Formica® Products
Technical Information

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Foreword

The guidelines are intended to provide general recommendations on the use of various High Pressure Laminate (HPL) products. Technical data sheets for HPL products are available from the manufacturer's technical website. Before use of HPL products, it is required to check for updated information from this website.

Reference is exclusively made to the technical information published on the manufacturer's technical website. Any liability in connection with any other technical information is explicitly disclaimed.

Disclaimer

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Compact and ColorCore® Compact

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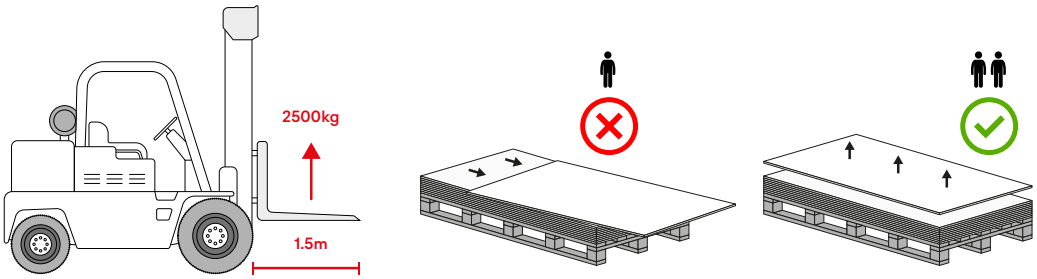
Contents

1. Transportation, storage, packaging & handling

Transportation and Handling of sheet material should only be carried out using suitable equipment. Sheets must always be handled with care to prevent damage to the external surface.

Transportation

- HPL products should only be handled and transported by competent professionals with proper equipment, taking great care to avoid breakage and damage.
- If the products should be loaded or unloaded, they should be lifted and not slid.
- One product rubbing against another can cause surface scratches or abrasions.
- Single sheets of HPL should be carried with the decorative surface facing the carrier's body.
- Two people are needed to handle large HPL products.
- Prevent dust from depositing on and between HPL products.
- Use adhesive, easy to peel off stickers for marking / coding, however, these must be removed immediately after installation.
- When transporting stacks of HPL products, use a platform of suitable size and stability, securing the HPL products with straps or stretch film to avoid dangerous slipping and place corner protection under the straps.

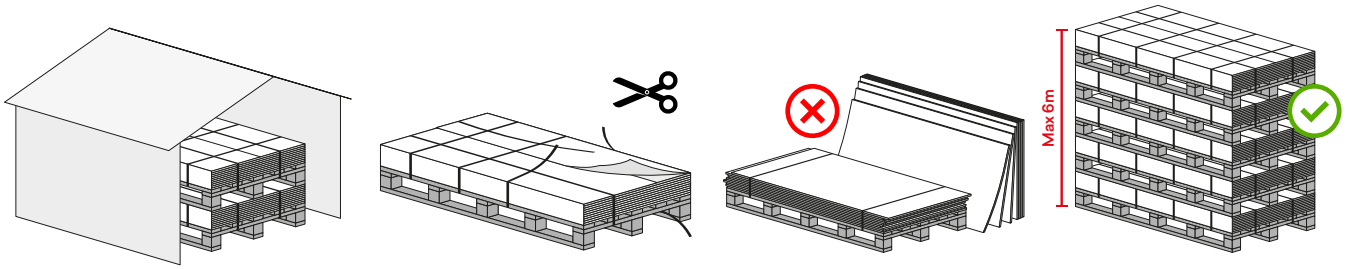


Storage

- HPL products covered with protective film should be stored in a clean, dry, frost free atmosphere at room temperature (ideally 20°C), avoiding exposure to atmospheric agents and UVA rays.
- Place pallets and HPL products on a flat surface that provides full support.
- Keep HPL products in the original packaging whenever possible.
- Remove straps if products are to be stored for a long period of time.
- Do not place moisture-sensitive (paper) layers between HPL products.

Prevent moisture forming between HPL products. Partial (on one side only) exposure to moisture or heat can be prevented by:

- Stacking HPL products one on top of the other.
- Avoiding gaps between HPL products, e.g. when HPL products have been machined.
- Removing protective films from both sides at the same time.



