

SUMMARY

The present work is concerned, firstly with study and determination of the optimum values of the effective parameters in the production of benzoic acid by the liquid-phase oxidation of toluene by atmospheric oxygen in the presence of cobalt octoate catalyst, and secondly with preparing new catalysts which can be utilized for the first time in a successful manner instead of cobalt octoate catalyst to produce benzoic acid.

Toluene produced by Arab company for detergent chemicals - Baji (ARADET) along with benzoic, xylenes, and other heavier aromatics, was used. The mixture was separated by fractionation to obtain toluene with a purity of about 99.765%.

Catalytic activity studies were carried out by using a laboratory oxidation unit for the oxidation of toluene. The product was analysed by gas chromatography analysis. The percentage weight of metal in each catalyst used was determined by using atomic absorption spectrophotometer analysis.

Cobalt octoate catalyst which contained 9.3% cobalt was used. This catalyst was received from Benzoic Acid Factory which imported it from abroad.

Furthermore, cobalt octoate containing 18.83% cobalt was also used. This catalyst was prepared by Industrial Chemistry Research Center. The results of experiments, using cobalt octoate catalyst of 9.3% cobalt, showed that the optimal