

# General guidelines for laboratory worktops and storage solutions

**This document is intended to provide general recommendations only. Trespa provides these guidelines and all testing, code and design data for informational purposes only and strongly advises that the customer, project owner and architect seek independent advice from a certified construction professional and/or engineer regarding application and installation as well as compliance with design requirements, applicable codes, laws and regulations, and test standards. Please check your local codes and applicable design requirements for proper use.**

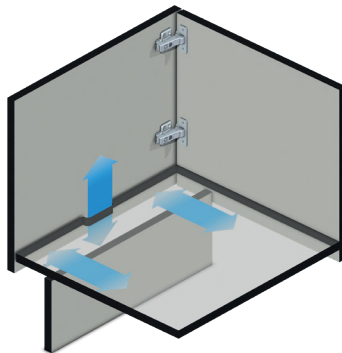
### General guidelines

Trespa® products can expand and contract like hardwood as a result of the natural fibres in their composition and the relative humidity of the environment. Because of this, some dimensional changes in the product have to be taken into account together with few general indications:

- The temperature and humidity acting on the front and back sides of the panels should not differ over a long period of time.
- The underside of horizontal workbenches and rear of vertical supporting elements should therefore be well ventilated. Multiple ways of providing the right ventilation can be achieved depending on local conditions and use, below is one example for high-humidity conditions.
- Panel edges should not be permanently wet. If panels are held in profiles, the profiles must be provided with drainage holes.
- The fixing of screws should not be so tight that they restrict panel movement.

### Gluing and fixings

- Trespa® panels can be glued to each other and to most construction materials with one or two-part adhesives: e.g. epoxy (for horizontal joints only), silicon or polyurethane adhesive systems.
- Gluing is in many cases carried out together with a mechanical joint to provide sufficient pressure during drying.
- Panels, strips and adhesive must be acclimatised in the same way (temperature and humidity preferably the same as the future conditions of use).
- The surface should be free of dust and grease and slightly abraded prior to gluing.
- Adhesive should be applied per adhesive manufacturer's written instructions.
- Choice of fixings is dependent on national guidelines.



*Figure 1 - Example of ventilation for high-humidity conditions*

# HORIZONTAL WORK SURFACES

## Products

Trespa® TopLab® PLUS and Trespa® TopLab® BASE

## Thickness

≥ 13 mm (1/2 in)

## Fixing

Fix the Trespa® panels with inserts or screws; different types of screws can be used. It is suggested to test the suitability per application.

The maximum drill hole depth equals the panel thickness minus 3 mm (1/8 in). In case of holes drilled parallel to the sheet, the remaining thickness has to be at least 3 mm (1/8 inch). The panel drill hole diameter must be in accordance with the instructions of the supplier of the fixing systems.

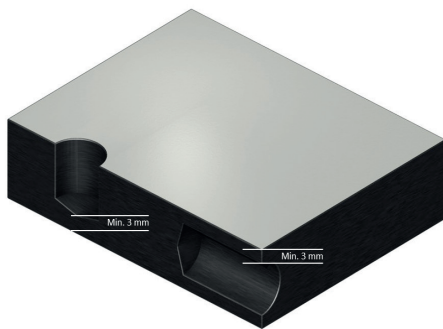


Figure 2 - Drilled holes

Drill holes in the support construction (e.g. metal brackets) must allow the panels to move: fit slotted holes or allow diameter of the drill holes to equal the screw diameter plus 3 mm (1/8 in).



Figure 3 - Drilled holes in support construction

If more than two panels are joined together (e.g. for long wall benches), slotted holes of sufficient length must always be made in the support frame.

## Fixing intervals

- Minimum distance from the edge: 20 mm (approx. 3/4 in).
- Maximum distance from the edge: 150 mm (6 in).
- Distribute screws evenly throughout the support.

## Support structure

The support structure must be sufficiently strong and rigid to withstand bending as a result of the load applied on top of the panel. If any other fittings are provided underneath the panel (drawers, boxes, pipes), then the support construction must be dimensioned accordingly.



Figure 4 - Example of support structure supported on all edges (see figure 8)

## Cut-outs

Right angled cuts can cause breakage or cracking. In order to avoid these, all the corners of the internal cut-outs should be evenly rounded.

