

Skorpionite

Crystal Data: Monoclinic. *Point Group:* 2/m. As needle-like crystals, to 0.5 mm, elongated parallel to [001] with dominant {100} and {110}; additional forms {111}, {221}, {131}, { $\bar{1}$ 01}.

Physical Properties: *Cleavage:* None. *Fracture:* Uneven. *Tenacity:* Brittle. *Hardness* = 3.5
D(meas.) = 3.15(3) D(calc.) = 3.17

Optical Properties: Transparent. *Color:* Colorless. *Streak:* White.
Luster: Vitreous.

Optical Class: Biaxial (-). $\alpha = 1.5884(10)$ $\beta = 1.6445$ (calc.) $\gamma = 1.6455(10)$ $2V = 15.0(5)^\circ$
Orientation: $Y \wedge c = 26^\circ$ (in acute β); $Z = b$.

Cell Data: *Space Group:* C2/c. $a = 19.045(3)$ $b = 9.320(2)$ $c = 6.525(1)$ $\beta = 92.73(2)^\circ$
 $Z = 4$

X-ray Powder Pattern: Skorpion mine, Lüderitz district, Karas region, south-western Namibia.
Intensities corrected to remove effects of preferred orientation.
3.170 (100), 2.788 (67), 3.014 (54), 9.501 (53), 3.063 (42), 5.238 (30), 2.582 (21)

Chemistry:	(1)	(2)
CaO	30.89	30.42
ZnO	28.83	29.43
P ₂ O ₅	25.49	25.67
CO ₂ (calc)	7.96	7.96
<u>H₂O (calc)</u>	<u>6.52</u>	<u>6.52</u>
Total	99.69	100.00

1) Skorpion mine, Lüderitz district, Karas region, south-western Namibia; average of 17 electron microprobe analyses, anionic groups confirmed by IR, H₂O and CO₂ calculated, corresponding to Ca_{3.05}Zn_{1.96}(PO₄)_{1.99}(CO₃)_{1.00}(OH)_{2.06}·0.98H₂O. (2) Ca₃Zn₂(PO₄)₂CO₃(OH)₂·H₂O.

Occurrence: A secondary mineral in an oxidized non-sulfide zinc deposit formed by weathering of sediment- and volcanic-hosted disseminated sulfide minerals.

Association: Tarbuttite, hydrozincite, gypsum.

Distribution: Skorpion zinc mine, Lüderitz district, Karas region, south-western Namibia.

Name: For the locality that produced the first specimens.

Type Material: Mineralogical Institute, University of Bochum, Germany, IMA 2005-010.

References: (1) Krause, W., H. Effenberger, H.-J. Bernhardt, and O. Medenbach (2008) Skorpionite, Ca₃Zn₂(PO₄)₂CO₃(OH)₂·H₂O, a new mineral from Namibia: description and crystal structure. *Eur. J. Mineral.*, 20, 271–280. (2) (2009) *Amer. Mineral.*, 94, 403 (abs. ref. 1).