

ISOTOPE PERCENTAGE ABUNDANCE WORKSHEET



1. Naturally occurring europium (Eu) consists of two isotopes with a mass of 151 and 153. Europium-151 has an abundance of 48.03%, and Europium-153 has an abundance of 51.97%. What is the atomic mass of europium?

2. Strontium consists of four isotopes with masses of 84 (abundance of 0.50%), 86 (abundance of 9.9%), 87 (abundance of 7.0%), and 88 (abundance of 82.6%). Calculate the atomic mass of strontium.

3. Titanium has five common isotopes: ^{46}Ti (8.0%), ^{47}Ti (7.8%), ^{48}Ti (73.4%), ^{49}Ti (5.5%), ^{50}Ti (5.3%). What is the average atomic mass of titanium?

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Answers

1. Naturally occurring europium (Eu) consists of two isotopes with a mass of 151 and 153. Europium-151 has an abundance of 48.03%, and Europium-153 has an abundance of 51.97%. What is the atomic mass of europium?

Europium-151 (Eu-151) with an abundance of 48.03% and a mass of 151 amu

Europium-153 (Eu-153) with an abundance of 51.97% and a mass of 153 amu

Atomic Mass = $(0.4803 \times 151 \text{ amu}) + (0.5197 \times 153 \text{ amu}) = 152.200 \text{ amu}$

2. Strontium consists of four isotopes with masses of 84 (abundance of 0.50%), 86 (abundance of 9.9%), 87 (abundance of 7.0%), and 88 (abundance of 82.6%). Calculate the atomic mass of strontium.

Strontium-84 (Sr-84) with an abundance of 0.50% and a mass of 84 amu

Strontium-86 (Sr-86) with an abundance of 9.9% and a mass of 86 amu

Strontium-87 (Sr-87) with an abundance of 7.0% and a mass of 87 amu

Strontium-88 (Sr-88) with an abundance of 82.6% and a mass of 88 amu

Atomic Mass = $(0.0050 \times 84 \text{ amu}) + (0.099 \times 86 \text{ amu}) + (0.070 \times 87 \text{ amu}) + (0.826 \times 88 \text{ amu}) = 87.502 \text{ amu}$

3. Titanium has five common isotopes: ^{46}Ti (8.0%), ^{47}Ti (7.8%), ^{48}Ti (73.4%), ^{49}Ti (5.5%), ^{50}Ti (5.3%). What is the average atomic mass of titanium?

Titanium-46 (^{46}Ti) with an abundance of 8.0% and a mass of 46 amu

Titanium-47 (^{47}Ti) with an abundance of 7.8% and a mass of 47 amu

Titanium-48 (^{48}Ti) with an abundance of 73.4% and a mass of 48 amu

Titanium-49 (^{49}Ti) with an abundance of 5.5% and a mass of 49 amu

Titanium-50 (^{50}Ti) with an abundance of 5.3% and a mass of 50 amu

Average Atomic Mass = $(0.080 \times 46 \text{ amu}) + (0.078 \times 47 \text{ amu}) + (0.734 \times 48 \text{ amu}) + (0.055 \times 49 \text{ amu}) + (0.053 \times 50 \text{ amu}) = 47.923 \text{ amu}$

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