

1.INTRODUCTION

The cumene molecule can be visualized as a straight-chain propylene group having a benzene ring attached at the middle carbon, $C_6H_5CH(CH_3)_2$. It is a colourless liquid, bp $152.4^{\circ}C$ having a characteristic aromatic odor. It is isomeric with n-propylbenzene, ethyltoluene and trimethylbenzene.

Thus cumene is also named as 1-methylethyl benzene or 2-phenyl-propane or isopropylbenzene. Cumene (C_9H_{12}) is a substituted aromatic compound in the benzene, toluene and ethylbenzene series. Cumene is a clear liquid at ambient conditions. High purity cumene is normally manufactured from propylene and benzene and is a minor constituent of most gasolines. It is the principal chemical used in the world wide production of phenol and its co-product acetone. Many consumer or industrial products such as plywood and composition board banded with phenolic resins, nylon-6, epoxy and polycarbonate resins and solvents, have origins that can be traced to cumene.

Cumene processes were originally developed between 1939 and 1945 to meet the demand for high octane aviation gasoline during world war-II. In 1989 about 95% of cumene demand was as an intermediate for the production of phenol and acetone. A small percentage is used for the production of α -Methylstyrene.

Before the development of the cumene route to phenol and acetone, cumene had been used extensively during world war II. It is a curious fact that although propylation of benzene by means of phosphoric acid and aluminium chloride have been the standard methods of manufacture for many years, the first plant used sulphuric acid as a

catalyst. This was a war time expedient arising from uncertainty over phosphoric acid supplies.

Almost all the world's supply of cumene is now produced as an intermediate for phenol and acetone manufacture. Some refinery units still produce cumene for use as an antiknock constituent of gasoline but it is doubtful whether new plants would be constructed for this purpose. Neither does it seem likely that any large scale plant would be installed for manufacturing the hydroperoxide, α -methylstyrene, diisopropylbenzene, or acetophenone, although these cumene derived compounds are of considerable commercial importance. They occur as byproducts during cumene and phenol production, and are usually marketed by manufacturers.