

Crystal Data: Cubic. *Point Group:* $4/m\bar{3}2/m$. Crystals rare, cubes, dodecahedra, or trapezohedra, commonly striated, up to 12 cm; as rounded grains, fine-grained, massive. Commonly heterogeneous below ~200 μm , into domains enriched in (Cs,Al), (Na,Si), or (Cs,Na,Al) with exsolved quartz.

Physical Properties: *Cleavage:* In traces. *Fracture:* Uneven to conchoidal. *Tenacity:* Brittle. Hardness = 6.5-7 VHN = 658-794 D(meas.) = 2.68-3.03 D(calc.) = 2.94

Optical Properties: Transparent to translucent. *Color:* Colorless, white, gray, or tinted pink, blue, violet; colorless in thin section. *Luster:* Vitreous; greasy to dull on the exterior. *Optical Class:* Isotropic; may show weak sectional birefringence. $n = 1.507\text{--}1.525$

Cell Data: *Space Group:* $Ia\bar{3}d$. $a = 13.682(3)$ $Z = 16$

X-ray Powder Pattern: Nagatara, Fukuoka Prefecture, Japan. (ICDD 25-194) 3.42 (100), 2.913 (45), 3.65 (30), 2.416 (24), 1.736 (22), 1.860 (18), 2.218 (17)

| Chemistry: | (1) | (2) | (3) | | (1) | (2) | (3) |
|--------------------------------|-------|-------|-------|-------------------|-------|---------|---------|
| SiO ₂ | 47.57 | 43.26 | 47.56 | K ₂ O | 0.01 | 0.01 | 0.02 |
| Al ₂ O ₃ | 16.12 | 16.67 | 16.40 | Rb ₂ O | 1.48 | 1.41 | 1.24 |
| Fe ₂ O ₃ | | 0.01 | | Cs ₂ O | 30.07 | 34.30 | 29.79 |
| CaO | 0.35 | 0.65 | 0.28 | Total | 97.29 | [97.07] | [97.37] |
| Na ₂ O | 1.69 | 0.76 | 2.08 | | | | |

(1) Maskwa Lake, Manitoba, Canada; by electron microprobe, average of three analyses; corresponds to (Cs_{0.58}Na_{0.15}Rb_{0.04}Ca_{0.02}) $\Sigma=0.79$ Al_{0.86}Si_{2.15}O₆·nH₂O. (2) Do.; original total given as 97.06%, corresponds to (Cs_{0.70}Na_{0.07}Rb_{0.04}Ca_{0.03}) $\Sigma=0.84$ Al_{0.94}Si_{2.07}O₆·nH₂O. (3) Do.; original total given as 97.36%, corresponds to (Cs_{0.57}Na_{0.18}Rb_{0.04}Ca_{0.01}) $\Sigma=0.80$ Al_{0.87}Si_{2.14}O₆·nH₂O.

Polymorphism & Series: Forms a series with analcime.

Mineral Group: Zeolite group.

Occurrence: In lithium-rich granite pegmatites; may be in kiloton amounts.

Association: Quartz, spodumene, petalite, amblygonite, lepidolite, elbaite, cassiterite, columbite, apatite, eucryptite, muscovite, potassic feldspar, albite, microcline.

Distribution: In fine crystals at several places around San Piero in Campo, Elba, Italy. In the Varuträsk pegmatite, 15 km northwest of Skellefteå, Västerbotten, Sweden. At Bikita, Zimbabwe. From Karibib, Namibia. In the USA, from a number of localities in Oxford Co., Maine; at Portland and Haddam, Middlesex Co., Connecticut; in the Tin Mountain mine, near Custer, Custer Co., South Dakota; in the Pala and Mesa Grande districts, San Diego Co., California. In large amounts in the Tanco pegmatite, Bernic Lake, Manitoba, Canada. From the Taquaral district, Itinga, Minas Gerais, Brazil. Large crystals from the Shengus, Skardu, and Gilgit districts, Pakistan. At Nilaw, Nuristan district, Laghman Province, Afghanistan. Additional minor occurrences are known.

Name: From *Pollux*, genative *Pollucis*, of classical mythology, brother of Castor, for its common association with "castorite" (petalite).

Type Material: Mining Academy, Freiberg, Germany, 27111.

References: (1) Dana, E.S. (1892) Dana's system of mineralogy, (6th edition), 343-344. (2) Vlasov, K.A., Ed. (1966) Mineralogy of rare elements, v. II, 60-65. (3) Beger, R.M. (1969) The crystal structure and chemical composition of pollucite. *Zeits. Krist.*, 129, 280-302. (4) Cerný, P. (1974) The present status of the analcime-pollucite series. *Can. Mineral.*, 12, 334-341. (5) Teertstra, D.K., P. Cerný, and R. Chapman (1992) Compositional heterogeneity of pollucite from High Grade Dyke, Maskwa Lake, southeastern Manitoba. *Can. Mineral.*, 30, 687-697. (6) Diego Gatta, G., R. Rinaldi, G.J. McIntyre, G. Nénert, F. Bellatreccia, A. Guastoni, and G. Della Ventura (2009) On the crystal structure and crystal chemistry of pollucite, (Cs,Na)₁₆Al₁₆Si₃₂O₉₆·nH₂O: A natural microporous material of interest in nuclear technology. *Amer. Mineral.*, 94, 1560-1568.