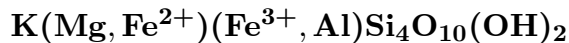


# Celadonite



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**Crystal Data:** Monoclinic. *Point Group:*  $2/m$  or  $2$ . As minute micaceous scales or earthy aggregates.

**Physical Properties:** *Cleavage:*  $\{001\}$ , perfect. *Tenacity:* Friable to unctuous. Hardness =  $\sim 2$   $D(\text{meas.}) = 2.95\text{--}3.05$   $D(\text{calc.}) = 3.00$

**Optical Properties:** Semitransparent. *Color:* Blue-green, olive-green, apple-green. *Luster:* Dull.

*Optical Class:* Biaxial (-). *Pleochroism:* Yellow-green, blue-green.  $\alpha = 1.606\text{--}1.625$ .  $\beta = \text{n.d.}$   $\gamma = 1.579\text{--}1.661$   $2V(\text{meas.}) = 5^\circ\text{--}8^\circ$

**Cell Data:** *Space Group:*  $C2/m$  or  $C2$ .  $a = 5.23(2)$   $b = 9.06(1)$   $c = 10.13(2)$   $\beta = 100^\circ 55(10)'$   $Z = 2$

**X-ray Powder Pattern:** Wind River area, Washington, USA.

2.580 (100), 4.53 (85), 3.635 (80), 3.087 (80), 2.678 (75), 2.402 (75), 3.318 (70)

## Chemistry:

	(1)
SiO <sub>2</sub>	55.61
Al <sub>2</sub> O <sub>3</sub>	0.79
Fe <sub>2</sub> O <sub>3</sub>	17.19
FeO	4.02
MnO	0.09
MgO	7.26
CaO	0.21
Na <sub>2</sub> O	0.19
K <sub>2</sub> O	10.03
H <sub>2</sub> O	4.88
Total	100.27

(1) 37 km east of Reno, Storey Co., Nevada, USA; corresponds to  $(\text{K}_{0.92}\text{Na}_{0.03}\text{Ca}_{0.02})_{\Sigma=0.97}(\text{Mg}_{0.78}\text{Fe}_{0.24}^{2+})_{\Sigma=1.02}(\text{Fe}_{0.93}^{3+}\text{Al}_{0.07})_{\Sigma=1.00}\text{Si}_{4.00}\text{O}_{10}(\text{OH})_2$ .

**Polymorphism & Series:** 1M polytype.

**Mineral Group:** Mica group.

**Occurrence:** Replaces primary ferromagnesian silicate minerals in altered intermediate to mafic volcanic rocks, developed under low-grade zeolite facies metamorphism; as amygdule fillings in basalts or andesites.

**Association:** Montmorillonite, clinoptilolite, heulandite, laumontite, prehnite, chlorite, quartz, calcite.

**Distribution:** Many localities; a few for well-characterized material include: on Mt. Baldo, near Verona, Vicenza, and at Val di Fassa, Trentino-Alto Adige, Italy. In the Zillertal, Tirol, Austria. In Scotland, at Scur Mohr. From Streymoy and Suduroy, Faeroe Islands. In the USA, in the John Day Formation, Grant Co., Oregon; in Mt. Rainier National Park, Pierce Co., Washington; and from Red Rock Canyon, Kern Co., California. On the Pearl Islands, off Nicaragua. In the Hosokura mine, Miyagi Prefecture; at Toyoura, Yamagata Prefecture; Nishikata, Tochigi Prefecture; Kamogawa, Chiba Prefecture; and many other places in Japan.

**Name:** From the French *celadon*, for *sea green*, its color.

**References:** (1) Dana, E.S. (1892) Dana's system of mineralogy, (6th edition), 683. (2) Wise, W.S. and H.P. Eugster (1964) Celadonite: synthesis, thermal stability and occurrence. *Amer. Mineral.*, 49, 1031–1083. (3) Buckley, H.A., J.C. Bevan, K.M. Brown, L.R. Johnson, and V.C. Farmer (1978) Glauconite and celadonite: two separate mineral species. *Mineral. Mag.*, 42, 373–382. (4) Cipurskii, S.I. and V.A. Dric (1986) Refining the crystallographic structure of celadonite. *Mineral. Zhurnal*, 8(3), 32–40 (in Russian with English abs.).

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