

COMPOSITION AND GENESIS OF ANALCIME IN THE BARSTOW FORMATION, SAN BERNARDINO COUNTY, CALIFORNIA

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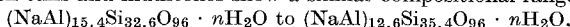
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ABSTRACT

ANALCIME is a common authigenic silicate mineral in rhyolitic tuffs and mudstones of the Miocene Barstow Formation. Optical and X-ray studies show that analcime is associated with clinoptilolite, phillipsite, clay minerals, and (or) potassium feldspar in the altered tuffs, and clay minerals and potassium feldspar in the mudstones. Analcime is nowhere associated with relict glass. The analcime is isotropic, subhedral to euhedral, 0.02–0.3 mm in size, and generally crowded with inclusions of opal or clay minerals. Vitroclastic texture in analcime-rich tuff is vague or nonexistent.

The composition of analcime was determined by measurement of the unit cell. Analcimes from both tuffs and mudstones show a similar compositional range,



and fall at the silica-rich end of the analcime series. The most siliceous analcime from the Barstow Formation is as siliceous as any natural analcime thus far reported.

Analcime formed during diagenesis in both tuff and mudstone. Petrographic evidence indicates that analcime in the tuffs did not form directly from rhyolitic glass but from an alkali-rich zeolite precursor such as clinoptilolite and phillipsite. The precursor of analcime in the mudstone is uncertain.