

## NATIVE COPPER OF THE UKRAINIAN CARPATHIANS AND ADJACENT AREAS

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Native copper is a rare mineral of the Ukrainian Carpathians and a widespread mineral of their adjacent areas, especially in the Volyn' region (LAZARENKO *et al.*, 1960; LAZARENKO *et al.*, 1962; LAZARENKO *et al.*, 1963; KHRUSHCHOV *et al.*, 1977; SHCHERBAK (ed.), 1990). In the Ukrainian Carpathians copper is known as mineral of oxidation zones in some ore deposits and occurrences as well as in Cu-bearing sandstones and also in the alluvium of Carpathian rivers. In the Volyn' region copper occurs in many localities of Cu-bearing basalts, tuffs, volcanic breccia, and sandstones. Short description of native copper from these occurrences is given in Table 1.

## References

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Table 1: Characteristics of native copper of the Ukrainian Carpathians and adjacent areas.

Region, area, district	Rocks, ores, their ages	Mineral associations	Distribution, form and size of copper	Composition of copper
Trans-Carpathians: Beregove poly-metallic deposit	Zone of oxidation of sulphide ores in Neogene rhyolite tuffs	Sphalerite, galena, cerussite	Rare mineral. Very fine and thin films on sphalerite crystals	99.1–99.3% Cu, traces of Ag and Sb
Ukrainian Carpathians: Marmarosh crystalline massif, the Rakhiv district	Pyritiferous-polymetallic ores in Riphean-Paleozoic metamorphic rocks of Bily Potik and Dilovets' suites	Sphalerite, galena, pyrite, chalcopyrite, pyrrhotine, quartz, calcite	Rare mineral. Small isometric grains, sometimes up to 2–3 mm.	99.0% Cu, traces of Fe, Ag, Sb and V
Ukrainian Carpathians: Marmarosh crystalline massif, the basin of Bily Cheremosh and Chorny Cheremosh rivers	Modern alluvial sediments	Cuprite, chalcocite, hematite, sphalerite, galena, cinnabar, malachite	Rare mineral. Small table like grains, sometimes up to 5–7 mm	99.0% Cu, traces of Fe and Ag
Precarpathians: the basin of Bystrytsya Nadvirna and Prut rivers (Nadvirna and Delyatyn district)	Neogene cupriferous sandstones and clays of Nyzhny Stebnyk suite	Pyrite, chalcocite, cuprite, covellite, tenorite, chalcopyrite, malachite, azurite, hydroxides of iron	Rare mineral. Very small films and table like grains, 0.01–0.1 mm in size	98.9–99.3% Cu, traces of Fe and Ag
Northern-western part of the Volyn'–Podillya plate: Volyn' region	Vendian volcanic and volcano-sedimentary rocks (basalts, their lava and tuff breccias, tuffs, quartz veins, sandstones)	Quartz, chalcedony, calcite, chlorite, analcime, zeolites, chalcocite, cuprite, chalcopyrite, native Ag, native Fe, malachite, azurite	Widespread mineral. Xenomorphic grains, hypidiomorphic and idiomorphic crystals, from 0.1 to 140 mm in size	99.5% Cu, up to 1.04% Fe, up to 0.37% Ag, traces of Au