1- Assessment of some Saudi kaolin-bauxite deposits for ceramic industries

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Abstract

Five Saudi Arabia kaolin-bauxite representative samples were assessed for ceramic industries. Chemical and mineralogical composition of these samples were investigated using XRF, XRD, DTA and TG methods. Plasticity, physical and optical properties as well as firing characteristics were allowed after firing up to 1500 degrees C. The solid phase composition of the vitrified samples was also investigated using XRD method. All kaolin samples are mainly composed of the kaolinite clay mineral, in addition of variable amounts of gypsum, calcite and/or microcline and anatase non-clay minerals, They are classified as low grade type and belonging to Seger 2 Category, which is not suitable for manufacturing white ware ceramics. The more pure types are recommended for the production of fireclay refractories, while the other types are suitable for manufacturing heavy-clay products, e.g. vitrified ceramic tiles and pipes. On the other hand, bauxite-rich samples,are mainly composed of gibbsite and kaolinite as well as high amounts of goethite, gypsum and anatase. They are recommended for manufacturing aluminous fireclay refractories as well as Bayer's precipitated aluminium hydroxide, after subjecting to proper selective mining and physical beneficiation processes.

KeyWords Plus: HIGH-PURITY; ALUMINA

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LAST INTERGLACIAL STRATIGRAPHY IN THE ARAB REGION OF THE NORTHWESTERN COAST OF EGYPT BURG EL-

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Abstract

The northwestern coast of Egypt, a stable carbonate platform, is characterized by the presence of successive coastal ridges that extend parallel to the present shoreline. Study of marine deposits at the bottom of Gebel Maryut ridge from the drain cut of Bahig, together with analyses of core samples raised from four boreholes drilled in the El-Dekheilla depression to the depths of 10-15 m, reveal the presence of two phases of beach boulders. The lower older phase (B.B.1) wedge eolianites (E.1) at an elevation of 3-4 m and show an average delta(18)O of -0.82 parts per thousand. The upper younger phase (B.B.II) wedge eolianites (E.2) at 6-7 m a.s.l., with an average delta(18)O of -1.5 parts per thousand. These beach boulders are overlained by thick fossiliferous limestones and geosoils. They record the last interglacial high sea level (isotope substage 5e and aminozone E, with an interpolated age of 125 ka) which was globally 6-8 m higher than present sea level, with characteristic warm wet tropical climatic conditions. A bed composed of marine molluscs and foraminifera shells with ooids and pellets below the loamy calcareous and evaporites of the El-Dekheilla depression was also examined. This bed is located 1-4 m b.s.l., with an average delta(18)O of -0.25 parts per thousand. It is related to aminozone C (isotope substage 5c/5a) with an interpolated age of 110 ka, and related to a transgressive sea with a mean sea level possibly equal to or slightly lower than the present one with evidence for less warm climatic conditions.

KeyWords Plus: ANTARCTIC ICE-SURGE; SEA-LEVEL; OXYGEN ISOTOPES; LATE QUATERNARY; NILE DELTA; NEW-GUINEA; PLEISTOCENE; HISTORY; BERMUDA; STAGE-5

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