

Helium Capture Activity Answers

1. What is helium capture?

Helium capture occurs in high mass stars when helium nuclei fuse to other nuclei to produce heavier elements.

2. What is an alpha particle?

An alpha particle consists of two protons and two neutrons bound together into a particle identical to a helium nucleus.

3. What is alpha decay?

Alpha decay is a type of radioactive decay in which an atomic nucleus emits an alpha particle (two protons and two neutrons bound together into a particle identical to a helium nucleus) and decays into an atom with a mass number 4 less and atomic number 2 less.

4. What two forces are involved in alpha decay?

The nuclear force and electromagnetic force are involved in alpha decay.

5. How is most of Earth's helium produced?

About 99.9% of the helium produced on Earth is the result of the alpha decay of underground deposits of minerals containing uranium or thorium.

6. As the process is continued, and a helium atom is added to the resulting atoms to produce new elements with fairly high cosmic abundance. Complete the following table.

Elements with High Cosmic Abundance

Element	Atomic number
hydrogen	1
helium	2
beryllium	4
carbon	6
oxygen	8
neon	10
magnesium	12
silicon	14
sulfur	16
argon	18
calcium	20
iron	26

7. What is unique about iron? Why is this “bad news” for a star?

It is the one element from which it is not possible to generate any kind of nuclear energy.