

SUBJECT - CHEMISTRY
CLASS - BSc (Hons) PART-1

Page No - 1
Date 18.04.20

PAPER: I

GROUP: A

TOPIC EXTRACTION AND USES OF THE ELEMENTS

Dr Hasi Mohan Prasad Singh

Department of Chemistry

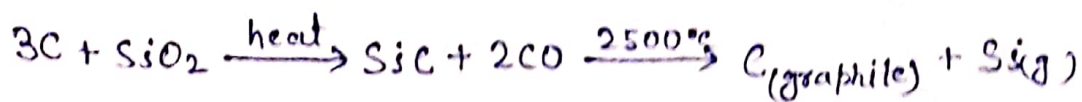
Dr L.K.V.D College Tarpur, Samastipur

Carbon

Carbon black (soot) is produced in large amounts. It is made by the incomplete combustion of hydrocarbons from natural gas or oil. The particle size is very small. over 90% is used in the rubber industry to make car tyres. Its other main use is in newspaper ink.

Three hundred and thirty-nine million tonnes were produced by high temperature carbonization of coal, in which coal is heated in large ovens in the absence of air, fifty-one million tonnes were produced by distilling heavier petroleum oils. Coke is extremely important in the metallurgical extraction of iron and many other metals. The distillation of coal also provides a valuable source of organic chemicals. This is usually found as a mixture with mica, quartz and silicates, which contains 10-60% C. Graphite is separated from most of the impurities by flotation.

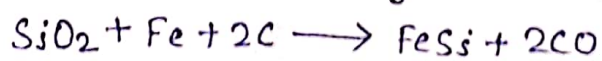
Finally it is purified by heating with HCl and HF in a vacuum to remove the last traces of silicon compounds as SiF_4 . Sedimentary deposits of carbon are mined in Mexico. This was once thought to be amorphous carbon; but is now regarded as microcrystalline (very finely divided) graphite. Nearly as much graphite is made synthetically as is mined.



Graphite is used for making electrodes. in steel making and metal foundries, for crucibles, as a lubricant, and in pencils. brake linings and brushes for electric motors. It is also used as the moderator in the cores of gas cooled nuclear reactors.

Silicon

More than a million tonnes of Si are produced annually. Most of it is added to steel to deoxidize it. This is important in the manufacture of high silicon corrosion resistant steels. For this purpose it is convenient to use ferro-silicon. It is made by reducing SiO_2 and scrap iron with coke.



The element Si is obtained by reducing SiO_2 with high purity coke. There must be an excess of SiO_2 . to prevent the formation of the Carbide. SiC , Si is a shiny blue-grey colour and has an almost metal-like lustre. but it is a semiconductor. not a metal. High purity Si (for the semiconductor industry) is made by converting Si to $SiCl_4$. purifying this by distillation, and reducing the chloride with Mg or Zn

