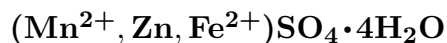


Ilesite



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Crystal Data: Monoclinic. *Point Group:* $2/m$. As prismatic crystals, to 1 mm, commonly aggregated as vein fillings and incrustations.

Physical Properties: Hardness = [2–3] (by analogy to rozenite group members).
D(meas.) = 2.26 (synthetic $\text{MnSO}_4 \cdot 4\text{H}_2\text{O}$). D(calc.) = 2.26 Soluble in H_2O .

Optical Properties: Transparent. *Color:* Green, becoming white through dehydration.
Optical Class: Biaxial (–) (synthetic $\text{MnSO}_4 \cdot 4\text{H}_2\text{O}$). *Orientation:* $Y = b$; $Z \wedge c = 5^\circ$.
 $\alpha = 1.508$ $\beta = 1.518$ $\gamma = 1.522$ 2V(meas.) = Moderate.

Cell Data: *Space Group:* $P2_1/n$ (synthetic $\text{MnSO}_4 \cdot 4\text{H}_2\text{O}$). $a = 5.94(1)$ $b = 13.76(2)$
 $c = 8.01(1)$ $\beta = 90^\circ 48(10)'$ $Z = 4$

X-ray Powder Pattern: Synthetic $\text{MnSO}_4 \cdot 4\text{H}_2\text{O}$. (ICDD 32-651).
4.55 (100), 5.5 (90), 4.01 (90), 2.99 (90), 3.46 (80), 3.28 (80), 3.01 (70)

Chemistry:

	(1)
SO_3	36.07
FeO	4.18
MnO	22.31
ZnO	5.97
H_2O	31.60
Total	100.13

(1) Hall Valley, Colorado, USA; corresponds to $(\text{Mn}_{0.70}\text{Zn}_{0.17}\text{Fe}_{0.13})_{\Sigma=1.00}\text{SO}_4 \cdot 4\text{H}_2\text{O}$.

Mineral Group: Rozenite group.

Occurrence: A rare secondary mineral in the oxidized zones of sulfide deposits.

Association: Pyrite, sphalerite, galena (McDonnell claim, Colorado, USA); rozenite, epsomite, copiapite, gypsum, melanterite, chvaleticeite (Chvaletice, Czech Republic).

Distribution: In the USA, from the McDonnell claim, Montezuma district, Hall Valley, Park Co., and at the Penn mine, Summit Co., Colorado. In the Silver King mine, Galena Hill, Yukon Territory, Canada. From Chvaletice, Czech Republic. At the Jokoku mine, southwest Hokkaido, Japan.

Name: Honors Malvern Wells Iles (1852–1890), American metallurgist of Denver, Colorado, USA, who made the first chemical analysis of the species.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 486–487. (2) Bauer, W.H. (1962) Zur Kristallchemie der Salzhydrate. Die Kristallstrukturen von $\text{MgSO}_4 \cdot 4\text{H}_2\text{O}$ (Leonhardtite) und $\text{FeSO}_4 \cdot 4\text{H}_2\text{O}$ (Rozenit). Acta Cryst., 15, 815–826. (3) Pasáva, J., K. Breiter, M. Huka, and J. Korecký (1986) Chvaleticeite, $(\text{Mn}, \text{Mg})\text{SO}_4 \cdot 6\text{H}_2\text{O}$, a new mineral. Neues Jahrb. Mineral., Monatsh., 121–125.