

Design plywood flat pressure resistance for long term duration load

Timber geometric properties:

Thickness of plywood:

$$t := 12 \text{ mm}$$

Width of wooden element:

$$b_1 := 45 \text{ mm} \quad b_2 := 90 \text{ mm}$$

Height of wooden element:

$$h_1 := 95 \text{ mm}$$

Bearing on plywood face strength small area:

$$f_{c,face,k} := 9.0 \frac{\text{N}}{\text{mm}^2}$$

Partial safety factor for plywood:

$$\gamma_{M,plywood} := 1.2$$

2nd service class factor for long duration loading:

$$k_{mod} := 0.7$$

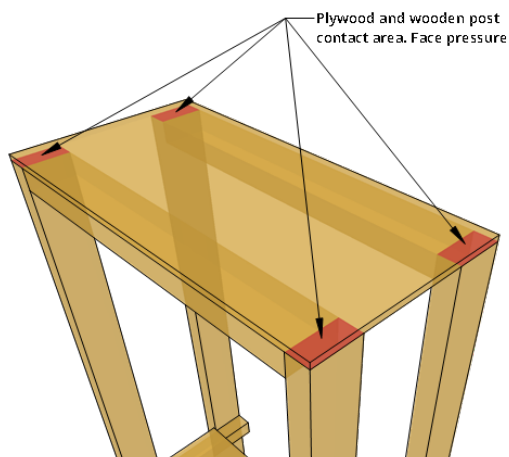
Design compressive stress on face area:

$$f_{c,face,d} := \frac{k_{mod} \cdot f_{c,face,k}}{\gamma_{M,plywood}} = 5.25 \frac{\text{N}}{\text{mm}^2}$$

Maximum load on plywood face:

$$F_{d,face} := f_{c,face,d} \cdot b_1 \cdot h_1 = 22.444 \text{ kN}$$

$$F_{d,face} := f_{c,face,d} \cdot b_2 \cdot h_1 = 44.888 \text{ kN}$$



1Pic. Plywood and wood contact area