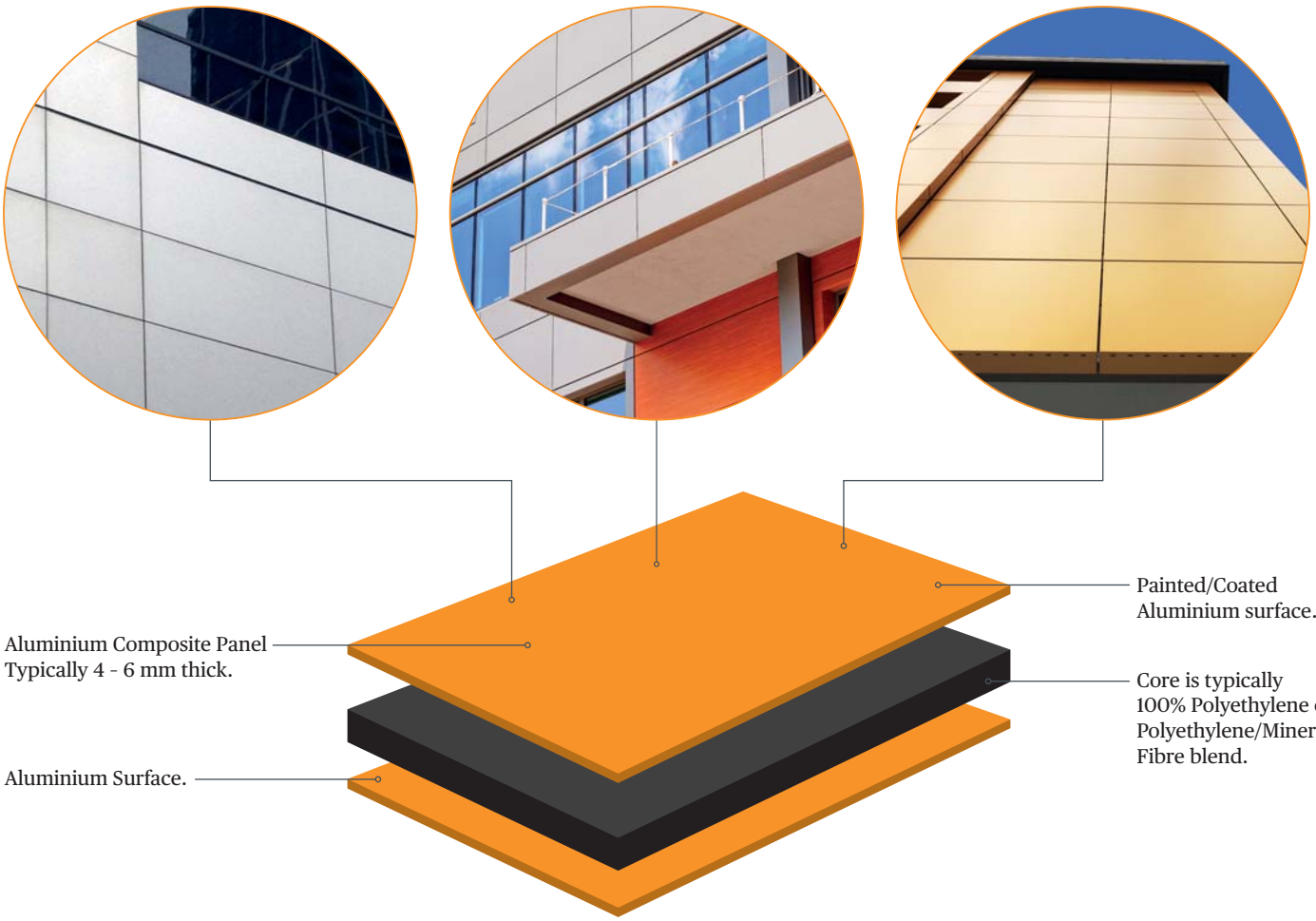
Risk Bulletin

Aluminium Composite Panels
July 2018 Update

CHUBB®

Risk Engineering Services



Background

Aluminium Composite Panel (ACP) cladding has been used on the exterior of buildings for more than 30 years. If the cladding is combustible, fire can spread rapidly on the exterior of the building and present a significant risk to occupants and property. In recent times, the Grenfell Tower fire in West London and the Torch Tower fire in Dubai have clearly demonstrated this risk. In the case of high rise buildings, fires involving exterior cladding can be very challenging for firefighting personnel and installed fire sprinkler systems may be ineffective in controlling fire spread.

