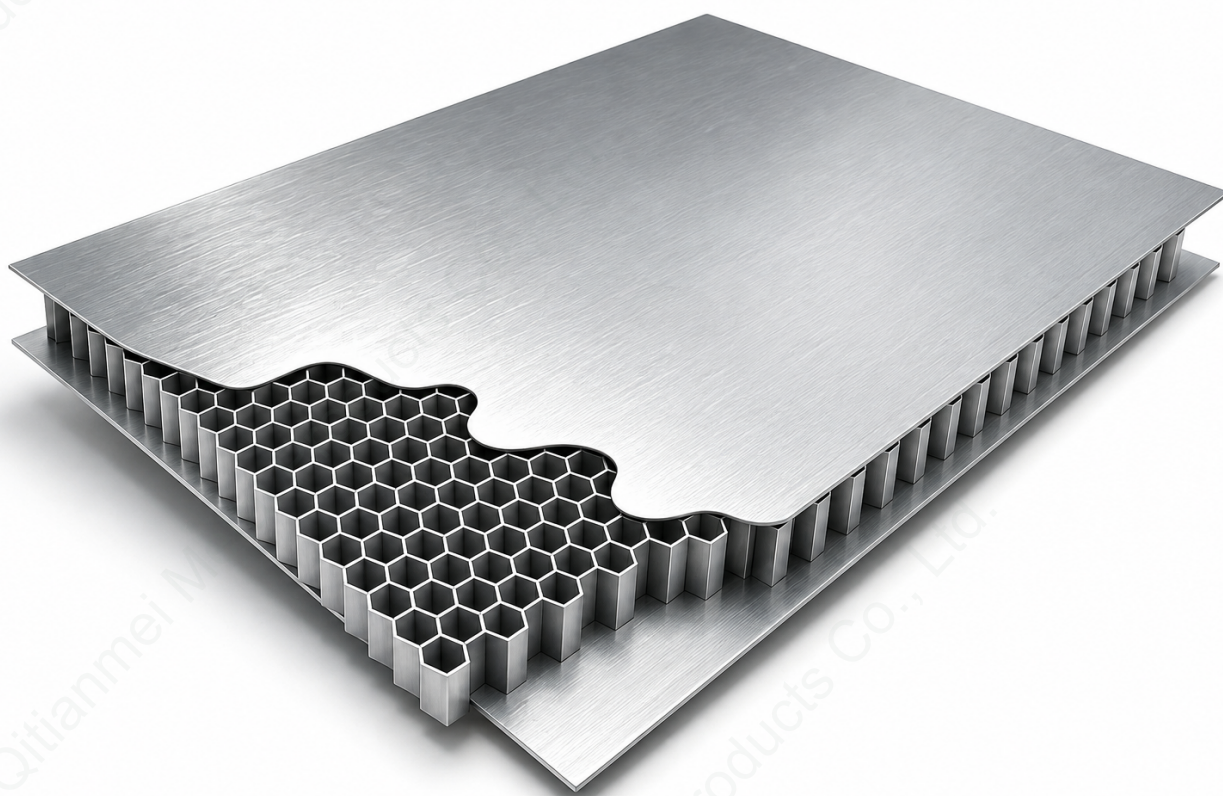


ALUMINUM HONEYCOMB PANELS

Structure / Physical Properties / Fabrication / Installation

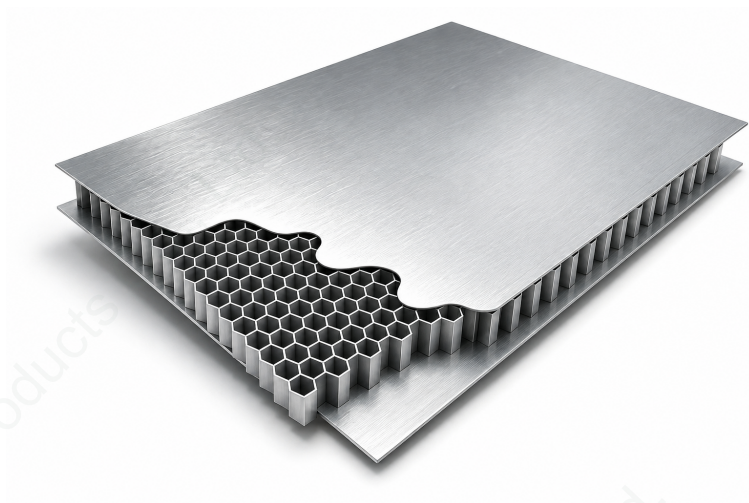


Designed around your application

QTM PANEL SOLUTIONS

Lightweight panels. Practical options.

Aluminum honeycomb panels for interior contractors, furniture makers and project buyers.



Approx. 5–65 mm

Overall Panel Thickness

0.1–2.0 mm

Face / Back Skin Thickness

Product illustration.

A panel built around your design

Select panel size, overall thickness, Face Skin Thickness, Back Skin Thickness and surface finish for the intended application. The honeycomb core separates the skins for efficient bending stiffness while using less aluminum than a solid plate of the same overall thickness. Face Skin Thickness and Back Skin Thickness should be specified separately and may be different.

Flat panels and interlocking wall panels

The QTM range includes flat honeycomb panels and interlocking interior wall panels. Share the application and drawing so the panel format, edge detail and required fabrication can be matched to the order.

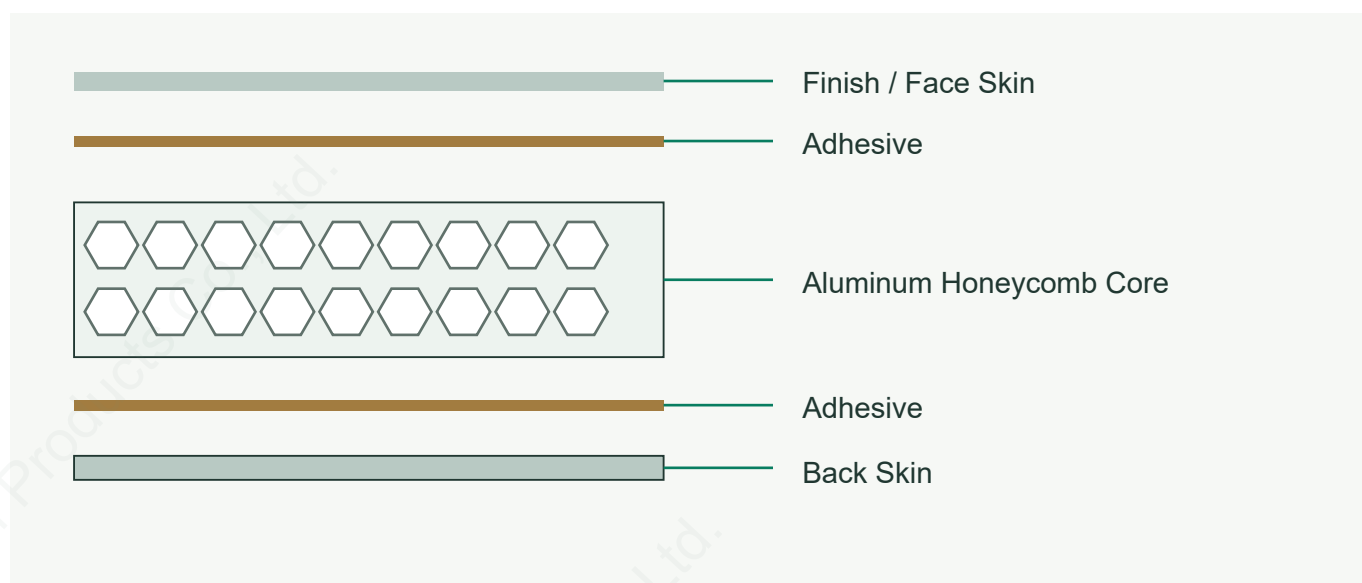
Explore this guide

Material, weight and loads: pages 3–11. Heat, fire and acoustics: pages 12–16. Applications and fabrication: pages 17–24. Installation and care: pages 25–29. Performance verification, industry references and contact: pages 30–32.

MATERIAL ANATOMY

Aluminum skins. Honeycomb core.

A lightweight sandwich construction with a clear role for every layer.



Concept illustration. Geometry and layer thicknesses are not to scale.

How the layers work together

The Face Skin and Back Skin carry bending forces; the honeycomb core supports them and transfers shear. Adhesive bonds connect the layers so the panel acts as a sandwich. Core direction affects shear response and belongs in the material specification.

