

Building audit - technical

Aluminium Composite Panel (ACP)

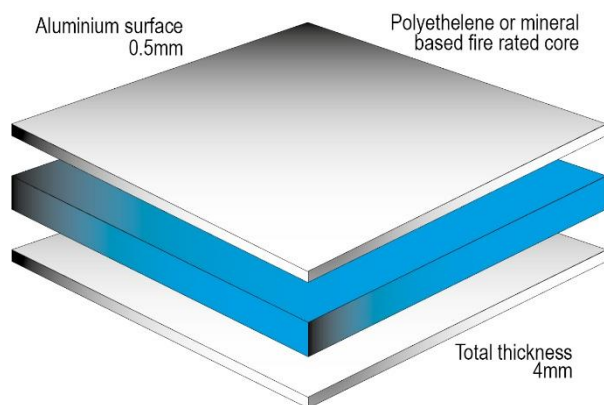
Aluminium Composite Panels (ACPs) are frequently used as external cladding on buildings, insulation and signage, and can be produced in a range of finishes.

The material is not unsafe or dangerous when installed in accordance with the National Construction Code (NCC). Incorrect use or installation may compromise the safe use of ACPs and render them non-compliant, which may pose a risk in the event of a fire.

What is Aluminium Composite Panel?

ACPs consist of two thin foil-coated aluminium sheets bonded to a non-aluminium thermoplastic, mineral or aluminium core. ACPs are:

- very light weight, rigid and strong
- frequently used for external cladding, insulation and signage
- produced in a wide range of metallic and non-metallic colours including patterns that imitate other materials
- can be used as cladding, partitions, false ceilings and other appropriate applications.



Typical Aluminium Composite Panel (ACP) construction.

Building compliance

The NCC sets the requirements for the design and construction of all new building work. ACPs used as external claddings must meet provisions which include those relating to fire and installation performance.

The fire performance properties required of external wall cladding systems depends on building height and use, presence of fire suppression systems and distance from the relevant boundaries.

For example, the NCC requires buildings greater than three storeys to use external cladding certified as non-combustible. In these circumstances, ACPs with a fire-resistant or non-combustible core must be used.

Panel combustibility

Many external cladding systems such as exterior insulation systems, high pressure laminates and weather resistant barriers, including ACPs, could be classed as combustible under certain circumstances.

The degree of combustibility of ACPs range from:

- products that are readily combustible - such as ACPs with a 100% polyethylene (PE) core that can melt at low temperatures and are highly flammable
- products with a combined core of mineral fibre and PE, which are less combustible but not fire resistant
- products with a core of almost all mineral fibre plus a small amount of PE, classed as fire resistant but may have limited combustibility
- products that have a fire resistant, non combustible core, such as an aluminium lattice, that are classed as non combustible.

ACP skins are usually very thin, 0.5mm thick and made of aluminium. Aluminium is a good conductor of heat which means that heat from a fire may transfer quickly from the external panel surface to the core.

Combined with the low melting temperatures of PE this may, under some conditions cause the core to melt and create an air gap in the panel. This can result in delamination and failure of the ACP and adjacent panels, potentially contributing to the spread of fire.

Aluminium Composite Panel (ACP)

ACP certification and installation

Product certification



CodeMark Australia is a voluntary, building product certification scheme providing a nationally accepted process for demonstrating building material compliance with the NCC.

CodeMark is responsible for issuing Certificates of Conformity under the CodeMark Scheme. These certificates identify the requirements of the NCC that the product is certified to comply with, and that it meets the current, relevant standard.

The building design and construction will determine what product is deemed to satisfy NCC requirements. The building surveyor or relevant authority will make an assessment and recommendation based on the individual building and design.

Certificates of Conformity will commonly contain detailed item specifications including recommended uses and product limitations along with guidance and technical requirements for installation.

If a certificate is accepted, all conditions and recommendations should be included in the building design and approval documentation.

Installation requirements

All walling systems, including attachments, cladding or lining, should be installed in a manner compliant with the NCC and the manufacturer's recommendations to ensure the safe use of materials.

The fire performance properties required of external wall cladding systems depends on building height, location and extent of coverage, fire prevention systems and distance from relevant boundaries.

There are generally two methods of construction where ACPs may be used on external walls including:

- fitment to an external fire rated wall as a decorative finish
- fitment to an external wall structure to form part of the external wall system.

Disclaimer: This information is provided as general information only and should not be relied upon as legal advice or an accurate statement of relevant legislation. Seek independent legal advice if you are uncertain as to your legal obligations.

Typically, ACPs will be fixed to a framework that is either attached to the external wall or forms part of the external wall structure depending on the building type and construction.

A simple way to find out if a product forms part of the external wall or has been used as an attachment is to determine, via an assessment, if the wall remains NCC compliant if the material or product is removed.

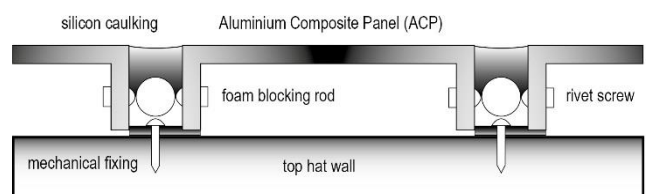
If the external wall remains fully NCC compliant with the material removed, the product is most likely used as an attachment.

If the integrity of the external wall is compromised with the material removed, then it is likely that the product forms an integral part of the external wall.

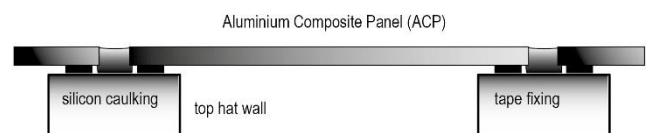
There are two ways of installing and fixing external ACP cladding as an attachment that are NCC compliant.

These are:

- mechanical fixing
- tape fixing.



ACP mechanical fixing



ACP tape fixing

Whichever method is used, all materials must be prepared and installed in accordance with manufacturers specifications and NCC requirements to be fully compliant.