

# Laumontite

# CaAl<sub>2</sub>Si<sub>4</sub>O<sub>12</sub>•4H<sub>2</sub>O

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**Crystal Data:** Monoclinic. *Point Group:* 2/*m*. Crystals square prisms with steep oblique terminations, stout, commonly elongated, to 20 cm. Radiating, columnar, fibrous; in interlocking aggregates, massive. *Twinning:* On {100}, typically with terminal re-entrants.

**Physical Properties:** *Cleavage:* {010}, {110}, perfect. *Fracture:* Uneven. *Tenacity:* Brittle. Hardness = 3–4 D(meas.) = 2.23–2.41 D(calc.) = 2.25 Undergoes a partial loss of H<sub>2</sub>O on exposure to air.

**Optical Properties:** Transparent to translucent. *Color:* White to gray, pink, yellowish, brownish, golden brown; colorless in thin section. *Streak:* White. *Luster:* Vitreous to pearly on cleavages.

*Optical Class:* Biaxial (-). *Orientation:* Y = b; X ∧ a = 10°–26°; Z ∧ c = 8°–33°.

*Dispersion:* r < v, distinct, weakly inclined. α = 1.502–1.514 β = 1.512–1.522

γ = 1.514–1.525 2V(meas.) = 26°–47°

**Cell Data:** *Space Group:* C2/*m*. a = 14.724(9) b = 13.075(6) c = 7.559(2)  
β = 112.01(3)° Z = 4

**X-ray Powder Pattern:** Synthetic.

4.16 (100), 3.51 (80), 9.5 (60), 3.27 (55), 6.84 (40), 3.66 (35), 3.03 (35)

**Chemistry:**

	(1)
SiO <sub>2</sub>	50.70
Al <sub>2</sub> O <sub>3</sub>	22.53
Fe <sub>2</sub> O <sub>3</sub>	0.04
CaO	11.54
Na <sub>2</sub> O	0.40
K <sub>2</sub> O	0.30
H <sub>2</sub> O <sup>+</sup>	12.00
H <sub>2</sub> O <sup>-</sup>	2.41
Total	99.92

(1) Halle, Germany; corresponds to (Ca<sub>0.96</sub>Na<sub>0.06</sub>K<sub>0.03</sub>)<sub>Σ=1.05</sub>Al<sub>2.07</sub>Si<sub>3.94</sub>O<sub>12</sub>•3.12H<sub>2</sub>O.

**Mineral Group:** Zeolite group.

**Occurrence:** Of hydrothermal origin, lining cavities in igneous rocks. Thick sedimentary beds rich in laumontite may form by decomposition of analcime or metamorphism of plagioclase. May be authigenic, cementing sandstones.

**Association:** Zeolites, apophyllite, datolite, calcite, chlorite.

**Distribution:** Relatively common. Well-crystallized specimens: from Huelgoat, Finistère, France. From Săcărâmb (Nagyág), Romania. At St. Gotthard, Ticino, Switzerland. From Floiental, Zillertal, and other places in Tirol, Austria. In Italy, from Baveno, Piedmont. From Poona and in the Khandivali quarry, near Bombay, Maharashtra, India, large crystals. In the USA, exceptional crystals from the Pine Creek tungsten mine, Bishop, Inyo Co., California; from Drain, Douglas Co., Oregon; at Bergen Hill, Hudson Co., and Paterson, Passaic Co., New Jersey; in the Goose Creek quarry, Leesburg, Loudoun Co., Virginia; on the Keweenaw Peninsula, Houghton and Keweenaw Cos., Michigan.

**Name:** For François Pierre Nicolas Gillet de Laumont (1747–1834), who first found the mineral.

**References:** (1) Dana, E.S. (1892) Dana's system of mineralogy, (6th edition), 587–588.

(2) Deer, W.A., R.A. Howie, and J. Zussman (1963) Rock-forming minerals, v. 4, framework silicates, 401–407. (3) Liou, J.G. (1971) P-T stabilities of laumontite, wairakite, lawsonite, and related minerals in the system CaAl<sub>2</sub>Si<sub>2</sub>O<sub>8</sub>–SiO<sub>2</sub>–H<sub>2</sub>O. J. Petrol. 12, 379–411.

(4) Yakubovich, O.V. and M.A. Simonov (1985) Refined crystal structure of the zeolite laumontite Ca(H<sub>2</sub>O)<sub>2.8</sub>[Al<sub>2</sub>Si<sub>4</sub>O<sub>12</sub>]0.5H<sub>2</sub>O. Kristallografiya (Sov. Phys. Crystal.), 30, 1072–1076 (in Russian).

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