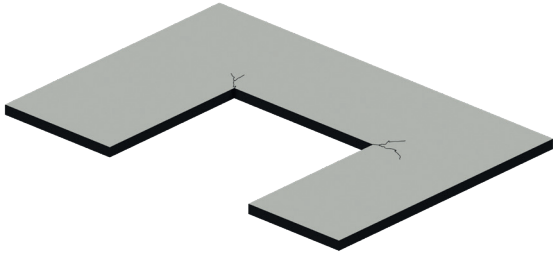


Figure 5 - Wrong cut-out

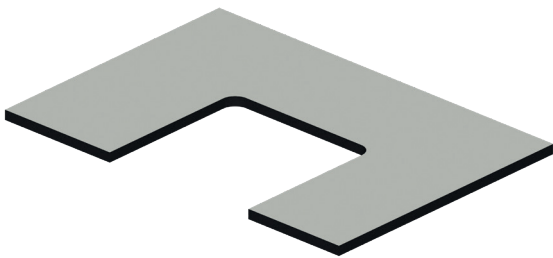


Figure 6 - Correct cut-out

## Maximum support and fixing intervals

Following data is for information purposes only; Trespa is a manufacturer of panels and therefore suggests that the customer seeks independent advice from a certified construction professional and/or engineer regarding application and installation of work surfaces following local building regulation and specific project conditions and design.

To determine the maximum or minimum panel lengths under specific loads, simulation tests have been performed following the loading instructions found in the safety tests of EN 13150:2020 (Workbenches for laboratories in educational institutions - Dimensions, safety and durability requirements and test methods).

Two different loading parameters for the chosen safety tests have been taken into account:

1. Vertical static load test (EN 1730:2012, 6.3.1). The panel deflection and stress have been calculated considering a vertical static load of  $F = 2000 \text{ N}$ . The vertical static load  $F$  is applied at the middle of the panel on a circular area of  $100 \text{ mm}$ .

2. Distributed load test (EN 1730:2012, 6.7). The panel deflection and stress have been calculated considering a uniformly distributed load of  $q = 125 \text{ kg/m}^2$ .

Following strength and durability requirements of EN 13150:2020, the deflection has been set as no greater than  $\text{span}/200$  under load.

SAFETY TESTS EN 13150:2020	q [KG/M2]	F [N]
Vertical static load test	0	2.000
Distributed load test	125	0

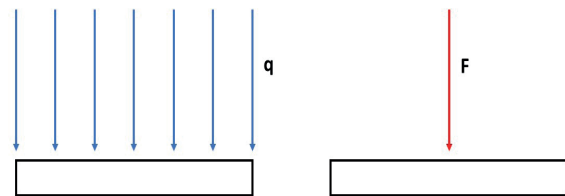


Figure 7 - Distributed load ( $q$ ) and vertical static load ( $F$ )

## Edge supported panel

PANEL THICKNESS	PANEL WIDTH	MAXIMUM OR MINIMUM PANEL LENGTH	
		Vertical static load F = 2000 Newton (approximately 200 kg/440 lb)	Load per unit area q = 125 kg/m <sup>2</sup> (25 lb/ft <sup>2</sup> )
13 mm (1/2 in)	700 mm (27.559 in)	> 1880 mm (74.015 in) <sup>B</sup>	unlimited <sup>A</sup>
	800 mm (31.496 in)	> 2490 mm (98.031 in)	unlimited
	900 mm (35.433 in)	none	unlimited
	1000 mm (39.370 in)	none	unlimited
	1100 mm (43.307 in)	none	> 2360 mm (92.913 in) or < 1430 mm (56.299 in)
16 mm (5/8 in)	700 mm (27.559 in)	unlimited	unlimited
	800 mm (31.496 in)	> 1200 mm (47.244 in)	unlimited
	900 mm (35.433 in)	> 1640 mm (64.566 in)	unlimited
	1000 mm (39.370 in)	> 2090 mm (82.283 in)	unlimited
	1100 mm (43.307 in)	> 2590 mm (101.968 in)	unlimited
	1200 mm (47.244 in)	none	unlimited
	1300 mm (51.181 in)	none	unlimited
	1400 mm (55.118 in)	none	< 1490 (58.267 in)
20 mm (3/4 in)	700 mm (27.559 in)	unlimited	unlimited
	800 mm (31.496 in)	unlimited	unlimited
	900 mm (35.433 in)	unlimited	unlimited
	1000 mm (39.370 in)	unlimited	unlimited
	1100 mm (43.307 in)	unlimited	unlimited
	1200 mm (47.244 in)	unlimited	unlimited
	1300 mm (51.181 in)	> 1300 mm (51.181 in)	unlimited
	1400 mm (55.118 in)	> 2020 mm (79.527 in)	unlimited
	1500 mm (59.055 in)	> 2530 mm (99.606 in)	unlimited
25 mm (1 in)	700 mm (27.559 in)	unlimited	unlimited
	800 mm (31.496 in)	unlimited	unlimited
	900 mm (35.433 in)	unlimited	unlimited
	1000 mm (39.370 in)	unlimited	unlimited
	1100 mm (43.307 in)	unlimited	unlimited
	1200 mm (47.244 in)	unlimited	unlimited
	1300 mm (51.181 in)	unlimited	unlimited
	1400 mm (55.118 in)	unlimited	unlimited
	1500 mm (59.055 in)	unlimited	unlimited

