

High-pressure compressibility and phase stability of Mn-dolomite (kutnohorite)

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ABSTRACT

We measured the bulk modulus and phase stability of a natural Mn-dolomite, kutnohorite, to 19 GPa. At room temperature, kutnohorite is stable in the rhombohedral dolomite phase up to 19 GPa, with an isothermal bulk modulus of 85(6) GPa ($K' = 4$). The compressibility of kutnohorite is found to match well with both single and double carbonate trends with respect to bulk modulus and unit-cell volume. The thermoelastic properties measured in this study show that the Mn dolomite end-member fits well with the systematic of all the rhombohedral carbonates, both calcite (single carbonate) and dolomite (double carbonate) type.

Keywords: Carbonate, high-pressure, X-ray diffraction, dolomite, compressibility