Answer on Question #76272, Chemistry / General Chemistry

Question:

A 1.84 x 10^4 mg block of metal has the following dimensions: 0.5839 inches by 0.531 inches, by 0.4981 inches. Determine the density of the block in g/mL. Using the provided list of metals and their respective densities, what is the metal's identity?

Given:

titanium = 4.54 g/mL

zinc = 7.13 g/mL

tin = 7.31 g/mL

nickel = 8.9 g/mL

In the provided boxes, enter your numerical value of the density of the metal that you calculated, and then enter the correct units exactly as given in the problem. Do not enter answers in scientific notation. Finally enter the identity of the metal from your list of choices above. Spelling and data entry count!

Solution:

Dimensions:

0.5839 · 2.54 cm = 1.4831 cm

0.531 · 2.54 cm = 1.3487 cm

0.4981 · 2.54 cm = 1.2652 cm

So, the volume: 1.4831 · 1.3487 · 1.2652 = 2.53 cm^3 = 2.53 mL

Mass: 1.84 x 10^4 mg = 18.4 g

Density: 18.4 / 2.53 = **7.27 g/mL**, so this is **tin**

Answer:

Calculated density: 7.27 g/mL

Metal: tin