Table top *thickness*, overhang and span

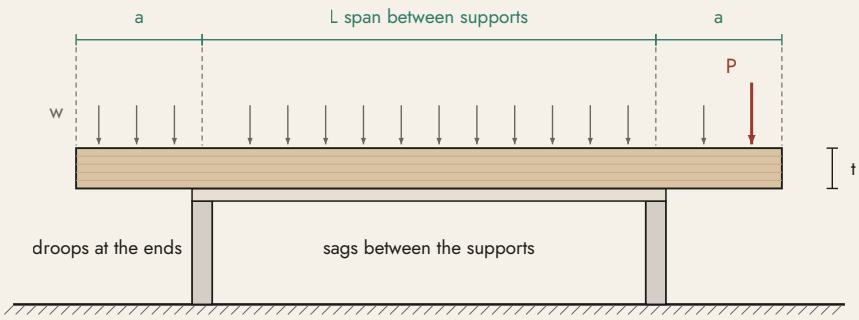
How thickness, span and overhang change the sag and stress of a table top, the weight of tops by material, and what to ask the partner workshop for. It gives no span or overhang table.

Compliance guidance. Weights, ratios and examples on this sheet are arithmetic from published material data and statics, for a partner workshop and a structural engineer to confirm. They are not engineered capacities and not a guarantee. We found no published rule for the safe span or overhang of a table top in the sources we could read, so none is given. A top that could break, collapse or tip under a person leaning, sitting or standing on it needs a tested design or a structural engineer. Guidance, not engineering advice.

AT A GLANCE

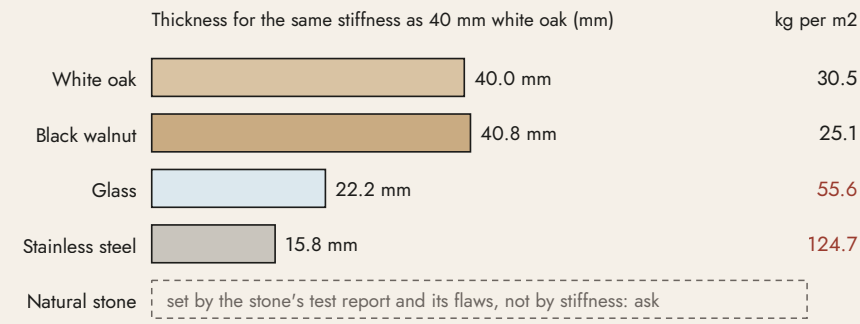
If you change	Sag	Bending stress	Weight of top	Why
Double the span between supports (load per metre unchanged)	x 16	x 4	no change per m²	Sag grows with L to the fourth power, stress with L squared.
Double an overhang, load spread along it	x 16	x 4	no change per m²	Cantilever, spread load: tip sag grows with a to the fourth power.
Double an overhang, load on the tip (someone leans on the edge)	x 8	x 2	no change per m²	Cantilever, tip load: sag grows with a cubed, moment with a.
Cut an overhang from 500 to 400 mm	x 0.51 (tip load) or x 0.41 (spread load)	x 0.80 or x 0.64	slightly less top	Legs moved 100 mm towards the ends.
Double the thickness	÷ 8	÷ 4	x 2	Sag falls with t cubed, stress with t squared.
Same thickness, oak to glass	÷ 5.8	no change	x 3.3	E 71,700 against 12,300 MPa; density 2,500 against 762 kg/m³. Brittle: see the glass sheet.
Same thickness, oak to stainless steel	÷ 16.3	no change	x 10.4	E 200,000 MPa; density 7,900 kg/m³. Thin sheet needs a frame.
Move the supports in from the ends to about 0.2 of the overall length (even load)	much less	÷ 5.8 for a 2,400 mm top	unchanged	Support and mid-span moments equal. Check seating and tipping.