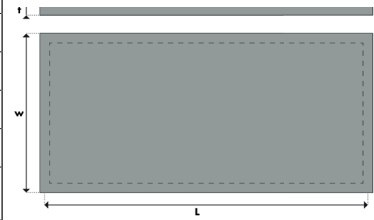


Figure 8 - Edge supported panel

A: 'Unlimited' means: maximum available panel length; 'none' means: no available panel length. All numbers have been rounded to the nearest 10.

B: There is often a minimum length instead of a maximum length. This is because the stricter performance requirement for the above tests in such a worktop design is the deflection. The deflection is defined by the shortest edge of the panel: if the longest edge (span or length L) increases, the deflection increases only slightly. However, if the shortest edge (width) increases, the deflection increases significantly. The EN 13150:2020 requirement for a maximum deflection equal to span/200 is sometimes met for a larger span (length L) but not for a shorter one. If the recommended length is smaller or larger than the number in the table this is indicated with the '<' and '>' symbols, respectively.

## Example for edge supported panels

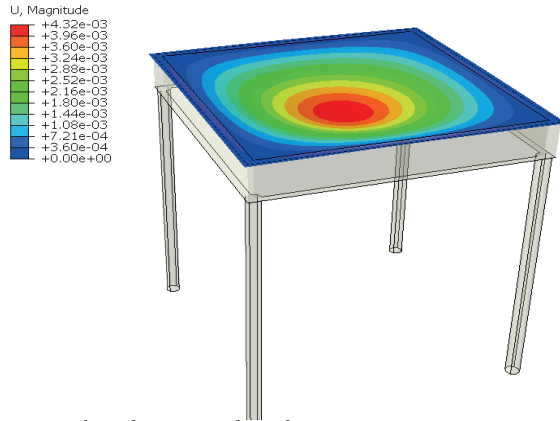


Figure 9 Example 1 edge supported panel

### Example 1

Dimensions: 800 x 800 mm (31.496 x 31.496 in)

Span: 0.8 m (31.496 in)

Point load applied at the middle of the panel on a circular area of  $\varnothing 100$  mm (3.937 in): 2000 N

Thickness: 16 mm (5/8 in)

Maximum calculated deflection: 4.325 mm (0.170 in)

Requirement maximum deflection according to EN 13150:2020 is  $\text{span}/200 = 0.004$  m (0.157 in)

Requirement in this case is NOT met: 4.325 (0.170 in) mm > 4 mm (0.157 in)

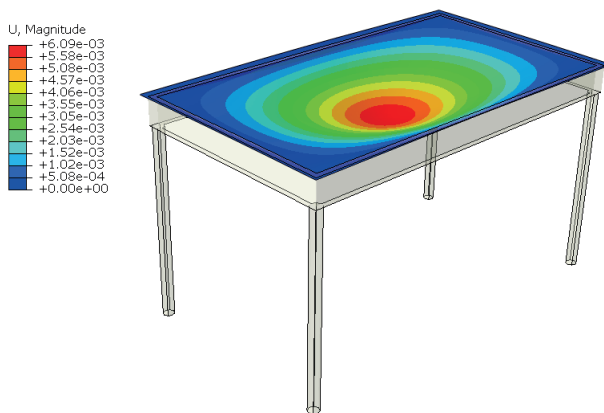


Figure 10 Example 2 edge supported panel

### Example 2

Dimensions: 800 x 1400 mm (31.496 x 55.118 in)

