
Effect of Acid Activation on the De-Tert-Butylation Activity of Some Jordanian Clays

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Abstract: Jordanian natural kaolin and bentonite show good catalytic activity towards debutylating 2-tert-butylphenol, and varying debutylation vs. isomerization selectivity after acid activation. The resulting catalytic activity of these samples is dependent on the acid employed for activation; the samples treated with acetic acid showed relatively low conversions, whereas those treated with hydrochloric or phosphoric acid were found to be very active. Treatments with strong acids such as HCl have various effects on the activity of the samples depending on the concentration of the acid. For example, treatment with 1 M HCl gives the highest activity, whereas a treatment using 12 M HCl produced the lowest activity. The debutylation selectivity of the acid-activated samples is affected by the acid type and/or concentration. This selectivity ranges from 20 to 60%, whereas that of water-treated samples is between 46– 82%.

Key Words: Bentonite • Butylphenol • Catalyst • Clay • Debutylation • Kaolin • Kaolinite • Montmorillonite

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