

Nuclear fusion

Nuclear fusion occurs when the nuclei of two atoms fuse (join) together to make a large nucleus and energy is released. Every element is made up of atoms with a different number of protons (positive particles) in the nucleus and neutrons (no charge).

Hydrogen, the most common element in the sun, has one proton but no neutrons. Normally the positive charges of the hydrogen nuclei means they repel each other, but in the heat of the core they fuse to form helium, which has two protons.

Remember : Nuclear fusion occurs in stars!

- ① When two protons (hydrogen nuclei) fuse, they form a heavy hydrogen nucleus, ${}^2_1\text{H}$.
- ② Two more protons collide separately with two ${}^2_1\text{H}$ nuclei and turn them into heavier nuclei, and these then collide to form the helium nucleus ${}^4_2\text{He}$.
- ③ There are large amounts of energy released at each of the stages and this is released as kinetic energy of the product nucleus and other particles.

Scientists are constantly trying to create usable nuclear fusion but it is very difficult to maintain this on a small scale. If we do, it could solve the earth's energy crisis.

