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Characterisation of traditional ceramic materials used in the Sotho culture (South-Africa) for clay pot making

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Abstract content
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Different types of clayey soils are readily available as a natural resource in South Africa. Some are used for brick making, some for eating in a geophagic habit while some others are used as cosmetic ingredients in cultural ceremonies or in traditional ceramic applications. Among the above mentioned numerous utilisations, clay pot making and trade are claimed to contribute to the improvement of the household income generation in the rural area of QwaQwa (Free State, South Africa). Traditional clay pots are made in Africa by people from different cultures. South Africa, a country with nine provinces and eleven official languages is enriched with a vast number of minerals. This paper discusses the outcomes from the characterisation of pots clay as traditionally used by the Sotho people of the Free State Province of South Africa. Clayey soil raw materials are collected from the local river banks and processed through a shaping, sun drying and firing set of subsequent processes. The knowledge of mineralogical composition, mineral phases formed during the processing of clays and the mastering of physio-chemical properties including plasticity helped to understand the thermal properties of the processed material generated, their forming and shaping, and the application of clay pots produced. Clayey soils, the main raw materials used, were randomly collected from the QwaQwa region of the Free State province and analysed using XRD, XRF,. FTIR, and Mossbauer spectroscopy. Main crystallite phases found include quartz, montmorillonite, illite and kaolinite. While 25 % of clay minerals were found in the material used only 5 % was kaolinite. The clayey soil showed a plastic limit of 31.74. Room temperature Mossbauer spectra displayed two paramagnetic doublet characteristics of Fe3+ in both octahedral and tetrahedral sites.

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