

## Prehnite

## Ca<sub>2</sub>Al<sub>2</sub>Si<sub>3</sub>O<sub>10</sub>(OH)<sub>2</sub>

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**Crystal Data:** Orthorhombic. *Point Group:*  $mm2$ . Uncommon as crystals, tabular || {001} or prismatic to steep pyramidal, to 4.5 cm. Aggregates are fanlike, reniform, globular, stalactitic; granular, compact. *Twining:* Fine lamellar.

**Physical Properties:** *Cleavage:* Good on {001}, poor on {110}. *Fracture:* Uneven. *Tenacity:* Brittle. Hardness = 6–6.5 D(meas.) = 2.80–2.95. D(calc.) = [2.90]

**Optical Properties:** Semitransparent to translucent. *Color:* Light to dark green, white, yellow, gray, pink; colorless in thin section. *Streak:* White. *Luster:* Vitreous, weak pearly on {001}. *Optical Class:* Biaxial (+). *Orientation:*  $X = a$ ;  $Y = b$ ;  $Z = c$ . *Dispersion:*  $r > v$ .  $\alpha = 1.611$ – $1.632$   $\beta = 1.615$ – $1.642$   $\gamma = 1.632$ – $1.665$   $2V(\text{meas.}) = 65^\circ$ – $69^\circ$

**Cell Data:** *Space Group:*  $P2cm$ .  $a = 4.646(2)$   $b = 5.491(3)$   $c = 18.52(3)$   $Z = 2$

**X-ray Powder Pattern:** Ashcroft, British Columbia, Canada. 3.08 (100), 2.55 (100), 3.48 (90), 1.77 (70), 3.28 (60), 2.37 (40), 2.31 (40)

### Chemistry:

	(1)	(2)
SiO <sub>2</sub>	41.67	43.71
TiO <sub>2</sub>	0.12	
Al <sub>2</sub> O <sub>3</sub>	24.44	24.72
Fe <sub>2</sub> O <sub>3</sub>	1.03	
FeO	0.32	
MgO	0.25	
CaO	27.25	27.20
Na <sub>2</sub> O	0.18	
K <sub>2</sub> O	0.18	
H <sub>2</sub> O <sup>+</sup>	4.44	4.37
Total	99.88	100.00

(1) Ashcroft, British Columbia, Canada. (2) Ca<sub>2</sub>Al<sub>2</sub>Si<sub>3</sub>O<sub>10</sub>(OH)<sub>2</sub>.

**Occurrence:** A secondary or hydrothermal mineral in veins and cavities in mafic volcanic rocks; less commonly in granite gneiss or syenite; a typical product of low-grade metamorphism.

**Association:** Zeolites, datolite, pectolite, calcite, epidote, copper.

**Distribution:** Numerous localities worldwide; some for the best crystals or rich material follow. At the Cape of Good Hope, Cape Province, South Africa. From Copper Valley, Brandberg Mountains, Namibia. In France, from La Combe-de-la-Selle, near Bourg d'Oisans, Isère. From Habachtal, Salzburg, and Ankogel, Austria. At Radauthal, near Harzburg, Harz Mountains, Germany. From near Campitello, Val di Fassa, Trentino-Alto Adige, Italy. At Comperio, Graubünden, and St. Gotthard, Ticino, Switzerland. In the USA, from Paterson, Passaic Co., and Bergen Hill, Hudson Co., New Jersey; in the Fairfax quarry, Centreville, Fairfax Co., Virginia; in the Roncari quarry, East Granby, Hartford Co., Connecticut; in the Hampden quarry, West Springfield, Hampden Co., Massachusetts. Fine crystals in the Jeffrey mine, Asbestos, Quebec, Canada. From the Khandivali quarry, Bombay, Maharashtra, India. In Copper Valley, Brandberg Mountains, Namibia. Around Coonabarabran, Warrumbungle Ranges, and in the Emu quarry, Prospect Hill, near Sydney, New South Wales, Australia. From the Rennick Glacier, North Victoria Land, Antarctica.

**Name:** For Colonel Hendrik von Prehn (1733–1785), who discovered the mineral.

**References:** (1) Dana, E.S. (1892) Dana's system of mineralogy, (6th edition), 530–532. (2) Deer, W.A., R.A. Howie, and J. Zussman (1963) Rock-forming minerals, v. 3, sheet silicates, 263–266. (3) Nuffield, E.W. (1943) Prehnite from Ashcroft, British Columbia. Univ. Toronto Studies, Geol. Ser., 49. (4) Zunic, T.B., S. Scavnicar, and G. Molin (1990) Crystal structure of prehnite from Komiza. Eur. J. Mineral., 2, 731–734.

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