PRODUCTION OF METAL

Metal is produced from iron ore which is dug from the ground. The mineral ore mined from the ground usually contains impurities in the form of non-metallic compounds called gangue. The extraction process of metals differs from metal to metal. However, all ores are invariably reduced at high temperatures, to metals with the aid of combustible reducing agents.

In the production of iron, for instance, the improved ironmite, magnetite, or haematite ore is mixed with limestone and melted by burning coke in a blast furnace.

The metal produced by this and similar reactions is called pure metal. It has generally poor physical, magnetic and electrical properties. Some other elements or metals are added to it to improve these properties. That means the metal so produced is a mixture of two or more metals. A mixture of two or more metals is called an alloy and the additives are called alloying metals or elements.

The product of the blast furnace is pig iron. Carbon is introduced into the iron to give properties lacking in pure iron. The new product is called steel. Steel is usually produced in special furnaces such as cupola, electric arc, Bessemer converter, and open hearth. Besides carbon, some of the more common alloying elements are nickel, silicon, manganese, chromium, tungsten, molybdenum and titanium.