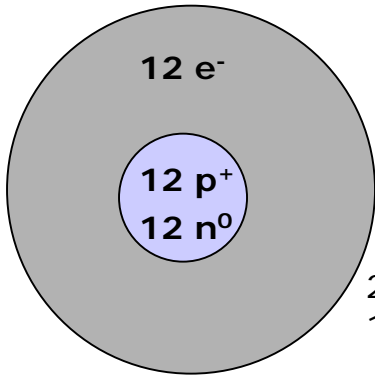


Average atomic mass

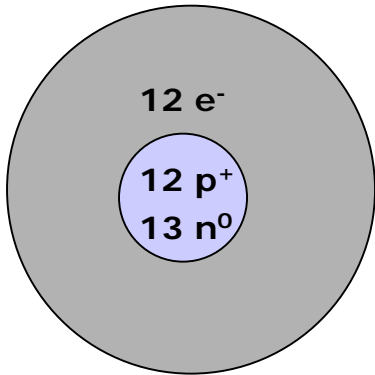
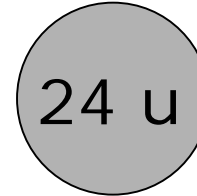


${}^{24}_{12}\text{Mg}$

mass (p⁺) = 1 u

mass (n⁰) = 1 u

mass (e⁻) = 0,0005 u (negligible)

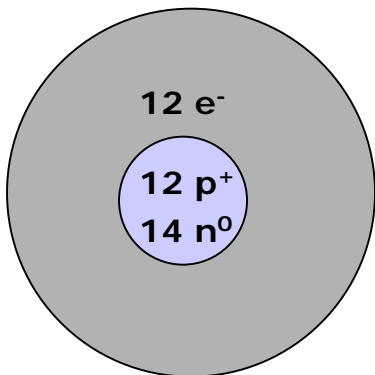
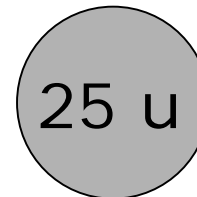


${}^{25}_{12}\text{Mg}$

mass (p⁺) = 1 u

mass (n⁰) = 1 u

mass (e⁻) = 0,0005 u (negligible)

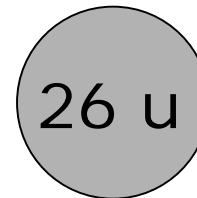


${}^{26}_{12}\text{Mg}$

mass (p⁺) = 1 u

mass (n⁰) = 1 u

mass (e⁻) = 0,0005 u (negligible)



Average atomic mass

Isotopes

Natural abundance

${}^{24}_{12}\text{Mg}$ (24 u) 79 %

${}^{25}_{12}\text{Mg}$ (25 u) 10 %

${}^{26}_{12}\text{Mg}$ (26 u) 11 %

$$\text{Average atomic mass} = \frac{[79 \times 24 \text{ u}] + [10 \times 25 \text{ u}] + [11 \times 26 \text{ u}]}{100} = 24.3$$

Average atomic mass

A magnesium sample has a mass of $0.25 \mu\text{g}$.

Determine:

1. the mass of the sample in a.m.u
2. the amount of magnesium atoms
3. the amount of Mg-26 isotopes

Natural occurrence of Mg-26: 11%

Solutions:

1. $1.505 \times 10^{17} \text{ u}$
2. $6.19 \times 10^{15} \text{ Mg atoms}$
3. $6.81 \times 10^{14} \text{ Mg-26 atoms}$

Average atomic mass

A magnesium sample has a mass of 0.25 μg .

Determine:

1. the mass of the sample in a.m.u
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Natural occurrence of Mg-26: 11%

Solutions:

1. $1.505 \times 10^{17} \text{ u}$
2. $6.19 \times 10^{15} \text{ Mg atoms}$
3. $6.81 \times 10^{14} \text{ Mg-26 atoms}$

$$1) m = 0.25 \times 10^{-6} \text{ g} \frac{6.02 \times 10^{23} \text{ u}}{1 \text{ g}} = 1.505 \times 10^{17} \text{ u}$$

$$2) x = 1.505 \times 10^{17} \text{ u} \frac{1 \text{ atom Mg}}{24,3 \text{ u}} = 6.19 \times 10^{15} \text{ Mg atoms}$$

$$3) x = 6.19 \times 10^{15} \text{ Mg atoms} \frac{11 \text{ Mg-26 atoms}}{100 \text{ Mg atoms}} = 6.81 \times 10^{14} \text{ Mg-26 atoms}$$