

Some frequently asked questions about ACP

1. What are the common uses of aluminum composite panels (ACP)?

Aluminum composite panels are widely used in building exterior wall cladding, signage, interior decoration, and soundproofing and insulation projects. Due to their lightweight, easy processing, and smooth surface, they are also suitable for furniture, display racks, and interior and exterior decoration of transportation vehicles.

2. What are the main materials that make up ACP?

ACP consists of two layers of aluminum sheets and a plastic core material, typically low-density polyethylene (LDPE) or fire-retardant material. The surface aluminum sheet is usually coated with polyester (PE) or polyvinylidene fluoride (PVDF) for enhanced weather resistance.

3. How is the fire performance of ACP?

ACP is classified into fire resistance grades such as B1 and A2. B1 grade panels have a density of approximately 1.6 and a weight of 7.5 kg/m², while A2 grade panels have a density of 1.8 and a weight of 8.1 kg/m², offering superior fire resistance.

4. What types of coatings are available for ACP?

The most common coatings are polyester (PE) and polyvinylidene fluoride (PVDF). PVDF coatings provide superior UV resistance and corrosion protection, making them ideal for outdoor applications, while PE coatings are better suited for indoor use.

5. What colors and surface effects are available for ACP?

ACP comes in a wide range of colors, textures, and surface effects. Users can choose metallic finishes, matte, mirror, high-gloss, or woodgrain effects to meet various design needs.

6. Besides traditional coatings, what other surface treatments are available for ACP?

ACP surfaces can also undergo treatments such as anodizing or embossing, providing diverse decorative options.

7. What is the lifespan of ACP?

The lifespan of ACP depends on the usage environment and surface coating. While the overall service life can reach up to 50 years, PVDF-coated ACP can last 15–30 years outdoors, whereas PE-coated ACP typically lasts 5–10 years outdoors.

8. How should ACP thickness be selected?

The thickness of ACP depends on its intended use. For exterior wall cladding, thicker aluminum skins and overall panel thickness (e.g., 0.5/4mm, 0.4/4mm, 0.3/4mm) are common. For signage, thinner panels such as 3mm are often used. Panels intended for grooving may use standard 0.3/3mm or economical 0.26/3mm panels, while flat printing can utilize 0.21/3mm or budget-friendly 0.15/3mm panels.

9. How is the weight of ACP calculated?

The weight of ACP depends on the thickness of the aluminum skins and the density of the core material. For example, a 0.3/4mm ACP weighs 5 kg/m². With aluminum skins of 0.3mm thickness and aluminum density at 2.71, the skin weight is $0.3 \times 2 \times 2.71 = 1.63$ kg/m². The core, 3.4mm thick with a density of 1, weighs 3.4 kg/m². The total weight is approximately $1.63 + 3.4 = 5$ kg/m².

10. What shapes can ACP be fabricated into?

ACP can be processed into various shapes through cutting, grooving, and bending. The typical bending angle is 90°, but it can also be bent up to 180°.

11. How is ACP maintained and cleaned?

ACP is easy to maintain and clean. Use mild detergents and soft cloths for cleaning, avoiding strong acidic or alkaline cleaners that may damage the surface coating.

12. How effective is ACP at soundproofing?

ACP provides some soundproofing capabilities, particularly when fire-retardant cores are used, making it suitable for buildings and interiors with high sound insulation requirements.

13. How much weight can ACP bear?

ACP is lightweight and suitable for light-load structures, but it is not designed for heavy loads. The thickness and material influence its load-bearing capacity, especially in wall cladding and curtain wall applications.

14. Is ACP environmentally friendly?

While most ACP cores are made of LDPE, which has limited recyclability, the aluminum layers are recyclable. Panels using non-toxic, fire-retardant materials also have better environmental performance.

15. Can ACP be installed in all climatic conditions?

ACP is suitable for various climates, performing well in environments ranging from -40°C to +80°C. However, for extreme conditions (e.g., high humidity, severe cold, or intense heat), high-durability coatings and materials should be used.

16. How should the edges of ACP be treated?

After cutting, ACP edges can remain exposed in standard environments due to the material's durability. For enhanced longevity and aesthetics, grooved and bent edges can be sealed with silicone to provide better protection and visual appeal.

17. What are the differences between ACP and solid aluminum panels?

ACP consists of aluminum skins and a plastic core, offering lighter weight and more cost-effective solutions. Solid aluminum panels are thicker, more durable, and suitable for high-load and high wind-pressure applications.

18. How does ACP handle wind load?

The wind load capacity of ACP depends on the thickness of the aluminum skins and the installation system. In high wind-pressure areas, thicker skins, back reinforcement, and enhanced installation systems are recommended to ensure stability.

19. What are the standard dimensions of ACP?

Standard ACP dimensions are typically 1220mm × 2440mm or 1500mm × 3050mm, with standard thicknesses of 3mm or 4mm. Custom sizes are available to meet specific project requirements.

20. What are the installation methods for ACP?

Common installation methods for ACP include hanging systems, splicing, and interlocking systems. It is essential to consider factors like thermal expansion, wind load, and environmental conditions to ensure the panels remain secure and undistorted.