

FAÇADE & BRIEF

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| SPECIFICATION &
PERFORMANCE

| ALUMINIUM COMPOSITE
PANELS

| FASCLAD.PH



SIX SPECIFICATIONS THAT DECIDE PERFORMANCE

Alloy, skin, panel, core, paint, lamination — what each one tells you about a panel.

PAGE 04 →



WHAT "FR" ACTUALLY MEANS

Why mineral content — not the brochure — decides whether a fire-rated core actually passes.

PAGE 03 →



LEAD EDITORIAL / SPECIFICATION

How to choose the right aluminium composite panel.

A specifier's guide to the six things that decide whether an ACP performs — and a quiet warning about the ones that don't.

LEAD EDITORIAL

How to choose the right aluminium composite panel.

Most aluminium composite panel (ACP) selections on Southeast Asian high-rise projects are made on price alone. The real cost shows up five to ten years later – when panels delaminate, when paint fades, when a façade fire test is repeated and fails. This issue is a guide to the six specifications that decide whether an ACP actually performs.

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An aluminium composite panel looks simple. Two thin sheets of aluminium bonded to a polymer or mineral core, painted on the visible face, cut and folded into shape, hung on the façade. The same physical product, in concept, that has clad office towers and hotel podiums for fifty years.

What the appearance hides is that there are six independent specification choices inside every ACP – and each one moves the panel along its own performance curve. A panel can score well on five and fail on the sixth. A panel can pass a fire test in a laboratory and fail the same test on a real façade because the test sample was specified differ-

ently from the production run.

This guide walks the six choices in turn – alloy, skin thickness, panel thickness, core material, paint system, lamination process – and shows what each one is doing for the building, what the cost of cutting it looks like, and what to put in your specification document so the panel that arrives on site is the panel you signed off on.

The argument is straightforward. The panel that lasts is rarely the cheapest panel. The panel that looks identical to the cheapest panel – until five years pass – almost never is.

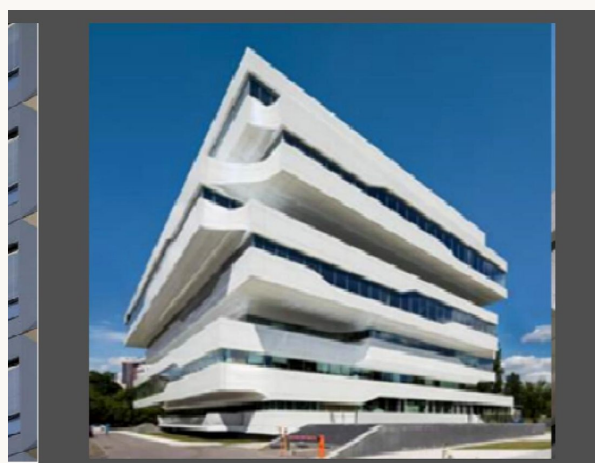


FIG. 01 • AN ACP ENVELOPE READS AS A SINGLE MATERIAL – BUT IT IS SIX INDEPENDENT SPECIFICATION CHOICES, LAYERED.

THE SIX CHOICES

**Alloy. Skin. Panel. Core.
Paint. Lamination.**

Six independent specifications. Each one shifts performance and price. Specify all six, or specify none.

LEAD EDITORIAL / CONTINUED

"FR" is the most-claimed, least-verified specification in the ACP market.

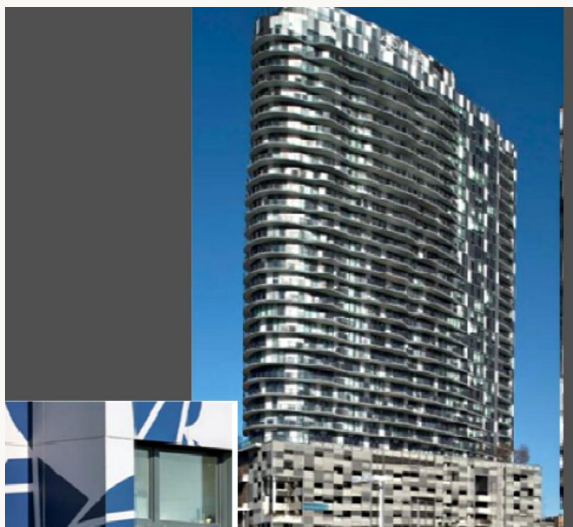


FIG. 02 · A HIGH-RISE ENVELOPE IS A FIRE-RATED ASSEMBLY. THE FIRE PERFORMANCE OF THE CLADDING IS DECIDED IN THE PANEL CORE, NOT IN THE BROCHURE.

