

## PHOSPHORUS - 32

Phosphorus-32 is naturally occurring on Earth, especially appearing as an impurity within water, however it can be created synthetically by irradiating its decay product, sulfur-32.

Mass Number &

Atomic Number

How & Where

is it made? Type of Emission,

Specific Activity & Half

Life

Use of Phosphorus-32 Phosphorus-32 contains a mass number of 31.97 and an atomic mass of 32 Phosphorus-32 gives off beta decay, contains a specific activity rate of  $10,590.14 \times 10^{12}$  Bq/g and a half life of 14.3 days.

Phosphorus-32 is abundant within biological systems, and can completely replace the non-radioactive Phosphorus-31,

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EVERYTHING YOU NEED TO KNOW

## PHOSPHORUS - 32

### Production & Uses

#### PRODUCTION

Primarily synthetically created by bombarding sulfur-32 with fast neutrons

Can occur naturally in Earth, appearing as trace amounts of impurity in water, and

#### PRACTICAL USES

A phosphorus-32 solution may be inserted into the roots of a

plant, allowing its growth to be tracked through a Geiger counter as it is chemically identical to its non-radioactive counterpart, phosphorus-31. Phosphorus-32 is particularly useful in the identification of malignant tumors as these specific tumors tend to accumulate more phosphate than other cells

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## PHOSPHORUS - 32

### Decay Equation, Radiation Emission & Stable Isotope

When phosphorus-32 undergoes beta decay, its final, and stable isotope product, sulfur-32, is derived from it. Decay Equation

What is phosphorus-32 final stable isotope? Type of Emitted Radiation

Phosphorus-32 has a relatively short half life of 14.3 days, wherein it undergoes beta decay, shown as: Phosphorus-32 gives off beta decay. 1.709 MeV of energy is released from this.