Step-by-Step Guide For Evaluating the Combustibility Risk of Cladding (Aluminium Composite Panels - ACP)

Step 1 – Identification of materials

The identification of ACPs is the critical first step in the process of identifying the potential hazard to life and property presented by the ACP. It must be undertaken with an almost 100 per cent confidence of the results.

The primary purpose is to accurately classify and quantify the materials present in order to determine the fire load along with its location and proximity to ignition sources.

Once identification and quantification is achieved, this enables respective parties to consider Steps 2 and 3 of this protocol.

ACPs in Australia typically come in four general categories defined by the composition of their core materials:

A. 50%-100% Polyethylene (PE, EVA Ethylene-vinyl acetate) – denoted as *Category 3*

These are considered the problem materials.

B. 30% PE and 70% inert materials – denoted as *Category 2*

Typically identified as FR (Fire Rated). Inert materials are typically mineral compounds.

C. 7% PE and 93% inert materials – denoted as *Category 1*

These are considered close to non-combustible

D. 0% PE - denoted as *Category 1*

Typically an aluminium honeycomb or similar core. Also considered close to non-combustible.

In cases where there is no documentation associated with the building's construction, or where available documentation lacks the necessary information to positively identify the ACPs that have been installed; or where there is sufficient doubt that the ACPs installed are what is documented (substitution), it is necessary for samples of the ACP, along with sarking and insulation materials behind any ACP, to be subjected to testing to clearly identify the composition and combustibility of core material and the insulation/sarking.

Importantly, visual examination of the ACP or small flame application of a sample, in these circumstances, is insufficient for identification purposes.

ExcelPlas Australia is an accredited laboratory that can perform a series of controlled tests that will adequately identify the core composition of installed ACP materials (including an insulation) on a building.

Reports commissioned by a building owner using this protocol should answer the following questions for Step 1:

1. Who has carried out inspections and testing for the building owner, and testing of the cladding material, what are their relevant competencies, qualifications and experience and what testing laboratories were used to test the samples?

2. What category(s) of ACPs are present on the building (A, B, C or D)?

3. What quantity of the material is present and extent of coverage (m^2)?

4. What substrate or insulation is present behind the ACP?

5. What potential ignition sources exist for the ACP given the configuration of the building?

Step 2 – Evaluating the exposure

Using the identification and quantification outcomes of Step 1, the purpose of this step is to provide a consistent report into the exposure of the building regarding the presence of ACPs.

This output is dependent upon the category of the ACP determined in Step 1 and should make findings with regard to four questions:

6. What exposures exist to the safety of the occupants based on the Step 1 outcomes?

7. Is the building compliant, with regard to ACPs, with the National Construction Code and associated Australian Standards?

8. What are the exposures to the property and consequential business interruption risk of a fire involving the ACP?

9. What exposures exist to the reputation, image and market value of the building as a result of the ACP identified?

Making findings for each of the questions is necessarily complex. Each building with ACPs present will vary in terms of quantification, insulation materials, ignition scenarios, fire protection and suppression systems, as well as occupation type.

Reports commissioned by a building's owner to make findings on the exposure should consider the following factors identified by insurers:

Step One identified 50%-100% PE or EVA Ethylene-vinyl acetate core ACP.

The exposure should be considered similar to that demonstrated by the Lacrosse Building fire (Melbourne), which was an ACP panel fire with fibreglass insulation and reflective foil sisalation in the cavity and an internal building sprinkler system

(combined sprinkler/hydrant system sharing a redundant water supply). The Grenfell fire had the added impetus of a combustible foam-based insulation material behind it and no internal sprinkler protection[i].

Where the quantity of 50%-100% PE ACP present is considered to be sufficient to sustain a fire, and relevant ignition scenarios exist, adverse findings to the four questions above should consider the risk as HIGH and Step 3 remedial action may be required.

Step One identified 30% PE core ACP.

The evaluation of the exposure to this type of ACP is more complex, with the existence of a combustible or semi-combustible (fire retardant) insulation or sarking in the cavity being a defining factor.

Recently completed and published full-scale façade fire tests (BS 8414-1:2015) conducted by BRE Global (a fire testing laboratory in the UK) on behalf of the UK Department for Communities & Local Government showed this category of panel, when combined with a PIR or Phenolic insulation, with horizontal and vertical non-combustible cavity barriers (not typically provided in Australia), resulted in flaming above and to the top of the test structure respectively. The prime concern for Australian stakeholders is how much more severe the fire spread would have been without the cavity barriers.

Where a quantity of 30 per cent PE ACP present is combined with combustible or semi-combustible insulation materials, and relevant ignition scenarios exist, adverse findings to the four questions above should consider the risk as HIGH and Step 3 remedial action may be required, unless appropriate internal fire suppression and protection systems exist to reduce the risk.

Where the insulation is considered close to non-combustible - mineral wool or fibreglass, and the sarking has a flame spread rating of less than 5 to AS 1530.2, the risk could be considered as low.

Step One identified 7% or less PE core ACP.

The fire risk presented by this material can be considered as LOW regardless of quantity, ignition scenarios and type of insulation.

Step 3 – Remedial actions for consideration

Remedial actions (if any are required) will be different from building to building and dependent on the category of ACP and insulation/sarking installed. Depending on the quantity of ACP installed, its configuration and installation, there is the potential for actions to be taken that would not necessarily involve 100 per cent replacement.

The report submitted to the building's owners with regard to Step 3 should address, in detail if necessary, a response to the following question:

10. What remedial actions are necessary (if any) to address unacceptable risks to the building due to the presence of an unsuitable ACP?

The acceptability of any such (alternative or performance) solutions should be agreed by all parties involved – such as the appointed fire safety engineer, the owner, insurer, regulator and fire authority – before any work is carried out. **The importance of consulting with the relevant jurisdiction's building regulator and urban fire authoritiy cannot be stressed enough in response to this question.**

Accredited Laboratory in Australia

ExcelPlas Pty Ltd is Australia's premium laboratory for the identification and testing of polymeric materials. With more than 25 years' experience, ExcelPlas is acknowledged as a leading provider of specialist analytical and technical capabilities for the building and construction industry in the area of polymer analysis. ExcelPlas Labs use a range of analytical techniques to assist building owners, building managers, building insurers, fire engineers and other stakeholders to provide advice relating to the flammability potential, composition and toxicity of cladding materials. ExcelPlas is a NATA-accredited laboratory and is ISO/IEC 17025 compliant. Please contact our head office on 03 9532 2207, visit our website at http://excelplas.com/ or email info@excelplas.com for further information.

Conclusion

Inspections, assessments and reports commissioned by a building owner to determine the risk associated with the presence of ACPs on a building should be carried out by competent fire protection professionals and including fire safety engineers.

A consistent methodology – yielding responses to the 10 questions above and able to be accepted by the broadest possible regime of underwriters and other building professionals – is essential.

Ref. Insurance Council of Australia