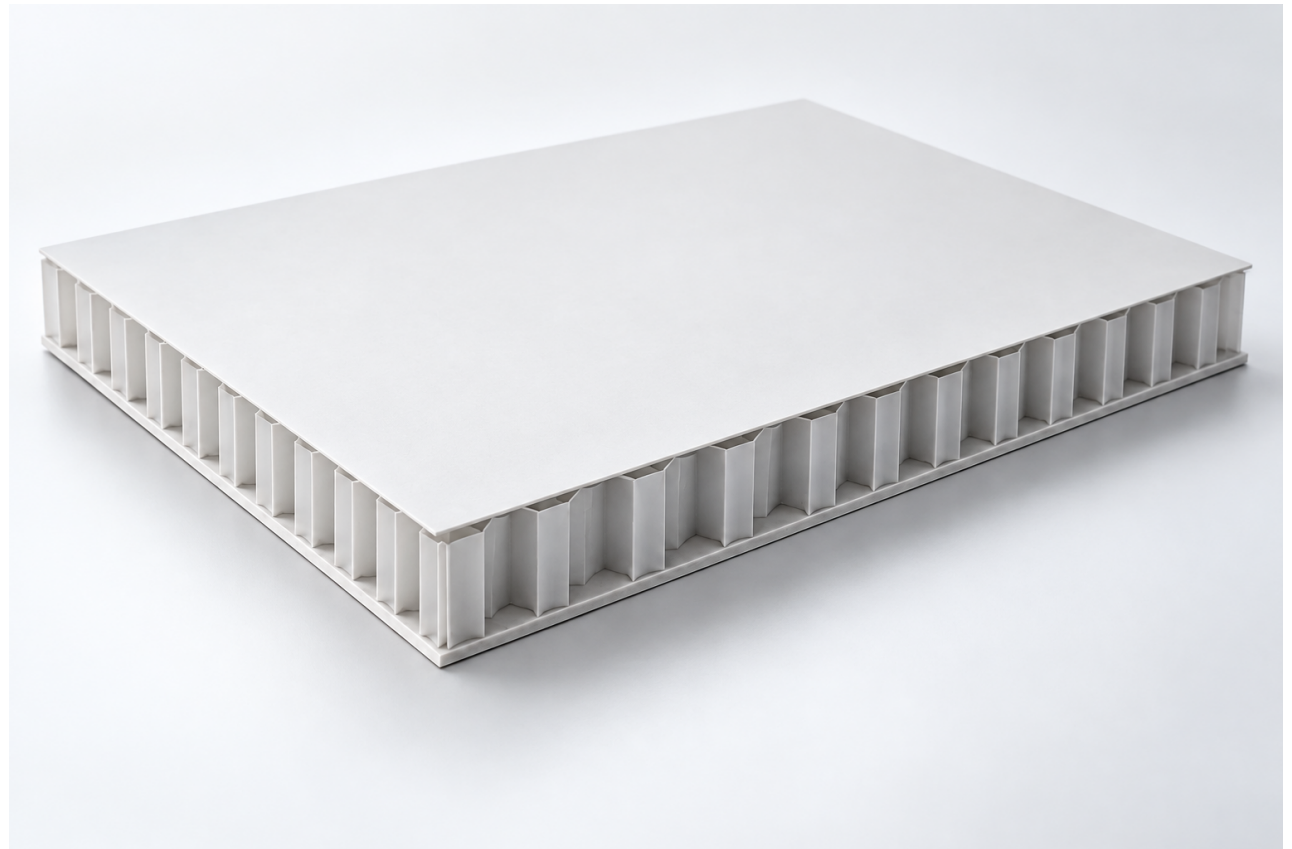


THERMOPLASTIC HONEYCOMB

Panel processing. Edge finishing. Corner forming.

Practical fabrication principles for Hexapan honeycomb panel systems.

**PREPARE**

Cutting · Surface treatment

CONNECT

Edge closure · Fixing points

FORM

Folded corners · Thermal joining

GUIDE

Processing at a glance

A clear route from panel selection to the finished assembly.

01 03–04 · Material & handling

Identify the panel construction and establish suitable storage and workshop conditions.

02 05–08 · Preparation & bonding

Machine clean edges, prepare the surfaces and select the appropriate lamination or bonding system.

03 09–11 · Edge finishing

Evaluate edge bands, supporting strips and profiles for the intended finish and loading.

04 12–15 · Fixing points

Develop reliable holes, inserts and mechanical connections for the sandwich structure.

05 16–18 · Forming & joining

Prepare folded corners and assess thermal joining on compatible constructions.

06 19–24 · Assembly & validation

Integrate fittings, evaluate the completed component and document the approved process.

MATERIAL

The panel defines the process.

