

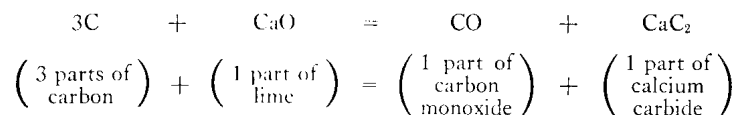
What Bangsite Is

Bangsite (the ammunition used in BIG-BANG) is specially prepared calcium carbide, which results when a mixture of powdered lime and powdered charcoal or coke is heated intensely in an electric furnace.

Ordinary charcoal or coke is nearly pure carbon. Carbon is represented in the chemical books by the letter C.

Ordinary lime is a combination of oxygen and the metal calcium, and is called by the chemists "calcium oxide." Calcium is represented by the letters Ca and calcium oxide by the letters CaO.

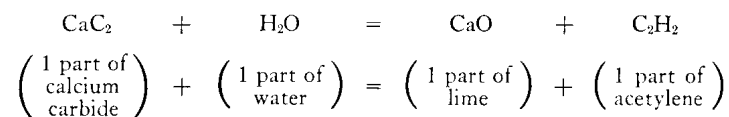
When a mixture of powdered lime and powdered charcoal, or coke, is heated intensely (5000° F.) in an electric furnace, a change takes place. The carbon takes the oxygen away from the lime and combines with it, forming a gas called carbon monoxide, which is represented by the letters CO, and the excess of carbon combines with the calcium, forming calcium carbide, which is represented by the letters CaC₂. The whole change from lime and coke to carbon monoxide and calcium carbide is represented by the equation:



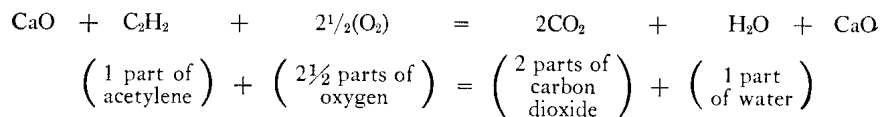
Calcium carbide is manufactured at Niagara Falls by the process here explained, the electric current required to heat the mixture of lime and coke being obtained from dynamos driven by water power.

Water is composed of two simple substances called oxygen and hydrogen. These substances are gases. Hydrogen is represented in chemical books by the letter H, oxygen by the letter O, and water by the letters H₂O. The number 2 means that there are two parts by volume of hydrogen and one part by volume of oxygen in water.

When calcium carbide is put into water a change takes place. The calcium combines with the oxygen of the water forming calcium oxide or lime, and the carbon combines with the hydrogen of the water forming acetylene gas which is represented by the letters C₂H₂. The whole change from calcium carbide and water to lime and acetylene is represented by the equation:



When acetylene gas is burned it combines with the oxygen of the air and forms water and carbon dioxide (CO₂). This chemical reaction is represented by the equation:



This combination of the C and the H of acetylene with the O of the air generates heat so that the gases (CO₂ and H₂O, that is, carbon dioxide and water vapor) which are produced by the burning of the acetylene are heated and therefore these gases expand greatly and quickly. It is this sudden expansion of the gas within the gun which forces the rich mixture out through the muzzle where combustion is completed, thereby reducing the former volume of the gaseous mixture to practically nothing, that is, a vacuum (partial) is formed. The Bang or Noise is caused by the atmosphere or air rushing in from all sides to fill this vacuum.

In stating the amounts of various substances which enter into a chemical reaction, parts by volume are always meant when all of the substances are gases. Thus one volume of acetylene gas and 2½ volumes of oxygen combine to form two volumes of carbon dioxide and one volume of water vapor. When some of the substances which enter into a chemical reaction are solids or liquids, however, the "parts" are not equal volumes nor indeed equal weights. Thus, one part of calcium carbide means 64 grams of calcium carbide, one part of water means 18 grams of water, one part of lime means 56 grams of lime, and one part of acetylene means 26 grams of acetylene. These parts are called the molecular weights of the various substances. This matter is explained in text-books on chemistry.