II

A fire test passed in a laboratory means nothing if the production panel does not match the tested sample.

A WORKING RULE ON EVERY ACP PACKAGE

An ACP core is the slab of material between the two aluminium skins. It is what burns — or does not burn — when a façade is exposed to fire. There are three families.

LDPE (low-density polyethylene) is a normally inflammable polymer core. Cheap. Common. Banned or restricted on tall buildings in most international codes after Grenfell.

"FR" (fire-retardant) is a mineral-filled polymer core. The mineral content is what actually delivers fire performance. The combustible polymer holds the mineral content together. The ratio between the two decides whether the core passes — or fails — a real fire test.

"A2" (non-combustible) is a mineral-dominant core, typically above 90 percent mineral content. It is the highest fire classification available in the ACP category.

Here is the problem. **"FR" is not a regulated term.** Any manufacturer can print it on a brochure. Two panels both labelled "FR" can have wildly different mineral content — one at 70 percent, another at 50 percent — and only one will reliably pass NFPA 285, the standard exterior wall fire test.

The fix is not to trust the brochure. The fix is to **specify the mineral content directly** — and require batch-level test reports against the codes the project must meet (BS 476 Part 6&7, EN 13501-1, NFPA 285).

REFERENCE / FIRE PERFORMANCE

Mineral content is the fire test.

Of the panels currently available in the regional market, fire performance against NFPA 285 – the standard exterior wall fire test – tracks almost linearly with mineral content in the core. The pattern is consistent enough to be a specification rule.

CORE TYPE – MINERAL CONTENT	NFPA 285 RESULT
A2 non-combustible · >90% mineral	PASS
FR — high mineral · 70–90% mineral	PASS
FR — borderline · 65–69% mineral	PASS / FAIL
FR — claimed but low · 50–64% mineral	FAIL
LDPE · effectively 0% mineral	FAIL

SPECIFIER'S RULE OF THUMB FOR > 18M BUILDINGS **≥ 70%**

Pattern observed across panels tested in the European, Japanese, Korean, and ASEAN markets between 2018 and 2024. Brand names withheld; specifier should request batch-level test reports from any candidate supplier.

SPECIFIER'S RULE

For any building over 18 metres in height, specify FR core with mineral content of **70 percent minimum**, and require third-party test reports against NFPA 285, BS 476 Part 6&7, and EN 13501-1.



FIG. 03 · VERTICAL ALUMINIUM FIN FAÇADE. THE FIN IS A WORKING SURFACE — EXPOSED EDGES, PERFORATION, AND OPEN JOINTS ALL INCREASE THE DEMANDS ON ALLOY AND CORE SPECIFICATION.

PRACTICAL / SPECIFICATION WORKSHOP

Six questions before you specify an ACP.

A starting list for design managers and procurement teams writing the ACP section of a façade specification. Take it into the conversation with your candidate suppliers – and ask for written, batch-level evidence on every answer.

- | | |
|---|--|
| <p>01 Alloy grade? 5005 for marine and coastal exposure. 3003 / 3105 for inland general use. 1100 only for back-of-house, never for façades.</p> <hr/> <p>02 Skin thickness? 0.5mm for high-rise façades and large panel sizes. 0.3mm is borderline. 0.2mm is signage and interior, not façade.</p> <hr/> <p>03 Panel thickness? 4mm is the façade standard. 3mm is acceptable on low-rise. 2mm is interior.</p> | <p>04 Core material and mineral content? FR with ≥70% mineral content for any tall building. A2 non-combustible (>90% mineral) where code or owner's requirements demand it.</p> <hr/> <p>05 Paint system? 3-coat PVDF (70/30 resin) to AAMA 2605 standard. 2-coat or 1-coat HDP / polyester systems will fade in tropical UV within 5–7 years.</p> <hr/> <p>06 Lamination process and adhesive? Specify the manufacturer's tested adhesive with documented peel-strength performance. Cheap glue causes delamination, which voids every other specification on the panel.</p> |
|---|--|

II

Specify all six. Verify all six on the production batch – not on the sample submitted with the bid. The panel that arrives on site is the panel that has to perform for thirty years.