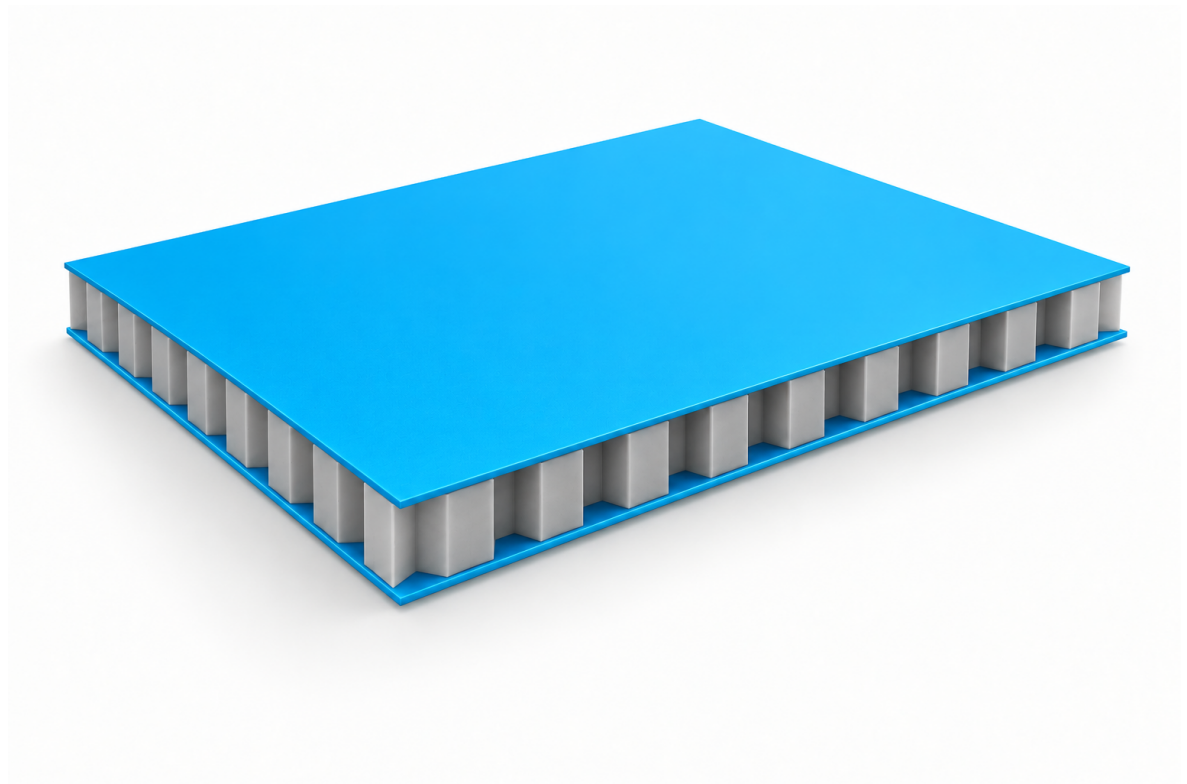
Core geometry, structural skins and surface finishes work together. Processing must address the complete construction.

Start with the specification

Identify the polymer, core configuration, thickness and skin material. A method developed for one facing cannot automatically be transferred to another.

Consider the finished surface

Films, textiles and other finishes influence tooling, handling and bonding. Protect the visible face from the first operation to final assembly.



— Use the current product data sheet and exact panel code when developing a process.

PREPARATION

Protect the panel from the start.

Good handling preserves face quality, panel flatness and the consistency of later operations.

Distributed support

Keep sheets on level pallets or aligned supports. Avoid long unsupported spans and concentrated contact loads.

Clean storage

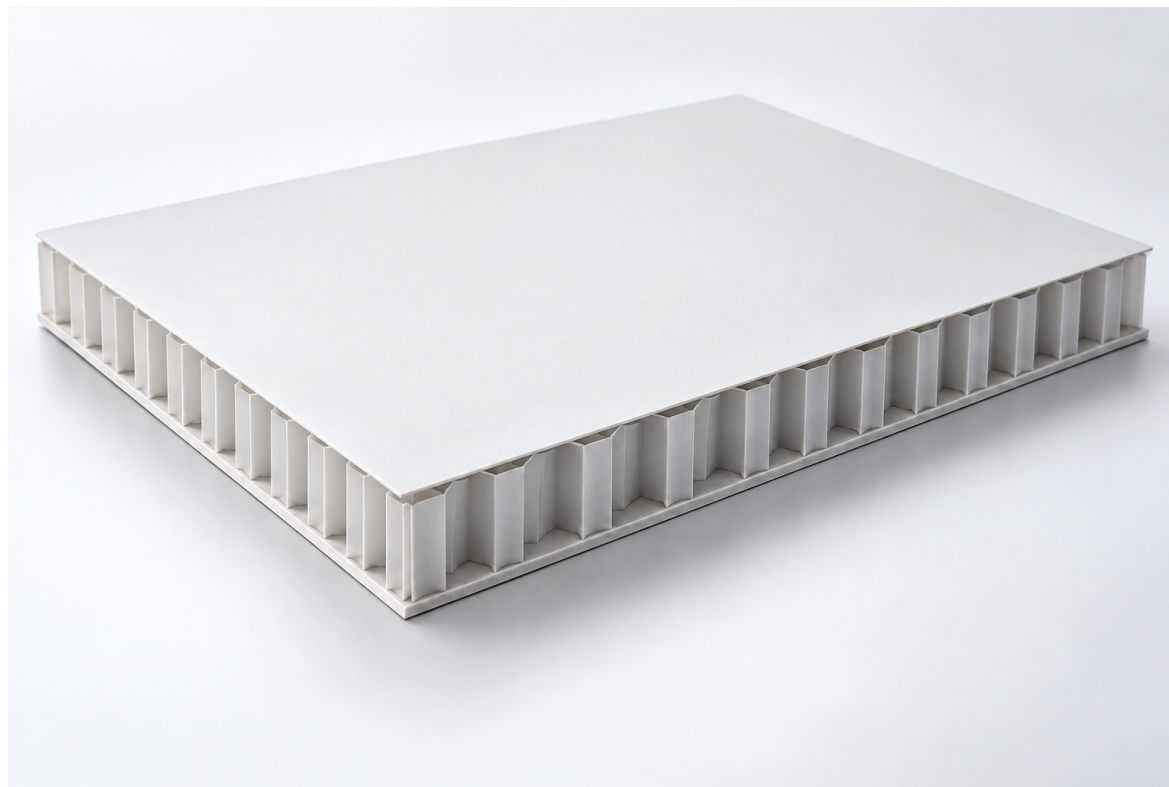
Protect the faces and edges against dirt, abrasion and impact. Use clean interlayers and define stack limits for the selected construction.