Define the honeycomb core specification

Specify the honeycomb cell designation, foil thickness, core orientation and other required core details. Qitianmei currently uses cell designations including **3×3 / 4×4 / 5×5 / 6×6 mm**, with **2×2 mm** also available for discussion in ceiling applications. The exact geometry and measurement method of each cell designation should be confirmed when required for engineering drawings.

What all-aluminum means

The Face Skin, Back Skin and Honeycomb Core are aluminum. Adhesive and any decorative coating, paint or film remain part of the finished panel.

QTM SELECTION RANGE

Choose your panel specification

Use these QTM ranges to start the selection, then confirm the finished configuration.

Specification	QTM selection range
Overall Panel Thickness	Approx. 5–65 mm
Face Skin Thickness	0.1–2.0 mm
Back Skin Thickness	0.1–2.0 mm
Honeycomb Foil Thickness	Approx. 0.03 mm
Honeycomb Cell Designation	3×3 / 4×4 / 5×5 / 6×6 mm; 2×2 mm may also be discussed for ceiling applications. Geometry and measurement method to be confirmed where required for engineering drawings.
Standard Sheet Size	1220 × 2440 mm
Maximum Width / Length	Approx. 1550 mm / 5000 mm
Surface Options	PVDF, powder coating, water-based paint, PVC/PET decorative film, wood grain, stone look, fabric/woven texture, brushed, matte, soft-touch and wood-grain transfer; availability depends on the selected finish system.
Materials and Bonding	Skin/core alloy, temper where applicable, and adhesive confirmed for the selected build-up.
Tolerances	Thickness, size, flatness, squareness and hole tolerances agreed against the drawing.

Face Skin and Back Skin may use different thicknesses. Final sizes, combinations, tolerances and supply scope are confirmed in the quotation and approved drawings.

PHYSICAL PROPERTIES / DENSITY

Density, mass and the correct units

A lightweight sandwich has several density terms. Use the one that matches the decision.

THEORETICAL CALCULATION

Quantity	Meaning and unit
Solid aluminum	About 2700 kg/m ³ for a preliminary estimate. This is the density of the metal itself.
Honeycomb core density	Core mass / expanded core volume, in kg/m ³ . Includes the hollow cells within that volume.
Panel mass per area	Finished panel mass / panel area, in kg/m ² . Useful for comparing weight and calculating dead load.
Apparent panel density	Panel mass per area / overall thickness in meters, in kg/m ³ .

Worked conversion

For the example on page 6: **4.24 kg/m² / 0.020 m = 212 kg/m³** This describes the complete hollow panel, not the density of its aluminum.

Why thickness alone is insufficient

Increasing skin thickness adds metal directly. Changing the core changes mass and mechanical behavior. Compare core specification, Face Skin, Back Skin, finish and hardware together.

Third-party material reference: Royal Society of Chemistry aluminum density data. The worked panel example is a theoretical calculation, not Qitianmei measured performance.

PHYSICAL PROPERTIES / WEIGHT

Calculate weight before shipment

Worked example: nominal 20 mm panel with two 0.5 mm skins. All inputs are shown.

THEORETICAL CALCULATION

Component / quantity	Calculation
Face Skin + Back Skin	$2700 \times (0.0005 + 0.0005) = 2.70 \text{ kg/m}^2$
Assumed 19 mm core thickness	$60 \text{ kg/m}^3 \times 0.019 \text{ m} = 1.14 \text{ kg/m}^2$
Assumed adhesive + finish	0.40 kg/m²
Calculated panel mass per area	$2.70 + 1.14 + 0.40 = 4.24 \text{ kg/m}^2$
1220 × 2440 mm panel	$1.220 \times 2.440 = 2.9768 \text{ m}^2$; $\times 4.24 = 12.62 \text{ kg}$
100 panels of this size	Approximately 1262 kg , before hardware and packaging

The general calculation

Mass per area = skin density × combined skin thickness + core density × core thickness + adhesive, finish and other components. Use meters for thickness.

Turn the estimate into a shipping weight

Add the actual edge profiles, inserts, hardware and packaging. Verify finished mass on a representative panel before final freight and lifting arrangements.

Theoretical calculation only — not Qitianmei measured data. For this example, a **19 mm core thickness** is used as a calculation assumption. It does not define the actual honeycomb core height of a 20 mm Qitianmei panel. Actual core height must be confirmed from the selected panel build-up. Core density and added mass are also assumed, and bond-line thickness is omitted from the nominal geometry.

WEIGHT / SELECTION REFERENCE

How thickness changes panel mass

Calculated mass per area in kg/m². Each column uses equal Face Skin and Back Skin thicknesses.

THEORETICAL CALCULATION

Overall Panel	Face 0.3 / Back 0.3 mm	Face 0.5 / Back 0.5 mm	Face 1.0 / Back 1.0 mm
10 mm	2.58	3.64	6.28
15 mm	2.88	3.94	6.58
20 mm	3.18	4.24	6.88
25 mm	3.48	4.54	7.18
30 mm	3.78	4.84	7.48
50 mm	4.98	6.04	8.68
65 mm	5.88	6.94	9.58

Calculation basis

Aluminum density: **2700 kg/m³**

Assumed core density: **60 kg/m³**

Adhesive and finish allowance: **0.40 kg/m²**

Calculation assumption: for this theoretical comparison only, core thickness is taken as the Overall Panel Thickness minus the Face Skin Thickness and Back Skin Thickness. This is a simplified geometry assumption and must not be used as the actual honeycomb core height for an order.

Use weight together with stiffness

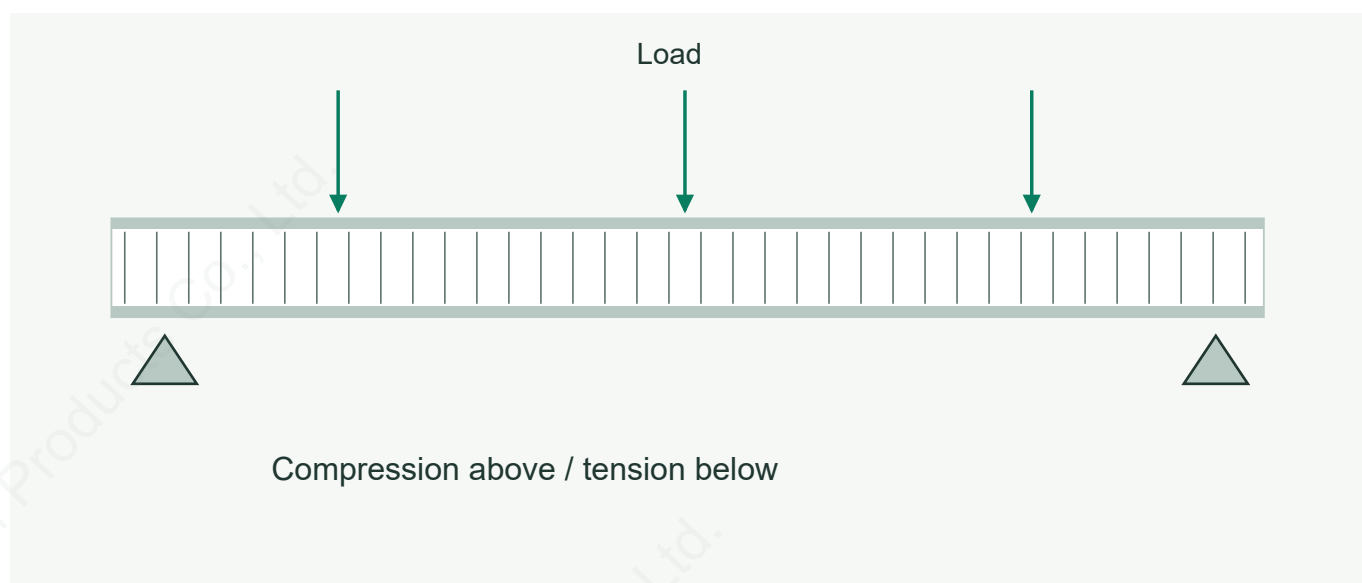
These estimates show the influence of skin and assumed core thickness. The lighter column is not automatically suitable for the same span or fixing load. QTM Face Skin and Back Skin selection extends to **2.0 mm per skin**; confirm the actual build-up.

Theoretical comparison only. These combinations are calculation inputs, not a stock list or a set of verified Qitianmei performance grades.

PHYSICAL PROPERTIES / STIFFNESS

Stiffness with less material

The honeycomb core separates and supports the skins for efficient bending performance.



Concept illustration. Geometry and layer thicknesses are not to scale.

What this means for your project

The hollow structure reduces mass compared with a solid aluminum plate of the same overall thickness. This can simplify handling and reduce component dead weight.

Match stiffness to the application

Overall Panel Thickness, Face Skin Thickness, Back Skin Thickness, core properties and supports determine the response. Review these together for a large wall panel, a door leaf or a furniture component.

