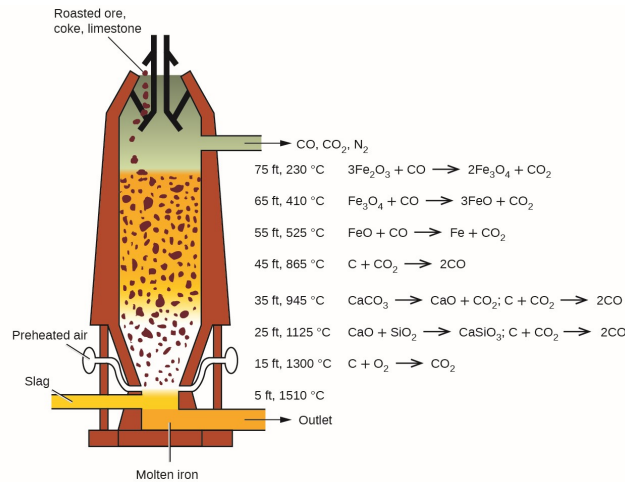


The first step in the metallurgy of iron is usually roasting the ore (heating the ore in air) to remove water, decomposing carbonates into oxides, and converting sulfides into oxides. The oxides are then reduced in a blast furnace that is 80–100 feet high and about 25 feet in diameter in which the roasted ore, coke, and limestone (impure CaCO_3) are introduced continuously into the top. Molten iron and slag are withdrawn at the bottom. The entire stock in a furnace may weigh several hundred tons.

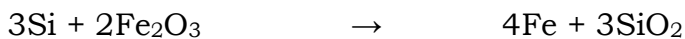
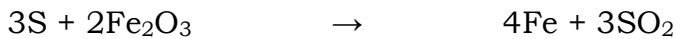


Manufacturing of steel:

- **Open hearth process**

Working Principle

In open hearth process, the impurities present in cast iron are removed by oxidation by haematite. The percentage of carbon is decreased by adding scrap iron. The heat required for the process is obtained by burning per-heated producer gas ($\text{CO} + \text{N}_2$) by regeneration of heat economy. Depending upon the impurities the lining of hearth is acidic (if phosphorous is absent) or basic lining (if phosphorous is present). The percentage of carbon is maintained by adding required amount of splgesien. The reactions during manufacture of steel are.



If phosphorous is present,

