

**Crystal Data:** Hexagonal. *Point Group:*  $\bar{3} 2/m$ . As reaction rims or aggregates <100  $\mu\text{m}$  at the contact of orthopyroxene phenocrysts and talc.

**Physical Properties:** *Cleavage:* n.d. *Tenacity:* n.d. *Fracture:* n.d. *Hardness* = n.d.  
D(meas.) = n.d. D(calc.) = 3.24 Extremely vulnerable to oxidation in contact with air and, in a few hours, it converts to iron oxyhydroxides (typically akaganéite).

**Optical Properties:** Translucent. *Color:* Light blue-gray (synthetic); greenish (under the microscope). *Streak:* Gray (synthetic). *Luster:* Nonmetallic.  
*Optical Class:*  $n(\text{calc.}) = 1.75$

**Cell Data:** *Space Group:*  $R\bar{3} m$ .  $a = 6.94(5)$   $c = 14.5(2)$

**X-Ray Diffraction Pattern:** Calculated pattern.  
2.31 (100), 2.82 (62), 5.55 (42), 1.73 (36), 2.94 (22), 1.85 (17), 1.53 (15)

Chemistry:	(1)	(2)
Fe	54.29	56.36
Mn	0.33	
Mg	0.05	
Si	0.03	
Cl	16.13	17.87
Na	0.02	
K	0.01	
Ca	0.25	
H		1.53
OH	[25.81]	24.22
Total	96.93	100.00

(1) Karee mine, Rustenburg District, Bushveld complex, South Africa; average electron microprobe analysis supplemented by Raman spectroscopy, OH calculated from stoichiometry; corresponds to  $(\text{Fe}^{2+}_{1.98}\text{Mn}^{2+}_{0.01}\text{Ca}_{0.01})(\text{OH})_{3.08}\text{Cl}_{0.92}$ . (2) Fe<sub>2</sub>(OH)<sub>3</sub>Cl.

**Polymorphism & Series:** A dimorph of hibbingite.

**Occurrence:** As a replacement product, either after rock-forming silicates with Fe<sup>2+</sup> (e.g., orthopyroxenes), iron meteorites, or man-made iron objects if they were in contact with chloride-rich anoxic brines. Could be a large reservoir for Cl and H<sub>2</sub>O in altered mafic and ultramafic rocks.

**Association:** Talc, orthopyroxene (En<sub>74-76</sub>Fs<sub>23-24</sub>Wo<sub>0-2</sub>), cummingtonite, magnesio-ferri-hornblende, actinolite, tremolite; also locally, carbonates (siderite, dolomite, calcite), sulfides (pyrrhotite, pentlandite, chalcopyrite), sericite, chromite with a hercynite component, rutile, magnetite (Karee mine). Akaganéite (iron meteorites).

**Distribution:** From the Karee mine, Rustenburg District, Bushveld complex, South Africa.

**Name:** The prefix indicates the dimorphous relation with *hibbingite*.

**Type Material:** Mineralogical Museum, Comenius University, Bratislava, Slovakia (7601).

**References:** (1) Koděra, P., J. Majzlan, K. Pollok, S. Kiefer, F. Šimko, E. Scholtzová, J. Luptáková, and G. Cawthorn (2022) Ferrous hydroxychlorides hibbingite [ $\gamma$ -Fe<sub>2</sub>(OH)<sub>3</sub>Cl] and parahibbingite [ $\beta$ -Fe<sub>2</sub>(OH)<sub>3</sub>Cl] as a concealed sink of Cl and H<sub>2</sub>O in ultrabasic and granitic systems. *Amer. Mineral.*, 107, 826-841.