Monohydrocalcite

\( \text{CaCO}_3 \cdot \text{H}_2\text{O} \)

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Crystal Data: Hexagonal. Point Group: 32. Rare as aggregates of rhombohedral crystals, to 2 mm; most commonly as spheroids and crusts.

Physical Properties: Hardness = n.d. \( \text{D(meas.)} = 2.38 \) (synthetic). \( \text{D(calc.)} = 2.48 \)

Optical Properties: Transparent to opaque. Color: Colorless to white. Optical Class: Uniaxial (−). \( \omega = 1.590–1.591 \) \( \epsilon = 1.545–1.546 \)

Cell Data: Space Group: \( P\overline{3}_121 \) or \( P\overline{3}_221 \). \( a = 6.084(4) \) \( c = 7.542(7) \) \( Z = 3 \)

X-ray Powder Pattern: Lake Issyk-Kol, Kyrgyzstan. 2.17 (10), 1.926 (10), 4.49 (9), 3.15 (9), 2.90 (8), 1.770 (7), 1.746 (7)

Chemistry:

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\begin{align*}
\text{CO}_2 & \quad \text{FeO} & \quad \text{MgO} & \quad \text{CaO} & \quad \text{SrO} & \quad \text{Na}_2\text{O} \\
(1) & \quad 38.96 & \quad 0.13 & \quad 49.30 & \quad 0.40 & \quad 0.69 \\
(2) & \quad 33.6 & \quad 2.49 & \quad 42.5 & \quad & \\
(3) & \quad 37.27 & \quad & \quad 47.48 & \quad & \\
\text{K}_2\text{O} & \quad \text{H}_2\text{O}^- & \quad \text{H}_2\text{O}^+ & \quad \text{insol.} & \quad & \\
(1) & \quad 0.07 & \quad & \quad 11.61 & \quad 0.79 & \\
(2) & \quad & \quad 2.1 & \quad 15.9 & \quad 5.0 & \\
(3) & \quad & \quad & \quad 15.25 & \quad & \\
\end{align*}
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(1) Lake Issyk-Kol, Kyrgyzstan; corresponds to \( \text{CaCO}_3 \cdot 0.65\text{H}_2\text{O} \). (2) Lake Fellmongery, Australia; corresponds to \( (\text{Ca}_{0.91}\text{Mg}_{0.07})\Sigma=0.98\text{CO}_3 \cdot 1.15\text{H}_2\text{O} \). (3) \( \text{CaCO}_3 \cdot \text{H}_2\text{O} \).

Occurrence: In lake-bed sediments and as tuffaceous deposits on lake margins, formed by precipitation at \( \text{pH} > 8.0 \) and high Mg:Ca or by biological activity; in caves, in speleothems, crusts, and “moonmilk,” probably formed from an aerosol, possibly in the presence of organic matter; rarely in hydrothermal mineral deposits.

Association: Calcite, aragonite, hydromagnesite, nesquehonite.


Name: For having the composition of calcite and the Greek for one, as with an additional \( \text{H}_2\text{O} \).

Type Material: A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 72027.


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