Dietzeite

\[ \text{Ca}_2(\text{IO}_3)_2(\text{CrO}_4) \cdot \text{H}_2\text{O} \]

Crystal Data: Monoclinic. Point Group: 2/m. As tabular \{100\} crystals, elongated along [001], to 1 mm; typically in columnar aggregates or fibrous crusts.

Physical Properties: Cleavage: On \{100\}, interrupted. Fracture: Conchoidal. Hardness = 3.5 D(meas.) = 3.62–3.70 D(calc.) = 3.822 Soluble in \text{H}_2\text{O}.

Optical Properties: Transparent. Color: Deep golden yellow. Optical Class: Biaxial (−). Orientation: Y = b; Z ∧ c = 6°. Dispersion: r < v, very strong, markedly inclined. \( \alpha = 1.825 \quad \beta = 1.842 \quad \gamma = 1.857 \quad 2V(\text{meas.}) = 86° \)

Cell Data: Space Group: \( P_2_1/c \). \( a = 10.118(1) \quad b = 7.238(1) \quad c = 13.965(2) \)
\( \beta = 106.62(1)° \quad Z = 4 \)

3.48 (100), 3.13 (100), 3.61 (90), 2.98 (60), 2.88 (60), 1.870 (60), 1.741 (50)

Chemistry:

\[
\begin{array}{lcc}
\text{L}_2\text{O}_5 & 58.10 & 59.19 \\
\text{CrO}_3 & 19.90 & 17.73 \\
\text{CaO} & 21.50 & 19.89 \\
\text{H}_2\text{O} & 3.19 & \\
\hline
\text{Total} & 99.50 & 100.00
\end{array}
\]

(1) Atacama Desert, Chile. (2) \( \text{Ca}_2(\text{IO}_3)_2(\text{CrO}_4) \cdot \text{H}_2\text{O} \); crystal-structure analysis confirms one \text{H}_2\text{O} molecule as an essential chemical component.

Occurrence: In nitrate deposits in an arid region.

Association: Lopezite, tarapacáite, ulexite (Oficina Maria Elena, Chile).

Distribution: In Chile, from the Atacama Desert, as in the Taltal district, from near the Oficina Louisa and Oficina Chacabuco; at Pampa Pique III, about one km north of Oficina Lautaro, and near Oficina Maria Elena, near Tocopilla, Antofagasta; from near Zapiga, Tarapacá.

Name: Honors August Dietze (1839–1893?), German chemist who first described this mineral.