Zonous Kaolinite bearing clay, an Investigation on its physical-Chemical properties and Industrial applications.

Ebrahimi, K.

Geology Department, Ferdowsi university of Mashhad.

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Abstract: Zonous Kaolinite bearing clay deposit is made by hydrothermal alteration of volcanic rocks mainaly of andesite and dacite. Kaolinite, quartz and calcite are the main mineral compositions. As quartz in the volcanic rocks is cryptocrystalline, it is too difficult to separate it from kaolinite. The physical properties and chemical composition of Zonous ceramic grade kaolinite bearing clay are directly related to its nature and geological formation.

The percentage of SiO$_2$ in Zonous clay is higher but the amount of Al$_2$O$_3$ is lower than Diamond kaolinite. For this reason the ceramic products of zonous clays have lower resistance to thermal shocks and module of rupture. High roughness, low plasticity and possible greater deformation during firing (Production of Ceramics) are other reasons for limiting the use of Zonous ceramic grade clays. The percentage of calcium oxide (CaO) in Zonous clay is higher in comparison with Diamond Kaolin but potassium oxide (K$_2$O) which plays as a flux in ceramic products is lower in zonous. The high percentage of CaO which has a high melting point can raise the viscosity as a result lead to Crack in ceramic products. Finally with these colour properties, the Zonous ceramic grade kaolinite bearing clays, can be used as a filler in paper, paint and rubber industries.