

A photograph of a modern building facade with large windows and a light-colored, textured cladding. The building is set against a clear blue sky. The image is partially obscured by a dark blue gradient overlay at the bottom.

What is combustible cladding?

Putting our experience to work for the protection of your property and occupants

What is combustible cladding?

Introduction

Numerous catastrophic building fires around the world have brought to the forefront the risks associated with using combustible Aluminium Composite Panels (ACP), or other cladding materials with combustible content, as part of the building's external wall (or facade).

As reported through the various State and Territory Government cladding taskforces, there are likely thousands of buildings across Australia which contain potentially combustible ACP cladding material, including residential apartments, childcare centres, hospitals and office buildings.

In Australia, the National Construction Code (NCC) Volume One specifies that a building of Type A or B construction must have elements which will avoid the spread of fire via the external wall of a building and between buildings. This requirement can be met by using non-combustible external walls, including all components incorporated in them such as the facade covering and insulation.

What is aluminium cladding and why is it used?

ACPs are a type of flat panel material comprising two thin aluminium skins bonded either side of an extruded thermoplastic core (with or without mineral content and/or fire retardant treatments), and typically between 3-6mm in thickness. The core is usually an opaque white, grey or black colour.

- A building's external wall is typically a complex system comprising many component parts (such as the external surface panel, air cavity, sarking or weatherproof membrane, insulation layer, fixing system and outer building wall)
- ACPs are a form of cladding attached to the outermost layer of the building's external wall
- Cladding improves a building's appearance, provides weather proofing and thermal insulation

What is combustible aluminium cladding?

ACPs are generally being classed into four categories from highly combustible (e.g. 100% polyethylene core*) to non-combustible (e.g. 100% aluminium honeycomb core).

| ACP Category | Fire Rating |
|--|------------------------|
| 35-100% thermoplastic core (0-65% inert materials) | Highly combustible |
| 8-34% thermoplastic core (66-92% inert materials) | Semi-combustible |
| ≤7% thermoplastic core (≥93% inert materials) | Limited combustibility |
| 0% thermoplastic core (100% inert materials) | Non-combustible |

* Polyethylene is a hydrocarbon based combustible material (1 kilogram of ACP PE cladding contains the energy equivalent of ~1.5 litres of petrol).

AT-A-GLANCE

- ACPs are commonly used in Australian building construction
- Combustible ACPs (and insulation materials) can promote rapid vertical flame spread across the building exterior
- The Grenfell Tower tragedy has highlighted the potentially catastrophic consequences for building occupants and users
- Confirming whether an ACP is combustible (or not) requires straightforward testing using chemical and mechanical analysis

What is combustible aluminium cladding?

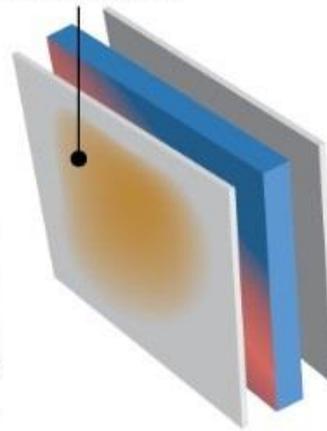
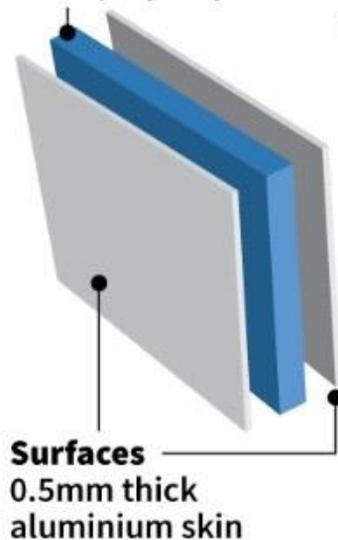
In a fire event, as demonstrated in the graphic, heat can quickly propagate from the surface of the aluminium skin through to the thermoplastic core material. In the space of a few short minutes this can lead to severe deformation and delamination of the aluminium skin, followed with the core melting and igniting. This can produce falling burning debris with potential to start secondary fires. This is particularly the case for ACPs containing a high polyethylene thermoplastic core content (ACP PE), or where semi-combustible fire retardant grade (ACP FR) have been used in an external wall assembly which also contains combustible insulation materials and/or with ventilated air cavities behind the panel.

Aluminium composite panel

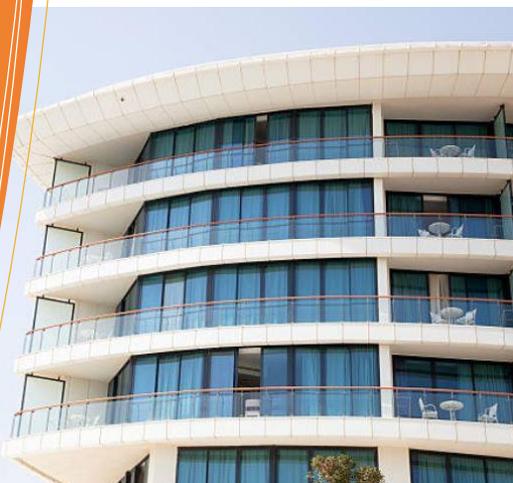
Insulating core
2-5mm thick,
100% polyethylene

Heat from a fire will
conduct quickly to the
core through thin
aluminium

Core loses ability to
bind, causing outer
skins to deform and
delaminate



GRAPHIC: JAMIE BROWN



How to identify combustible aluminium cladding

Safer Buildings Group conducts building inspections to identify if potentially combustible cladding materials have been used in the building's external facade. Where aluminium cladding is identified, we undertake sampling and testing to accurately identify if combustible components are present. Test results allow our fire engineers to assess the potential fire risks of the cladding, which in turn allows us to provide building owners with a report detailing the building's fire safety risk assessment, including identified fire risks and safety concerns, and actions for managing incompatible products.