Workshop conditioning

Allow the material to reach workshop conditions before precision cutting or bonding.

Incoming inspection

Check dimensions, flatness and surface condition. Lift with adequate support and avoid sliding finished faces across each other.



— Release only panels that meet the agreed incoming quality criteria.

MACHINING

Clean cuts. Consistent edges.

Cut quality influences both the visible finish and the reliability of subsequent edge treatments.

01 Match the tool to the material

Select sharp blades or cutters suited to the skin and core. Establish speed and feed on representative offcuts.

02 Support without compression

Distribute clamping loads across the panel. Prevent local crushing, face impressions and movement during cutting.

03 Refine the edge

Trim only what is needed to obtain a straight, stable bonding face. Inspect for burrs, melting, fibre damage and separation between layers.

04 Remove chips effectively

Extract debris at the tool and clear the exposed cells. Address static where it causes particles to remain on the workpiece.

— Define machine settings through trials on the actual panel; one cutting recipe will not suit every construction.

SURFACE PREPARATION

Build adhesion at the surface.

Reliable bonding begins with a clean substrate and a preparation method matched to its chemistry.

Remove contamination

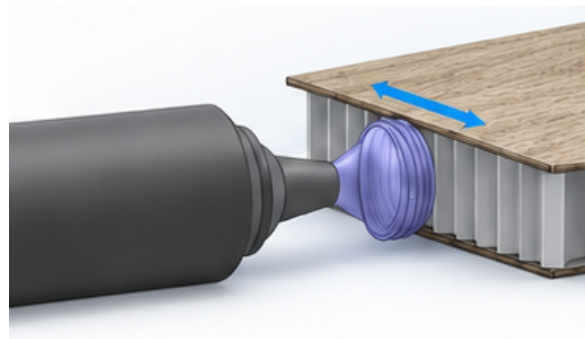
Clear dust, oils and processing residues with a compatible cleaning method. Avoid products that damage the finish or leave a residual film.

Establish surface compatibility

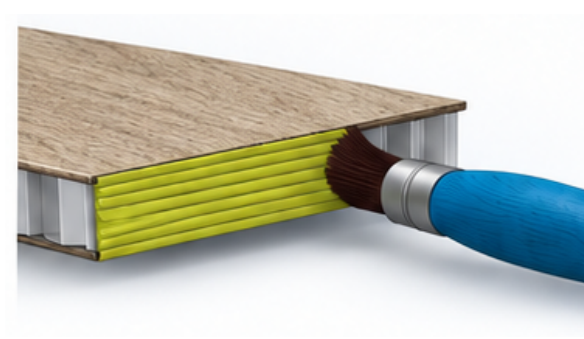
Assess primer, plasma or corona treatment with the adhesive supplier. Mechanical abrasion alone may be insufficient for low-surface-energy polymers.

Control the interval

Keep prepared areas clean and bond within the qualified time window. Where sanding is needed, limit pressure and material removal to protect the skins.



Edge surface activation



Preparation of the bond area

— Surface preparation and adhesive selection should be qualified as one system.

LAMINATION

Specify the complete facing system.

The facing, adhesive and application conditions must remain compatible with the sandwich structure.

Film & textile finishes

Confirm wetting and coverage on the prepared surface.
Control tension and adhesive quantity to prevent wrinkles, print-through or uneven appearance.

Veneer & HPL

Select a bonding and pressing route that respects the panel's temperature and compression limits. Use uniform support throughout the cycle.

Panel balance

Assess the effect of different finishes on opposite faces.
Check flatness, bond continuity and core condition after cooling or cure.



— Do not transfer a conventional wood-panel press cycle without validating it for the selected sandwich panel.

BONDING

Design the bond around the joint.

Joint geometry and service conditions determine the demands placed on the adhesive system.

