
Acid-Base Interactions and the Properties of Kaolinite in Non-Aqueous Media

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Abstract: In non-aqueous systems, kaolinite can show, in addition to the physical interactions, considerable chemical activity. This study considers the chemical reactions that can occur at the kaolinite surface and explains these reactions in terms of acid-base interactions. In certain applications the chemical activity must be controlled if satisfactory products are to be obtained; for example, when kaolinite is used as a filler in rubber or as a diluent for insecticide powders. The concept of acid-base interactions is used to explain rheological and film properties in kaolinite-organic systems. The strength of the surface acid sites of kaolinite varies with the moisture content. At 1% moisture the surface is equivalent to 48% sulphuric acid whereas at 0% it is equivalent to 90% sulphuric acid. Therefore, the moisture level is extremely important and dry kaolinite will promote or catalyze many chemical reactions and where acid-base interactions are involved the presence of even small amounts of water usually retards or inhibits the reaction. Several examples explaining these interactions are given in the paper.

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