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Phase Evolutions and behavior of Kalibbar Nephelen Cyenite in comparison with Indian Feldspar in Composition of Monokotorata Tile Engob

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Abstract: The Kalibbar Nephelincyanite comes from a region in East Azerbaijan. Its mineral and chemical composition is nearly similar to an Indian feldspar which is used in some of Iranian tile and ceramic industries. The procreation and behavior parameters of Kalibbar Nephlincyanite with the Indian feldspar in production of Monokotorata tile engob, has been studied comparatively. Nephelincyanite has shown lower thixotropic behavior, compare to feldspar, during preparation of raw materials. Consequently, loss water requires in processing of granulates with more suitable particle size distribution in tile production. Phase analysis of the formulated engob containing feldspar showed orthoclase, anorthit, mullite and zirconium silicate after sintering of, while in the formulated engob with nephelincyanite, orthoclase, anorthit, zirconium silicate, leucit and nephlin phases are detected. However, zirconium silicate is added to both formulas in order to create color properties. Absence mullite phase and the presence of Nephlin and Leucit phases made little hesitation on properties and behavior of Nephelincyanite engob at different temperatures in comparison with feldspar. But further investigation on thermal behavior, energy changes and weight and volume differences during sintering process of the engobs, showed that the thermal behavior of both engobs are nearly similar and there will be no concern in substituting the Indian Feldspar by Kalibar Nephelincyenite in the tile production technology. Economically there is a good reason to use Nephlincyanite in this substitution.

Keywords: *Nephelin, Nephelin cyenite, Feldspar, Feldspathoid, Thixotrop, Monokotorata Tile, Engob.*