Packaging

- The adhesive protective film on HPL products is designed to temporarily protect the surface from dust, scratches and marks left by handling equipment; it does not protect from corrosion, dampness, or chemical agents.
- The removal of the adhesive protective film should take place within 6 months from the date of shipping by the manufacturer.
- For HPL compact sheets the adhesive protective film should be removed from both sides of the compact sheet surface at the same time.
- Liability for improper use of HPL products covered with an adhesive protective film, including any consequences of an incorrect application, is rejected.

Handling

- Treat panels with care.
- Two people are needed to handle large HPL products.
- Do not slide panels. Lift panels when moving.
- Prevent dirt on and between the panels.

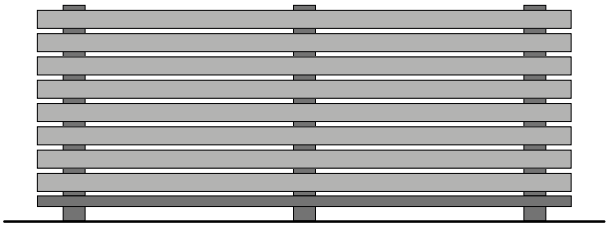
2. Compact and ColorCore Compact processing

Conditioning

HPL products are composed of over 60% cellulose fiber. HPL products are sensitive to temperature variations and, above all, to humidity variations, which can cause dimensional changes. Prior to fabricating or installing compact laminates, a process of pre-conditioning must be carried out to ensure the panels reach an equilibrium with the site conditions.

Please note that the information given is a general guide to good practice only and constitute no form of warranty or representation as to fitness for purpose in respect of the process. The user is required to verify and test for specific suitability.

HPL compact panels undergo a certain amount of dimensional movement when subjected to changes in humidity. In order to minimise the risk of the HPL compact panels moving once installed, it is imperative that, prior to fabricating or installing compact laminates, a process of pre-conditioning is to be carried out to ensure the panels reach an equilibrium within the site conditions. Installation of the HPL compact panels should allow for dimensional changes, if any.



Pre-conditioning

Lay the HPL compact panels on a pallet, neatly and flat, using carefully aligned spacer sticks (20x20mm) between the panels at 300mm centres across the full area of the panels, in the location where they are to be used (or in another location having identical climatic conditions), for a minimum of 7 days prior to installation.

Cutting

HPL compact panels should be cut with saws using blades with tungsten carbide inserts or diamond tipped blades.

Cutting tools and saw blades should always be kept sharp to avoid chipping. To avoid chipping on the lower side during cutting operations with circular saws, precautions should be taken such as:

- Lowering the saw in the bench.
- Reducing the throat of the saw by placing a piece of hardboard under the cut; changing the saw blade for one with negative angle teeth.
- Simply allowing extra material for edge trimming.

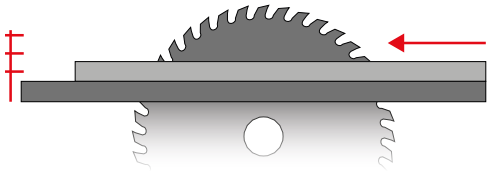
The following general guidelines apply to cuts made on panels using circular saws.

- Feed: 7-22 m/min (23-72 ft/min).
- Teeth: alternate or flat-top V-shaped teeth.

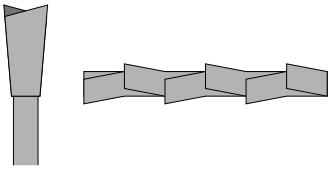
Positioning

Always position the teeth on the decorative side of the panel. Edge cutting best results are obtained using bench machinery. Sharp edges can be rounded by means of sandpaper or a milling machine.

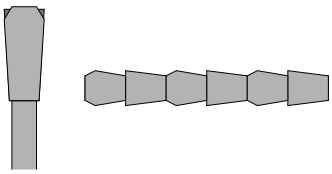
Rake angle: best performance is obtained with a 45° rake angle. Use rubber shims to prevent the panels from sliding if the machine is not equipped with a mobile work top.



Saw blade height adjustment



Alternate teeth



Flat topped V-Shape teeth

Cutting with a bench circular saw

Keep decorative side facing upwards when saw cutting, drilling, and milling. When a decorative side must be slid over the machine's worktop while machining, place a protective panel, for example of hardwood, on the worktop.