Design the load path

Carry forces through reinforced edges or inserts into the support system. Check panel deflection, local indentation, core and bond behavior, and connection resistance for the intended duty.

PHYSICAL PROPERTIES / LOAD CAPACITY

Select for the load and span

A useful load specification includes the panel, its supports and how the force is applied.

Selection factor	Why it matters
Panel construction	Size, overall thickness, Face Skin, Back Skin, core direction and properties, adhesive, reinforcement and cut-outs.
Load and unit	Uniform pressure in kPa or kN/m ² ; concentrated force in N or kN; self-weight from kg/m ² and gravity.
Supports and span	Clear span, two-edge or four-edge support, cantilever or restrained edges, rail bearing and fixing positions.
Acceptance criteria	Deflection at service load, permanent deformation, ultimate resistance and applicable design factors.
Service conditions	Load duration and repetition, impact, operating temperature, moisture and project-specific exterior exposure.

Panel resistance and fixing resistance

Check the panel and the complete load path: skin stresses, core shear/crushing, bond, edge zones, fasteners and anchors. Local loads need their own bearing and reinforcement check.

From requirement to selection

Send the span and load case with the drawing. Pages 10–11 illustrate force and deflection calculations; page 30 lists useful verification methods for the selected configuration.

Exterior exposure is a project-specific condition and does not indicate that a standard interior Qitianmei panel is automatically suitable for long-term outdoor use.

LOADS / WORKED EXAMPLE

Pressure, force and support reaction

A uniform pressure acts over an area. The support arrangement determines how that force is carried.

THEORETICAL CALCULATION

Step	Value and condition
Panel dimensions	1.220 × 2.440 m; area = 2.9768 m²
Assumed uniform pressure	1.00 kPa = 1.00 kN/m² = 1000 N/m²
Total applied force	1.00 × 2.9768 = 2.977 kN
Two simple supports	For symmetric loading on two opposite supports: reaction at each support = 1.488 kN
Example panel self-weight	4.24 kg/m ² × 9.81 / 1000 = 0.0416 kN/m²
Self-weight of the whole panel	12.62 kg × 9.81 / 1000 = approximately 0.124 kN

Apply loads in the correct direction

For a horizontal panel, self-weight acts normal to the face. For a vertical wall panel, it acts mainly in the panel plane; wind or pressure acts normal to the face. Use the applicable load combinations.

Force is the input to the design

The **2.977 kN** figure is applied force, not an allowable panel capacity. Do not divide it equally among screws without checking the actual support stiffness, fixing arrangement and load distribution.

Design example / theoretical calculation. The 1.00 kPa pressure is an assumed input, not a Qitianmei allowable load or project design pressure. Self-weight uses the assumed configuration on page 6.

LOADS / CALCULATION MODEL

Span has a major effect on deflection

Illustrative elastic beam calculation under uniform load; includes bending and core shear.

THEORETICAL CALCULATION

Span L (m)	Bending (mm)	Shear (mm)	Total (mm)
0.50	0.12	0.08	0.20
0.75	0.62	0.18	0.80
1.00	1.96	0.32	2.28
1.25	4.78	0.50	5.28
1.50	9.91	0.72	10.63

Model and inputs

All dimensions and material properties below are calculation inputs for this example. Strip width **b = 100 mm**; Overall Panel Thickness **20 mm**; each skin **t = 0.5 mm**; skin center spacing **h = 19.5 mm**. Assume **E = 70 GPa** and core shear modulus **G = 20 MPa** in the span direction. Uniform pressure **q = 1 kPa**; two simple supports; fully bonded elastic layers.

Calculation and interpretation

Line load:

$w = q \times b = 100 \text{ N/m}$

Bending stiffness:

$D = E b t h^2 / 2 = 665.44 \text{ N}\cdot\text{m}^2$

Shear stiffness:

$S = b h G = 39,000 \text{ N}$

Midspan deflection:

$5wL^4 / (384D) + wL^2 / (8S)$

At **L = 1.00 m**:

Skin stress $\approx 12.82 \text{ MPa}$

Core shear stress $\approx 0.0256 \text{ MPa}$

Use SI units in the formulae.

Use with verified material properties

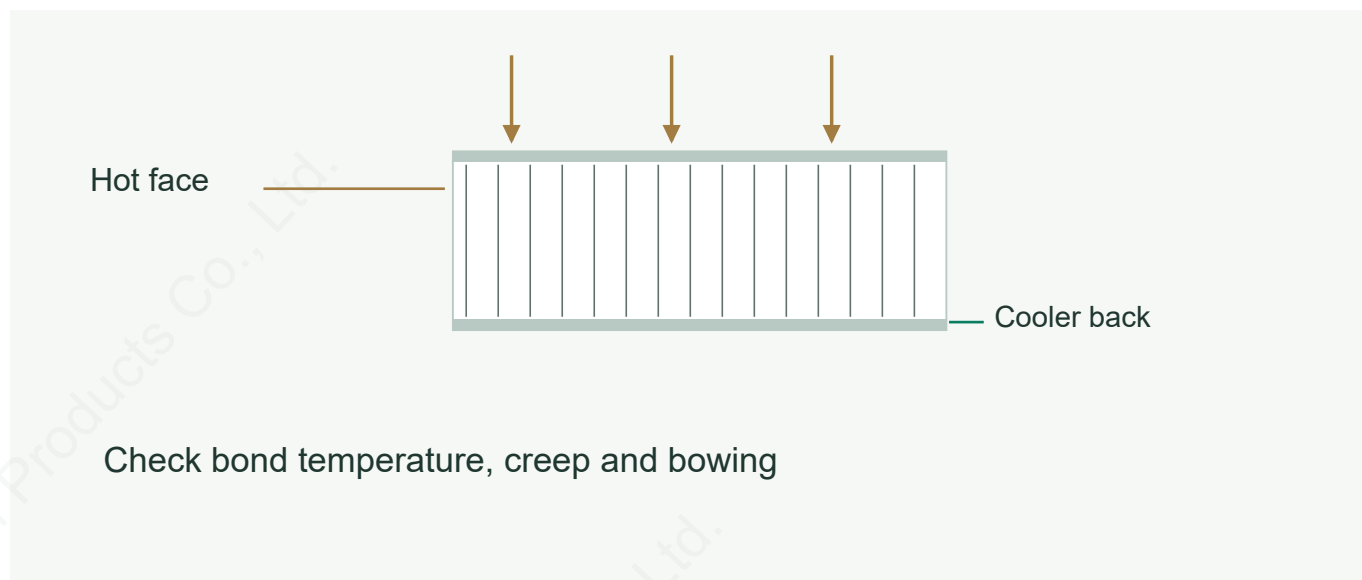
This model illustrates span sensitivity. Actual core modulus, skin strength, bonds, local failure modes and connections must be checked before setting an allowable load. A four-edge-supported plate needs a plate model.

Calculation adapted from Hexcel sandwich beam principles. Assumed moduli are model inputs, not Qitianmei test data.

THERMAL PERFORMANCE

Heat exposure and panel selection

Choose the panel, finish and connections for the actual service environment.



Concept illustration. Geometry and layer thicknesses are not to scale.

Heat tolerance comes from the complete panel

The aluminum skins provide the surface and stiffness; the adhesive, finish and joints must retain their function at the intended temperature. Heat can soften the bond, increase creep and cause bowing when the two faces have different temperatures.

Material temperature is not panel temperature capability

Pure aluminum melts at approximately **660.3°C**. A bonded panel can lose stiffness, bond strength or finish quality far below this temperature. The melting point therefore does not establish a usable service range.

Define continuous and short-term exposure

Specify normal temperature, peak temperature, duration, cycles and load. For sun-exposed panels, assess surface and bond-line temperatures, including dark finishes. Pages 13–14 cover movement and selection near heat sources.

Third-party material reference: Royal Society of Chemistry aluminum data. The aluminum melting point is material information only and is not a Qitianmei panel service-temperature rating. Bonded-panel temperature capability requires configuration-specific evaluation.

TEMPERATURE / MOVEMENT

Allow for thermal expansion

Movement allowances protect the finish, joints and fixing zones as temperature changes.

THEORETICAL CALCULATION

Parameter	Calculation / meaning
Illustrative coefficient	$\alpha = 23 \times 10^{-6} \text{ /K}$ for a preliminary aluminum estimate
Length change	Change in length = $\alpha \times \text{panel length} \times \text{temperature change}$
Example conditions	2.440 m panel; temperature rise of 60°C; free, uniform expansion
Calculated length change	$23 \times 10^{-6} \times 2.440 \times 60 = 0.003367 \text{ m} = \mathbf{3.37 \text{ mm}}$
Reference length change	At the same temperature rise, a 5.000 m panel expands by 6.90 mm

Turn movement into a connection detail

Locate fixed and sliding points intentionally. Size clearance holes, slots, joint gaps and sealant geometry for movement from the installed temperature, plus fabrication and installation tolerances.

