

Hohmannite



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Crystal Data: Triclinic. *Point Group:* $\bar{1}$. Crystals are short prismatic along [001], to 1 mm, typically with dull or rounded and striated faces; as granular aggregates.

Physical Properties: *Cleavage:* {010}, perfect; {110} and {1 $\bar{1}$ 0}, less perfect (referred to morphological axes; relation to X-ray axes uncertain). *Hardness* = 3 *D*(meas.) = 2.255 *D*(calc.) = 2.250 *Decomposes* in hot H₂O; rapidly dehydrates to metahohmannite on exposure to air.

Optical Properties: *Transparent* to translucent. *Color:* Chestnut-brown to burnt orange, pale amaranth-red. *Streak:* Yellow-orange. *Luster:* Vitreous, brilliant. *Optical Class:* Biaxial (-). *Pleochroism:* *X* = pale yellow; *Y* = pale greenish yellow; *Z* = dark greenish yellow. *Orientation:* *Y* \wedge *c* = 23°. *Dispersion:* *r* > *v*, extreme. α = 1.553–1.559 β = 1.643 γ = 1.655–1.657 *2V*(meas.) = 40°

Cell Data: *Space Group:* $P\bar{1}$. *a* = 9.148(1) *b* = 10.922(1) *c* = 7.183(3) α = 90.29(6)° β = 90.79(4)° γ = 107.36(2)° *Z* = 2

X-ray Powder Pattern: Sierra Gorda district, Chile.
7.92 (FFF), 8.69 (FF), 10.36 (F), 3.46 (F), 5.31 (mF), 3.12 (mF), 3.95 (mf)

Chemistry:	(1)	(2)
SO ₃	33.80	34.52
Fe ₂ O ₃	33.92	34.42
H ₂ O	30.76	31.06
insol.	1.15	
Total	99.63	100.00

(1) Sierra Gorda district, Chile. (2) Fe₂O(SO₄)₂•8H₂O.

Occurrence: An uncommon low-temperature precipitate in oxidized iron sulfide deposits.

Association: Metahohmannite, copiapite, amarantite, sideronatrite (Sierra Gorda district, Chile); chalcantinite, picromerite, amarantite, fibroferrite, copiapite (Chuquicamata, Chile); metahohmannite, sulfur, cinnabar (Redington mine, California, USA).

Distribution: In Chile, in Antofagasta, from near Caracoles, Sierra Gorda district, and at Alcaparrosa, near Cerritos Bayos, both southwest of Calama; at Quetena, west of Calama; and from Chuquicamata. At the Redington mine, Knoxville, Napa Co., California, USA. From Saghand, Yazd, Iran. In the Plaka mine, near Laurium, Greece.

Name: Honors Thomas Hohmann (1843–1897), mining engineer of Valparaiso, Chile who discovered the first specimens.

Type Material: Mining Academy, Freiberg, Germany, 18623.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 613–614. (2) Scordari, F. (1978) The crystal structure of hohmannite, Fe₂(H₂O)₄[(SO₄)₂O]•4H₂O and its relationship to amarantite, Fe₂(H₂O)₄[(SO₄)₂O]•3H₂O. *Mineral. Mag.*, 42, 144–146 and M9–M11. (3) Cesbron, F. (1964) Contribution à la minéralogie des sulfates de fer hydratés. *Bull. Minéral.*, 87, 125–143, esp. 134–135 (in French).