Select a compatible system

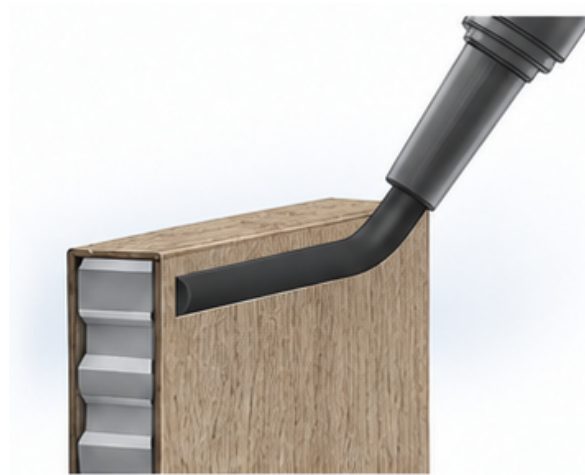
Evaluate the cleaner, primer and adhesive together.
Account for the substrates, expected loads, temperature and environmental exposure.

Maintain process control

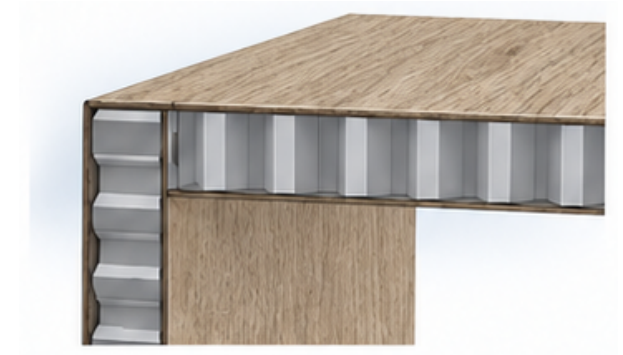
Follow the supplier's open-time and curing requirements.
Apply a consistent bond line and use distributed holding pressure.

Keep the assembly stable

Support the faces during cure and check alignment afterwards. The same controls apply when bonding additional layers or doubling panels.



Adhesive application



Aligned corner assembly

— Confirm strength and durability using the actual materials and joint configuration.

EDGE FINISHING

Choose the right closure route.

Select the edge system for appearance, production capability and the conditions the finished component will encounter.

Reactivated edge bands

Evaluate a compatible functional layer with the available laser, hot-air, infrared or plasma activation equipment.

Hotmelt bonding

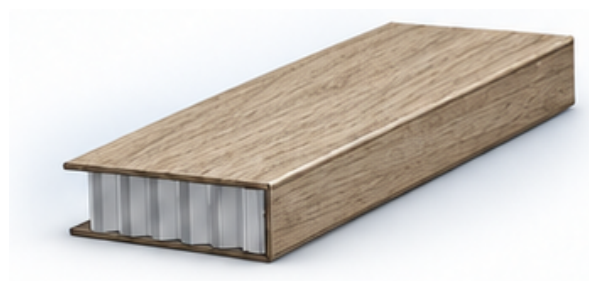
Polyolefin systems and suitably prepared PUR systems are potential routes. Verify wetting, contact and durability on the selected surfaces.

Supporting strips

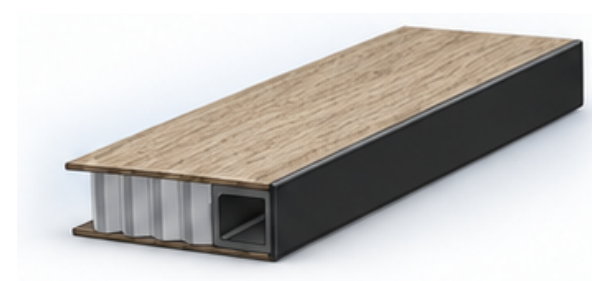
An intermediate strip can create a more continuous substrate for the decorative edge.

Profiles & bonded bars

A profile can close the edge, while an appropriately designed bar can also provide a local attachment zone.



Supported edge



Profile closure

— Selection is application-specific; no universal adhesive ranking is implied.

EDGE BANDING

Control contact along the edge.

A uniform bond requires a stable edge, even adhesive application and controlled pressure.

Prepare the line

Confirm that the machine detects low-density panels reliably. Adjust guides, trimming and pressure elements for the actual construction.

Apply & consolidate

Distribute adhesive consistently across the intended bonding surfaces. Maintain sufficient contact without distorting the skins or core.

Finish & inspect

Trim within the qualified process window. After cure, assess gaps, face marking and resistance to peeling, moisture and temperature.



Edge coverage concept



Wetting of the cellular edge

— Illustrative renderings show process concepts; they are not photographs of Hexapan test specimens.

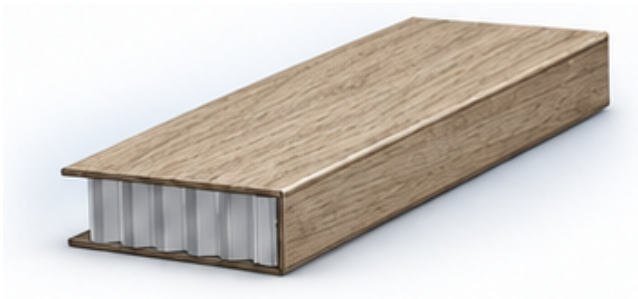
EDGE CLOSURE

Integrate finish and reinforcement.

Alternative closures can combine a finished appearance with a defined attachment or support function.

