

Edingtonite

BaAl₂Si₃O₁₀•4H₂O

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Crystal Data: Orthorhombic, pseudotetragonal. *Point Group:* 222, $\bar{4}2m$ pseudotetragonal. Prismatic crystals exhibit pseudotetragonal pyramid or sphenoid forms, to 10 cm; also massive. *Twinning:* On {110} and about [001].

Physical Properties: *Cleavage:* {110}, perfect. Hardness = 4–4.5 D(meas.) = 2.73–2.78 D(calc.) = 2.75–2.80 Pyroelectric and piezoelectric.

Optical Properties: Transparent to translucent. *Color:* White, grayish, pink; colorless in thin section. *Luster:* Vitreous.

Optical Class: Biaxial (-). *Orientation:* X = c; Y = b; Z = a. *Dispersion:* r < v, strong. $\alpha = 1.535\text{--}1.541$ $\beta = 1.542\text{--}1.553$ $\gamma = 1.545\text{--}1.557$ 2V(meas.) = 54°–62°

Cell Data: *Space Group:* P2₁2₁2; $\bar{P}4_2m$ pseudotetragonal. a = 9.550(10) b = 9.665(10) c = 6.523(5) Z = 2

X-ray Powder Pattern: Kilpatrick, Scotland. (ICDD 25-61). 3.576 (100), 6.51 (80), 2.741 (75), 5.38 (60), 4.79 (50), 4.69 (50), 2.589 (45)

Chemistry:

	(1)	(2)
SiO ₂	35.14	36.3
Al ₂ O ₃	20.12	20.6
BaO	31.18	28.6
K ₂ O		0.32
H ₂ O	13.16	12.8
Total	99.60	98.62

(1) Bölet mine, Sweden; corresponds to Ba_{1.03}Al_{2.01}Si_{2.98}O_{10.00}•3.72H₂O. (2) Ice River, Canada; by electron microprobe, H₂O by TGA; corresponds to (Ba_{0.96}K_{0.04})_{Σ=1.00}Al_{2.08}Si_{3.12}O_{10.00}•4.00H₂O.

Mineral Group: Zeolite group.

Occurrence: In cavities in mafic igneous rocks and nepheline syenites; in carbonatites; in hydrothermal veins.

Association: Thomsonite, analcime, natrolite, harmotome, brewsterite, prehnite, calcite.

Distribution: At several quarries in the Kilpatrick Hills, Dumbartonshire, Scotland. From Disgwylfa Hill, Shropshire, England. Large crystals from the Bölet mine, Västergötland, Sweden. At Staré Ransko, Czech Republic. In the Podol'skoye and other deposits, Southern Ural Mountains, and in the Khibiny massif, Kola Peninsula, Russia. Along Ash Creek, in Mendocino Co. near the Sonoma Co. line, California, USA. In the Brunswick No. 12 mine, near Bathurst, New Brunswick; along the Ice River valley, 25 km south of Field, British Columbia; and at Mont Saint-Hilaire, Quebec, Canada. In the Jacupiranga mine, São Paulo, Brazil.

Name: For James Edington (1787–1844), mineral collector of Glasgow, Scotland, the discoverer of the mineral.

References: (1) Dana, E.S. (1892) Dana's system of mineralogy, (6th edition), 599. (2) Deer, W.A., R.A. Howie, and J. Zussman (1963) Rock-forming minerals, v. 4, framework silicates, 358–376. (3) Van Reeuwijk, L.P. (1972) High-temperature phases of zeolites of the natrolite group. Amer. Mineral., 57, 499–510. (4) Galli, E. (1976) Crystal structure refinement of edingtonite, Acta Cryst., 32, 1623–1627. (5) Mazzi, F., E. Galli, and G. Gottardi (1984) Crystal structure refinement of two tetragonal edingtonites. Neues Jahrb. Mineral., Monatsh., 373–382. (6) (1985) Amer. Mineral., 70, 1333–1334 (abs. ref. 5). (7) Grice, J.D., R.A. Gault, and H.G. Ansell (1984) Edingtonite: the first two Canadian occurrences. Can. Mineral., 22, 253–258. (8) Belitsky, I.A., S.P. Gabuda, W. Joswig, and H. Fuess (1986) Study of the structure and dynamics of water in the zeolite edingtonite at low temperature by neutron diffraction and NMR-spectroscopy. Neues Jahrb. Mineral., Monatsh., 541–551.

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