There are numerous types of ACPs. Panels are typically 4 mm to 6 mm thick and comprise a 3 mm to 5 mm thick core material between two thin (-0.5mm) sheets of aluminium. The composition of the core material is generally either 100% Polyethylene (PE) or various combinations of PE and Mineral Fibre. Other core materials can include Expanded Polystyrene (EPS), Polyurethane (PU) or Aluminium Honeycomb; however these are not common and are typically thicker panels. Core materials which incorporate PE, EPS or other combustible materials present the main fire risk associated with ACPs.

Level of Risk

For buildings that are clad with ACPs, it is important to evaluate the level of risk as this can vary greatly for each building. The following list outlines some of the key risk factors that should be considered when evaluating the level of risk:

- The composition and combustibility of the ACP core material;
- The building height and occupancy;
- The amount of ACP cladding and its location on the building;
- The extent of continuous vertical sections of ACP cladding on the building;
- The type of substrate and/or insulation located behind the ACP;
- Proximity of ACPs to balconies and other potential fire ignition sources;
- Installed building fire protection and fire detection systems;
- The Fire Resistance Level as defined in the Building Code of Australia of the building construction and fire compartments;
- The distance from nearby buildings not protected by fire sprinkler systems;
- Installed building emergency warning systems and fire exits; and

- If the building design is based on Alternative Solution provisions of the Building Code of Australia by a fire safety engineer.

Chubb Risk Engineering Services can assist with the evaluation of the level of risk in regard to insurance underwriting requirements only. For confirmation of ACP compliance with local building codes or standards, please refer to accredited building surveyors or fire safety engineers that are registered to practice in the relevant jurisdiction.

The completion of the Chubb Building Cladding Questionnaire can assist Chubb Risk Engineering Services with a preliminary evaluation of the level of risk in regard to insurance underwriting requirements.

Photograph showing the PE core of Aluminium Composite Panel.

ACP Identification

To determine the type and the extent of ACP cladding on a building, construction drawings, specifications, fire engineering reports, building certification documents or other relevant information that includes details of façade materials should be requested.

ACPs with cores incorporating a large proportion of PE, EPS or PU are generally combustible and are not preferred. To determine the combustibility of ACP, details of make and product specifications (that include fire test criteria) are required.

It is common for product specifications to include certification to various fire test standards. Currently Chubb Risk Engineering Services accepts large scale fire tests in accordance with the requirements of the following fire test standards: AS 5113:2016, BS 8414 and ISO 13785. While the AS 1530.1 small scale combustibility test of the core material is also accepted by Chubb Risk Engineering Services, the small scale fire test outlined in AS 1530.3 is not considered an adequate test for façade systems.

If product specifications are not available, the type of ACP core material can be checked by visual inspections of penetrations/openings in the ACP, or the removal of a section of ACP, or by drilling a hole in the ACP. Accredited building practitioners that are registered to practice in the relevant jurisdiction should preferably be used for any such inspection. The type of substrate and insulation behind the ACP and fixing methods should also be checked at this time.

Core material that is black in colour is typically PE (combustible). If the core material ranges from light grey to white in colour and has a fibrous texture it is most likely a limited combustibility mineral fibre blend and should be investigated further. Samples of core material removed from the building can be tested by the CSIRO - Materials & Infrastructure Services (or similar testing laboratories) to verify the type of core material. If there is any doubt as to the combustible nature of the core material, testing should be undertaken.

The use of limited combustibility and non-combustible ACPs is more common in recent years, whereas older buildings are more likely to have 100% PE core panels (combustible).

Fire Risk Considerations

The risk factors noted previously can influence the rate and extent of fire spread. A rapidly spreading external fire increases the likelihood of major building damage and can impact of the safe evacuation of building occupants.

Continuous sections of combustible ACPs provide a pathway for external fire spread. In addition to combustible ACP cladding, combustible insulation materials located behind the ACP add to fire load and can increase fire intensity.

