Hillebrandite

\[ \text{Ca}_2\text{SiO}_3(\text{OH})_2 \]

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Crystal Data: Monoclinic (?), pseudo-orthorhombic. Point Group: 2/m. Acicular fibrous crystals, to 0.5 mm; radial spherulitic.

Physical Properties: Cleavage: {010}. Hardness = 5–6 D(meas.) = 2.66–2.69 D(calc.) = [2.65]

Optical Properties: Transparent to translucent. Color: White, colorless, pale greenish; colorless in thin section. Optical Class: Biaxial (-). Orientation: Z = c. Dispersion: \( r < v \), strong, producing characteristic abnormal blue interference colors. \( \alpha = 1.605(5) \) \( \beta = \sim 1.61 \) \( \gamma = 1.612(3) \) 2V(meas.) = 60°–80°

Cell Data: Space Group: \( P2_1/a \) (?). \( a = 16.60 \) \( b = 7.26 \) \( c = 11.85 \) \( \beta = 90° \) \( Z = 12 \)

X-ray Powder Pattern: Velardeña, Mexico. 2.92 (vvs), 4.76 (vs), 3.33 (vs), 3.02 (s), 2.82 (s), 2.76 (s), 2.37 (s)

Chemistry:

\[
\begin{array}{ccc}
\text{SiO}_2 & 32.59 & 31.58 \\
\text{TiO}_2 & 0.02 & \\
\text{Al}_2\text{O}_3 & 0.23 & \\
\text{Fe}_2\text{O}_3 & 0.15 & \\
\text{MnO} & 0.01 & \\
\text{MgO} & 0.04 & \\
\text{CaO} & 57.76 & 58.95 \\
\text{Na}_2\text{O} & 0.03 & \\
\text{K}_2\text{O} & 0.05 & \\
\text{F} & 0.00 & \\
\text{H}_2\text{O} & 9.36 & 9.47 \\
\text{CO}_2 & 0.00 & \\
\end{array}
\]

Total 100.24 100.00

(1) Velardeña, Mexico; total Fe as \( \text{Fe}_2\text{O}_3 \). (2) \( \text{Ca}_2\text{SiO}_3(\text{OH})_2 \).

Occurrence: In limestone affected by high-grade contact metamorphism.

Association: Wollastonite, garnet (Velardeña, Mexico); calcite, vesuvianite, grossular (Carlingford, Ireland); fosshagite (Crestmore, California, USA).

Distribution: In the Terneras mine, Velardeña, Durango, Mexico. In the USA, from Crestmore, Riverside Co., California. At Carlingford, Co. Louth, Ireland. In the Güneyce-Ikizdere area, Trabzon Province, Turkey. From Mt. Chapchachi, north of the Caspian Sea, Kazakhstan. At Nugrah, Saudi Arabia. In the Haturtim Formation, Israel. From Kushiro, Hiroshima Prefecture, and in the Mihari mine and at Fuka, near Bicchu, Okayama Prefecture, Japan.

Name: For William Francis Hillebrand (1853–1925), American geochemist and analytical chemist.


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