Diameter	Teeth	RPM	Blade thickness	Blade height
mm			mm	mm
300	72	~ 6.000/min	3.4	30
350	84	~ 5.000/min	4	35
400	96	~ 4.000/min	4.8	40

Cutting with a hand held circular saw

When using a hand-held circular saw, the panel side with no decor should be facing upwards.

Diameter	Teeth	RPM	Blade thickness	Blade height
mm			mm	mm
150	36	~ 4.000/min	2.5	15
200	36	~ 4.000/min	3.0	20

Cutting with a jigsaw

Jig saw (carbide-tipped): interior corners of cut-outs should be drilled first with 8 - 10 mm (≈ 5/16 - 3/8 in) hole diameter. Consider the use of a specific jig saw blade for decorative surfaces.

Milling and routing

Milling Shapes:

- Straight and slanted bits for cutting and bevelling edges.
- Hollow or round ground bits for rounded edges.
- Diamond circular saw blades for grooves.

Material:

Hard metal or diamond cutters, manually operated milling cutter, or spindle moulder.

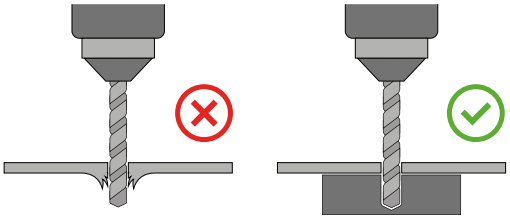
Diameter	RPM		Speed	Feed
mm			m/s	m/min
20-25	~ 18.000	~ 24.000/min	20-30	5
125	~ 6.000	~ 9.000/min	40-60	5-15

Edging and milling templates

Edges should be safe, free from saw marks and jagged edges. For better appearance it is advised polishing edges. Several edge treatments can be considered for functional and aesthetic reasons.

Drilling

The use of carbide-tipped HSS-drill bits or diamond ones with a 60-80° angle is recommended. HPL compact panels should be drilled using back support. The exit speed of the drill bit must be carefully selected so as not to damage the product surface. The feed rate must be reduced by 50% shortly before the drill bit exits the work piece. During drilling operations, the counter-pressure should be increased using hardwood or equivalent material in order to prevent the surface from breaking.



3. Fabrication and installation

Vertical installations

There are two installation methods for HPL compact panels:

- Mechanical (screws and rivets).
- Adhesive fixing (glue).

Mechanical fixing

Visible fixing with screws or rivets

HPL compact panels can be fixed to a timber sub-frame structure using fast fix screws, or they can be fixed to a metal sub-frame structure using screws or aluminium rivets. The sub-frame structure must be assembled in such a way that the area behind the HPL compact panel is ventilated with at least 20mm of air gap. This ensures that the temperature and humidity will be the same on both sides of the HPL compact panel. When determining the sub frame requirements, it is vital that the subframe used is of sufficient strength to support the HPL compact panels. The following must be considered:

- The legal requirements.
- The load-bearing requirements.
- Maximum fixing distances for the panels.
- The necessary ventilation or moisture regulating measures.
- The tolerance for panels to move with expansion and contraction.
- The available panel sizes.
- The thickness of any insulating layer.
- The anchoring options in the building (wall) construction.

Adhesive fixing

For adhesion of HPL compact panels to a subframe support system, always consult the strict recommendations of the adhesive supplier. A subframe support system should always be used. The following must be considered:

- Condition of the wall to be used.
- Load bearing limits of adhesive.
- Tolerance for panels to move with expansion and contraction.
- Ventilation around the system and behind the panels.
- Maximum panel size recommendation 3050x1300mm.
- Preparation of wall.
- Preparation of panels.

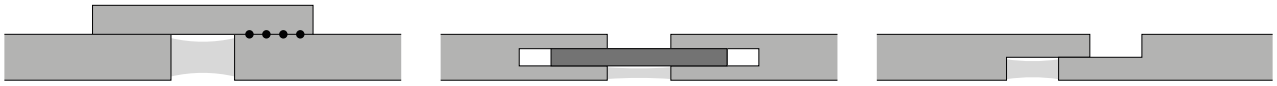
Corner solutions

When joining two panels in a corner, it is important to take the panel movement into account. To avoid tension at the joint, it is advisable to keep the leg length of the corner element as small as possible (max 400 mm).

