

Spencerite

$\text{Zn}_4(\text{PO}_4)_2(\text{OH})_2 \cdot 3\text{H}_2\text{O}$

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Crystal Data: Monoclinic, pseudo-orthorhombic. *Point Group:* $2/m$. Crystals elongated along [001], tabular on {100}, bluntly terminated or lancelike, with many other forms, to 2 cm. Typically with a columnar to platy structure, stalactitic, massive. *Twinning:* Polysynthetic, twin plane and composition plane {100}.

Physical Properties: *Cleavage:* On {100}, perfect; on {010}, good; on {001}, distinct. Hardness = ~ 3 D(meas.) = 3.123–3.145 D(calc.) = 3.282

Optical Properties: Transparent to translucent. *Color:* White, pale green; colorless in transmitted light. *Luster:* Vitreous, pearly on cleavages.

Optical Class: Biaxial (-). *Orientation:* $Z = b$; $X \simeq a$. *Dispersion:* $r > v$, moderate. $\alpha = 1.586$ $\beta = 1.602$ $\gamma = 1.606$ $2V(\text{meas.}) = 49^\circ$

Cell Data: *Space Group:* $P2/c$. $a = 10.448(3)$ $b = 5.282(1)$ $c = 11.208(3)$
 $\beta = 116^\circ 44(2)'$ $Z = 2$

X-ray Powder Pattern: Hudson Bay mine, Canada. (ICDD 35-631).
9.34 (100), 3.491 (50), 2.3292 (25), 4.590 (19), 3.861 (7), 3.4211 (6), 3.1055 (6)

Chemistry:	(1)	(2)
P_2O_5	26.13	26.31
ZnO	60.39	60.34
H_2O	13.44	13.35
Total	99.96	100.00

(1) Hudson Bay mine, Canada. (2) $\text{Zn}_4(\text{PO}_4)_2(\text{OH})_2 \cdot 3\text{H}_2\text{O}$.

Occurrence: A rare secondary mineral in some zinc-bearing hydrothermal deposits.

Association: Hemimorphite, hopeite, smithsonite, cerussite.

Distribution: Found in the Hudson Bay mine, about eight km southeast of Salmo, near Nelson, Kootenay district, British Columbia, Canada. At Kabwe (Broken Hill), Zambia. In the Turf Pits mine, Grassington Moor, Yorkshire, England.

Name: To honor Leonard James Spencer (1870–1959), British mineralogist, formerly Keeper of Minerals, British Museum (Natural History), London, England.

Type Material: Royal Ontario Museum, Toronto, Canada, M9602, M9610, M9691, M9726; The Natural History Museum, London, England; Natural History Museum, Paris, France, 120.22; Harvard University, Cambridge, Massachusetts, 98956; National Museum of Natural History, Washington, D.C., USA, 121566.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 931–933. (2) Fanfani, L., A. Nunzi, and P.F. Zanazzi (1972) Structure and twinning in spencerite. Mineral. Mag., 38, 687–692.