

# Haapalaite



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**Crystal Data:** Hexagonal. *Point Group:* n.d. As thin scales.

**Physical Properties:** Hardness = Very soft, less than that of graphite. VHN = 9–11 (3 g load). D(meas.) = n.d. D(calc.) = 3.57

**Optical Properties:** Opaque. *Color:* Bronze-red; in polished section, brown. *Luster:* Metallic, strong. *Pleochroism:* Distinct, light brown to grayish brown. *Anisotropism:* Very strong, bronze-red to grayish white.

R<sub>1</sub>–R<sub>2</sub>: n.d.

**Cell Data:** *Space Group:* n.d.  $a = 3.64(2)$   $c = 34.02(2)$   $Z = [1.5]$

**X-ray Powder Pattern:** Near Outokumpu, Finland.

11.34 (100), 5.67 (90), 3.18 (80b), 1.841 (70), 1.821 (70), 2.835 (40), 2.59 (40)

## Chemistry:

	(1)
Fe	24.13
Ni	14.85
Cu	0.12
Co	0.01
MgO	18.77
FeO	6.39
CaO	0.00
Al <sub>2</sub> O <sub>3</sub>	0.15
S	22.04
H <sub>2</sub> O	[13.82]
Total	[100.28]

(1) Near Outokumpu, Finland; by electron microprobe, average of three analyses, H<sub>2</sub>O calculated for 2(OH)<sup>1-</sup>; corresponding to 4(Fe<sub>0.63</sub>Ni<sub>0.37</sub>)•3.22(Mg<sub>0.84</sub>Fe<sub>0.16</sub><sup>2+</sup>)(OH)<sub>2.00</sub>.

**Occurrence:** As thin scales in the Kokka serpentine and in carbonate; rarely in chrysotile.

**Association:** Pentlandite, maucherite, chalcopyrite, magnetite, chromite, lizardite, calcite.

**Distribution:** In the Kokka serpentinite body, about 33 km north-northwest from the Outokumpu mine, Tapiola, Finland [TL].

**Name:** In honor of Paavo Haapala (1906–), Chief Geologist of the Outokumpu Company, Finland.

**Type Material:** Preserved by the Outokumpu Company, Finland.

**References:** (1) Huhma, M., Y. Vuorelainen, T.A. Häkli, and H. Papunen (1973) Haapalaite, a new nickel–iron sulfide of the valleriite type from East Finland. Bull. Geol. Soc. Finland, 45, 103–106. (2) (1973) Amer. Mineral., 58, 1111 (abs. ref. 1).