

A simple predictive model for the thermal expansion of AlSi₃ feldspars

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ABSTRACT

We have investigated the thermal expansion of several synthetic feldspars, including Li-feldspar, rubicline (Rb-microcline), Rb-sanidine, and buddingtonite (NH₄-feldspar). When analyzed in conjunction with earlier data on both ordered and disordered Na- and K-feldspars, it is clear that the coefficient of thermal expansion (α) decreases dramatically, and linearly, with increasing room-temperature volume. For “AlSi₃” feldspars, then, chemical expansion limits thermal expansion. The relationship between α and room-temperature volume provides a useful predictive tool based simply on the volume of a feldspar at room temperature. This relationship also reveals that volumes of K-Na mixing in naturally occurring alkali feldspars decrease with increasing temperature.

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