Span: 1.4 m (55.118 in)

Point load applied at the middle of the panel on a circular area of  $\varnothing 100$  mm (3.937 in): 2000 N

Thickness: 16 mm (5/8 in)

Maximum calculated deflection: 6.084 mm (0.239 in)

Requirement maximum deflection according to EN 13150:2020 is  $\text{span}/200 = 0.007$  m (0.275 in)

Requirement in this case is met: 6.084 mm (0.239 in) < 7 mm (0.275 in)

## Span over 2 supports

PANEL THICKNESS	PANEL WIDTH	MAXIMUM PANEL LENGTH	
		Vertical static load F = 2000 Newton (approximately 200 kg/440 lb)	Load per unit area q = 125 kg/m <sup>2</sup> (25 lb/ft <sup>2</sup> )
13 mm (1/2 in)	700 mm (27.559 in)	370 mm (14.566 in)	770 mm (30.314 in) <sup>A</sup>
	800 mm (31.496 in)	390 mm (15.354 in)	
	900 mm (35.433 in)	420 mm (16.535 in)	
	1000 mm (39.370 in)	440 mm (17.322 in)	
	1100 mm (43.307 in)	460 mm (18.110 in)	
	1200 mm (47.244 in)	480 mm (18.897 in)	
	1300 mm (51.181 in)	500 mm (19.685 in)	
	1400 mm (55.118 in)	520 mm (20.472 in)	
16 mm (5/8 in)	700 mm (27.559 in)	500 mm (19.685 in)	930 mm (36.614 in)
	800 mm (31.496 in)	540 mm (21.259 in)	
	900 mm (35.433 in)	560 mm (22.047 in)	
	1000 mm (39.370 in)	590 mm (23.228 in)	
	1100 mm (43.307 in)	620 mm (24.409 in)	
	1200 mm (47.244 in)	650 mm (25.590 in)	
	1300 mm (51.181 in)	670 mm (26.377 in)	
	1400 mm (55.118 in)	690 mm (27.165 in)	
20 mm (3/4 in)	700 mm (27.559 in)	700 mm (27.559 in)	1160 mm (45.669 in)
	800 mm (31.496 in)	740 mm (29.133 in)	
	900 mm (35.433 in)	780 mm (30.708 in)	
	1000 mm (39.370 in)	820 mm (32.283 in)	
	1100 mm (43.307 in)	860 mm (33.858 in)	
	1200 mm (47.244 in)	890 mm (35.039 in)	
	1300 mm (51.181 in)	920 mm (36.220 in)	
	1400 mm (55.118 in)	950 mm (37.401 in)	
25 mm (1 in)	700 mm (27.559 in)	960 mm (37.795 in)	1420 mm (55.905 in)
	800 mm (31.496 in)	1020 mm (40.157 in)	
	900 mm (35.433 in)	1070 mm (42.125 in)	
	1000 mm (39.370 in)	1120 mm (44.094 in)	
	1100 mm (43.307 in)	1170 mm (46.062 in)	
	1200 mm (47.244 in)	1210 mm (47.637 in)	
	1300 mm (51.181 in)	1250 mm (49.212 in)	
	1400 mm (55.118 in)	1290 mm (50.787 in)	
1500 mm (59.055 in)	1320 mm (51.968 in)		

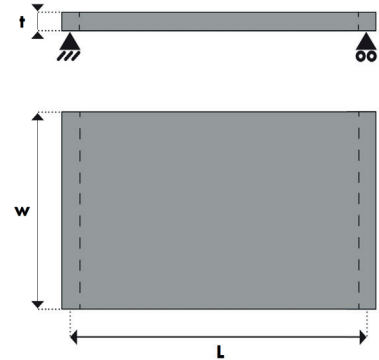


Figure 11 – Span over two supports

A: For a distributed load the maximum length is independent of the width; therefore only one value is given in the table. All numbers have been rounded to the nearest 10.

