

mass spectrometer

If the average mass of a B atom is 10.81 amu, and ^{10}B , with a mass of 11.008 amu, is 80.40% abundant, what is the percent abundance and mass of the other B isotope?

$$100\% - 80.40\% = 19.60\%$$

$$^{10}\text{B} \quad x \cdot 0.1960 = 0.1960x$$

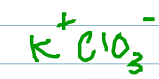
$$^{11}\text{B} \quad 11.008 \cdot 0.8040 = \frac{8.850}{10.81 \text{ amu}}$$

$$0.1960x + 8.850 = 10.81 \quad x = 10.00 \text{ amu}$$

$$\text{MOLE} = \frac{6.022 \times 10^{23}}{\text{AVOGADRO'S NUMBER}} \text{ pieces}$$

molar mass (Mm)

What is the molar mass of potassium chlorate?



$$\text{K}: 1 \times 39.10 = 39.10$$

$$\text{Cl}: 1 \times 35.45 = 35.45$$

$$\text{O}: 3 \times 16.00 = 48.00$$

$$\underline{122.55 \text{ g}} = 1 \text{ mol}$$

$$122.55 \text{ g/mol}$$

What is the mass of 12.345 moles of KClO_3 ?

$$12.345 \text{ mol} \times \frac{122.55 \text{ g}}{1 \text{ mol}} =$$

$$1512.9 \text{ g}$$

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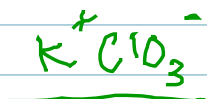
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How many atoms are in a 4.70g Ag sample?

$$4.70 \text{ g Ag} \times \frac{1 \text{ mol}}{107.87 \text{ g}} \times \frac{6.02 \times 10^{23} \text{ atoms}}{1 \text{ mol}} = 2.62 \times 10^{22} \text{ atoms Ag}$$

What is the mass of 3.18×10^{24} molecules of PF_5 ?

$$\begin{aligned} & (3.18 \times 10^{24} \text{ molecules}) \times \frac{1 \text{ mole}}{6.022 \times 10^{23} \text{ molecules}} \times \frac{125.91 \text{ g}}{1 \text{ mole}} \\ & = 6.65 \times 10^7 \text{ g} = 6.65 \times 10^4 \text{ kg} \end{aligned}$$

Calculate the percent composition of citric acid



$$\text{C} : 5 \times 12.01 = 60.05 \text{ g} \Rightarrow \frac{60.05 \text{ g}}{180.13 \text{ g}} \times 100\% = 33.34\% \text{ C}$$

$$\text{H} : 8 \times 1.01 = 8.08 \text{ g} \quad \frac{8.08 \text{ g}}{180.13 \text{ g}} \times 100\% = 4.49\% \text{ H}$$

$$\text{O} : 7 \times 16.00 = 112.00 \text{ g} \quad \frac{112.00 \text{ g}}{180.13 \text{ g}} \times 100\% = 62.18\% \text{ O}$$

(100%)