CP4 – Safe Conditions for Evacuation
 - iv. CP8 – Fire Protection of Openings and Penetrations
 - v. CP9 – Fire Brigade Access
- b. It is interesting to note that combustibility or non-combustibility, are not specifically prescribed in any of these Performance Requirements. It is only indirectly referenced in CP2 and CP9 through **Fire Load** requirements. Referring to the description of Fire Load it applies only to the **Fire Compartment**, and a **Fire Compartment** does not include the bounding walls.
- c. The preceding could be an issue of semantics, but for greater clarity, the issue of combustibility needs to be specifically addressed in the Performance Requirements. This is problematic of course because the current standard for assessing combustibility is AS 1530.1. Only appropriate for use on materials (components) not systems (Elements)

The DTS Provisions for External Walls

1. As noted above this is where the problem, oversight and confusion lie. The NCC/BCA Vol 1, Section C, Part C1, C1.0 (a) notes “Where a **Deemed-to-Satisfy Solution** is proposed, **Performance Requirements CP1 to CP9** are satisfied by complying with—” subclause (i) C1.1 to C1.14, C2.1 to C2.14 and C3.1 to C3.17;..”. Based on the preceding and considering the requirements for External Walls we could legitimately conclude the following. Compliance with the Performance Requirements for an External Wall following the DTS path, will be achieved by complying with the preceding DTS provisions
2. The DTS provision for External Walls is the following, NCC/BCA Vol 1, Section C, Part C1, C1.9 (a) (i)
 - (a) In a building **required** to be of Type A or B construction, the following building elements and their components must be **non-combustible**:
 - (i) **External walls** and **common walls**, including all components incorporated in them including the facade covering, framing and insulation
3. **PLEASE NOTE**, the External Wall (Element) must be non-combustible including the components incorporated in them. From this we conclude that if an External Wall is non-combustible it satisfies the Performance Requirements CP1 to CP9. This is the first anomaly because the definition for non-combustibility in the NCC/BCA is as determined by AS 1530.1. Clearly a standard intended to test materials cannot be applied to systems.
4. While not specifically defined in the NCC/BCA, an External Wall includes all components that when combined form a system, that satisfies the relevant provisions of the NCC/BCA. Other than Section C, this includes loads prescribed under Section B, Waterproofness and Acoustics as prescribed under Section F and Energy Efficiency as prescribed under Section J.

5. Now C1.9 (e) lists a range of materials that can be used wherever a non-combustible material is required, included bonded laminates. In the case of the latter a DTS compliance requirement is that it must be determined as non-combustible based on AS 1530.1

There are some errors with this standard, its application and subsequent reporting, that need to be addressed, this will be the subject of a separate note. This note will cover matters such as its non-applicability to bonded.

6. **IMPORTANTLY** there are no DTS clauses for the External Wall, that provide the same clarification as C1.9(e) does for the components within that wall system. No DTS provisions to show that the External Wall satisfies the particular Performance Requirements scheduled above. It should be specifically noted here that there are not DTS provisions for these Performance Requirements for an External Wall.

By comparison under Section F, we have the Performance Requirement FP1.4, which notes in part that an External Wall must prevent the penetration of water. When you go to the DTS provisions Part F1, Clause F1.0 notes, there are no DTS provisions for this Performance Requirement

Therefore, the only way that FP1.4 can be satisfied is via a Performance Solution, which could use the Verification Method FV1.1 as a component of that Performance Solution. As one of the Assessment Methods prescribed in A2.2 (2), scheduled above.

7. Failure to highlight the fact that there are no DTS provisions for an External Wall, only the components of the External wall is the essence of the problem. Stakeholders are erroneously focusing on just the component and as a result believe they have satisfied the Performance Requirements.
8. I have attended more than 8 # AS 5113 tests as an independent witness for ACLAD. I can say categorically that having materials deemed DTS under C1.9(e) does not mean that the External Wall system will pass AS 5113. Indeed, even plasterboard would fail if not the correct type or thickness. Some ACP's considered DTS under C1.9(e) fail several key aspects of the AS 5113 test, if not installed in a particular manner.