### Span over 3 supports

PANEL THICKNESS	PANEL WIDTH	MAXIMUM OR MINIMUM PANEL LENGTH	
		Vertical static load $F = 2000$ Newton (approximately 200 kg/440 lb)	Load per unit area $q = 125$ kg/m <sup>2</sup> (25 lb/ft <sup>2</sup> )
13 mm (1/2 in)	700 mm (27.559 in)	440 mm (17.322 in)	1050 mm (41.338 in) <sup>A</sup>
	800 mm (31.496 in)	460 mm (18.110 in)	
	900 mm (35.433 in)	500 mm (19.685 in)	
	1000 mm (39.370 in)	520 mm (20.472 in)	
	1100 mm (43.307 in)	550 mm (21.653 in)	
	1200 mm (47.244 in)	570 mm (22.440 in)	
	1300 mm (51.181 in)	590 mm (23.228 in)	
	1400 mm (55.118 in)	610 mm (24.015 in)	
	1500 mm (59.055 in)	640 mm (25.196 in)	
16 mm (5/8 in)	700 mm (27.559 in)	600 mm (23.622 in)	1300 mm (51.181 in)
	800 mm (31.496 in)	640 mm (25.196 in)	
	900 mm (35.433 in)	680 mm (26.771 in)	
	1000 mm (39.370 in)	710 mm (27.952 in)	
	1100 mm (43.307 in)	740 mm (29.133 in)	
	1200 mm (47.244 in)	780 mm (30.708 in)	
	1300 mm (51.181 in)	810 mm (31.889 in)	
	1500 mm (59.055 in)	860 mm (33.858 in)	
20 mm (3/4 in)	700 mm (27.559 in)	830 mm (32.677 in)	1600 mm (62.992 in)
	800 mm (31.496 in)	890 mm (35.039 in)	
	900 mm (35.433 in)	940 mm (37.007 in)	
	1000 mm (39.370 in)	980 mm (38.582 in)	
	1100 mm (43.307 in)	1030 mm (40.551 in)	
	1200 mm (47.244 in)	1070 mm (42.126 in)	
	1300 mm (51.181 in)	1110 mm (43.700 in)	
	1500 mm (59.055 in)	1180 mm (46.456 in)	
25 mm (1 in)	700 mm (27.559 in)	1150 mm (45.275 in)	< 1950 mm (76.771 in)
	800 mm (31.496 in)	1220 mm (48.031 in)	
	900 mm (35.433 in)	1290 mm (50.787 in)	
	1000 mm (39.370 in)	1360 mm (53.543 in)	
	1100 mm (43.307 in)	1410 mm (55.511 in)	
	1200 mm (47.244 in)	1470 mm (57.874 in)	
	1300 mm (51.181 in)	1520 mm (59.842 in)	
	1500 mm (59.055 in)	1620 mm (63.779 in)	

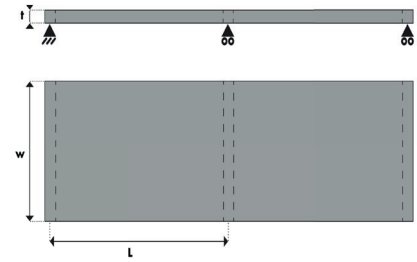


Figure 12 – Span over three supports

A: For a distributed load the maximum length is independent of the width; therefore only one value is given in the table. All numbers have been rounded to the nearest 10.



# HORIZONTAL WORK SURFACES: DESIGN RECOMMENDATION

Durability, maintainability, reliability and aesthetics are optimized when the worktop is machined correctly. Trespa panels can be tailored to the technical discipline of the laboratory. Some examples of how Trespa panels can be adapted to particular work needs and conditions are illustrated on the next pages.

## Joints

It is recommended that the joint between two benches should be as level as possible, strong and easy to clean (dependent on specification).

As a general rule, joints should be over or near supports and minimum 150 mm (6 in) away from sink areas. It is generally accepted that the distance from a joint to the end of bench should be greater than the overall width of the bench.

