

Arsenohauchecornite

Ni₁₈Bi₃AsS₁₆

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Crystal Data: Tetragonal. *Point Group:* $4/m\ 2/m\ 2/m$, 422, $\bar{4}2m$, or $4mm$. Tabular crystals, to 2 cm; in irregular masses.

Physical Properties: *Fracture:* Conchoidal. Hardness = n.d. VHN = 516–655 (50 g load). D(meas.) = 6.35 D(calc.) = 6.52

Optical Properties: Opaque. *Color:* Bronze. *Luster:* Metallic, brilliant on fresh surfaces. R₁–R₂: (470) 41.6–43.0, (546) 46.2–47.1, (589) 48.2–49.2, (650) 50.8–51.6

Cell Data: *Space Group:* $I4/mmm$, $I422$, $I\bar{4}m2$, $I\bar{4}2m$, or $I4mm$. $a = 10.2711(2)$
 $c = 10.8070(4)$ $Z = 2$

X-ray Powder Pattern: Vermilion mine, Sudbury, Canada.
2.875 (100), 2.393 (66), 2.298 (59), 3.253 (56), 4.343 (53), 3.637 (48), 1.862 (48)

Chemistry:	(1)	(2)
Ni	44.9	46.52
Fe	1.4	
Co	0.3	
Bi	26.5	27.60
As	4.4	3.30
Sb	0.1	
Te	0.0	
S	22.0	22.58
Total	99.6	100.00

(1) Vermilion mine, Sudbury, Canada; by electron microprobe, corresponding to (Ni_{17.8}Fe_{0.6}Co_{0.2})_{Σ=18.6}Bi_{3.0}As_{1.4}S_{16.0}. (2) Ni₁₈Bi₃AsS₁₆.

Mineral Group: Hauchecornite group.

Occurrence: In hydrothermal Ni–Co–Cu sulfide veins.

Association: Chalcopyrite, pyrrhotite, gersdorffite, pyrite, gold, nickeline, galena, copper, sperrylite, michenerite, froodite (Vermilion mine, Canada).

Distribution: From the Vermilion mine, Sudbury, Ontario, Canada [TL]. At Karagaily, central Kazakhstan. In the Tsumo mine, near Hiroshima City, Shimane Prefecture, Japan.

Name: Alludes to its chemical relation to the hauchecornite group.

Type Material: Royal Ontario Museum, Toronto, Canada, M29206–M29208.

References: (1) Gait, R.I., and D.C. Harris (1980) Arsenohauchecornite and tellurohauchecornite: new minerals in the hauchecornite group. *Mineral. Mag.*, 43, 877–878. (2) (1981) *Amer. Mineral.*, 66, 436–437 (abs. ref. 1). (3) Gait, R.I. and D.C. Harris (1972) Hauchecornite – antimonian, arsenian and tellurian varieties. *Can. Mineral.*, 11, 819–825. (4) Grice, J.D. and R.B. Ferguson (1989) The crystal structure of arsenohauchecornite. *Can. Mineral.*, 27, 137–142.