

Wood Screw Withdrawal Calculator

Estimate how much pull-out force a wood screw can resist, from the screw gauge, the wood species, and the depth of thread penetration.

How it works

The estimate uses the common empirical withdrawal formula $P = 2850 \times G^2 \times D \times L$, where G is the specific gravity of the wood, D the shank diameter in inches, and L the threaded penetration in inches. It assumes side-grain insertion with a proper pilot hole (about the root diameter of the screw). Withdrawal in end grain is roughly 60% weaker, and a larger pilot hole or an over-driven screw can cut the value sharply - the calculator shows the estimate divided by four as a conservative working load.

For live values, use the interactive calculator: bookoffasteners.com/calculators/wood-screw-withdrawal-calculator/

Reference values only — verify against the governing standard or manufacturer before use.