Factors multiply the value you had. Exact beam arithmetic for the same material, load and width (Wood Handbook equation 9-2, Table 9-1): direction and size of a change, not a safe limit.



t thickness L span between supports a overhang beyond a support w load along the top P load on an edge

A table top on two sets of legs: thickness t, span L between supports and overhang a, with the load along the top and a person leaning on an edge. Original drawing by Make Bespoke Studio, not to scale.



Thickness of each material that matches the stiffness of a 40 mm white oak top, with its weight per square metre. Arithmetic from published E values; stone is set by test, not stiffness. Original drawing by Make Bespoke Studio.

WEIGHT OF TOPS

Material and density used	kg per m² at each thickness
Solid white oak at 12% moisture, 762 kg/m³	25 mm: 19.1; 40 mm: 30.5; 60 mm: 45.7
Glass (float, toughened or laminated), 2,500 kg/m³	10 mm: 25.0; 12 mm: 30.0; 15 mm: 37.5; 19 mm: 47.5
Natural stone (density assumed), 2,700 kg/m³	20 mm: 54.0; 30 mm: 81.0; 40 mm: 108.0
Stainless steel sheet or plate, 7,900 kg/m³	3 mm: 23.7; 6 mm: 47.4; 12 mm: 94.8

Stone density 2,700 kg/m³ is assumed. Weight = thickness (mm) x density / 1,000.

WHAT TO ASK THE PARTNER FOR

Build-up in section; support layout with the span and each overhang; how it was checked (calculation, or a test to the current edition of BS EN 15372 or BS EN 12521); deflection limit; weight and centre of mass; the load that tips it; movement allowance and fixings; joints and cut-outs relative to the supports.

SPECIFICATION WORDING

TOP AND SUPPORT BUILD-UP

Table top: [40] mm [solid oak] on [60 x 40 mm steel rails] with supports at [ ] mm and [ ] mm from the ends, span [ ] mm, overhang [ ] mm each end and [ ] mm each side, as drawing [ref]. The partner is to submit the calculation or test report for this build-up, stating the load case, the material data used and the deflection limit, before production.

STABILITY

The table is to be stable against a vertical load of [ ] kg applied at the edge at its most unfavourable point, with the base footprint and mass shown on drawing [ref]. The partner is to state the load at which it tips, and the edition of [BS EN 15372 / BS EN 12521] and severity level to which a finished table has been tested, with the test report.

WEIGHT AND FIXING

Weight of top [ ] kg and of the complete table [ ] kg, centre of mass shown on the drawing. The top is fixed [with slotted fixings so that it can move across the grain / on soft pads with a stop]; no rigid fixing of a stone, glass or wide timber top.

TERMS USED

Overhang
The part of a table top that extends beyond its support: beyond the legs, a rail or the base. Its length is the overhang a; how far it can reach depends on thickness, material and what holds the top.

Span
The distance between two supports of a table top (L), measured between the legs, rails or pedestals that carry it, not along the whole top.

Modulus of elasticity (E)
A material's stiffness: the stress needed to stretch or compress it by a given fraction, in MPa. A top with a higher E sags less at the same thickness. (Wood Handbook, equation 9-2.)

Tipping line
The line about which a table rotates when it tips: the edge of its base, or the line through the outer legs, on the side being loaded.

STANDARDS AND SOURCES

- USDA Forest Products Laboratory, Wood Handbook, FPL-GTR-282 (2021): Tables 5-3a, 5-6; equation 9-2, Table 9-1.
- National Glass Association, Glass Technical Paper FM05-12 (2023): glass density, E and strength.
- Euro Inox, Tables of Technical Properties (2007): grade 1.4301 density and E.
- BS EN 15372:2023 and BS EN 12521:2023 (finished tables): current on BSI Knowledge; not read.

Full guide: https://makebespoke.com/trade/technical/table-top-thickness-overhang-and-span. Make Bespoke Studio coordinates manufacture through its partner workshops. Figures are guidance only and your specification governs; some may be superseded, so contact the studio to verify.