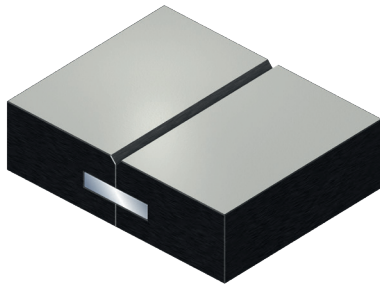


Figure 13 - Spline joint filled with sealant

Spline joint sealant (e.g. silicon):

- Sealant can be cleaned, removed and replaced if necessary



Figure 14 - Standard spline joint

Standard spline joint:

- Spline (or biscuits) assists the joining of two separate panels
- Spline establishes a strong joint
- Recommended to use with tight joint fasteners (also known as dog bolts)

## Edges

Edges should be safe, free from saw marks and jagged edges. For better aesthetics it is advised to polish edges. The drip grooves are optional. If choosing for a design with a chamfer, it is advisable to manufacture the chamfer or the radius from 2 mm to 3 mm (1/16 in to 1/8 in). Below few common designs.

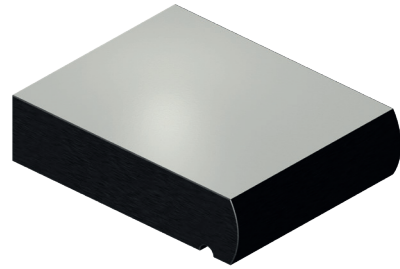


Figure 15 - Example edge finish TopLab® n.1 "Crescent edge"

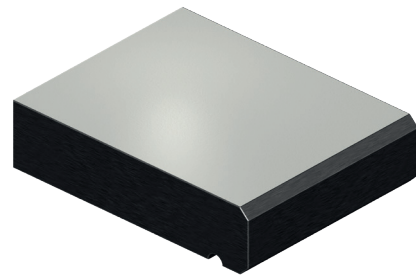


Figure 16 - Example edge finish TopLab® n.2 "Chamfer edge" with 2 to 3 mm chamfer

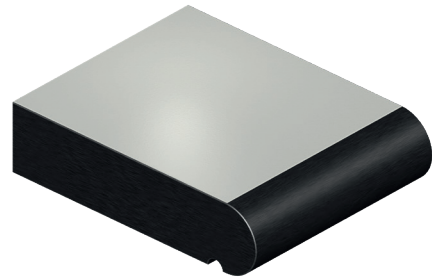


Figure 17 - Example edge finish TopLab® n.3 "Bullnose edge"

## Accessories

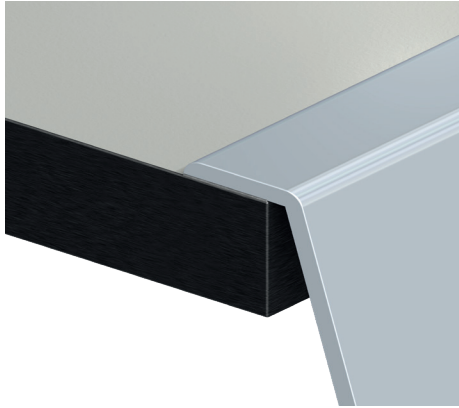
The machinability of Trespa panels allows the easy incorporation of sinks (stainless steel, epoxy, ceramic, polypropylene), drip cups (polypropylene) and marine edges (epoxy).

## Sinks

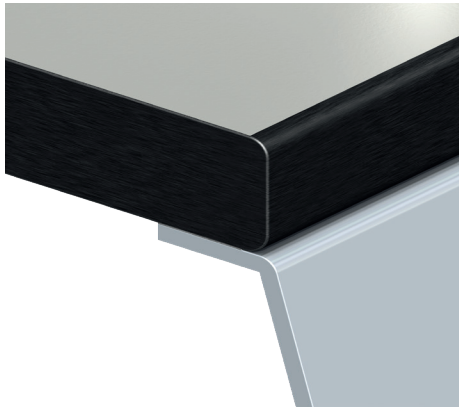
Sinks should be supported by a minimum thickness of 6 mm (1/4 in) in installation with drop-in sinks – see figure 18.