Consider both sides of the joint

Expansion of adjacent panels, frame movement and the restraint arrangement affect the required gap. The calculated **3.37 mm** is a panel length change, not an automatic joint-width specification.

Theoretical calculation using an illustrative coefficient. The coefficient $\alpha = 23 \times 10^{-6} \text{ /K}$ is based on published other-manufacturer reference data from ALUMETAL and is not Qitianmei measured data. Confirm the actual aluminum alloy, temperature range and project conditions before using the result for engineering design.

TEMPERATURE / SERVICE SELECTION

Choose for the actual heat exposure

State temperature and time together so the panel can be matched to its working conditions.

Exposure / function	Selection approach
Interior near equipment	Identify radiant heat, distance, ventilation, hot contact surfaces and normal operating load.
Project-specific sun-exposed / exterior application	Consider finish color, solar heating, temperature cycles, Face/Back temperature gradient, joint movement, adhesive, edge protection and exposure conditions.
Continuous elevated temperature	Assess hot bond strength and long-term creep with the selected skins, core, adhesive and finish.
Short temperature peaks	State the peak, duration and number of cycles; assess response while hot and after cooling.
Ovens, flues or direct flame	Use a dedicated, qualified heat-protection system. Ordinary decorative bonded panels are not selected from aluminum melting temperature.
Thermal insulation	Metal cell walls conduct heat across the core. Use the complete assembly R-value or U-value when specifying insulation.

How a service range is established

Evaluate representative bonded panels under the actual temperature and load. Inspect residual strength, delamination, blistering, permanent bow and finish changes after exposure. Publish the range with its duration and configuration.

Useful industry context

Published product temperature ranges and acoustic figures are included on page 31. These help frame a technical discussion; the supplied QTM configuration needs its own agreed performance basis.

Published third-party adhesive data illustrate the need for project-related testing under thermal exposure and are not Qitianmei product specifications or measured performance. Qitianmei currently uses a PU adhesive system. Temperature and durability performance must be confirmed from current supplier data and the selected panel configuration.

FIRE BEHAVIOR

Specify the right fire performance

Define the required classification early so the panel and installation can be reviewed together.

STANDARDS REFERENCE

Project consideration	Selection guidance
Reaction to fire	EN 13501-1 classifies contribution to fire development for the applicable product and end-use configuration.
Example: A2-s1,d0	A2 = reaction-to-fire class; s1 = smoke production class; d0 = flaming droplets/particles class. This is a notation example, not a Qitianmei rating.
Fire resistance	A separate assembly assessment, normally including time and required functions. It is not established by an A2 reaction-to-fire result.
Configuration to identify	Thickness, skins, core, adhesive, finish, mounting, joints, cavity, insulation and the report field of application.

Agree the requirement before final selection

Provide the project location and required classification. Match supporting reports to the exact supplied panel and installation; a decorative film or bond change may alter the classification scope.

Heat service and fire remain separate

A normal operating-temperature range does not establish fire performance. Likewise, a reaction-to-fire classification does not establish long-term load capacity at an elevated service temperature.

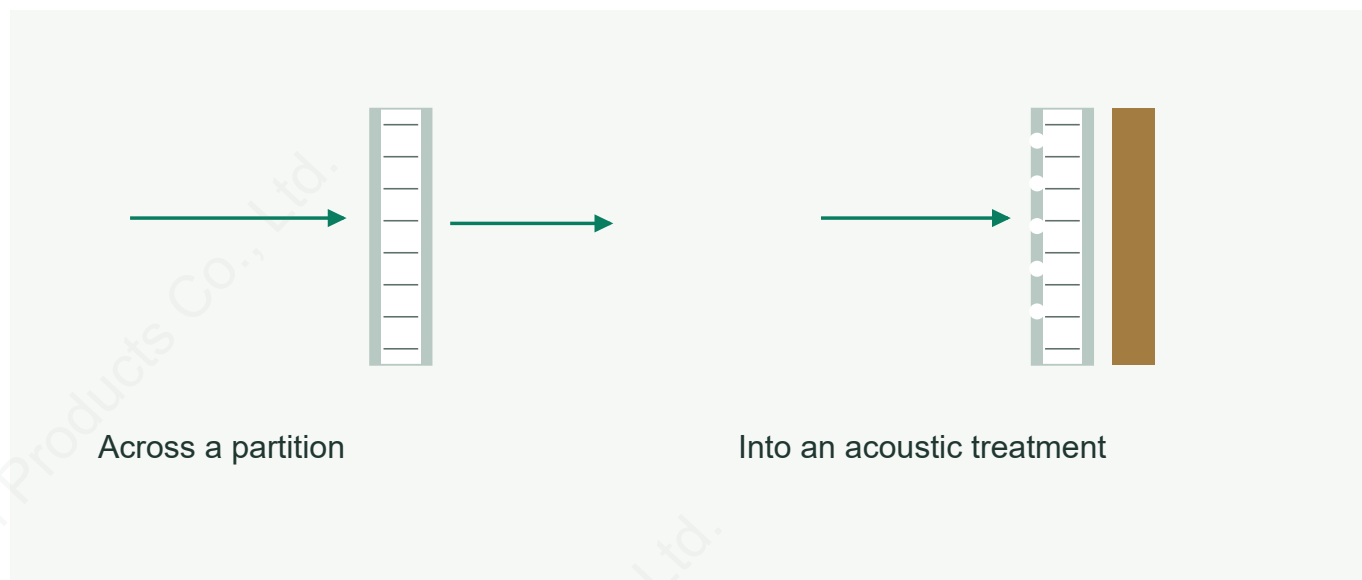
Standards explanation only. A2-s1,d0 is an example of classification notation and is not a declared Qitianmei product rating. Any Qitianmei fire-performance claim requires valid evidence for the corresponding product configuration.

ACOUSTIC BEHAVIOR

Choose the acoustic objective

Sound insulation between rooms and sound absorption within a room need different solutions.

STANDARDS REFERENCE



Concept illustration. Geometry and layer thicknesses are not to scale.

Sound insulation: specify R_w in dB

The weighted sound reduction index R_w summarizes airborne sound insulation; higher values generally indicate better insulation under the rating method. ISO 10140-2 measures laboratory insulation, with rating under ISO 717-1. Seals, joints and flanking paths affect installed results.

Sound absorption: specify the treatment

A plain, closed metal face is generally reflective. Perforations, acoustic backing and a cavity can create an absorptive treatment. Absorption coefficients are dimensionless; ISO 354 is a reverberation-room measurement method. Absorption and insulation are different properties.

Choose an assembly for the target

Specify the target metric and frequency range, then match the full build-up: panel, backing, cavity, perimeter and penetrations. Added acoustic materials also affect weight and fire performance. Published comparison data appear on page 31.

Standards and acoustic-design explanation only. No Qitianmei sound-insulation or sound-absorption performance is declared on this page.

APPLICATIONS

Where honeycomb panels fit

Practical starting points for interior and furniture projects.



Wall lining



Ceilings



Furniture / Cabinet Panels



Door panels

Illustrative interior applications.

Walls and ceilings

Use broad decorative surfaces with a coordinated rail, joint and retention design. Plan access panels and support services independently.

Doors and furniture

Plan a lightweight door or furniture component together with reinforced edges, hinges, handles and supports. Match panel size, span and repeated-use requirements to the hardware.

Project-specific applications

This guide focuses primarily on interior wall, ceiling, furniture, cabinet and door applications. Exterior cladding or transport-related applications require separate technical and supply-scope review and should not be interpreted as standard Qitianmei applications or evidence of completed Qitianmei projects.

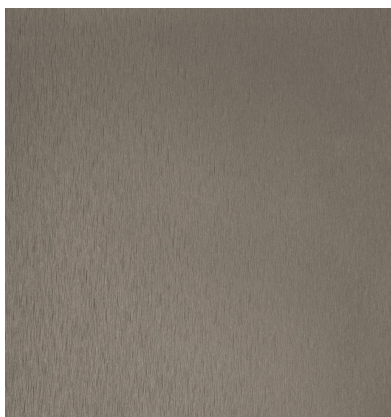
SURFACE SELECTION

Match finish to environment

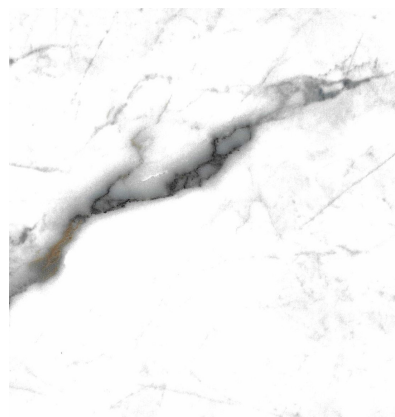
Appearance, exposure and cleaning requirements belong in the same specification.



