

## INTRODUCTION

Carbon Disulfide,  $\text{CS}_2$ , is a colourless, extremely volatile and flammable liquid. The compound was discovered in 1796 by W.A.Lampadius who observed it as a liquid product when a mixture of charcoal and iron pyrites was heated at a high temperature. In 1802, Clement and Desormes obtained  $\text{CS}_2$  by heating charcoal and elemental sulfur. The chemical composition of Carbon Disulfide was established by Vauquelin and was established by Berzelius. Small amounts of Carbon Disulfide have been found in cracked fractions of petroleum and in liquid fractions obtained from coal tar.

Carbon Disulfide is used mainly in the manufacture of viscose rayon and cellophane and as a raw material for the production of Carbon Tetrachloride.

## HISTORY

Industrial interest in the compound dates back to 1839, when it was prepared by Schrotter using charcoal and sulfur in a heated retort. Externally heated earthenware or iron retorts were generally used in earlier years. Its solvent power was recognized early and for some time Carbon Disulfide was widely used for the extraction of fats and oils. It was however, not until introduction in the early 1900s of the viscose rayon process, which uses Carbon Disulfide to solubilize cellulose, that it began to assume the role of a large-scale industrial chemical. The retort process was the only industrial process, for nearly eighty years.

Then came the electrothermal process for the manufacture of Carbon Disulfide. The first electric furnace for manufacturing Carbon Disulfide was patented by E.R.Taylor in 1901. In this type of internally heated furnace, the charcoal is placed between electrodes and is heated by the electric current passing through the charcoal bed. Molten sulfur is contacted with charcoal at the bottom of the furnace.

As demand for Carbon Disulfide rapidly increased in the 1940s, limitations of the charcoal processes provided the incentive for the development of a more efficient large-scale method for its manufacture.

The methane-sulfur process developed by C.M.Thacker (Pure Oil Co.) during the period 1943-1965 consists of the reaction of hydrocarbons, particularly methane gas, with sulfur vapor in the presence of a solid catalyst at temperatures around 500-700°C. This process offers certain advantages in that it is a continuous process, has a relatively inexpensive and available source of carbon in the form of methane or natural gas and it operates at temperatures lower than those of retort process.

The process based on methane gained acceptance widely in America and later in Europe. Currently, over 85% of the world's production capacity is based on methane.