It is important to note here that the use of AS 5113 as a part of an Assessment Method for a Performance Solution, is not mandatory under the NCC/BCA.

As a side issue in there are significant discrepancies in the AS 5113 test and report method that consequently provides misleading information to stakeholders. These textual errors and errors in application will be the subject of another paper. When these matters are addressed, stakeholders who have already paid for tests in good faith, will need to retest. Perhaps more concerningly, building owners are currently having facades repaired using products tested against this standard, which may have to be remediated when the standard is amended.

Performance Solutions for External Walls are required to Comply with the Performance Requirements

1. As noted above there are no DTS provisions for an External Wall System. To provide a clearer pathway to compliance for External Wall systems. The **Verification Method CV3 Fire Spread via External Walls** was included in the NCC/BCA Vol 1 – 2016 Amdt. 1.

As noted above a Verification Method is not a Performance Solution, it is an Assessment Method used as a component of a Performance Solution. Used to demonstrate that the Performance Requirements have been satisfied.

2. Therefore, the only way that the External Wall System can be demonstrated as having achieved compliance with the Performance Requirements, is via a Performance Solution. This can be completed by any of the Assessment Methods, including reference to performance under the AS 5113 test. Although I would caution use of that now given notable deficiencies (see future paper).
3. Now if the External Walls System requires a Performance Solution to demonstrate compliance, it effectively renders the DTS clause C1.9(e) superfluous or redundant. Why include a clause that has only served to make people believe, that by having a product compliant with AS 1530.1 in your external wall, the External Wall is compliant.

Obligations of Suppliers to Comply with the NCC/BCA

1. When suppliers make the statement that their products comply with the NCC/BCA, because they are determined non-combustible under AS 1530.1, it is factually correct. Unfortunately, that is only part of the requirement for compliance with the Code.
2. The supplier is required to comply with the various State and Territory Workplace Health and Safety Acts. They must ensure that so far as reasonably practicable the product that they are supplying is without risks to persons defined therein. See for example the Qld. Work Health and Safety Act 2011, Part2, Division 3, Clause 25 (2).
3. Subclause (3) (a) here notes that the supplier ***must “carry out, or arrange the carrying out of, any calculations, analysis, testing or examination that may be necessary for the performance of the duty imposed by subsection (2)”***
4. Subclauses 4 & 5 here place obligations on the supplier to make this information available on request. This is to ensure that it is without risks to health and safety, when used for a purpose for which it was designed or manufactured.
5. The NCC/BCA prescribes some of these **minimum** Performance Requirements for satisfying health and safety for building occupants to ensure that it is without risks. Installing a product in an external wall that complies with AS 1530.1, does not mean that all the Performance Requirements for the External wall will be satisfied. Testing of a system using that product under a standard such as AS 5113, may reveal that the system propagates flame. This would mean that CP2 is breached and the system tested using that product does not comply with the code.
6. Suppliers must provide a Performance Solution for an External Wall system, demonstrating that their product complies with the NCC/BCA Performance Requirements. Not Just an AS 1530.1 test certificate for non-combustibility otherwise they breach their obligations under the Workplace Health and Safety Act.

Recommendations

1. That the NCC/BCA takes one of the following pathways:
 - a. includes a statement under the DTS provisions that there are no DTS provisions for an External Wall (Element), that satisfies the Performance Requirements CP1 – CP9. This is consistent with the approach adopted for the Performance Requirement FP1.4
 - b. That it includes a DTS provision that the External Wall (Element) complies with AS 5113. My view is that this pathway not be adopted, until the serious deficiencies in the structure and application of AS 5113 are addressed.
2. That the DTS provision C1.9 (e) is removed because these components invariably form part of an Element. If there are DTS or Verifications methods for the Element, this will automatically render the component test irrelevant.