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PŮVODNÍ PRÁCE/ORIGINAL PAPER

Iron-bearing dantopaite from Kutná Hora ore district, Czech Republic, and its mineral association

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Abstract

Dantopaite, a very rare sulfosalt of Ag-Bi(-Pb-Cu), has been found and identified in samples from Staročeské pásmo Lode of the historic Ag-Pb-Zn Kutná Hora ore district, Czech Republic. Dantopaite, ideally $\text{Ag}_5\text{Bi}_{13}\text{S}_{22}$, is the only mineral of the pavonite homologous series found in the Kutná Hora ore district and it is the first occurrence of this rare sulfosalt in Czech Republic. It was determined in four grains of two samples of massive sulfide ores consisting of arsenopyrite, pyrrhotite and chalcopyrite with no presence of Ag-Bi lillianite homologues, typical of the Ag-Bi mineralization of the deposit. Each analysed grain represents a different dantopaite composition with regard to the $\text{Ag} + \text{Bi} = 2 \text{Pb}$ substitution. The empirical formulas range from Ag,Bi-richest composition of $\text{Ag}_{3.62}\text{Cu}_{0.25}(\text{Pb}_{0.59}\text{Fe}_{1.07}\text{Cd}_{0.03})_{\Sigma 1.69}(\text{Bi}_{12.02}\text{Sb}_{0.23})_{\Sigma 12.25}\text{S}_{22}$ to the Pb-richest composition of $\text{Ag}_{3.18}\text{Cu}_{0.17}(\text{Pb}_{1.83}\text{Fe}_{1.30}\text{Cd}_{0.03}\text{Mn}_{0.05})_{\Sigma 3.21}(\text{Bi}_{11.71}\text{Sb}_{0.08})_{\Sigma 11.79}\text{S}_{22}$. A specific feature of this occurrence is the presence of iron in the chemical composition of this mineral, which is positively correlated with the lead content. The associated minerals include: a) minerals of the early sulfide stage (sphalerite, stannite) and cassiterite; b) minerals of the second sulfide stage: kenoargentotetrahedrite-(Fe) and minerals of the Ag-Bi mineralization (native bismuth, matildite, Ag,Bi-bearing galena, dantopaite; c) minerals of the latest Ag-Sb period (acanthite, stephanite). An overview of members of the pavonite homologous series is given.

Key words: dantopaite, pavonite homologue, Ag-Pb-Bi sulfosalts, chemical composition, Kutná Hora ore district, Czech Republic

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