

ABSTRACT

Phosphoric acid (H_3PO_4) is a colourless, volatile and viscous substance. It has tremendous applications in daily life. Its important applications include fertilizers, pesticides, food additives, beverages and medicinal areas. Different types of processes are used for phosphoric acid production but two processes i.e. wet and dry are the most applicable. But in this research work a new process for the production of phosphoric acid is developed. This developed process involves reaction of phosphate rock with 25% concentration of hydrochloric acid (HCl). The optimization of pH and particle size (mesh size) has been carried out. The phosphoric acid produced by this method is 42-47% of high purity. The new method has many advantages, as it involves the synthesis of calcium sulphate (CaSO_4) as the major byproduct used in fertilizers. Effect of different parameters on the production of phosphoric acid, particle size of phosphate rock, hydrochloric acid concentration, pH of solution mixture, temperature on the recovery of DCP, sulphuric acid concentration, dehydration of calcium sulfate were observed. Optimization of particle size (200 mesh), HCl solution (25%), pH of reaction media (6-7) and conc. of sulphuric acid (40%). Purification of phosphoric acid was analyzed by different methods but ammonium molybdate titration method was used for such specification analysis.