Fire sprinklers systems for residential buildings, offices, educational institutions, hotels and hospitals are typically designed to operate over a relatively small area. For residential buildings, the design can be based on as little as 4 sprinklers operating.

Therefore, a rapidly spreading fire via external ACP cladding can overwhelm the fire sprinkler system, affecting its ability to control internal fire spread and result in increased damage. Fire rated compartments can also help to reduce internal fire spread (floors/walls), however, the Fire Resistance Level of the fire compartment needs to be considered. In the event of a major fire, smoke and water damage to areas not directly involved in the fire is likely to occur.

Local building codes generally require emergency warning systems and fire rated exits to be provided based on building occupancy and fire rated compartment area. An Alternative Solution by a fire safety engineer to Deemed to Satisfy provisions of local building codes need to be carefully reviewed to ensure that fire safety requirements are acceptable. In some cases, fire modelling by fire safety engineers may not have considered external fire spread via combustible cladding which may compromise the validity of the Alternative Solution.

The likelihood of a fire due to ignition of combustible ACPs is increased where ACPs are located in close proximity to:

- Balconies that are not protected by fire sprinkler systems;
- Street level; and
- Other high risk areas such as near loading docks, stored combustible materials, waste bins, electrical systems, hot exhaust flues and smoking areas.

The control and enforcement of restrictions for high risk activities (such as smoking, the use of portable cooking equipment, heaters, candles, etc.) on balconies is difficult, particularly for residential buildings. In most cases, the removal of combustible ACPs, and any associated combustible insulation, installed on balconies and near high risk areas is the preferred solution.

A less effective alternative is to ensure these areas are adequately protected by fire sprinkler systems. Until ACPs are removed from high risk areas or additional fire sprinkler protection is installed, the control of high risk activities is critical. This includes controlling cutting and welding near combustible ACPs using hot work permits.

Various types of 'Non-Combustible' and 'Limited Combustibility' ACPs have been introduced to the market in more recent times, however, the specifications of these panels can vary. Therefore, a thorough review of fire test standards and approval criteria is recommended.

The use of Limited Combustibility ACPs are considered acceptable by Chubb Risk Engineering Services under specific applications, however, acceptability is subject to the combustibility of the ACP and where it is installed.

ACPs that are classified as A2 to EN 13501-1 are generally considered acceptable and no further actions are necessary unless insulation materials located behind the panels are combustible.

Please refer to Table 1 which lists combustibility ratings of common types of ACPs used in Australia based on EN 13501-1 criteria.

Note: Alucobond A2 was introduced to the market in 1992, whereas Alucobond Plus was introduced in 2000. Alpolic was introduced to the market circa 2004.

Chubb Risk Engineering Services do not confirm compliance (or otherwise) of cladding systems with any local codes or standards. Our evaluations are limited to the level of risk in regard to our insurance underwriting requirements.

Table 1: Aluminium Composite Panel Combustibility Ratings*

Chubb Acceptable (Less than 10% combustible materials)	Chubb Limited Combustibility (Up to 30% combustible materials)	Chubb Combustible (Greater than 30% combustible materials)
• Alucobond A2 • Alpolic A2 • Alcadex A1 • Aodeli NCP Alumcanbond • Arconic Reynodual • Nu-Core A2 • Vitracore G2 • Alucore	• Alucobond Plus • Alpolic FR • Alfrex FR	Other products assessed by Chubb as not meeting Chubb Acceptable or Limited Combustibility ratings. e.g. • Alucobond PE • Alpolic • Alucobest • Formwall 1000 • plus other 100% PE core panels

* Ratings are for Chubb Risk Engineering assessment purposes only and are subject to change. The list does not cover all manufacturers or brands and is not representative of product type, quality or other properties.

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Chubb is the world's largest publicly traded property and casualty insurer. Chubb, via acquisitions by its predecessor companies, has been present in Australia for over 50 years. Its operation in Australia (Chubb Insurance Australia Limited) provides specialised and customised coverages include Marine, Property, Liability, Energy, Professional Indemnity, Directors & Officers, Financial Lines, Utilities as well as Accident & Health, for a broad client base, including many of the country's largest companies.

More information can be found at www.chubb.com/au

Contact Us

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