

CHARACTERIZATION, BENEFICIATION AND UTILIZATION OF CLAY FROM PANRUTI AREA, TAMILNADU, INDIA

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Abstract

Clay is a versatile industrial mineral which often needs upgrading for special applications. The upgrading process commonly known as beneficiation, is aimed at removing impurities like quartz, feldspar, iron oxide etc. In this study, a clay sample was collected from a deposit located in Panruti area, Tamilnadu, India. The sample was characterized by X-ray Fluorescence (XRF) and X-ray diffraction (XRD) analytical methods. The study area clay mainly contains kaolinite while the major impurities are quartz and goethite. Wet sieving of the clay sample by $-53\ \mu\text{m}$ sieve removed almost all the quartz and the iron bearing impurities. The iron content in clay could be further reduced by treating with a wet, high intensity magnetic separator (WHIMS) and leaching with organic acids. Results show that laboratory beneficiation studies have improved the quality of the clay sample to a very high grade with a chemical composition close that of ideal kaolinite. Based on evaluation of the technological properties, acid leached clay may find use as a raw material for ceramics as well as a filler material for paper and other industries as described in the Indian Standard Specification.

Keywords: Clays, Panruti, beneficiation, acid leaching, and utilization