

Epidote

$\text{Ca}_2\text{Al}_2(\text{Fe}^{3+}, \text{Al})(\text{SiO}_4)(\text{Si}_2\text{O}_7)\text{O}(\text{OH})$

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Crystal Data: Monoclinic. *Point Group:* $2/m$. Crystals prismatic, to 35 cm, commonly elongated and striated || [010]. Fibrous, coarse to fine granular, massive. *Twinning:* On {100}, contact, lamellar, common.

Physical Properties: *Cleavage:* Perfect on {001}, imperfect on {100}. *Fracture:* Uneven. *Tenacity:* Brittle. Hardness = 6–7 D(meas.) = 3.38–3.49 D(calc.) = 3.391–3.464

Optical Properties: Transparent to nearly opaque. *Color:* Pistachio-green to pale green, yellow, yellowish green, greenish yellow, greenish black; yellow-green in thin section.

Luster: Vitreous, pearly, somewhat resinous.

Optical Class: Biaxial (-). *Pleochroism:* Strong; X = colorless, pale yellow, pale green; Y = greenish yellow; Z = yellowish green. *Orientation:* Y = b. *Dispersion:* $r > v$. $\alpha = 1.715\text{--}1.751$
 $\beta = 1.725\text{--}1.784$ $\gamma = 1.734\text{--}1.797$ $2V(\text{meas.}) = 90^\circ\text{--}116^\circ$

Cell Data: *Space Group:* $P2_1/m$. $a = 8.8877(14)$ $b = 5.6275(8)$ $c = 10.1517(12)$
 $\beta = 115.383(14)^\circ$ Z = 2

X-ray Powder Pattern: Bourg d'Oisans, [France].

2.900 (100), 2.679 (100), 2.688 (70), 4.02 (50), 2.599 (50), 2.460 (50), 3.40 (40)

Chemistry:

	(1)		(1)
SiO ₂	36.52	MnO	0.00
TiO ₂	0.00	MgO	0.00
Al ₂ O ₃	20.97	CaO	23.05
Fe ₂ O ₃	17.22	H ₂ O ⁺	1.98
FeO	0.45	Total	100.19

(1) Westfield, Hampden Co., Massachusetts, USA; corresponds to $(\text{Ca}_{1.99}\text{Fe}_{0.03}^{2+})_{\Sigma=2.02}\text{Al}_{1.94}\text{Fe}_{1.04}^{3+}(\text{Si}_{2.94}\text{Al}_{0.06})_{\Sigma=3.00}\text{O}_{12}(\text{OH})_{1.06}$.

Polymorphism & Series: Forms a series with clinozoisite.

Mineral Group: Epidote group.

Occurrence: Characteristic of several facies of regionally metamorphosed rocks and some contaminated felsic igneous rocks; in contact zones between igneous and calcareous sedimentary rocks; from alteration of plagioclase (saussuritization).

Association: Zeolites, amphiboles, plagioclase feldspars, quartz, actinolite, calcite (greenschist facies); amphiboles, vesuvianite, scapolite, talc, wollastonite, pyroxenes, garnet (epidote-hornfels facies); pumpellyite, glaucophane, lawsonite, riebeckite, garnet, omphacite (blueschist facies).

Distribution: A few notable occurrences follow for this widespread mineral. From Bourg d'Oisans, Isère, France. At Arendal, Norway. From Traversella, Piedmont, Italy. Exceptional crystals from the Knappenwand, Untersulzbachtal, Salzburg, Austria. In the USA, fine crystals from around Sulzer, Prince of Wales Island, Alaska; on Garnet Hill, Calaveras Co., California; at the Calumet mine, Chaffee Co., Colorado; in the Seven Devils district, Adams Co., Idaho; and from the Julie claim, Pamlico district, Mineral Co., Nevada. In Mexico, at San Quentin, Baja California. From Naukluft Farm, Rehoboth, Namibia. In Pakistan, exceptional crystals from Tormiq.

Name: From the Greek for *increase*, the base of the prism with one longer side.

Type Material: Natural History Museum, Paris, France.

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