MINERAL ANALYSIS OF NATURAL ZEOLITE DEPOSITS

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ABSTRACT

NATURAL zeolites in altered volcanic tuff beds occurring in southeastern Oregon and north central Nevada show layers of mordenite, clinoptilolite, and erionite as principal minerals with occasional occurrence of phillipsite and chabazite. The sequence mordenite (phillipsite), clinoptilolite, erionite (chabazite) seems to be typical of the deposits investigated. This order is concurrent with a decreasing Si/Al ratio in the zeolite composition.

The mordenitic layers at the base of a sequence usually show a considerable amount of non-zeolitic minerals such as quartz, feldspar, illite, fluorite, and calcite. The layers of clinoptilolite and erionite, on the other hand, contain relatively pure zeolite. At some localities, the erionite layers are not completely altered and contain unaltered volcanic glass.

Powder X-ray diffraction, electron microscopy, and electron diffraction methods have been used for analyzing the zeolitic deposits. Mineral separation techniques not only provided purified samples of zeolites for experiments on their chemical and physical properties, but also facilitated the determination of the nature and amounts of the various impurities present.

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