Question # 81430

Calculate the number of grams of sulfuric acid in 1 gallon of battery acid if the solution has a density of 1.30 {\rm g/mL} and is 39.1 {\rm \%} sulfuric acid by mass.

Answer:

The mass of sulfuric acid in 1 gallon of battery acid is equal to 1924.12 grams.

First of all, it is necessary to convert gallon to liters:

$$1\ gal\ =\ 3.7854\ l$$

According to the formula (1), the mass of sulfuric acid is equal to:

$$w = \frac{m_{H_2SO_4}}{\rho * V_{solution}} * 100\% \qquad (1)$$

$$m_{H_2SO_4} = \frac{w * \rho * V_{solution}}{100\%} = \frac{39.1 * 1.3 * 10^3 * 3.7854}{100\%} = 1924.12\ g$$