Woodgrain



Metallic



Stone look

Concept illustration. Geometry and layer thicknesses are not to scale.

Coatings

Confirm PVDF, powder coating or water-based paint. Agree pretreatment, coating specification, color, gloss and intended environment.

Decorative films

Select PET or PVC film for the required appearance and environment. Woodgrain, metallic and stone-look finishes are decorative effects. Confirm the selected film, adhesive and panel build-up for the intended heat and moisture conditions. Any exterior application must be reviewed project by project and is not implied by the availability of a particular finish.

Face and Back finishes

Face and Back may use matching or different finishes where confirmed for the project.

Approve the appearance

Review a physical sample for color, gloss and texture. For directional finishes, agree the grain direction across adjacent panels. Inspect folds, edges and openings on a trial finished part.

PRODUCTION AND QUALITY PLANNING

Six steps from materials to panels

The sequence below explains the main stages of bonded aluminum honeycomb panel production.

Actual Qitianmei production steps, process parameters and inspection points depend on the selected panel build-up and current factory process requirements.



Panel pressing / production overview.

01 / Prepare the core

Prepare the selected core geometry, thickness and orientation.

02 / Prepare the skins

Size and prepare the aluminum Face Skin and Back Skin for the bonding system.

03 / Apply the adhesive

Control preparation, mix and application to the specified process.

04 / Assemble the layers

Align Face Skin, Honeycomb Core and Back Skin in sequence.

05 / Press and cure

Control pressure, temperature and time for the chosen adhesive system.

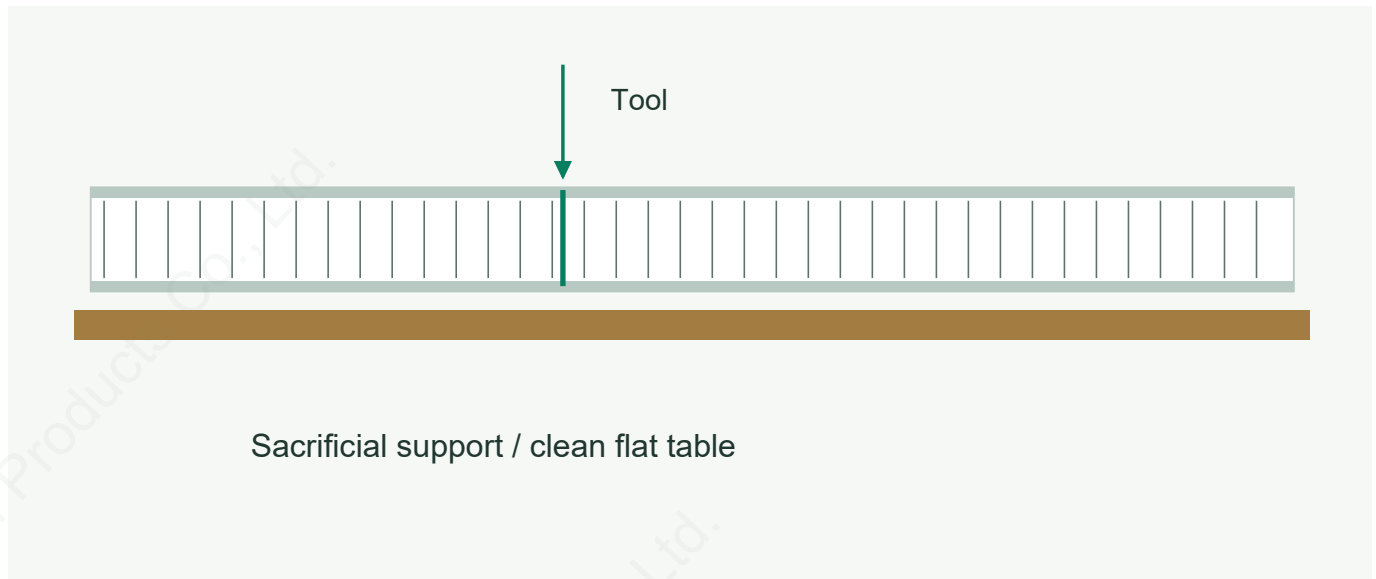
06 / Trim and inspect

Check dimensions, finish and edge details; identify and protect the panels.

FABRICATION / CUTTING

Cut, drill and machine

Start with a trial part and a clean, stable support surface.



Concept illustration. Geometry and layer thicknesses are not to scale.

Cutting and CNC profiles

Straight cuts, shaped profiles and service openings can be planned from the part drawing. Use suitable aluminum tooling, a non-marking hold-down and support on both sides of each cut.

Drilling and openings

Back up the exit face for a clean hole. Locate fixing holes in the designed reinforcement zones and detail service openings separately. Support any countersunk connection so it does not weaken or crush a thin skin.

First-part inspection

Check dimensions, burrs, edge squareness, skin lift, core damage and scratches. Deburr carefully and close exposed core where required. Establish feeds and speeds for the actual machine and build-up.

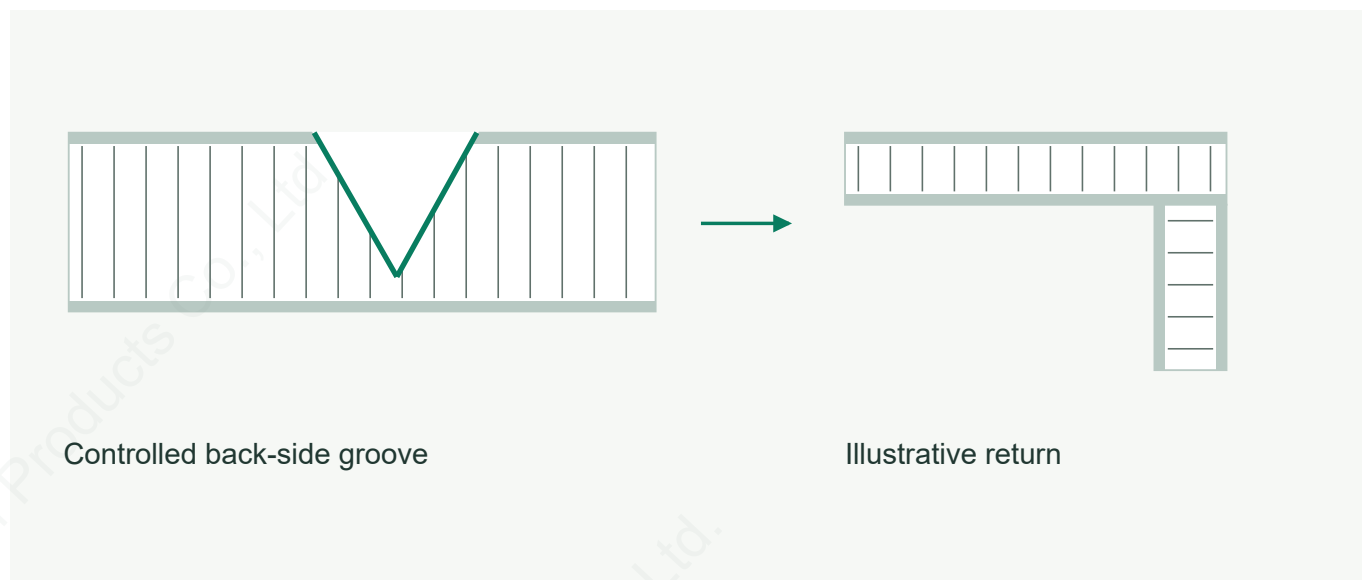
TECHNICAL REFERENCE / SUPPLY SCOPE NOTE

Standard full-panel supply does not automatically include CNC machining, drilling or service openings. Special fabrication requirements must be confirmed project by project.

FABRICATION / FORMING

Folded returns and curved parts

Plan corners, returns and curved components around the selected panel build-up.



Concept illustration. Geometry and layer thicknesses are not to scale.

Routed returns

A controlled groove on the back removes part of the core while leaving a specified thickness of the Face Skin. For a fabrication trial, establish the remaining thickness and fold radius on a trial part, then close and reinforce the return. The folded area needs its own structural review.

Curves and folded components

Agree the forming sequence for curved panels, corner returns and column wraps. Check skin strain, core damage and bond behavior on a trial part. Groove depth and bend radius depend on the selected build-up.

