

Approved Document B Volume 2 - Requirement B4(1)

Aluminium Composite Material Assessments under BCA Guidance Note 18 Option 3

Background

- **Kingspan K15** has been successfully tested with Terracotta, Carea and Eternit, and less successfully with Trespa. In each case, the BR135 parameters were met (note, with Trespa, the test itself was already deemed to have failed and so no BR135 classification certificate was forthcoming). The build-up in each case was similar in the case of Terracotta, Carea and Trespa (2 x PBS, LWSF, CP board, K15, cavity, aluminium support rails). The test involving Eternit was placed on a blockwork backing wall however, as the test principally looks at the performance 'from the outside in' the results of this test are of similar value. In each test, at compartment lines, mineral quilt vertical cavity barriers were provided and intumescent horizontal barriers. Around openings, intumescent type cavity barriers were installed.
- **Celotex RS5000** has been successfully tested with an Eternit (cementitious board) finish. In each test, at compartment lines, mineral quilt vertical cavity barriers were provided and intumescent horizontal barriers. Around openings, intumescent type cavity barriers were installed.
- **Xtratherm SR/RS** has been successfully tested with an Eternit (cementitious board) finish. In each test, at compartment lines, mineral quilt vertical cavity barriers were provided and intumescent horizontal barriers. Around openings, intumescent type cavity barriers were installed.

It's clear that several of tested external cladding finishes are of a mineral/resin compound which offer a combustibility classification of Class B when graded according to BS EN 13501:1. As such, with the exception of Trespa (a timber fibre laminate board) when exposed to a sudden exposure to high temperature, the performance of the other types are all similar and it's apparent from the test data that these cladding finishes tend to break down in the early stages of the test and thus expose the insulation to the full effects of the fire.

What's been reasonably justified by other bodies

NHBC have seen justifications from fire engineers including Exova and BRE supporting the use of aluminium composite materials which achieve at least a Class B combustibility on a build-up which is, otherwise, similar to those tested.

NHBC have been accepting of these where:

- A CP board exists behind the insulation – a minimum Class B has been a consistent feature within the BS8414 tests.
- Robust and comprehensive cavity barriers have been provided at compartment lines and around openings – these have formed part of the build-ups in the BS8414 tests.
- Aluminium support battens have been used to support the ACM panels
- ACM panels hold a minimum combustibility of Class B (verified by BBA Certificate or other third party means)

These types of cladding boards are used in abundance in the Middle East where (as advised by Arup Fire) only ACM products formed from no more than 25% polyethylene (75% cement) content have passed the NFPA285 fire test. This test is similar to a BS8414:2 test in that rate of fire spread from a flame plume directly onto the external surface is measured within a fifteen minute period and appears to tie in with the minimum Class B combustibility criteria.

What items of the build-up are critical

It's considered that the most critical items associated with a timber clad wall build-up using LWSF are:

- The use of minimum Class B aluminium composite material boards with a Class 0 surface spread of flame classification
- The use of a cement particle board behind the insulation (minimum Class B as used in several tests and a suggested thickness no less than 12mm)
- The use of reputable and robust cavity barriers – both mineral wool filled and intumescent products (but not including the use of Thermabate) – to compartment lines and around all openings.

Proposal

It is proposed that, on buildings with a floor over 18 metres from external ground level, where a ACM material is specified that meets the criteria outlined in Appendix A that NHBC accept the build-up as meeting Requirement B4(1). Technical Services and Major Projects staff need not ask for further justification under BCA Guidance Note 18.

It is recognised however that it is unlikely that a building will only have ACM facades and so care will be needed that a scheme isn't approved on the basis that the majority of the cladding is ACM, whilst missing some higher risk element elsewhere. Where other façade types are utilised it will continue to be necessary to request further justification under BCA Guidance Note 18 for these façade types.

It is also worth noting that the fire rated versions of these aluminium composite panels look identical to the non-fire-rated versions and so vigilance on site is needed to ensure that a product substitution hasn't taken place.

Appendix A

Minimum specification required for brickwork facades where justification under BCA Guidance Note 18 will not be required –

From inside to out –

- 2 Layers Plasterboard
- Minimum 100mm Lightweight Steel Frame internal leaf (insulated?)
- Minimum Class B Cement Particle Board no less than 12mm
- Insulation
 - Kingspan K15
 - Celotex RS5000
 - Xtratherm SR/RS
- Drained and vented cavity
- Aluminium support rails
- Minimum Class B aluminium composite material boards with a Class 0 surface spread of flame classification