HPL compact panels can be joined together in corners in various ways:

- Glued aluminum or plastic corner profile.
- Glued aluminum or plastic strip.
- Built-in strip and groove joint.

Joints and connections can be made with various methods.



Expansion joint | Built in groove | Rebated joint

To allow for dimensional changes because of moisture and temperature fluctuations, joints should be left free both for vertical and horizontal connections such that the panel can move by a maximum of 2.5 mm/m. For panel thicknesses from 8 mm or more, it is possible to make connections in the form of rebated joints or as built-in groove connections.

Horizontal joints: Either built-in groove or rebated joint connections can be used for horizontal joints. Joints must be made in such a way that the panels can move by 2.5 mm/m maximum. The recess in the rebated joint must measure at least twice the width of the joint itself.

Vertical joints: Built-in groove connections can be used for vertical joints. Panel thickness on each side of the groove must be at least 2.9 mm. If aluminium grooves are used, a panel thickness of 8 mm is sufficient.

Joint sealing using mastic

For details of mastic sealing, use recommendations of the product supplier.

Hole spacing

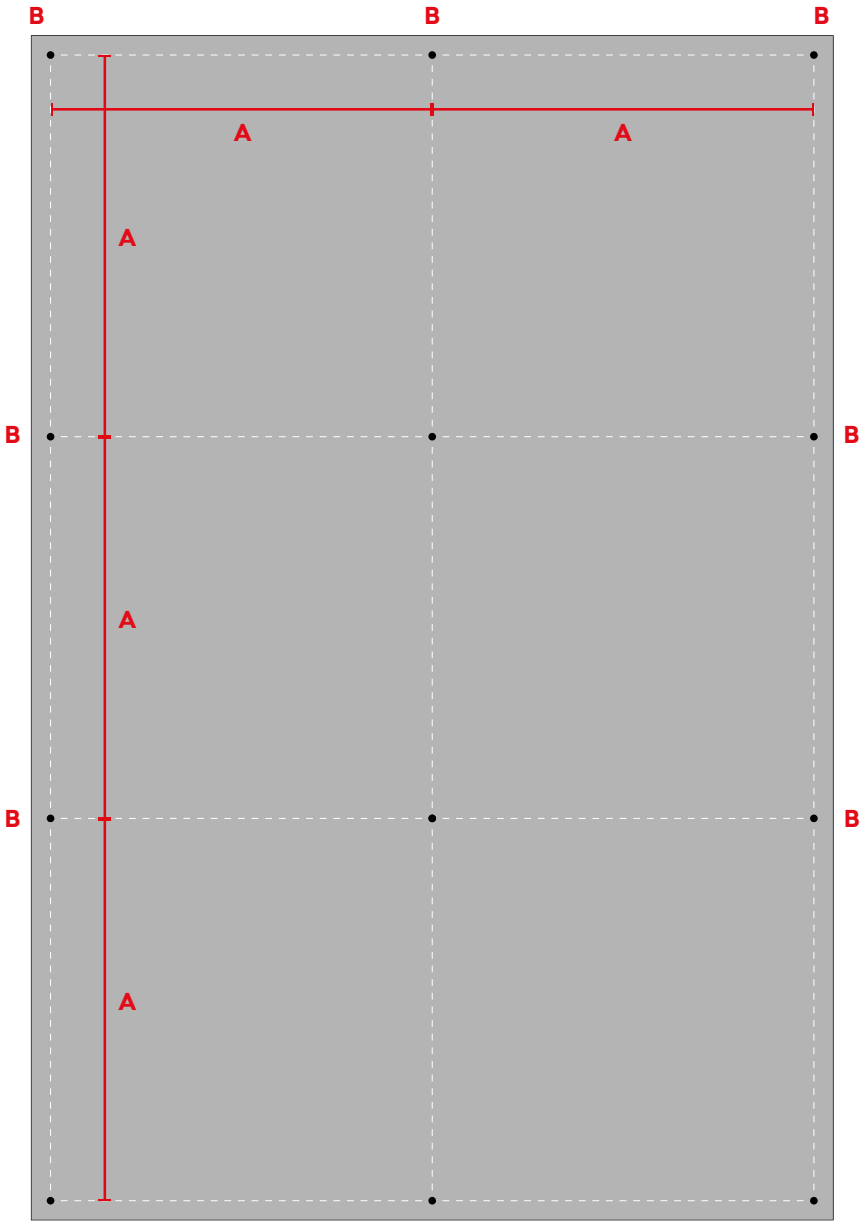
When fixing panels with screws or rivets, it is important to ensure that panels can move freely and evenly and there is adequate clearance greater than the screw diameter, generally the hole should be 1.5mm larger diameter than the screw diameter.

