

Herderite from Mogok, Myanmar, and comparison with hydroxyl-herderite from Ehrenfriedersdorf, Germany

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ABSTRACT

The crystal structures of herderite, $\text{CaBePO}_4[\text{F}_{0.75}(\text{OH})_{0.25}]$, $a = 9.7446(4)$, $b = 7.6769(3)$, $c = 4.7633(2)$ Å, $\beta = 90.667(1)^\circ$, $V = 356.31(4)$ Å³, $P2_1/a$, and $Z = 4$, from the Mogok Stone Tract, Myanmar, and hydroxyl-herderite, $\text{CaBePO}_4[(\text{OH})_{0.52}\text{F}_{0.48}]$, $a = 9.7615(4)$, $b = 7.6680(3)$, $c = 4.7853(2)$ Å, $\beta = 90.184(1)^\circ$, $V = 358.18(4)$ Å³, $P2_1/a$, and $Z = 4$, from the Sauberg mine, Morgenröther Zug, Ehrenfriedersdorf, Germany, have been refined to R_1 indices of 1.7%, in both cases, using $\text{MoK}\alpha$ single-crystal X-ray diffraction data. Herderite from Mogok is associated with complex rare-element beryl-type granite pegmatite. Most herderite-series minerals are the product of late-stage processes in granite pegmatite evolution, typically of an exsolved fluid upon crystallization, and significant F-enrichment in these fluids appears to result in the domination of herderite over hydroxyl-herderite. Herderite is now documented from Mogok, Myanmar; Yichung, China; Brazil; and probably Erongo, Namibia. The pegmatites at Ehrenfriedersdorf, Germany have produced samples at the boundary between herderite and hydroxyl-herderite, if not possibly herderite as well.

Keywords: Herderite, hydroxyl-herderite, crystal structure, Mogok, Myanmar, Ehrenfriedersdorf, Germany