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THERMAL DEHYDRATION OF THE MIXTURE OF CALCIUM DIHYDROGEN PHOSPHATE AND GLAUCONITE

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When natural phosphates with a high impurity content are used in acidic-thermal treatment, it becomes necessary to define more accurately the reactions taking place. This paper deals with the results obtained in the study of interactions in the mixture of $\text{Ca}(\text{H}_2\text{PO}_4)_2 \cdot \text{H}_2\text{O}$ with glauconite $\text{K}(\text{Fe}, \text{Mg})(\text{Fe}^{3+}, \text{Al})\text{Si}_4\text{O}_{10}(\text{OH})_2$ in the course of dynamic heating in air until complete dehydration (at 620–650°C). The methods used include thermal, chemical, IR-spectroscopic and x-ray analyses. A comparison with the results obtained at dehydration of pure $\text{Ca}(\text{H}_2\text{PO}_4)_2 \cdot \text{H}_2\text{O}$ and of its mixture with SiO_2 is given.

Phosphoric acid, formed in the course of dehydration of $\text{Ca}(\text{H}_2\text{PO}_4)_2 \cdot \text{H}_2\text{O}$ in the temperature range of 120–300°C, was found to interact with glauconite. New phosphates and silicates, both crystalline and amorphous, are formed. Thus, dehydration of $\text{Ca}(\text{H}_2\text{PO}_4)_2 \cdot \text{H}_2\text{O}$ in its first stage proceeds more deeply than in the case with its mixture with amorphous SiO_2 . The second stage of dehydration of the mixture of $\text{Ca}(\text{H}_2\text{PO}_4)_2 \cdot \text{H}_2\text{O}$ and glauconite proceeds at its maximum speed at 320°C, i.e. 40° higher than in the case of a pure salt. The degree of polymerization of phosphates, however, is lower due to their association with metal ions being formed during decomposition of glauconite.