

Crystal Data: Monoclinic. *Point Group:* 2/m. Crystals commonly short prismatic along [100] or [001], tabular on [010], to 20 cm. Cleavable, granular, massive. *Twinning:* Common as simple, contact, or penetration twins according to the Carlsbad, Baveno, or Manebach laws.

Physical Properties: *Cleavage:* Perfect on {001} and {010}; partings on {100}, {110}, {110}, and {201}. *Fracture:* Conchoidal to uneven. *Tenacity:* Brittle. Hardness = 6–6.5 D(meas.) = 2.55–2.63 D(calc.) = 2.563

Optical Properties: Transparent to translucent. *Color:* Colorless, white, gray, pale yellow, flesh-red, green; colorless in thin section; may exhibit opalescence or schiller iridescence.

Streak: White. *Luster:* Vitreous, pearly on cleavages.

Optical Class: Biaxial (–). *Orientation:* Z = b; X ∧ a = 14°–6°; Y ∧ c = –13° to –21°.

Dispersion: r > v, distinct. α = 1.518–1.520 β = 1.522–1.524 γ = 1.522–1.525

2V(meas.) = 35°–75°

Cell Data: *Space Group:* C2/m. a = 8.5632(11) b = 12.963(14) c = 7.299(11) β = 116.073(9)° Z = 4

X-ray Powder Pattern: Selkingen, Switzerland. (ICDD 19-931).

3.31 (100), 3.77 (80), 4.22 (70), 3.24 (65), 3.29 (60), 2.992 (50), 3.47 (45)

Chemistry:	(1)	(2)		(1)	(2)
SiO ₂	65.39	64.76	Na ₂ O	1.08	
Al ₂ O ₃	18.45	18.32	K ₂ O	14.76	16.92
BaO	0.02		Rb ₂ O	0.49	
			Total	100.19	100.00

(1) Himalaya mine, Mesa Grande district, California, USA; by electron microprobe, corresponds to (K_{0.86}Na_{0.10})_{Σ=0.96}Al_{1.00}Si_{3.00}O₈. (2) KAlSi₃O₈.

Polymorphism & Series: Dimorphous with microcline; forms a series with celsian.

Mineral Group: Feldspar (alkali) group; (Al,Si) commonly only partially ordered.

Occurrence: The common feldspar of granites, granite pegmatites, and syenites. In cavities in basalts; in high-grade metamorphic rocks and as a result of potassic hydrothermal alteration; also authigenic and detrital.

Association: Albite, muscovite, biotite, “hornblende,” schorl, beryl.

Distribution: Widespread. Fine examples from St. Gotthard, Ticino, and at Val Giuv, Tavetsch, Graubünden, Switzerland. In the Zillertal, Tirol, Austria. From Baveno, Piedmont, in the Pfitschtal, Trentino-Alto Adige, and at San Piero in Campo, Elba, Italy. At Epprechtstein, Bavaria, Carlsbad, Bohemia, and Manebach, Thuringia, Germany. From Cornwall, England. In Russia, from the Mursinka-Alabashka area, near Yekaterinburg (Sverdlovsk), Ural Mountains. In the USA, from Maine, at Paris and Buckfield, Oxford Co; at Cornog, Chester Co., and Blue Hill and Lieperville, Delaware Co., Pennsylvania. In California, from the Pala and Mesa Grande districts, San Diego Co.; in Colorado, on Mt. Antero, Chaffee Co.; at Crystal Pass, Goodsprings, Clark Co., Nevada. From Guanajuato, Mexico. At Tanokamiyama, Shiga Prefecture, Japan. Gem crystals from Ampandrandava, Fianarantsoa, and Itrongay, near Betroka, Madagascar.

Name: From the Greek for *straight* and *fracture*, in allusion to the cleavage angle.

References: (1) Dana, E.S. (1892) Dana's system of mineralogy, (6th edition), 314–321.

(2) Deer, W.A., R.A. Howie, and J. Zussman (1963) Rock-forming minerals, v. 4, framework silicates, 6–93. (3) Phillips, W.R. and D.T. Griffen (1981) Optical mineralogy, 345–348.

(4) Prince, E., G. Donnay, and R.F. Martin (1973) Neutron diffraction refinement of an ordered orthoclase structure. Amer. Mineral., 58, 500–507. (5) Su, S.-C., F.D. Bloss, P.H. Ribbe, and D.B. Stewart (1984) Optic axial angle, a precise measure of Al,Si ordering in T₁ tetrahedral sites of K-rich alkali feldspars. Amer. Mineral., 69, 440–448.

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