## Hinges

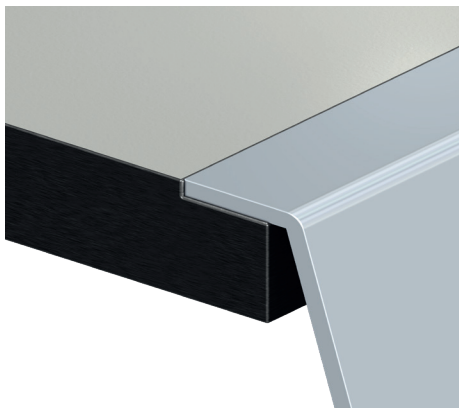
Consult with your hardware representative for hinges that are most compatible with the material thickness and construction style specified or required. The maximum drill hole depth equals the panel thickness minus 3 mm (1/8 in).



*Figure 18 - Drop on*



*Figure 19 - Undermount*



*Figure 20 - Drop in*

## FURNITURE INSTALLATION DETAILS

### Other edge finishes on work surfaces

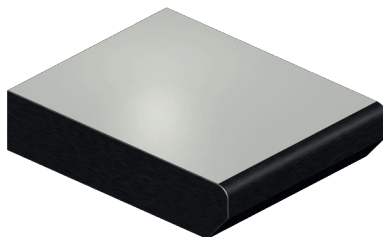


Figure 21 - Example edge finish TopLab® n.4

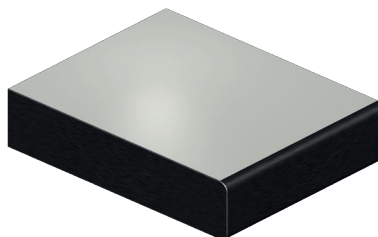


Figure 22 - Example edge finish TopLab® n.5

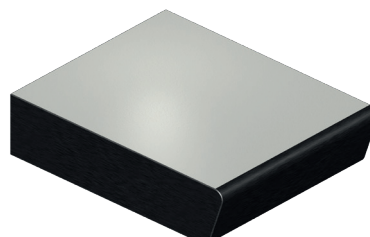


Figure 23 - Example edge finish TopLab® n.6

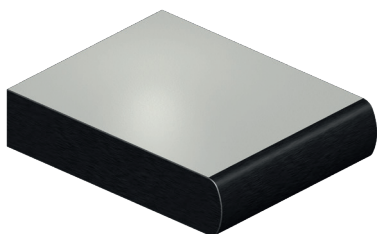


Figure 24 - Example edge finish TopLab® n.7

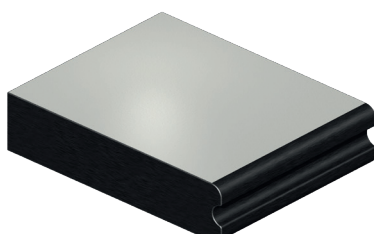


Figure 25 - Example edge finish TopLab® n.8

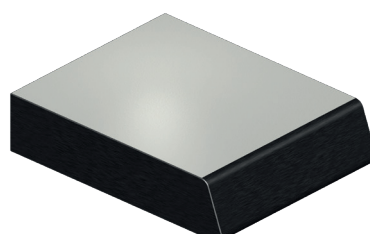


Figure 26 - Example edge finish TopLab® n.9

### Double thickness using Trespa 13 mm panels

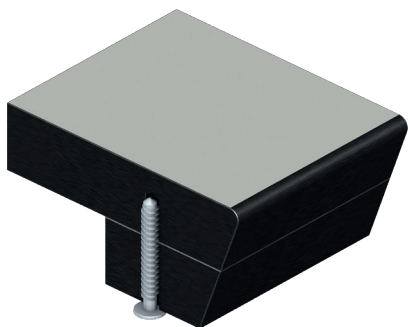


Figure 27 - Double thickness

Glued and mechanical joint; follow instructions of screw manufacturer. The holes must be pre drilled according to screw manufacturer recommendations

**Corner joints**

Numerous techniques can be used for joining the panels. Some variants normally used for cabinets are displayed here below just as an example.

