

Intro to boron essay



Have you ever done the laundry and wondered what was in the detergent you use? Or if you watched a rocket launch into space have you wondered how it can even make it past earth? The answer to those questions is boron (B). Boron is a metalloid element with an atomic number of 5 and an atomic mass of 10. 81. Its melting point is 2076 C and its boiling point is 3927 C. In 1808, Sir Humphrey Davy in France discovered this element when he reacted boric acid with potassium. At the same time Joseph-Louis Gay-Lussac and L.J. Thernard also discovered boron as well in Paris.

Boron is a very functional element that can be used as something simple like eye drops or used for something as complex as an engine igniter for rockets. Boron is often in the form of a powder substance or in the form of a crystal. You cannot find boron in nature unless it's in another compound such as borax. The United States and Turkey have the highest reserves of borax. However boron is usually found in other compounds in the real world since it is very difficult to isolate. The easiest way to get boron is by heating borax and carbon.

Boron is a poor conductor of electricity at room temperature but when at high temperatures boron shows good conductivity. Boron is nonreactive to water, oxygen, acids and alkali. One of the many uses for boron is cleaning supplies and laundry detergent. Boron is found in borax, which is in those supplies. The borax and other borates clean and bleach by converting some water molecules into hydrogen peroxide and since the pH of borax is 9. 5 it produces a basic solution in water, which increases the effectiveness of bleach and other cleaners.

Borates bond with other particles to keep ingredients dispersed evenly in a mixture, which maximizes the surface area of active particles to enhance the cleaning power. Also, the boron, oxygen and salt of borax prevent the metabolic process of organisms and therefore are used to disinfect and kill unwanted pests. Another use of boron is that it is used to ignite rocket propellants. It does this because when a small amount of boron is added into the propellant, which causes a significant increase in performance.

Triethylborane a compound of boron ignites the JP-7 fuel of the Pratt & Whitney J58 turbojet/ramjet engines which power the Lockheed SR-71 Blackbird. NASA's Apollo and Skylab programs from 1967-1973 also used Triethylborane. It ignites engines effectively due to its ability to conduct energy when in high temperatures. Other uses for boron are neodymium magnets, which are used for cell phones, DVD's and also used for magnetic resonance imaging(MRI), which is used to see the internal part of a body.

MRI's are useful in imaging the brain, muscles, heart and cancers. Boron is also in bulletproof vests and used as a shield to radiation. Boron is a very useful element and although we don't realize it, we use boron somehow in our everyday live. It is a unique element because we can use that one element in so many different ways. It helps to cure diseases, clean houses, discover the final frontier, and so many more things. Boron is truly a great and versatile element.