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# Effects of Micro-Sized Mixtures of Kaolin Minerals on Properties of Kaolinites

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**Abstract:** “ Kaolinites” from classic, large deposits of kaolin are shown commonly in scanning electron micrographs to be mixtures, at least in part, in microdimensions, of kaolin-mineral polymorphs.

Artificial mixtures of selected kaolin polymorphs simulating the natural mixtures, also micrographed, show crystallinities intermediate between the crystallinities of the end members in X-ray powder diffractograms. Thus, *apparent* crystallinity interpreted from diffractograms of a kaolin specimen may be a product of kaolin-mineral mixture in microdimensions as well as from ordering in the crystals. Evaluation of the crystallinity of a kaolin from powder diffraction may be suspect if independent means, such as SEM, are not used to assess the monomineralic character of that kaolin specimen.

Analogous to the apparent crystallinity of a “ kaolinite” being the product of a mixture, so may other widely ranging properties of “ kaolinite” be products of kaolin-mineral mixtures in microdimensions. These properties include DTA, IR, chemical composition, free energies of formation, and industrial applications.

Specifications for a monomineralic, nearly ideal kaolinite are considered—the Keokuk geode variety possesses desired crystallographic and chemical properties.

**Key Words:** Crystallinity • Halloysite • Kaolin • Kaolinite

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