Answer on Question #70670, Chemistry / General Chemistry:

Consider a tray that is 25cm by 40 cm. The mass of the gold plated on the top surface of the tray is 3.86grams. Given that the density of gold is 19.3g/cm^3 determine the thickness of the gold on the top of the tray. I need the answers for the following: length, width, mass, density, volume, area, and thickness, put in the calculations so I can see how you got the answers.

Solution.

$l = 25cm = 0,25m$

$b = 40cm = 0,4m$

$\rho = 19,3g / cm^3$

$m = 3,86g$

$d - ?$

Weight – m

Density - ρ

Length – l

Width – b

Thickness – d

Area – S

Volume - V

Solution weight:

$\mathrm{m} = \rho \cdot \mathrm{V}$

Volume, volume is the product of length and width and thickness:

$V = l \cdot b \cdot d$

So we get the formula:

$\mathrm{m} = \rho \cdot l \cdot b \cdot d$

$d = \frac{m}{\rho \cdot l \cdot b}$

Substitute in the formula numerical data:

$d = \frac{m}{\rho \cdot l \cdot b} = \frac{3,86g}{19,3g / cm^3 \cdot 25cm \cdot 40cm}$

$d = 2 \cdot 10^{-4} cm = 2 \cdot 10^{-6} m$

Answer: $d = 2 \cdot 10^{-4} cm = 2 \cdot 10^{-6} m$.