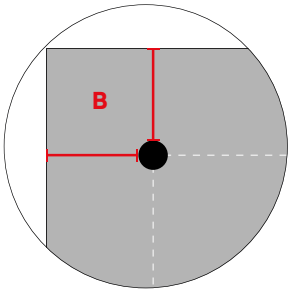
All joints between panels must be at least 8 mm wide. Flexible joint closures, are available and manufacturers instructions should always be followed.

A. Horizontal and vertical fixing distance (see below table)
B. Fixing clearance

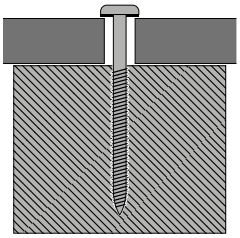
- Min: 20mm
- Max: 10 times the panel thickness (upto 12mm)

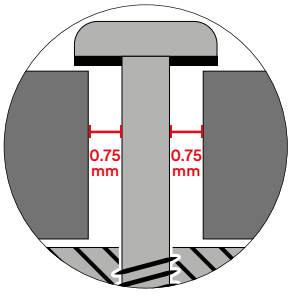
Recommended maximum panel height: 3050mm. Note: Fixing distances for ceiling application must be multiplied by 0.75.





Min: 20mm
Max: 10 times the panel thickness (upto 12mm)





	A		B	
Thickness	2 fixings in one direction	3 or more fixings in one direction	Min	Max
6	450	550	20	60
8	600	750	20	80
10	750	900	20	100
12	750	900	20	120
20	750	900	20	120

Sizes shown in mm

Expansion gaps between panels

During the planning of any installation, it is essential to consider the dimensional movement that can occur with HPL compact panels, due to temperature and moisture variation. allowances must be made in the design, fabrication and installation process, to accommodate these variations.

Typical movement for an HPL compact panel would be:

- 2.5mm/m in the vertical Direction per LM
- 2.5mm/m in the Horizontal Direction per LM

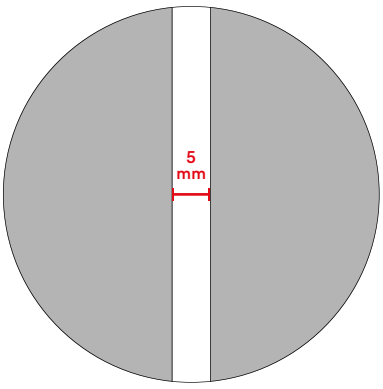
For internal installations where the temperature and humidity are constant between 15°C & 22°C degrees, and do not have extreme variation. Gaps between panels of 5mm can be considered.

For internal installations where temperature and humidity have a wider variation, Gaps between panels should be 8mm.

Width of Panel	Suitable gap between panels
m	mm
1	3
1.5	5
1.8	8

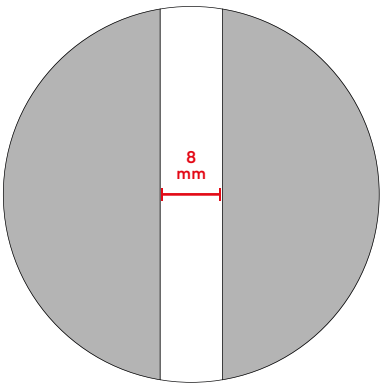
Typical installation with constant temperature and humidity between 15-22°C

Based on a standard HPL panel size (3050 x 1300mm)



Installations with extreme variations between temperature and humidity.

Based on a standard HPL panel size (3050 x 1300mm)



Horizontal Installations

HPL compact panels can be used as worktops or as table tops.