A WORKING RULE FOR ACP PROCUREMENT

REGIONAL BRIEF / CLIMATE & EXPOSURE

Why Asia-Pacific demands more from an ACP.

The same panel specified for a project in Frankfurt or Vancouver will not last as long on a tower in Manila, Bangkok, or Jakarta. Heat, humidity, salt, pollution, and UV collude in the regional climate to shorten the life of every weak link in the specification.

COASTAL & MARINE EXPOSURE

Most major Southeast Asian cities are coastal. Salt-laden air accelerates corrosion of lower-grade alloys. Marine-grade 5005 alloy is the appropriate specification — not the marketing-grade default that comes with most price-driven bids.

INDUSTRIAL & VEHICULAR POLLUTION

Acidic atmospheric pollution and traffic emissions in dense regional cities chemically attack paint systems. PVDF coatings stand up; cheaper polyester systems chalk and fade within a building's warranty period.

TROPICAL UV LOAD

Equatorial UV intensity is materially higher than northern-hemisphere benchmarks. Paint systems certified to AAMA 2605 hold colour and gloss; 2-coat systems do not.

TYPHOON & HIGH-WIND LOADING

Higher wind pressures in PAG-ASA Zone I and equivalent corridors elsewhere in the region demand greater panel strength. Strength comes from skin and panel thickness — not from the printed marketing claim.

OPEN-JOINT & PERFORATED DESIGNS

Architectural preferences in the region increasingly favour open-joint cassette systems, perforated panels, and exposed-edge details. These designs expose the core directly to weather. Lower-grade alloys and weak adhesive systems fail first at the edge.

THE SPECIFICATION CONCLUSION

None of these conditions are exotic. They are the operating environment for ACP across Southeast Asia. A panel specified for Northern European conditions will fail here at twice the rate.



FIG. 04 · A COPPER-FINISH ACP ENVELOPE. PIGMENT RETENTION, EDGE INTEGRITY, AND ADHESIVE PEEL-STRENGTH ARE TESTED BY TROPICAL CLIMATE THE DAY THE PANEL SHIPS.

A SHORT GLOSSARY / FOR THE SPECIFICATION DOCUMENT

A vocabulary for the ACP section.

Eight terms worth defining inside the specification document itself — so the panel that arrives on site is unambiguously the panel you signed off on.

ACP Aluminium Composite Panel. Two aluminium skins bonded to a polymer or mineral core. Used widely on façade cladding and interior applications.

ALLOY 5005 / 3003 / 1100 Aluminium alloy grades. 5005 has the highest corrosion resistance — appropriate for marine and coastal exposure. 3003 / 3105 are general-grade. 1100 is the cheapest and softest, never appropriate for façade.

SKIN THICKNESS The thickness of each aluminium face sheet on an ACP. 0.5mm is the high-rise façade standard. Thinner skins reduce wind-load resistance and panel size limits.

FR CORE Fire-retardant core. Mineral-filled polymer, where the mineral content carries the fire performance. Performance is a function of mineral percentage — not of the "FR" label itself.

A2 NON-COMBUSTIBLE The highest ACP fire classification, with mineral content typically > 90 percent. Required where local code or owner's brief mandates non-combustible cladding.

PVDF Polyvinylidene fluoride. The premium ACP paint resin. Specify 70/30 PVDF resin content — the percentage of fluoropolymer in the binder — to achieve AAMA 2605.

AAMA 2605 The highest performance standard for organic coatings on architectural aluminium. Achievable only with a 3-coat system using 70/30 PVDF.

NFPA 285 / BS 476 / EN 13501-1 The principal exterior wall fire-test standards used in the global market. Different jurisdictions accept different combinations — a project specification should name the applicable codes explicitly.

IN SUMMARY · THE ARGUMENT OF THIS ISSUE

Specify the panel that lasts. Verify the credentials before you sign.

An aluminium composite panel is six specifications, not one. The cheapest panel almost always cuts corners on at least one of them — often the one that decides whether a building passes its fire test in year ten.

PROJECT IN FOCUS

Nustar Canopy

*The Grand Entrance Casino Canopy at NūSTAR Cebu —
the largest built aluminum canopy in the Philippines.*



Nustar Canopy — Aluminum cladding: Alucobond® Plus Spectra Color.

FOR THE DESIGN & DEVELOPMENT COMMUNITY

Thank you.

For reading. For sharing. And for the panel specifications you are writing today that will outlast the buildings around them.



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