

# Crystal morphology and indicative microchemistry of kaolinite from kaolin occurrences in Alkaleri region, northeastern Nigeria

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## Abstract

Samples from eight kaolin occurrences in and around the Alkaleri area, northeastern Nigeria, were studied for their mineral constituents (by X-ray diffractometry, XRD), kaolinite morphology and microchemistry (by combined scanning electron microscopy, SEM, and transmission electron microscopy, TEM equipped with an energy dispersive spectrometer, EDS). The kaolins are very fine-grained and light grey to white in colour. In terms of mineral constituents, all the kaolin occurrences are abundantly rich in kaolinite, with four of them being monomineralic. Minor to trace quantities of quartz, illite, muscovite and hematite are present in the other four occurrences. The kaolinite crystals are preponderantly pseudo hexagonal in morphology making them suitable for use in industrial applications in which coating is required. The kaolins are derived from the weathering of the feldspar-bearing sandstones.

*Keywords:* Kaolinite, Kaolin, TEM, XRPD, SEM, Nigeria