The manufacturer offers as part of its standard delivery program HPL compact panels with a black or brown core. There are also panels that have a core that matches the colour of the surface. However, it is advised that such panels are slightly more fragile and therefore should be handled with extra care.

Subframe

In all cases, a rigid secure structural support or subframe should always be used. Steel or aluminium subframe should be sturdy and rigid enough to prevent panel warping because of the load applied on the upper surface. If any other elements are fitted under the panel (drawers, boxes, pipes), then the subframe must be dimensioned accordingly. Drill holes in the subframe must allow for the panels to move either drill slotted holes or make sure that the diameter of the drill holes equals screw diameter plus 1.5mm. If more than two panels are joined together (e.g., for long wall benches), additional supports should be installed in the subframe.

Air Gap Between wall and HPL Compact Panel
The subframe structure must be constructed in such a way, as to provide an air gap between the wall and the HPL compact panel. For wall systems constructed inside a building, where the wall is in good condition and free from any moisture ingress or damp, then a 10mm air gap, between the wall and the back of the HPL compact panel, can be considered.

A typical air gap on a subframe would be 20mm from the back of the HPL compact panel to the wall.

Fixing

For HPL compact panels with a black core, typical fast fix screws can be used.

For HPL compact panels with a matching colour core, inserts should always be used along with correct machine screws.

There should always be a clearance between the screw diameter and the hole diameter of 1.5mm, to allow dimensional movement in all circumstances the panels must be fixed to a secure support or subframe system. For invisible fixing, maximum drill hole depth equals panel thickness minus 3 mm. Drill hole diameter in panels should comply with the instructions of the supplier of the fixing means and be capable of withstanding the shank of the screw. Panel thickness and fixing distances as well as expected load capacity are directly linked and must be calculated correspondingly.

Adhesive application direct to wall
For best practice, a subframe would be used and the panel adhered to the subframe.

For HPL compact sheets of thickness, 6mm or less. It is possible to adhere directly to a wall, however the environmental conditions must be considered, as these conditions are critical to provide a successful installation.

- The walls must be dry, flat, free from any moisture and in good condition.
- The wall must not be exposed to a high degree of temperature or moisture variation, that would cause the HPL compact panel to expand or contract beyond an internal building's usual temperatures of between 15°C and 22°C.

Always contact the adhesive manufacturer to ensure the correct adhesive is used.