Supporting edge

Bond a compatible strip to provide a continuous base beneath the decorative trim.

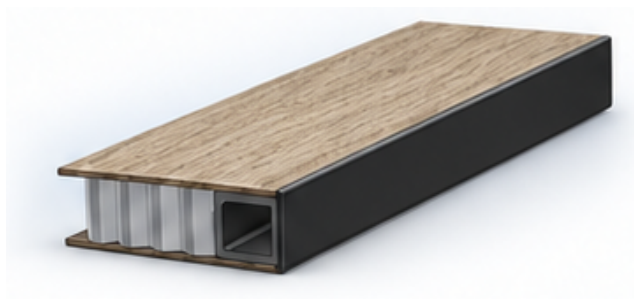


Supporting strip

— A neat edge does not establish joint strength; validate the structural function separately.

Hollow profile

Match the profile section and bond arrangement to the panel edge and the required finish.



Hollow profile

Reinforcement bar

Select the material, fit and bonded area for the fastener and intended load. Verify the resulting local load transfer.



Bonded reinforcement

DRILLING

Prepare a repeatable fixing zone.

Hole quality and cavity geometry are central to consistent insert installation.

Control the machining operation

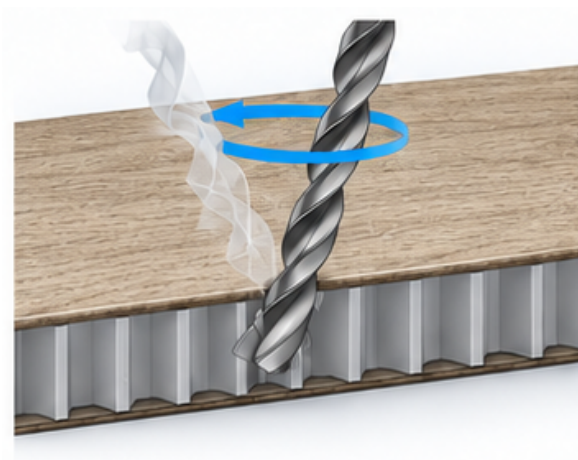
Use tools appropriate to the facing. Support the exit side where necessary and avoid crushing the panel through excessive clamping.

Define the cavity

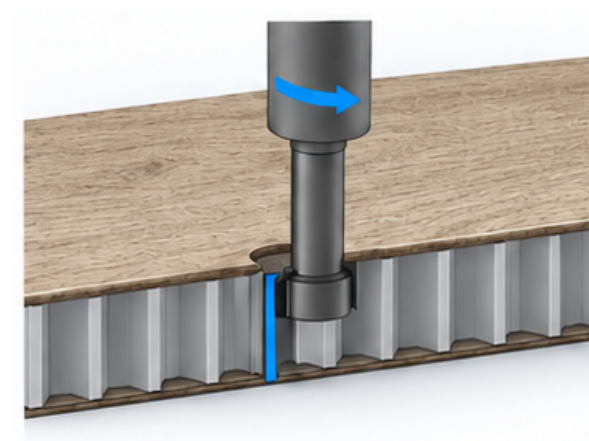
Specify position, depth and remaining skin thickness for the selected fixing system. Keep the geometry consistent from part to part.

Clean before assembly

Remove chips and contamination before surface treatment, adhesive dispensing or hardware installation.



Tapered cavity



Stepped cavity

— Hole size, depth and edge distance are determined by the fixing design and validation results.

INSERTS

Transfer loads through a local insert.

A bonded insert can distribute attachment forces beyond the immediate fastener location.

Prepare & activate

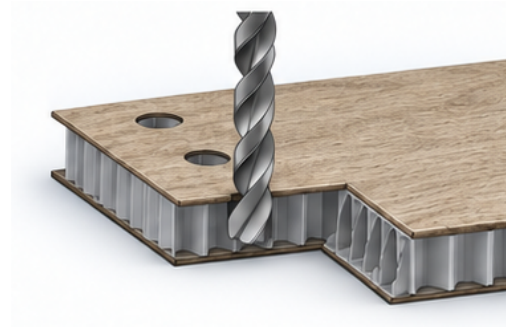
Machine the specified cavity and treat the bonding area using the qualified preparation method.

Position & bond

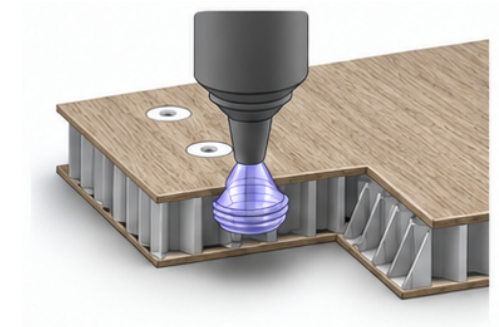
Set the insert at the required depth. Dispense a controlled quantity of compatible bonding material and retain the assembly during cure.

Verify the connection

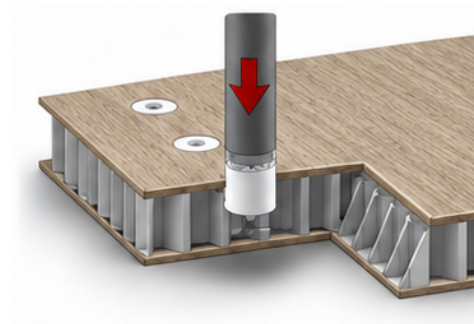
Assess pull-out, shear and resistance to rotation in the relevant loading directions.



