

Magnesite deposits of Serbia: An overview

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Magnesite deposits of Serbia are related both spatially and genetically to the Jurassic ophiolite belt of the Inner Dinarides (including the Vardar zone). In the frame of this belt they occur in various geological environments (in ultrabasites, in sedimentary series of freshwater Neogene basins lying on or by ultrabasites, and in Quaternary placers linked to adjacent primary source magnesite deposits) and they belong to different genetic (hydrothermal, weathering infiltration, sedimentary) and structural-morphological types (veins, stockwork, layers, irregular bodies). But regardless the aforementioned differences, all the deposits contain dense (micro- to crypto-crystalline) magnesite that represents favourable raw material for manufacturing of refractories.

The exploration, study and exploitation of magnesite in Serbia have a hundred-year-long tradition. They date back to the beginning of 20th century, and were intensified after World War II for the needs of the Magnohrom, a newly-developed refractory material manufacturer in Kraljevo. They reached their climax in the period from 1950 to 1990, when they satisfied the needs of this manufacturer for 500,000 to 900,000 tons of the magnesite ore (namely from 300,000 to 500,000 tons of magnesite concentrate) annually. In that period the largest number of geological reports and feasibility studies on magnesite reserves were completed, as well as mining projects, technological and techno-economic studies. The largest number of scientific papers from the mentioned fields was also written then. At the same time Serbia (as integral part of the SFR Yugoslavia) became a significant world manufacturer of high-quality refractory materials (bricks and grain products) on the basis of magnesite (which were exported to the USA, Germany and many other countries). It also became known for the results of exploration and study of magnesite deposits. Besides well-known vein and stockwork deposits in ultrabasites (as Brezak, Milichevci, Koviljacha, Razhana, Liska, Krive strane, Masnica, Chavlovac, Bogutovac, Trnava and Goleš) new types of magnesite deposits were discovered and studied in Serbia: sedimentary or Bela Stena type in freshwater Neogene basins (as Bela Stena, Shilopaj, Kacher, Kremna and Beli Kamen) and detrital type in freshwater Neogene basins, too (in Razhana, Pranjani and Chachak-Kraljevo Miocene basins) and Quaternary placers (around magnesite deposits of other genetic types).

As the result of long-lasting exploration, significant balance (economic) reserves of magnesite of A, B and C₁ categories, according to the national classification, were established (A, B – Proved Reserves, C₁ – Probable Reserves according to United Nations – UNFC and Australian – JORC classifications) of over 5 million tons, as well as out-of-balance (intrinsically economic) “reserves” of the same categories (A and B – Measured Resources, C₁ – Indicated Resources according to the classifications) of about 10 million tons (by detailed exploration), as well as potential “reserves” of C₂, D₁ and D₂ categories (Inferred Resources according to the classifications) of over 218 million tons (by basic exploration, reconnaissance, prospecting and preliminary exploration) thus total magnesite resources of Serbia are estimated to be over 233 million tons.