Always follow the adhesive manufacturer's installation instructions

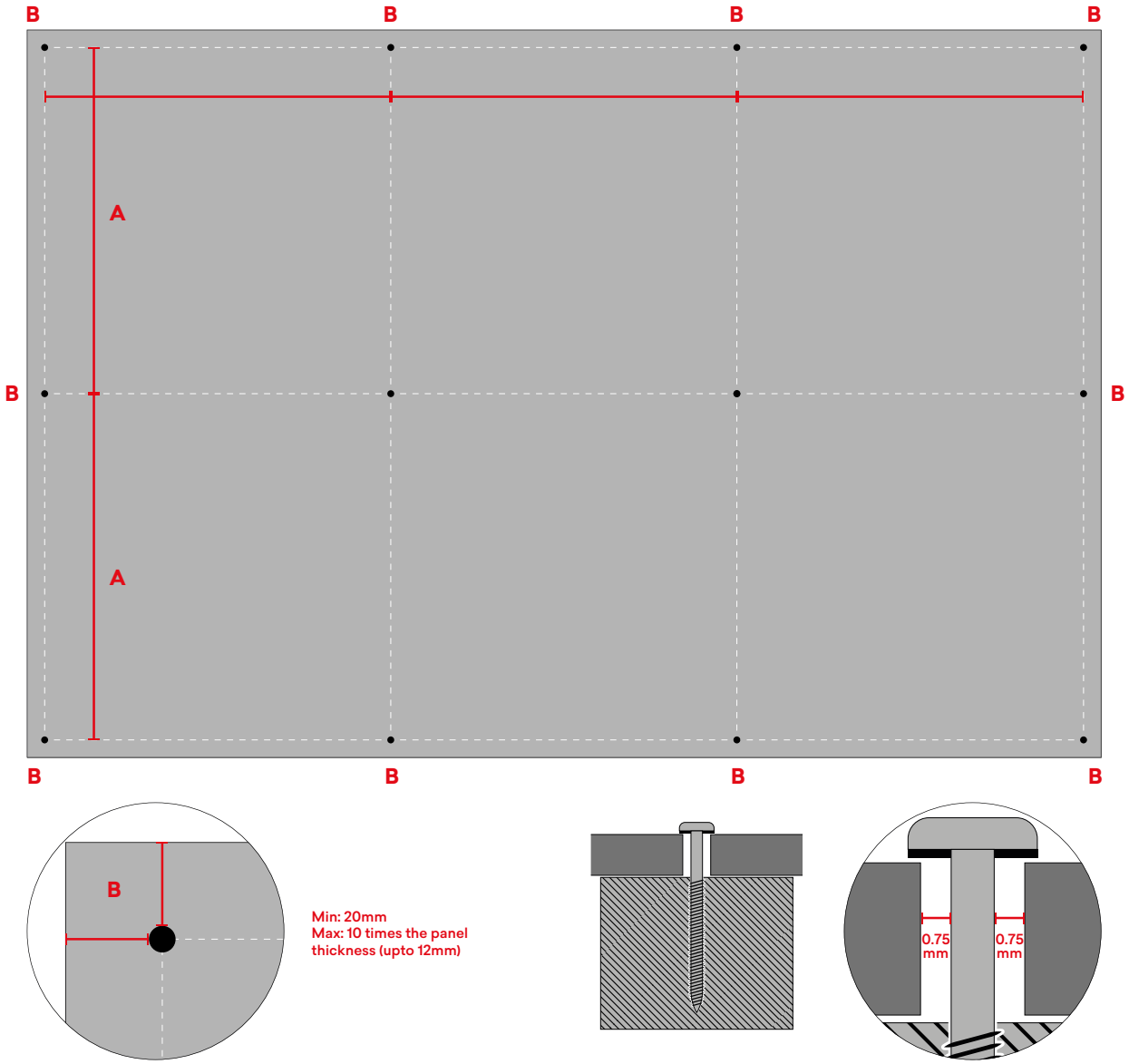
Horizontal joint assemblies

When joining HPL compact, it is recommended to use the following:

- Masons mitre joint.
- Butt joint.

For best results, always use:

- Profile jigs for accurate cutting.
- Toggle bolts and adhesive to secure tight-fitting joints.
- Inserts with correct hole clearance and spacing dimensions.
- The use of non-decorative or transparent quick drying adhesives are recommended to achieve a visually satisfactory result.



Hole spacing

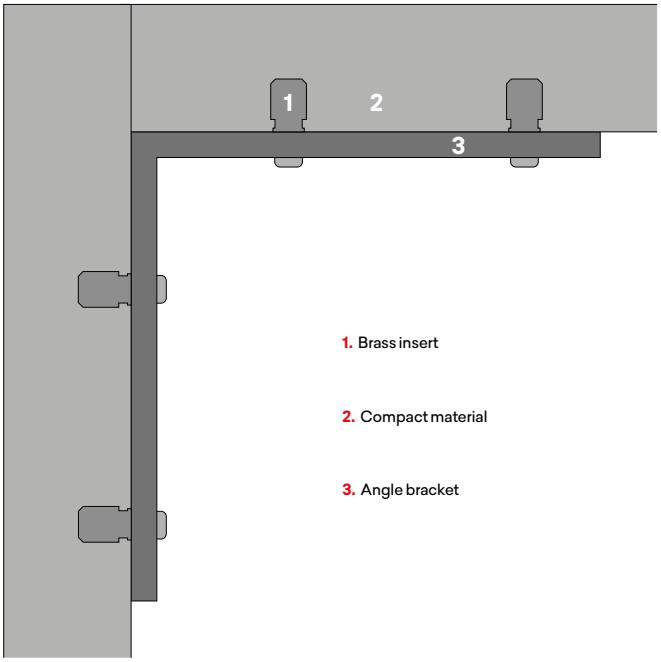
	A		B		
Thickness	2 fixings in one direction	3 or more fixings in one direction	Min	Min (concealed)	Max
4	300	300	20	75	40
6	600	600	20	75	60
8	600	600	20	75	80
10-20	600	900	20	75	120
20	600	900	20	75	120