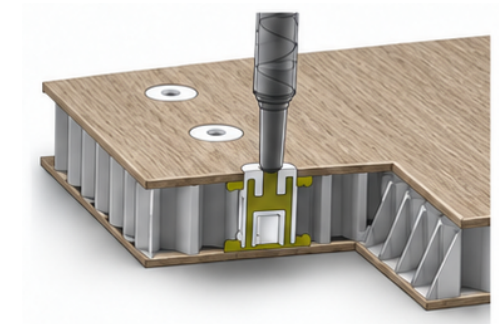
01 · Machine



02 · Prepare



03 · Set the insert



04 · Inject adhesive

— Keep insert position, adhesive quantity and curing conditions within the approved process window.

MANUAL ASSEMBLY

Make small-batch fixing repeatable.

Manual methods suit prototypes and short production runs when preparation and dispensing remain controlled.

Prepare the cavity

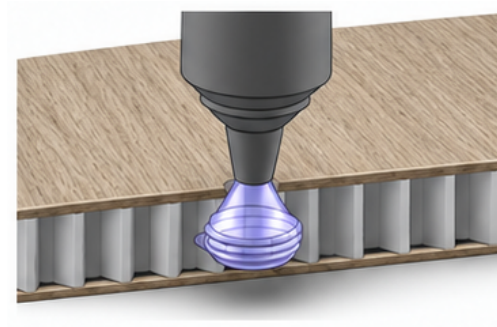
Use a consistent machining method and clean the contact area before treatment.

Fill & install

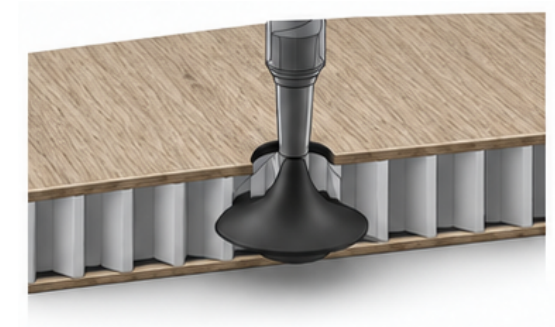
Apply the qualified compound without voids or uncontrolled overfilling. Position the selected element and confirm its alignment.

Support during cure

Keep the assembly stable until the compound has reached the required cure state.



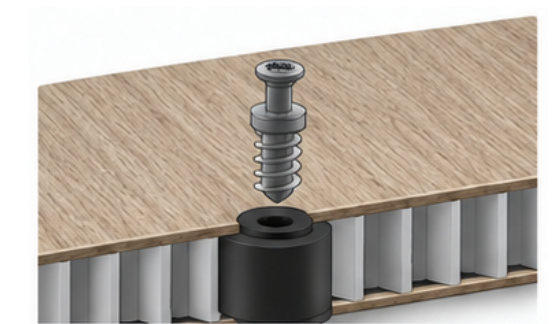
01 • Treat the surface



02 • Fill the cavity



03 • Install



04 • Check seating

Document the manual sequence so the same fixing quality can be reproduced.

FASTENING

Engineer the mechanical connection.

Fastener behaviour depends on the skins, cellular core, geometry and local reinforcement.

Direct screws

Use direct fastening only where the panel construction and load case support it. Determine pilot-hole geometry and installation torque through testing.

Reinforced locations

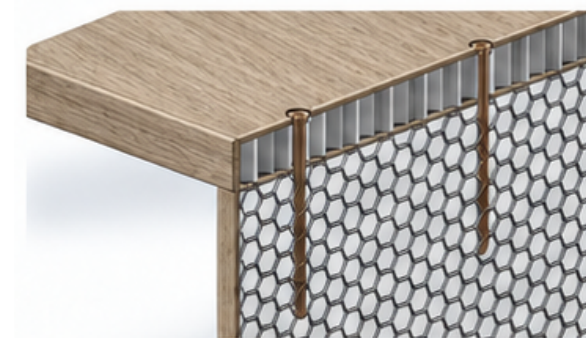
Where necessary, incorporate bonded inserts, bars or backing elements to spread loads and establish a reliable attachment zone.

Relevant checks

Evaluate pull-out, local compression and repeated loading. Include edge distance and assembly tolerances in the assessment.



Corner connection



Load-transfer section

— A longer thread alone is not a basis for assigning a permissible load.

CORNER FORMING

Prepare the fold geometry.

A controlled groove allows a suitable thermoplastic outer skin to remain continuous around the corner.

Define the profile

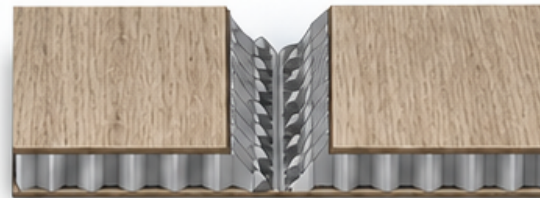
Set groove geometry and residual skin thickness for the material, panel thickness and intended angle.

