GEOCHEMISTRY OF THE BREZOVÁ POD BRADLOM BAUXITE, SLOVAKIA

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Geological setting

The bauxite from Brezová pod Bradlom represents the last bauxite deposit found in Slovakia (ČINČURA, 1998) and is restricted to the northern part of the Malé Karpaty Mts. near the city Brezová pod Bradlom. It represents a further link in the chain of the north Slovakian and Austrian bauxites. All Western Carpathian bauxites, including the Brezová pod Bradlom occurrence, belong to the group of karst bauxites and are closely connected with the longest and most important paleokarst period in the Western Carpathians, the Paleoalpine karst period (ČINČURA & KOEHLER, 1995). The bauxite fills up the basal parts of Pre-Gosau canyon-like depressions in the Upper Triassic Hauptdolomite, occurs in irregular, most probably small lens shaped bodies and is relatively rare. The covering formation of the bauxite forms the coarse and medium grained, basal Valchov conglomerate of the Upper Cretaceous Gosau group.

Mineralogical and chemical composition

The presence of individual mineral phases (boehmite, kaolinite and chlorite) was determined by X-ray diffraction. The results of semiquantitative analysis show that boehmite is the main alumina mineral of the bauxite. Its average content ranges between 53–68 %. Kaolinite content varies from 12–15 %. The relatively high average content of chlorite (19 to 37 %) is striking (ČINČURA, 1998).

The content of Al_2O_3 in individual bauxite samples varies from 38.90 to 41.48 %. The range of total Fe_2O_3 content varies in individual bauxite samples from 15.53 to 16.58 %. The content of Al_2O_3 in individual bauxite clays varies from 17.47 to 37.61 %. The range of total Fe_2O_3 content varies in individual bauxite clays from 7.04 to 21.18 %. The trace elements of bauxites/bauxite clays, which may reflect the source area (V: 261–630 ppm, Ni: 198–494 ppm, Cr: 101–316 ppm, Zr: 101–954 ppm), indicate that the geology of the source area was complex, and marked by a significant proportion of alkaline eruptive rocks or crystalline shale. A significant part of the parent rocks of the bauxite originates probably from paleovolcanites of the Hronic, occurring at present especially in the Malé Karpaty Mts.

References

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