Finished-part inspection

Inspect for cracking, wrinkling and bond separation. Check the finished shape against the approved drawing or template, and confirm that the edge closure and hardware fit correctly.

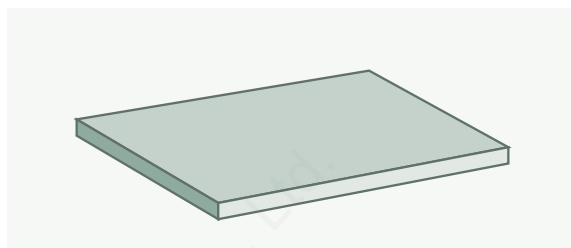
TECHNICAL REFERENCE / SUPPLY SCOPE NOTE

Routed returns, folded returns, curved panels and column wraps are fabrication concepts. Feasibility and supply scope must be confirmed for the specific project.

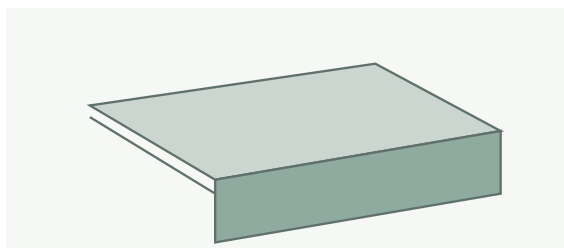
FABRICATION / DESIGN POSSIBILITIES

From flat panel to finished component

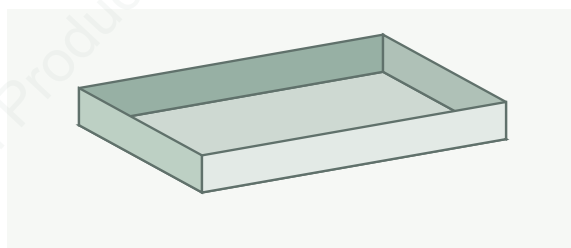
Select the geometry, then resolve the skins, core, edges and fixing zones together.

**01 / Flat cut panel**

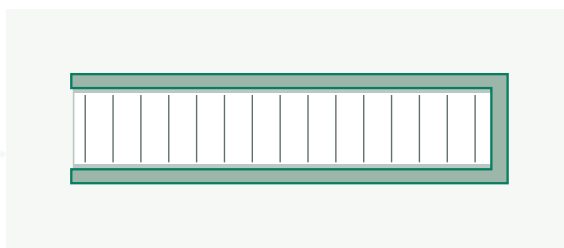
Wall lining or a furniture blank

**02 / Folded return**

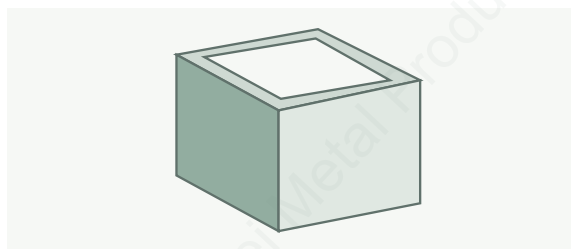
A closed corner or panel reveal

**03 / Tray / cassette**

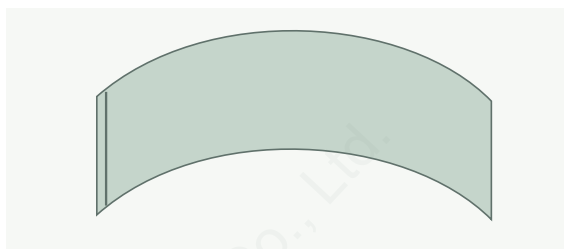
Returns around a panel perimeter

**04 / Edge profile**

A clean, protected perimeter

**05 / Column wrap**

A formed component around a column

**06 / Curved panel**

A radiused face for interior features

Develop the part from a drawing

These illustrations show common industry fabrication concepts rather than a fixed Qitianmei standard supply range. Confirm panel build-up, bend radius, corner closure and hardware fit with a trial part before batch production.

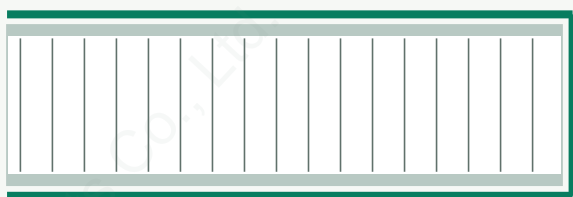
TECHNICAL REFERENCE / SUPPLY SCOPE NOTE

Cut-to-size work, routed returns, trays/cassettes, edge profiles, column wraps and curved components must be confirmed individually for production feasibility and supply scope.

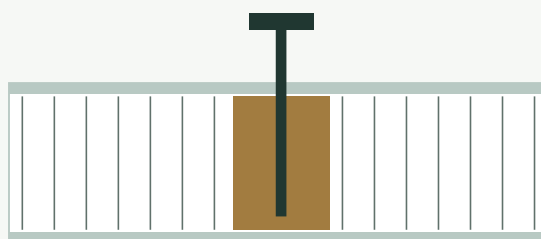
FABRICATION / EDGES

Edge protection and fixing strength

Choose the finished edge for appearance, protection and the required fixing method.



Edge cap / closure



Designed insert zone

Concept illustration. Geometry and layer thicknesses are not to scale.

Three useful edge approaches

Choose a folded skin return, a bonded edge profile or a reinforced solid edge zone. Specify the finished appearance, corner closure and fixing role. Decorative edge capping alone is not a structural connection.

Load introduction

Use a designed bonded/potted insert or reinforced edge for concentrated loads. A through-bolt needs a designed spacer or solid zone to avoid crushing the core during tightening.

Connection checks

Verify pull-out, pull-through, bearing and the bond around reinforcement. Do not rely on a screw in exposed honeycomb cells for a load-bearing fixing.

TECHNICAL REFERENCE / SUPPLY SCOPE NOTE

Furniture edging, reinforcement, inserts and hardware preparation are project-specific and are not automatically included in standard full-panel supply.

FABRICATION / JOINING

Choose the connection

Select for force transfer, service access, appearance and exposure.

Connection type	Application and detail
Mechanical fixing	For retained or removable panels; use reinforced fixing zones and allow the specified movement.
Bonded joint	For distributed contact and concealed joining; select the adhesive, preparation and cure for the substrates.
Interlocking profile	For aligned panel joints; define engagement, perimeter restraint and the installation sequence.
Combined connection	Where mechanical and bonded details work together; assign the load and movement role of each part.

Bonded joints

Select an adhesive system for the actual substrates, finish and exposure. Agree surface preparation, bond thickness and cure, and validate representative joints for the intended loads.

Mechanical joints

Provide reinforcement appropriate to the fastener and load. Keep intended sliding points free to move and isolate incompatible metal contacts where required by exposure.

Heat and welding

Do not weld or heat the bonded panel unless a qualified procedure protects the adhesive, core and finish.

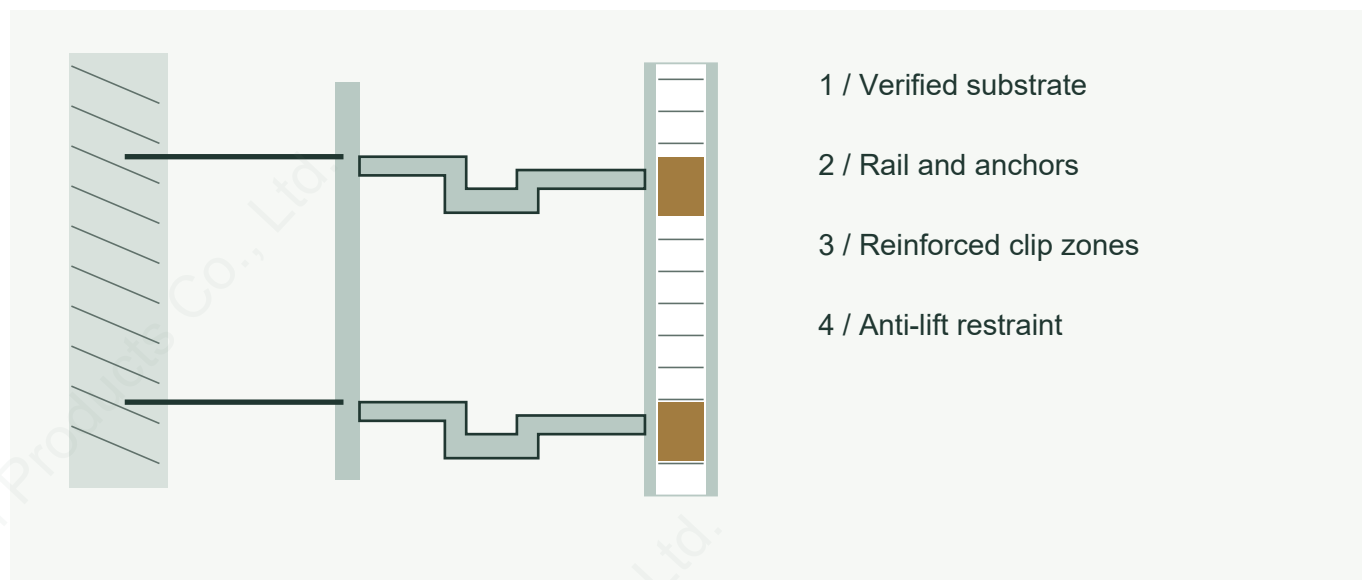
TECHNICAL REFERENCE / SUPPLY SCOPE NOTE

Prepared connection details, reinforcement, inserts and profiles are project-specific and must be confirmed separately.

