PMPA
PRECISION MACHINED PRODUCTS ASSOCIATION

CRAFTSMAN'S CRIBSHEET

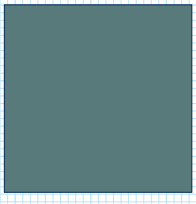
№ 81

Rapid Methods for Determining the Weight of a Steel Bar (Imperial Units)

The need frequently arises in our shops to estimate the weight of steel, whether as a part of quoting, to estimate how much steel may be needed given a certain length of part, or just to decide how heavy the bar is that we are loading into the machines for safety purposes. Counting bars in a bundle and multiplying by weight per bar allows a quick "reality check" on whether or not the tag weight is correct, or how much weight is left in the rack.

Steel weighs 0.2833 pounds per cubic inch.
To get the weight of a steel bar, we need to calculate its volume in Cubic Inches.

To calculate the volume, we need to first calculate the area in square inches of the section, then multiply by its length.

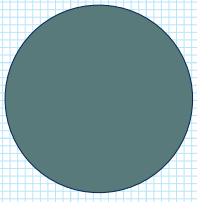


Square or Flat Bar

To find the area of a square or flat bar, multiply the width by the thickness. Then multiply that by the length (in inches) to calculate the volume, then multiply the volume by 0.2833 pounds per cubic inch

Example 1" square steel bar 12 feet (144 inches) long
1 inch times 1 inch times 144 inches = 144 cubic inches ; times 0.2833 pounds per cubic inch = **40.97 pounds.**

Example ½" by 2"inch flat 10 feet (120 inches) long
½ inch times 2 inches times 120 inches = 120 cubic inches; times 0.2833 pounds per cubic inch = **33.99 pounds.**



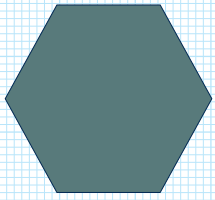
Round Bar

To find the area of a round bar, square the diameter and multiply by 0.7854. Multiply this by the length to calculate the volume

Example 1" round by 12 feet long steel bar
1 inch times 1 inch times 0.7854 = 0.7854 square inches times 144 inches = 113.09 cubic inches; times 0.2833 pounds per cubic inch = **32.04 pounds per bar.**

Weight of bars left in a bundle: if there are 75, 1" round 12 feet long bars left in a bundle the weight of the remaining steel is 75 bars times 32.04 pounds per bar = **2,403 pounds.**

Example ¾" round by 4 feet (48 inches) long steel bar
.750" times .750" times .7854 times 48 inches = 21.21 cubic inches; times 0.2833 pounds per cubic inch = **6.00 pounds**



Hex Bar

To find the area of a hex, first square the flat-to-flat distance, then multiply that by 0.866. Then multiply by length in inches to get the volume. Then multiply by 0.2833 pounds per cubic inch to get the pounds.

Example 1" hex steel bar, 12 feet (144 inches) long
1" times 1" times 0.866 times 144" times 0.2833 pounds per cubic inch = **35.33 pounds**

Example 1.5" hex bar 3" long blank for chucker.
1.5" times 1.5" times 0.866 times 3" times 0.2833 pounds per cubic inch = **1.93 pounds per 3 inch blank**. PMPA