Hectorfloresite

Crystal Data: Monoclinic, pseudohexagonal. Point Group: 2/m. As crystals, to 1.5 mm, prismatic along [010], typically doubly terminated and pseudohexagonal due to cyclic twinning, exhibiting \{100\}, \{212\}, \{001\}. Twinning: Multiple contact twins parallel [010], ubiquitous, on twin planes \{001\}, \{601\}, and \{504\}, giving a pseudohexagonal outline.

Physical Properties: Cleavage: Irregular parting \perp and \parallel to elongation. Fracture: Conchoidal. Tenacity: Brittle. Hardness = \sim 2 \ D(meas.) = 2.80(3) \ D(calc.) = 2.90

Optical Class: Biaxial (−). Dispersion: \(r < v\), barely perceptible. \(\alpha = 1.493(2)\) \(\beta = 1.521(2)\) \(\gamma = 1.523(2)\) \(2V(meas.) = 26(2)^\circ\)

Cell Data: Space Group: \(P\overline{2}_1/a\). \(a = 18.775(4)\) \(b = 6.9356(7)\) \(c = 14.239(2)\) \(\beta = 108.91(2)^\circ\) \(Z = 4\)

X-ray Powder Pattern: Alianza mine, Chile.
3.880 (100), 2.700 (80), 2.788 (30), 1.9420 (20), 4.69 (15), 6.17 (10), 1.6780 (10)

Chemistry:

\[
\begin{array}{ccc}
\text{I}_2\text{O}_5 & 23.2 & 21.79 \\
\text{SO}_3 & 42.3 & 41.80 \\
\text{Na}_2\text{O} & 34.5 & 36.41 \\
\text{Total} & 100.0 & 100.00 \\
\end{array}
\]

(1) Alianza mine, Chile: by electron microprobe, average of eight analyses, presence of \((\text{IO}_3)^{-}\) and \((\text{SO}_4)^{2-}\) confirmed by IR. (2) \(\text{Na}_9(\text{IO}_3)(\text{SO}_4)_4\).

Occurrence: In dessication cavities in a nitrate deposit; may be more widespread than this single locality indicates.

Association: Glauberite, nitratine, blödite, darapskite, halite.

Distribution: From the Alianza nitrate mine, Oficina Victoria, Tarapacá, Chile.

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Type Material: National Museum of Natural History, Washington, D.C., USA.