INSTALLATION / INTERIOR WALLS

Concealed mechanical fixing

Load path: panel reinforcement → clip → rail → anchor → supporting wall.



Concept section / not to scale.

Set out and install

Survey the substrate and joint grid. Verify anchors and rail alignment. Install a first panel, engage clips fully and fit designed anti-lift restraint before proceeding.

Panel interface

Attach clips to designed reinforcement, not unreinforced cells. Interlocking decorative edges align joints but do not replace the support and retention system.

Movement and access

Provide the specified movement allowance and removal clearance. Final clip geometry, spacing and loads belong on approved project drawings.

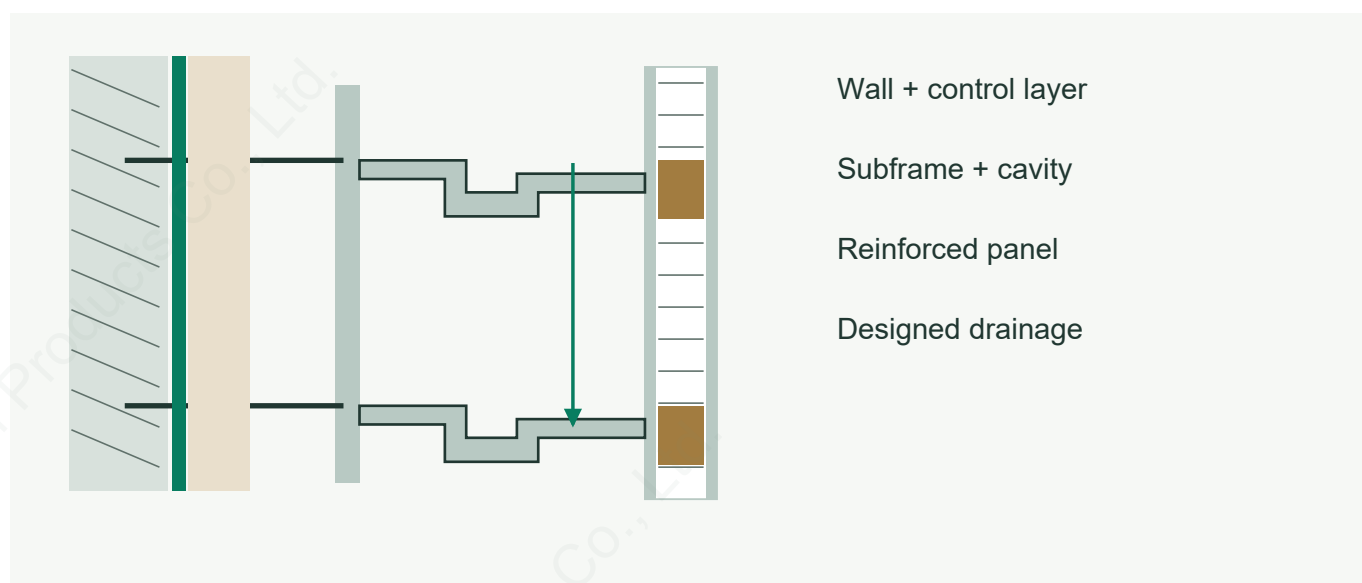
TECHNICAL REFERENCE / SUPPLY SCOPE NOTE

This is an installation concept. Final fixing details and site-installation responsibility must be confirmed for the project.

INSTALLATION / EXTERIOR

Exterior Cladding — Project-Specific Technical Reference

Qitianmei's current primary product positioning is for interior applications. Exterior use is not a default claim for standard interior panels and requires project-specific confirmation of the complete panel and installation system.



Concept section / not to scale.

Load path

The engineer defines pressures, corner zones, spans, brackets and anchors. Assess suction, inward pressure, impact and thermal movement together.

Water and fire interfaces

Resolve head, sill, base, corners and penetrations. Coordinate the air/water layer, insulation, drainage, ventilation and cavity barriers.

Panel selection

Confirm exterior finish, adhesive durability, edge protection and corrosion compatibility. Develop the illustrated concept into project-specific drawings, calculations and weatherproofing details before installation.

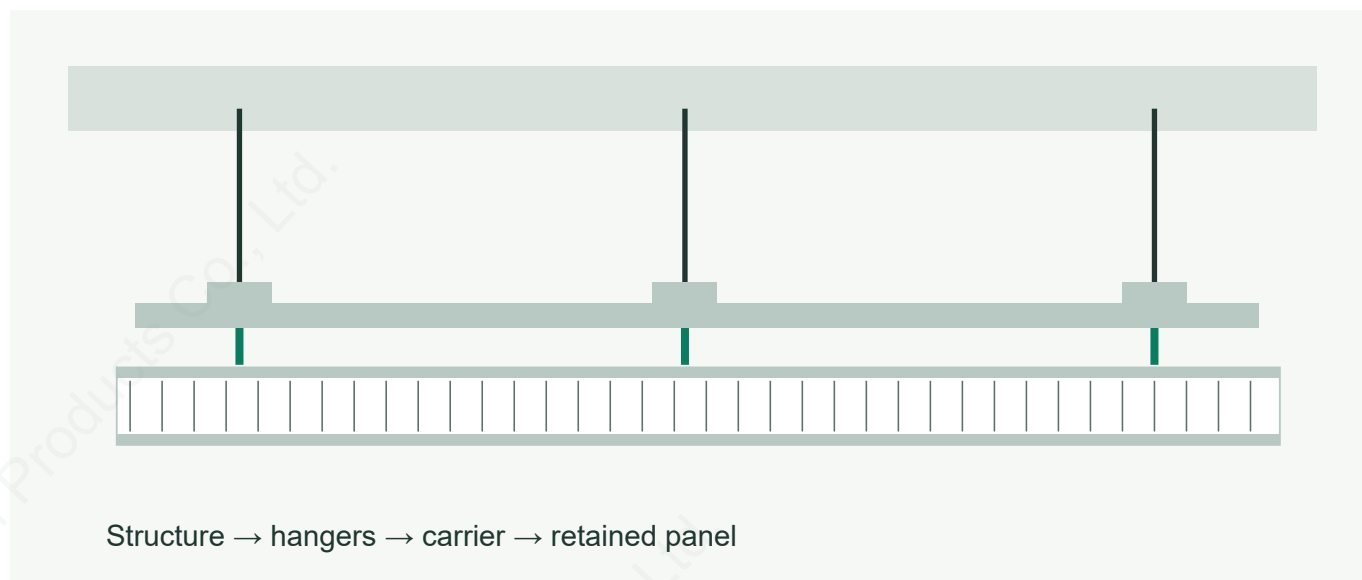
TECHNICAL REFERENCE / SUPPLY SCOPE NOTE

This page is a technical design reference only. It does not declare standard interior Qitianmei panels suitable for long-term outdoor use.

INSTALLATION / CEILINGS

Ceiling support and access

A complete suspension system carries the panel load back to the structure.



Concept illustration. Geometry and layer thicknesses are not to scale.

Support the services independently

Lights, ducts, sprinklers and equipment need independent support unless the complete connection is designed for those loads. Reinforce and close penetrations.

Verify positive retention

Check anchors, hangers, rail level and engagement. Install anti-lift or safety retention as required by the system and project.

Plan maintenance access

Provide access panels and removal clearance. Hanger spacing depends on the complete loads and system design, not only panel weight.