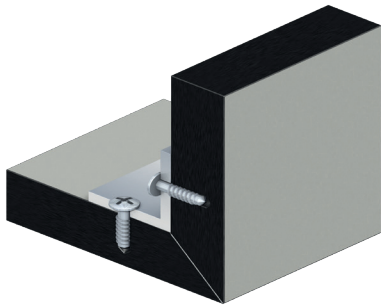


Figure 28 - With screw-fixed L profile

Glued joint  
Aluminium L profile 30 x 30 x 3 mm

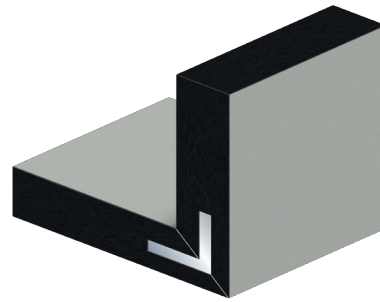


Figure 29 - With glue-fixed L profile

Glued joint  
Aluminium L profile 30 x 30 x 3 mm

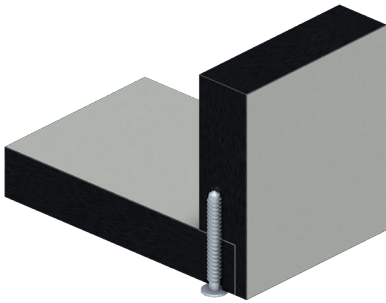


Figure 30 - Screw-fixed /glued with recess

Glued joint  
Pre-drilled hole

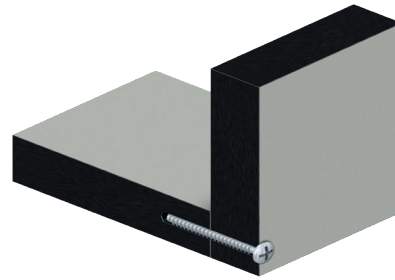


Figure 31 - Screw-fixed

Glued joint  
Pre-drilled hole

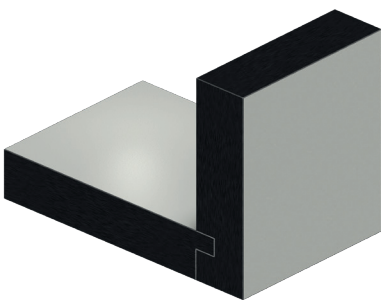


Figure 32 - Glued

Glued joint

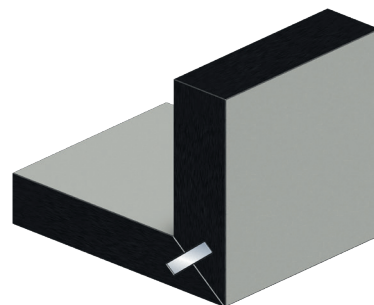


Figure 33 - With glue-fixed tongue

Glued edge  
Aluminium tongue

## Other finishes

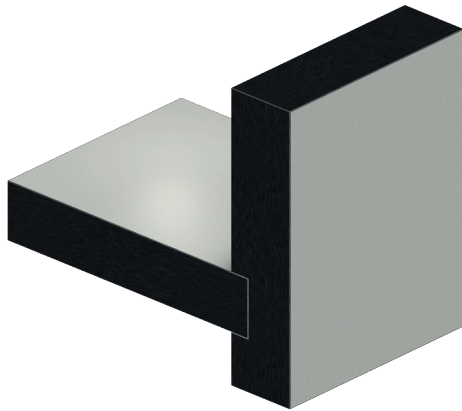


Figure 34 - Glue-fixed with groove T joint

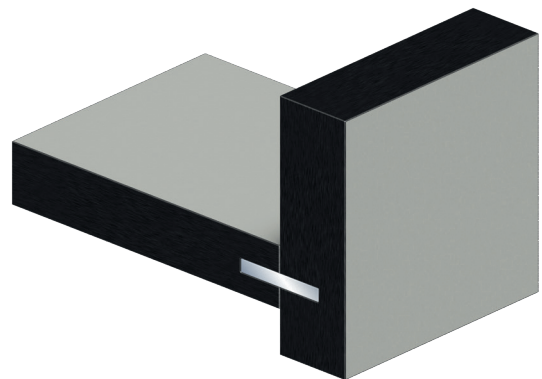


Figure 35 - Glue-fixed with tongue T joint



Figure 36 - Back panel finish glue-fixed with 6 mm (1/4in) Trespa® TopLab®



Figure 37 - Back panel finish screw-fixed with 6 mm (1/4in) Trespa® TopLab®

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