Protect the outer layer

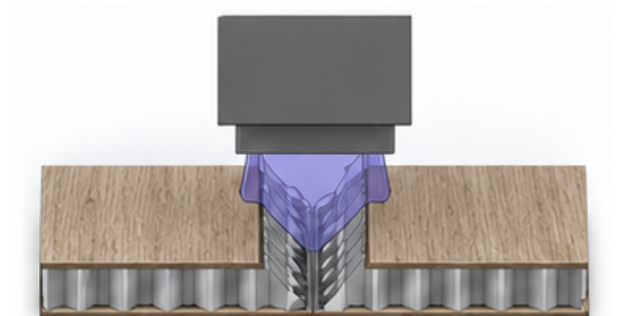
Keep the remaining skin uniform. Avoid scoring and local thinning that may initiate cracks during forming.

Prepare the bond surfaces

Treat the internal joint area using the method established for the selected adhesive.



Machined folding zone



Local surface preparation

— Establish groove depth, temperature and achievable radius through trials on the selected Hexapan construction.

CORNER FORMING

Form a continuous corner.

Apply local heat where required, bring the panel to its target angle and retain the geometry until stable.

Heat & bond

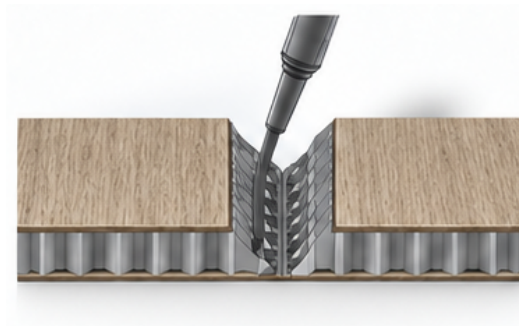
Control heat input within the validated window and apply the chosen adhesive to the prepared joint.

Fold & retain

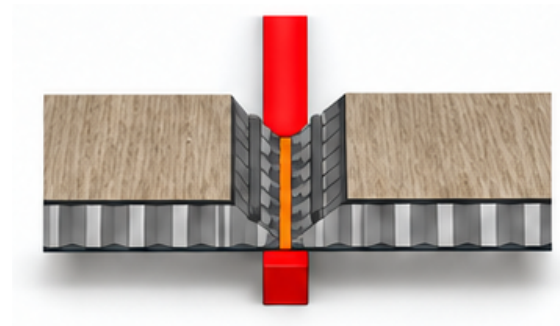
Support the panel while forming. Hold the angle through cooling and the necessary adhesive cure.

Assess the result

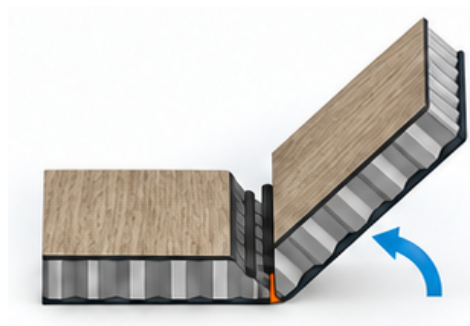
Inspect the outside face for cracking, whitening or distortion. Verify angle retention and the strength of the finished corner.



01 · Local heating



02 · Adhesive application



03 · Controlled folding



04 · Finished corner

Forming conditions are specific to the facing and construction; illustrations do not define process settings.

THERMAL JOINING

Develop a compatible welded joint.

Butt welding may provide an extension route for suitable thermoplastic panel constructions.

Align & heat

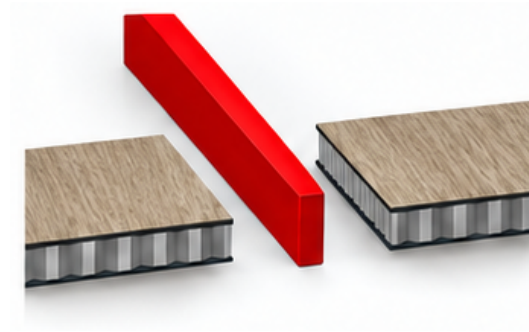
Support the panels and heat the opposing edges using a process suited to the materials.

Consolidate & cool

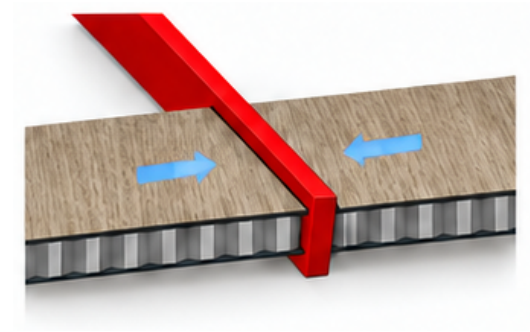
Remove the heat source, bring the softened edges together and retain alignment during cooling.

Finish & qualify

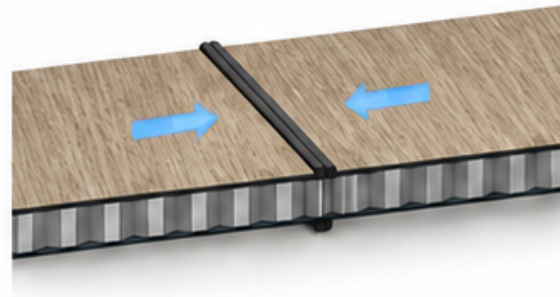
Remove excess weld material and evaluate the completed joint under the intended service loads.