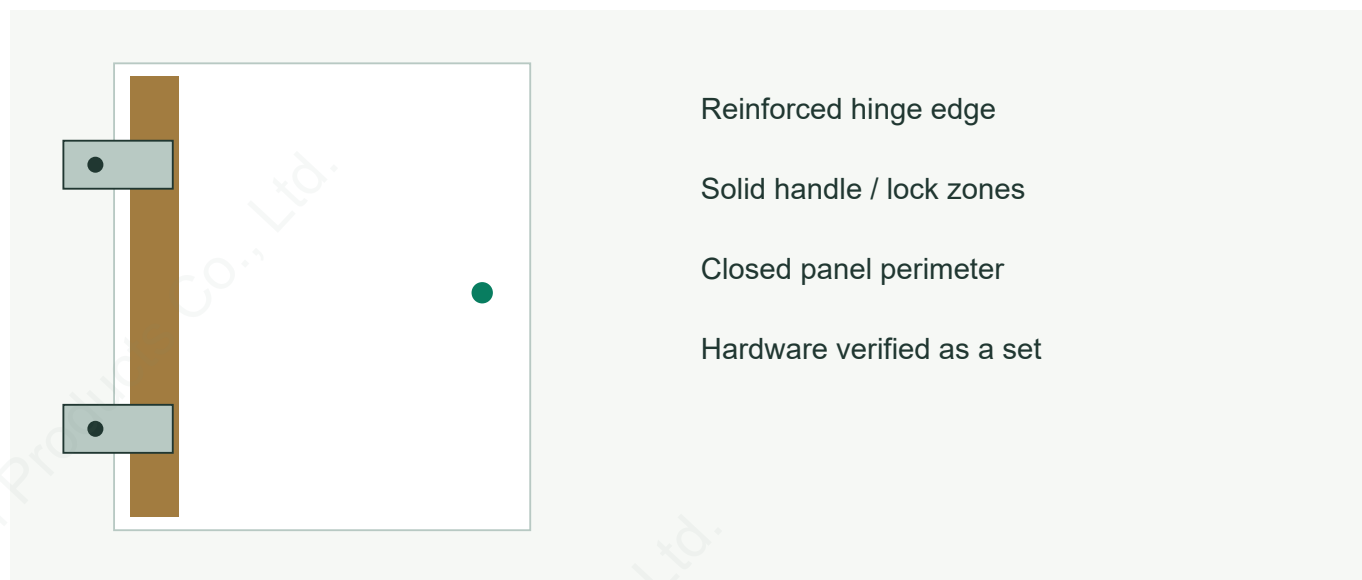
TECHNICAL REFERENCE / SUPPLY SCOPE NOTE

Ceiling-system components, spacing and site-installation scope must be confirmed for the actual project.

INSTALLATION / FURNITURE

Hardware and edge reinforcement

The edge construction and fixing zones determine door and cabinet performance.



Concept illustration. Geometry and layer thicknesses are not to scale.

Hinges, handles and locks

Fix into a designed edge section or insert. Support openings and maintain the required edge clearances. A thin Face Skin alone is not a hinge mounting block.

Validate the assembly

Select hinge positions and quantity for the door size, mass and duty. Check pull-out, sag, operating cycles and slam loading with the actual hardware.

Shelves and work surfaces

Specify the span, support contact and point loads. Add reinforcement where needed; panel thickness alone does not define shelf capacity.

TECHNICAL REFERENCE / SUPPLY SCOPE NOTE

Reinforcement, inserts, drilling, hardware preparation and assembly are project-specific and are not automatically included in standard full-panel supply.

SITE EXECUTION

Delivery, Site Installation Reference and Care

Agree identification, packing and inspection before the panels leave for your project.

Item	Technical guidance
Receive	Check IDs, finish batches, quantity, transit damage and moisture.
Store	Keep dry, flat and protected; prevent trapped condensation and contamination.
Set out	Confirm substrate, joint grid, tolerances and panel orientation.
First panel	Check anchors, reinforcement, engagement, retention and movement allowance.
Progress	Check rails, fasteners, joints, cut-edge protection and clear drainage.
Handover	Record panel locations, drawings, inspection results and replacement method.

Handling

Use enough people or suitable equipment for the size and measured mass. Lift rather than drag panels over one another. Protect edges and verify any vacuum-lifting method for the actual surface and load.

Cleaning and aftercare

Use a soft cloth and a finish-compatible cleaner, tested first in an inconspicuous area. Keep joints and drainage paths clear, and inspect fixings and panel surfaces after impact or water ingress.

TECHNICAL REFERENCE / SUPPLY SCOPE NOTE

Installation steps are project-coordination guidance. Installation responsibility and supply/service scope must be confirmed separately.

SPECIFICATION / PERFORMANCE VERIFICATION

Performance testing for your project

Use a clear performance schedule to connect the panel specification with the project requirement.

STANDARDS REFERENCE

Performance need	Useful evidence
Core shear properties	ASTM C273/C273M: shear strength and modulus; record core direction, density, geometry and conditioning.
Core compression	ASTM C365/C365M: flatwise compression. Include local bearing and support zones in the component design.
Bond / flatwise tension	ASTM C297/C297M: tensile strength of sandwich construction; record failure location and conditioning.
Panel flexure	ASTM C393/C393M: core shear properties by beam flexure. Record specimen, loading, span and failure mode.
Fixings and hardware	Pull-out, pull-through, bearing and repeated-use tests on the actual reinforced connection and hardware.
Heat, fire and acoustics	Match exposure, classification and acoustic methods to the complete supplied configuration and relevant end-use assembly.

A practical approval package

Agree the drawing revision, material build-up, finish sample, tolerances, mass and required performance documents. Confirm supply scope, packing, quantity and delivery requirements in the quotation.

Standards / test-method reference only. These methods are not Qitianmei certifications, test reports or measured performance results. Any declared Qitianmei performance must be supported by valid test evidence for the corresponding product configuration.

OTHER MANUFACTURER DATA / INDUSTRY REFERENCE

Published industry benchmarks

Selected published third-party and other-manufacturer figures provide technical context for sandwich-panel selection.

These figures are not Qitianmei product specifications, measured results or guarantees.

Published comparison at similar rigidity

ALUMETAL honeycomb panels and solid aluminum, as paired in its published comparison table.

Honeycomb panel	Reported rigidity	Solid aluminum
10 mm / 5.0 kg/m²	21,900 kN·cm²/m	7.0 mm / 18.9 kg/m²
20 mm / 7.0 kg/m²	138,900 kN·cm²/m	13.0 mm / 35.1 kg/m²

Other manufacturer data — Source: ALUMETAL Aluminum Honeycomb Panel New, p. 9.

The reported weight reductions of approximately **74% and 80%** belong to the cited comparison only.

Complete skin/core details are not stated; these figures are industry examples and must not be presented as Qitianmei weight-saving performance.

Published temperature and acoustic reference

3A Composites ALUCORE technical data, 02/2022, p. 22; 20 and 25 mm panels with 1.0 mm front and rear skins.

Published property	20 mm	25 mm
Sound insulation Rw	23 dB	25 dB
Temperature resistance	−40 to +80°C	−40 to +80°C

Other manufacturer data — Source: 3A Composites ALUCORE Processing and Technical Data, edition 6.

The **23 / 25 dB** sound-insulation values and **−40 to +80°C** temperature range belong to the cited ALUCORE configurations and are not Qitianmei measured performance.

Acoustic figures are panel laboratory indices, not installed room-to-room reductions.

Use the industry context to define the target, then agree the Qitianmei build-up, drawings and supporting performance data for the project.

SAMPLES AND QUOTATIONS

Tell us about your project

Send your application, dimensions, preferred finish, quantity and any available drawing.

SAMPLES / SPECIFICATION / QUOTATION

Start with the details you have.

For an initial review, send the application, panel dimensions, Overall Panel Thickness, preferred surface finish, color, quantity and delivery destination. Where available, also provide the intended Face Skin Thickness, Back Skin Thickness, honeycomb core requirement, drawings and any special fabrication requirement.

01 / Application	Where will the panel be used?
02 / Size and finish	Panel dimensions, Overall Panel Thickness, appearance, color and quantity.
03 / Face Skin / Back Skin	Provide the preferred Face Skin Thickness and Back Skin Thickness where known.
04 / Drawing, if available	Send a sketch, drawing or reference image.
05 / Special fabrication	State any required cut-to-size work, CNC machining, drilling, edging, reinforcement, inserts, component preparation, assembly or installation requirement.

Standard full-panel supply does not automatically include CNC machining, drilling, furniture edging, reinforcement, hardware inserts, assembly or installation.

Samples

Small samples are available. Free samples are typically up to 200 × 200 mm, with courier cost normally borne by the customer. Project-specific samples are confirmed separately.

Qitianmei Metal Products Co., Ltd.

Email: Ryan@qitianmeialu.com

WhatsApp: +86 13560138196

Website: qitianmeialu.com