

**STRONGLY ACIDIC CATION EXCHANGE RESIN OF SULPHONATED POLYSTYRENE TYPE USED AS CATALYST FOR EPOXIDATION OF CASTOR OIL WITH PERACETIC ACID AND PERFORMIC ACID**

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**ABSTRACT**

Cationic ion-exchange resins are versatile catalysts, which offer several advantages over the homogeneous acid catalysts with respect to corrosion, product recovery, selectivity, etc. In this work, we compared the kinetics of the epoxidation of castor oil with performic and peracetic acid generated in situ in presence of cation exchange resin (Amberlite IR-120) as catalyst at 30, 50, 70, 85°C. The reaction was found to be first order with respect to the conversion of ethylenic unsaturation. The rate constants for the epoxidation with peracetic acid were 0.067, 0.184, 0.55, and 1.12 (h<sup>-1</sup>) at 30°C, 50°C, 70°C and 85°C, respectively, while those for the performic acid were 0.125, 0.287, 0.645, and 0.981 (h<sup>-1</sup>). Activation energies of the epoxidation were found to be 48.2 kJ/mol for the peracetic acid and 35.4 kJ/mol for the performic acid.

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