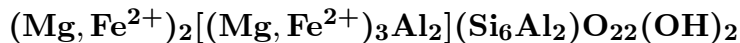


**Gedrite**

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**Crystal Data:** Orthorhombic. *Point Group:*  $2/m\ 2/m\ 2/m$ . As bladed and prismatic crystals; fibrous and semi-sheaflike aggregates.**Physical Properties:** *Cleavage:* Perfect on  $\{210\}$ , intersecting at  $54^\circ$  and  $126^\circ$ , imperfect on  $\{010\}$ ,  $\{100\}$ . *Tenacity:* Brittle. *Hardness* = 5.5–6 *D*(meas.) = 3.15–3.259 *D*(calc.) = 3.18–3.334**Optical Properties:** Transparent to translucent. *Color:* White, gray, brown, green; colorless, gray, or brown in thin section. *Luster:* Vitreous.*Optical Class:* Biaxial (+). *Pleochroism:* Weak to moderate, in browns, yellows, or gray.*Orientation:*  $X = a$ ;  $Y = b$ ;  $Z = c$ .  $\alpha = 1.625\text{--}1.690$   $\beta = 1.635\text{--}1.705$   $\gamma = 1.643\text{--}1.718$   
 $2V$ (meas.) =  $70^\circ\text{--}90^\circ$ **Cell Data:** *Space Group:*  $Pnma$ .  $a = 18.531\text{--}18.601$   $b = 17.741\text{--}17.839$   $c = 5.249\text{--}5.284$   
 $Z = 4$ **X-ray Powder Pattern:** Grafton, Maine, USA.

3.06 (100), 8.27 (80), 3.23 (70), 8.97 (50), 4.48 (40), 3.65 (40), 3.35 (40)

<b>Chemistry:</b>	(1)	(2)	(1)	(2)
SiO <sub>2</sub>	40.71	43.46	MgO	10.66
TiO <sub>2</sub>	0.29	0.58	CaO	0.05
Al <sub>2</sub> O <sub>3</sub>	18.73	14.18	Na <sub>2</sub> O	1.59
Fe <sub>2</sub> O <sub>3</sub>	0.90		K <sub>2</sub> O	0.06
FeO	24.39	20.35	H <sub>2</sub> O <sup>+</sup>	2.75
MnO	0.14	0.49	H <sub>2</sub> O <sup>-</sup>	0.15
			<b>Total</b>	<b>100.42</b>
				<b>[97.08]</b>

(1) Grafton, Maine, USA; corresponds to  $(\text{Fe}_{3.00}^{2+}\text{Mg}_{2.34}\text{Al}_{1.23}\text{Na}_{0.46}\text{Fe}_{0.10}^{3+}\text{Ti}_{0.03}\text{Mn}_{0.02}\text{Ca}_{0.01}\text{K}_{0.01})_{\Sigma=7.20}(\text{Si}_{5.99}\text{Al}_{2.01})_{\Sigma=8.00}\text{O}_{22}(\text{OH})_{2.70}$ . (2) Tallan Lake sill, Peterborough Co., Ontario, Canada; by electron microprobe, original total given as 97.07%; corresponding to  $(\text{Mg}_{3.31}\text{Fe}_{2.12}^{2+}\text{Al}_{0.82}\text{Na}_{0.57}\text{Fe}_{0.37}^{3+}\text{Mn}_{0.06}\text{Ti}_{0.06})_{\Sigma=7.31}(\text{Si}_{6.37}\text{Al}_{1.63})_{\Sigma=8.00}\text{O}_{22}(\text{OH})_2$ .**Polymorphism & Series:** Forms a series with magnesio-gedrite and ferro-gedrite.**Mineral Group:** Amphibole (Fe–Mn–Mg) group: 0.1  $\text{Mg}/(\text{Mg} + \text{Fe}^{2+})$  0.89;  $(\text{Ca} + \text{Na})_{\text{B}} < 1.34$ ;  $\text{Li} < 1.0$ ;  $\text{Si} < 7.0$ ;  $\text{Al}^{\text{iv}} > 0.99$ .**Occurrence:** Widespread in medium- to high-grade metamorphic rocks; in metasomatized contact metamorphic rocks.**Association:** Garnet, cordierite, “hornblende,” anthophyllite, cummingtonite, sapphirine, sillimanite, kyanite, quartz, staurolite, biotite.**Distribution:** From Gèdre, Héas Valley, Haut Pyrénées, France. At Strathy, Sutherlandshire, and Glen Urquhart, Inverness-shire, Scotland. From Snarum, Bjordammen, and Bamble, Norway. At Schisshyttan, near Väster Silfberg, Värmland, Sweden. From Shuyeverskoya, Karelia. In the USA, at Haddam, Middlesex Co., Connecticut; Grafton, Oxford Co., Maine; Masons’ Mountain, Macon Co., North Carolina; and Powder Mill Point, Berkeley, Alameda Co., California. At Budsbrook, Western Australia. In the Wakamatsu mine, Tottori Prefecture, and at Iratsuyama, Ehime Prefecture, Japan.**Name:** For the occurrence near Gèdre, France.**References:** (1) Dana, E.S. (1892) Dana’s system of mineralogy, (6th edition), 384–385. (2) Milton, D.J. and J. Ito (1961) Gedrite from Oxford County, Maine. *Amer. Mineral.*, 46, 734–740. (3) Papike, J.J. and M. Ross (1970) Gedrites: crystal structures and intra-crystalline cation distributions. *Amer. Mineral.*, 55, 1945–1972. (4) Hawthorne, F.C., J.L. Griep, and L. Curtis (1980) A three-amphibole assemblage from the Tallan Lake sill, Peterborough County, Ontario. *Can. Mineral.*, 18, 275–284. (5) Phillips, W.R. and D.T. Griffen (1981) Optical mineralogy, 223–225.

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