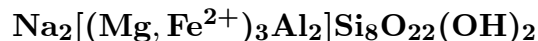


Glaucophane



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Crystal Data: Monoclinic. *Point Group:* $2/m$. As prismatic crystals; columnar, fibrous, or granular aggregates; massive. *Twinning:* Simple or multiple twinning $\parallel \{100\}$.

Physical Properties: *Cleavage:* Perfect on $\{110\}$, intersecting at $\sim 56^\circ$ and $\sim 124^\circ$; partings on $\{010\}$, $\{001\}$. *Fracture:* Conchoidal to uneven. *Tenacity:* Brittle. Hardness = 6 D(meas.) = 3.08–3.22 D(calc.) = 3.132

Optical Properties: Translucent. *Color:* Gray, lavender-blue, commonly zoned; lavender-blue to colorless in thin section. *Streak:* Blue-gray. *Luster:* Vitreous to pearly. *Optical Class:* Biaxial (-). *Pleochroism:* Vivid; X = yellow to colorless; Y = violet to lavender; Z = blue. *Orientation:* $Y = b$; $Z \wedge c = -7^\circ$ to -6° , $X \wedge a \simeq 8^\circ$. *Dispersion:* $r < v$, weak. $\alpha = 1.594\text{--}1.630$ $\beta = 1.612\text{--}1.648$ $\gamma = 1.619\text{--}1.652$ $2V(\text{meas.}) = 0^\circ\text{--}50^\circ$

Cell Data: *Space Group:* $C2/m$. $a = 9.595$ $b = 17.798$ $c = 5.307$ $\beta = 103.66^\circ$ $Z = 2$

X-ray Powder Pattern: Sebastopol quadrangle, California, USA. (ICDD 20-453). 8.26 (100), 3.06 (65), 2.693 (60), 4.45 (25), 3.38 (25), 2.937 (25), 2.523 (25)

Chemistry:	(1)	(2)	(1)	(2)	(1)	(2)		
SiO ₂	58.04	56.28	FeO	6.12	10.34	K ₂ O	0.02	0.11
TiO ₂	0.66	0.17	MnO	0.07	0.25	F	0.02	
Al ₂ O ₃	10.31	12.16	MgO	11.71	8.41	Cl	0.01	
Fe ₂ O ₃	2.89	1.72	CaO	1.37	0.62	H ₂ O ⁺	1.98	
Cr ₂ O ₃		0.11	Na ₂ O	6.97	7.04	H ₂ O ⁻	0.00	
						Total	100.17	97.21

(1) Tiburon Peninsula, California, USA; corresponds to $(\text{Na}_{1.96}\text{Ca}_{0.04})_{\Sigma=2.00}(\text{Mg}_{2.39}\text{Al}_{1.82}\text{Fe}_{0.61}^{2+}\text{Fe}_{0.18}^{3+})_{\Sigma=5.00}\text{Si}_8\text{O}_{22}(\text{OH})_2$. (2) Kodiak Islands, Alaska, USA; by electron microprobe, $\text{Fe}^{2+}:\text{Fe}^{3+}$ calculated; corresponds to $(\text{Na}_{1.90}\text{Ca}_{0.09}\text{K}_{0.02})_{\Sigma=2.01}(\text{Al}_{1.82}\text{Mg}_{1.74}\text{Fe}_{1.20}^{2+}\text{Fe}_{0.18}^{3+}\text{Mn}_{0.03}\text{Ti}_{0.02}\text{Cr}_{0.01})_{\Sigma=5.00}(\text{Si}_{7.83}\text{Al}_{0.17})_{\Sigma=8.00}\text{O}_{22}(\text{OH})_2$.

Polymorphism & Series: Forms a series with ferroglaucophane.

Mineral Group: Amphibole (alkali) group: $\text{Fe}^{2+}/(\text{Fe}^{2+} + \text{Mg}) < 0.5$; $\text{Fe}^{3+}/(\text{Fe}^{3+} + \text{Al}^{\text{vi}}) < 0.3$; $(\text{Na} + \text{K})_{\text{A}} < 0.5$; $\text{Na}_{\text{B}} \geq 1.34$.

Occurrence: Characteristic of the blueschist facies, in former subduction zones in mountain belts; in the greenschist facies and in eclogites that have undergone retrograde metamorphism.

Association: Crossite, chlorite, epidote, pumpellyite, lawsonite, omphacite, jadeite, actinolite, barrosite, cummingtonite, aragonite.

Distribution: Widespread in some mountain belts. On Syra Island, Cyclades Islands, Greece. At numerous sites in the California Coast Ranges, as on the Tiburon Peninsula and at Vonsen Ranch, Marin Co., at Glaucophane Ridge, Panoche Valley, San Benito Co., and near Valley Ford, Sonoma Co.; in the Kodiak Islands, Alaska, USA. At St. Marcel, Val d'Aosta, and Piollore (Biella), Piedmont, Italy. On Anglesey, Wales. In Japan, at Ubuzan, Aichi Prefecture, and Otakiyama, Tokushima Prefecture.

Name: From the Greek for *bluish green* and *to appear*.

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