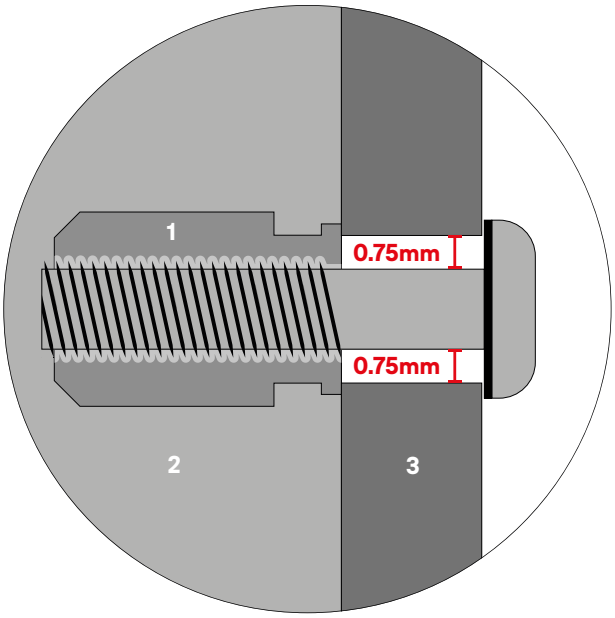
Sizes shown in mm

Corner joint assemblies

If using ColorCore® Compact, where a corner joint is required:

- It is always recommended to use mechanical fastening, either visible or invisible fasteners, along with special support brackets.
- The recommended clearances and spacings should always be followed, as detailed.
- Ensure the correct length screw is used for fastening. If screws are too long there is a danger of cracking the panel.





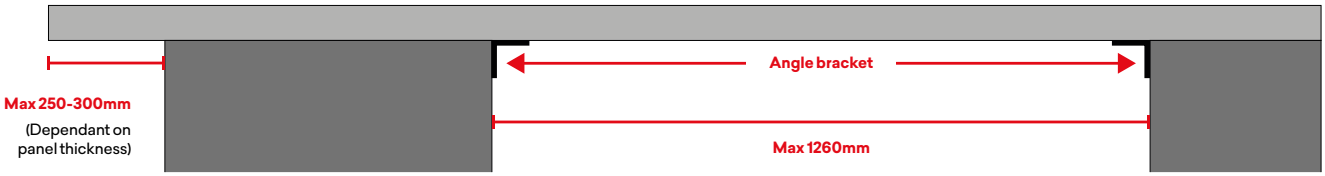
Bridging distance

If installing a horizontal panel, be aware of maximum bridging distance.

Panel thickness	Max unsupported bridging distance	Max overhang
12	1260	250
20	1260	300

Sizes shown in mm

No material less that 12mm should be used for bridging or to create an overhang.



Loss of structure

Various machining and engraving operations can be carried out on HPL compact panels with a colour matching core. However, please note that the scoring can alter the HPL compact panel surface structure and lead to the loss of all specific characteristics of the product. For further information see www.formica.info

Maintenance and aftercare

- Formica decorative laminates do not easily scratch or chip and will withstand normal wear and tear, but should never be used as a cutting or chopping surface.
- Laminate surfaces are best kept clean using warm water and mild detergent. Non-abrasive liquids or creams are recommended for stubborn stains.
- More persistent marks and discolouration can usually be removed by light use of a mild abrasive cream. On no account should a highly abrasive scouring pad be used.
- Ink marks from felt-tip and ball-point pens can be removed with a suitable solvent (e.g. methylated spirits, acetone, etc.) on a clean cloth (see below for further details). Organic solvents such as white spirit and cellulose thinners can also be used to remove paint splashes and graffiti, as they will not affect the laminate surface.
- Acid based ceramic cleaners and limescale removers must not be used as they can cause permanent staining. Any spillage or splashes of these cleaners must be washed off the laminate surface immediately.
- After using a cleaner, the surface should be rinsed with clean water and polished dry with a soft cloth.
- Proprietary window-cleaning products can be used to avoid and remove drying marks and smears on the final finish. Furniture polishes should not be used, as this may result in the build-up of silicone wax on the surface, that may cause eventual discolouration and smear marks which can be very difficult to remove.
- Because of the nature of the surface, deep textured finishes are inevitably more difficult to clean than smooth surfaces and light textures. Removal of marks is still possible when using the above guidelines.

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