De-tert-butylation of 2-tert-butylphenol was carried out over thermally-treated and acid-treated Jordanian bentonite clay samples. This reaction was found to follow first-order kinetics for all clay samples with different pretreatment procedures. The apparent rate const. (k) was also detd., and found to depend on the pretreatment. Thermal pretreatment at temps. ≤ 250°C has an enhancing effect on surface acid sites. The total surface acidity (H <4.8) and the concn. of strong acid sites peaked at 250°C. Also, as a result, the max. catalyst activity was obtained with samples treated at this temp. Acid pretreatment with 0.10 M HCl, 1.0 M HSO₄, or 1.0 M H₃PO₄, followed by thermal treatment at 250°C produced the best enhancement effect on the surface acidity and catalytic activity.