

# Gyrolite

# NaCa<sub>16</sub>(Si<sub>23</sub>Al)O<sub>60</sub>(OH)<sub>8</sub>•14H<sub>2</sub>O

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**Crystal Data:** Triclinic, pseudohexagonal. *Point Group:*  $\bar{1}$ . As spherical to radial masses, to 5 cm; massive, platy or plumose aggregates; as fibrous layers. *Twinning:* At a microscopical scale by rotation of 120° and 240°  $\perp$  (001).

**Physical Properties:** *Cleavage:* Perfect basal; poor prismatic. *Tenacity:* Flakes flexible. Hardness = 3–4 D(meas.) = 2.388–2.390 D(calc.) = 2.40

**Optical Properties:** Transparent to translucent, opaque. *Color:* Colorless to white, may be grayish, tan, yellowish, brownish, or pale green from inclusions; colorless in thin section.

*Luster:* Vitreous to pearly.

*Optical Class:* Uniaxial (-).  $\omega = 1.540$ – $1.550$   $\epsilon = 1.535$ – $1.536$

**Cell Data:** *Space Group:*  $P\bar{1}$ .  $a = 9.74(1)$   $b = 9.74(1)$   $c = 22.40(2)$   $\alpha = 95.7(1)^\circ$   $\beta = 91.5(1)^\circ$   $\gamma = 120.0(1)^\circ$   $Z = 4$

**X-ray Powder Pattern:** Bombay, India; {00l} reflections only are sharp, may resemble truscottite or reyerite.

22. (vs), 11.0 (s), 4.20 (s), 1.82 (s), 3.65 (ms), 2.80 (ms), 8.4–7.4 (md)

## Chemistry:

	(1)	(2)
SiO <sub>2</sub>	50.70	50.88
Al <sub>2</sub> O <sub>3</sub>	1.48	1.75
Fe <sub>2</sub> O <sub>3</sub>		0.25
MgO	0.18	0.74
CaO	33.24	31.34
Na <sub>2</sub> O		1.34
H <sub>2</sub> O	14.18	[13.68]
Total	99.78	[99.98]

(1) Isle of Skye, Scotland; corresponds to Ca<sub>15.80</sub>Mg<sub>0.12</sub>(Si<sub>23.20</sub>Al<sub>0.80</sub>) $\Sigma=24.00$ O<sub>60</sub>(OH)<sub>7.04</sub>•18.12H<sub>2</sub>O. (2) Qarusait, Greenland; by XRF and AA, H<sub>2</sub>O by weight loss; corresponds to Na<sub>1.18</sub>Ca<sub>15.22</sub>Mg<sub>0.50</sub>Fe<sub>0.08</sub>(Si<sub>23.07</sub>Al<sub>0.93</sub>) $\Sigma=24.00$ O<sub>60</sub>(OH)<sub>7.92</sub>•16.72H<sub>2</sub>O.

**Occurrence:** As replacements of wall rocks and in vugs, amygdules, and veinlets in basalts; in hydrothermally altered rhyolites and sediments; in some ore deposits.

**Association:** Apophyllite, stilbite, laumontite, thomsonite, okenite, tobermorite, xonotlite, calcite.

**Distribution:** At Portree, Isle of Skye and 'S Airde Beinn, Isle of Mull, Scotland. From Ballhenry, Co. Antrim, Ireland. At Ortano, Elba, and at Monte Biaena, Pannone, Trentino-Alto Adige, Italy. At Ljósá, Eysturoy, and Gjónoyri, Streymoy, Faeroe Islands. From Qarusait and Tapaursak, Greenland. In India, from Nasik, Poona, on Bombay Island and around Bombay, Maharashtra. In Japan, at Sawayama Lake, Nagano Prefecture; Irakawa, Yamagata Prefecture; and Otemo, Niigata Prefecture. In the USA, from Fort Point, San Francisco Co., and in the New Almaden mine, Santa Clara Co., California; from Yellowstone National Park, Wyoming; in the Goose Creek quarry, Leesburg, Loudoun Co., Virginia. From 40 km southwest of Cape Blomiden, between Margaretville and Port George, Nova Scotia, Canada. A few other localities are known.

**Name:** From the Greek for *round*, in reference to its common habit.

**References:** (1) Dana, E.S. (1892) Dana's system of mineralogy, (6th edition), 566. (2) Mackay, A.L. and H.F.W. Taylor (1953) Gyrolite. Mineral. Mag., 30, 80–91. (3) Merlino, S. (1988) Gyrolite: its crystal structure and crystal chemistry. Mineral. Mag., 52, 377–387.

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