01 • Position



02 • Heat



03 • Join



04 • Finish

— A welded extension must be assessed separately from an uninterrupted panel.

PANEL ASSEMBLY

Create a defined load path.

Corner and carcass connections should combine reliable load transfer with a practical assembly sequence.

Continuous connections

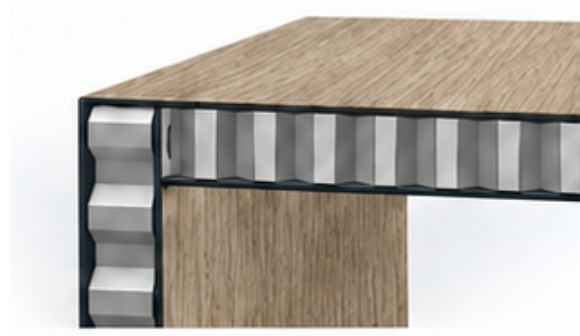
A bonded bar or continuous joining feature can distribute forces along an edge. Provide sufficient bond area and access for application.

Discrete connectors

Local hardware can simplify assembly and servicing. Establish appropriate fixing zones, spacing and reinforcement.

Overall rigidity

For long sides or large carcasses, assess intermediate supports, resistance to racking and the contribution of rear panels.



Continuous joint



Local connector

— Evaluate the assembled structure, including the interaction between its panels and connections.

FURNITURE FITTINGS

Account for movement and sustained load.

Shelves, hinges and drawer fittings place different demands on the attachment zones.

Shelf supports

Check both panel deflection and support pull-out under the intended loading.



Shelf detail

Hinges & doors

Opening and closing introduce repeated forces. Provide reinforced fixing points where the design requires them.



Hinge detail

Drawer hardware

Maintain fitting alignment and appropriate mounting torque. Evaluate the installation with the intended mass and operating cycle.



Drawer detail

— Combine the hardware supplier's installation requirements with tests on the complete panel and fixing system.

ASSEMBLY DETAILS

Resolve the concentrated loads.

Rear panels, handles and suspension hardware require well-defined attachment details.

Rear panels & handles

Rear-panel joints can contribute to carcass stability. Handles introduce repeated local forces that must be carried by the fixing zone.

Suspended components

Trace the load from the panel through brackets and fasteners to the supporting structure.

Installed performance

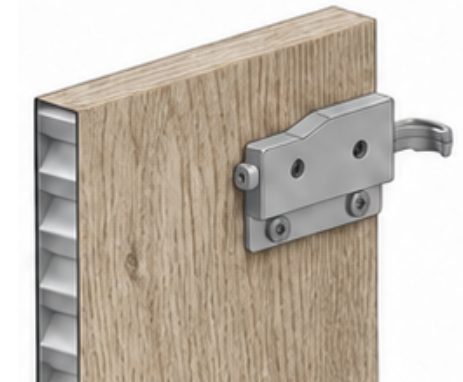
Validate the completed assembly for service loads, operating forces and dynamic effects where relevant.



Rear-panel joint



Handle attachment



Suspension bracket

— Overhead and wall-mounted assemblies require verification of the entire installed load path.

REFERENCE

Practical questions, clear answers.

The appropriate solution depends on the panel construction and the application.

01 Which edge closures are possible?

Edge bands, supporting strips and profiles can be evaluated against finish, processing and durability requirements.

02 Can a corner be folded?

Suitable thermoplastic constructions can be assessed for grooved corner forming. Skin material and groove design are decisive.

03 Can panels be extended or laminated?

Compatible joints, welding routes and added layers require validation of preparation, bonding or thermal processing.

04 How is recyclability determined?

Consider the complete assembly: skins, coatings, adhesives, hardware and the collection or recycling route available.

05 Where are performance ratings found?

Consult the current technical data sheet and applicable test reports for the exact product construction.

VALIDATION

Turn trials into a controlled process.

Define measurable acceptance criteria and document the operating window before production release.

01 Material traceability

Record the panel code, batch, thickness, facing and applicable technical documentation.

02 Process settings

Capture tooling, clamping, feed, speed and thermal conditions, together with preparation and adhesive details.

03 Quality criteria

Check dimensions, appearance, layer integrity, edge continuity and corner stability.

04 Performance assessment

Use relevant peel, pull-out, shear, bending or assembly tests. Include representative temperature, moisture and operating cycles.

05 Production release

Approve reference samples, retain the validated settings and establish routine inspection intervals.

— Concept illustrations explain the operations; they do not represent certified equipment settings or guaranteed performance.

CONTACT

Develop the next detail with Hexapan.

A clear application brief is the starting point for an appropriate panel and processing route.

Share the application

Provide a panel code or target construction, component drawing, edge or corner detail, available equipment and expected volume.

Define the requirements

Include mechanical loads, environmental exposure and appearance criteria so the relevant development work can be identified.

Technical scope

This application guide presents process principles. Product-specific settings, ratings and approved systems require confirmation for the intended construction.

