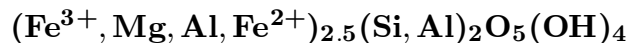


Odinite



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Crystal Data: Monoclinic or hexagonal. *Point Group:* n.d. As clay-sized crystallites within aggregates.

Physical Properties: Hardness = n.d. $D(\text{meas.}) = \text{n.d.}$ $D(\text{calc.}) = [2.78]$

Optical Properties: Semitransparent (?). *Color:* Green to dark green. *Streak:* Gray-green. *Luster:* Silky to earthy. *Optical Class:* n.d.

Cell Data: *Space Group:* Cm (1M). $a = 5.373(3)$ $b = 9.326(7)$ $c = 7.363(6)$
 $\beta = 104.0(1)^\circ$ $Z = [2]$, or *Space Group:* $P31m$ (1A, probable). $a = 5.366(6)$ $c = 7.161(8)$
 $Z = [2]$

X-ray Powder Pattern: Los Islands, Guinea; mixed monoclinic and hexagonal polytypes. 7.15 (100), 3.58 (85), 1.552 (65), 4.65 (40), 2.67 (40), 2.41 (30), 4.53 (20)

Chemistry:	(1)	(1)
SiO_2	36.0	CaO 0.13
TiO_2	0.4	Na_2O trace
Al_2O_3	12.2	K_2O 0.35
Fe_2O_3	19.5	H_2O^+ 0.91
FeO	6.21	H_2O^- 4.10
MnO	0.33	CO_2 10.05
MgO	9.7	P_2O_5 0.17
		Total 100.05

(1) Los Islands, Guinea; by a combination of wet chemical analysis and electron microprobe; after exclusion of CaO as CaCO_3 , K_2O , and P_2O_5 as impurities, corresponds to $(\text{Fe}_{0.78}^{3+}\text{Mg}_{0.77}\text{Al}_{0.56}\text{Fe}_{0.28}^{2+}\text{Ti}_{0.02}\text{Mn}_{0.02})_{\Sigma=2.43}(\text{Si}_{1.79}\text{Al}_{0.21})_{\Sigma=2.00}\text{O}_5(\text{OH})_{4.00}$.

Polymorphism & Series: 1M and 1A polytypes.

Mineral Group: Kaolinite-serpentine group.

Occurrence: Formed in marine waters, a minor component of green clay infillings or replacements of microtests, bioclasts, fecal pellets, or mineral debris on shallow marine shelves and reef lagoonal areas in tropical latitudes. Probably only present in rocks less than Quaternary in age, as susceptible to alteration to chlorite through weathering.

Association: Quartz, calcite, kaolinite, smectite, illite, chlorite.

Distribution: A minor component of sediments estimated to cover more than 100,000 km² of present-day sea bottom. At least eleven independent localities are noted: among these are the reef lagoon southwest of New Caledonia; in the Ogooue River prodelta, Congo Republic; the continental shelf between the Amazon and Orinoco Rivers, Brazil; the Niger River prodelta, Nigeria; off Martinique Island; Los Islands, in the mouth of the Koukoure River, Guinea.

Name: For Dr. Gilles Serge Odin, clay mineralogist of the University P. and M. Curie, Paris, France, who did the initial work on this mineral.

Type Material: National Museum of Natural History, Washington, D.C., USA, 165498; The Natural History Museum, London, England, 1987,532; Museum of Natural History, Paris, 187.7; National School of Mines, Paris, France.

References: (1) Bailey, S.W. (1988) Odinite, a new dioctahedral-trioctahedral Fe^{3+} -rich 1:1 clay mineral. *Clay Minerals*, 23, 237–247. (2) (1990) *Amer. Mineral.*, 75, 432–433 (abs. ref. 1). (3) Odin, G.S. (1985) La “verdine,” facies granulaire vert marine et cotier, distinct de la glauconite: distribution actuelle et composition. *Compt. Rendus Acad. Sci. Paris*, 301, 105–108 (in French).

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