

To Calculate Wing Loading

In this example, we will use an aircraft weighing 5 1/2 lbs (5 lbs 8 oz.) with 600 square inches of wing area. Calculating the wing loading requires that the wing area be converted to square feet (ft²) and pounds to ounces.

1) Convert the area to square feet. There are 144 (12 x 12) square inches in a square foot.

$$600 \text{ in}^2 / 144 = 4.17 \text{ ft}^2$$

2) Convert the total empty weight (ready-to-fly with no fuel) to ounces. There are 16 ounces in a pound.

$$5.5 \text{ lbs} \times 16 = 88 \text{ oz.}$$

3) Divide the weight by the area:

$$88 \text{ oz.} / 4.17 \text{ ft}^2 = 21.1 \text{ oz} / \text{ft}^2$$

Using round numbers, this gives the aircraft a wing-loading of 21 oz / ft² or

You can perform the entire calculation in one shot using simple substitution:

$$\text{(Weight in pounds } \times \text{ 16)} / \text{(Square inches area } / \text{ 144)}$$

This reduces to:

$$\text{Wing Loading} = \text{(Weight in pounds } \times \text{ 2304)} / \text{Wing Area in square inches}$$

Plugging the numbers from this example into the above formula gives us this:

$$(5.5 \times 2304) / 600 = 21.1 \text{ oz} / \text{ft}^2$$

For multi-wing aircraft, divide the overall weight of the aircraft by the total wing area for all wings.