

TRANSFORMATIONS IN OIL SHALE ASH AT WET DEPOSITION

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Estonian oil shale ash contains chemically active compounds which would undergo different spontaneous transformations in the atmosphere of air. For explaining these processes the system ash–water–air was studied storing moistured samples of ash in laboratory in open-air as well as hermetic conditions. The samples of dry ash formed at pulverized combustion of oil shale at the Baltic Power Plant, and samples obtained from ash storing plateau from different depth of different boreholes were under investigation. The mineral composition of both initial and stored samples was determined by XRD. The content of CaO_{free} and CO_2 in the samples was determined by chemical analysis. The CO_2 -binding degree and the slaking rate of samples were calculated.

At open-air storing ash samples contact with H_2O and CO_2 . Substantial changes, especially upon lime, take place during the initial period of storing. The content of $\text{Ca}(\text{OH})_2$ increases rapidly and thereafter, approximately during the following four weeks, it carbonates completely forming calcite. Numerous other compounds of complicated composition form as well. At hermetical storing of samples, due to the absence of CO_2 in the gaseous phase, the changes in the mineral composition of ash are much less intensive. $\text{Ca}(\text{OH})_2$ formed at hydration of dry ashes preserves throughout the all period of sample storing. Storing conditions as well as the properties of initial samples have a great influence upon the processes taking place at storing of ashes. The results obtained could be used to explain and control the processes taking place at storing of ashes under atmospheric (wet) conditions.

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