

Density

Definition:

Density means pounds per cubic foot. It measures the relationship between weight and volume of an item.

Calculation:

The density calculation is a two-step process.

Step 1: Calculate the Cubic Feet

$$\text{Cubic Feet} = \frac{(\text{length in inches} \times \text{width in inches} \times \text{height in inches})}{1728 \text{ cubic inches}}$$

Step 2: Calculate the Density-Pounds per Cubic Foot (PCF)

$$\text{Density (PCF)} = \frac{\text{weight of the same item}}{\text{Cubic feet}}$$

Example:

Find the density of a 300 pound item with dimensions: 48 inches long, 48 inches wide and 36 inches high.

$$\text{Cubic Feet} = \frac{48 \text{ in.} \times 48 \text{ in.} \times 36 \text{ in.}}{1728 \text{ cubic inches}} = \frac{82944 \text{ cubic in.}}{1728 \text{ cubic in.}} = 48 \text{ cubic feet}$$

$$\text{Density (PCF)} = \frac{300 \text{ Pounds}}{48 \text{ cubic feet}} = 6.25 \text{ pounds per Cubic Foot}$$