

Nickeltsumcorite

Crystal Data: Monoclinic. *Point Group:* 2/m. As elongated, flattened crystals in radial spherulites or dense concentric nodules to 0.15 mm.

Physical Properties: *Cleavage:* Distinct on {001}, by analogy with tsumcorite.
Fracture: Uneven. *Tenacity:* Brittle. *Hardness* = ~ 4 *D(meas.)* = n.d. *D(calc.)* = 5.02

Optical Properties: Transparent. *Color:* Yellow, brownish yellow, light brown or brown.
Streak: Yellow. *Luster:* Vitreous.
Optical Class: Biaxial (-). $\alpha = 1.82(2)$ $\beta = 1.87(1)$ $\gamma = 1.90(1)$ *2V(meas.)* = Large.
2V(calc.) = 74°

Cell Data: *Space Group:* C2/m. $a = 9.124(8)$ $b = 6.339(3)$ $c = 7.567(7)$ $\beta = 115.19(6)^\circ$ $Z = 2$

X-ray Powder Pattern: Km-3 mine, Lavrion mining district, Attiki Prefecture, Greece.
4.64 (100), 3.238 (82), 2.545 (79), 2.505 (61), 3.008 (60), 4.47 (41), 2.859 (41)

Chemistry:	(1)
CaO	2.79
PbO	28.12
MgO	0.30
CoO	0.15
NiO	17.39
ZnO	0.76
Mn ₂ O ₃	0.57
Fe ₂ O ₃	6.83
As ₂ O ₅	38.17
<u>H₂O</u>	<u>[4.92]</u>
Total	100.00

(1) Km-3 mine, Lavrion mining district, Attiki Prefecture, Greece; average of 6 electron microprobe analyses supplemented by IR spectroscopy, H₂O calculated; corresponds to $(\text{Pb}_{0.76}\text{Ca}_{0.30})_{\Sigma=1.06}(\text{Ni}_{1.39}\text{Fe}^{3+}_{0.51}\text{Zn}_{0.06}\text{Mn}^{3+}_{0.04}\text{Mg}_{0.04}\text{Co}_{0.01})_{\Sigma=2.05}\text{As}_{1.99}\text{O}_{7.97}[(\text{H}_2\text{O})_{1.25}(\text{OH})_{0.78}]$.

Mineral Group: Tsumcorite-group.

Occurrence: A secondary mineral in the oxidized zone of a hydrothermal deposit containing gersdorffite and galena.

Association: Annabergite, nickellotharmeyerite, nickelaustinite, gaspéite, a Ni-dominant serpentine group member (presumably pecoraite), calcite, dolomite, aragonite, quartz, goethite, cerussite, arseniosiderite, mimetite, oxyplumboroméite (bindheimite), a Ca-rich roméite-group mineral (hydroxycalcioroméite?), unspecified manganese oxides/hydroxides.

Distribution: From the dumps of the Km-3 mine, Lavrion mining district, Attiki Prefecture, Greece.

Name: The Ni-dominant analog of tsumcorite.

Type Material: A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (94317).

References: (1) Pekov, I.V., N.V. Chukanov, D.A. Varlamov, D.I. Belakovskiy, A.G. Turchkova, P. Voudouris, A. Katerinopoulos, and A. Magganas (2016) Nickeltsumcorite, $\text{Pb}(\text{Ni},\text{Fe}^{3+})_2(\text{AsO}_4)_2(\text{H}_2\text{O},\text{OH})_2$, a new tsumcorite-group mineral from Lavrion, Greece. *Mineral. Mag.*, 80(2), 337-346. (2) (2016) *Amer. Mineral.*, 101, 2782 (abs. ref. 1).