

## Abstract

Statistical treatment of more than fifty thousand analyses of coal samples made during the last 40 years has provided representative information about the quality of coal, particularly the contents of ash, sulfur and trace and other elements in the coals from the Upper Paleozoic basins of the Czech Republic, of which the Czech part of the Upper Silesian Basin is presently being mined. Based on the reflectance of vitrinite ( $R_o$  0.55–1.95 %) and calorific value higher than  $24 \text{ MJ.kg}^{-1} Q_{s,m,af}$  the coal has been coalified to the rank of high to low volatile bituminous coals with ash contents ( $A^d$ ) of 2–50 %, except for the interlayers that have an  $A^d$  of even more than 80 % and sulfur contents of 0.02–18.4 %  $S_t^d$ . Anthracites with vitrinite reflectance ( $R_o$ ) of 2.00–4.8 % are known from the Boskovice and Blanice grabens and from the Krušné hory Upper Carboniferous relic. High volatile bituminous coal with  $R_o$  0.7 %,  $A^d$  36.3 % and  $S_t^d$  1.7 % appears to be the most abundant type of Upper Carboniferous hard coal in the Czech Republic. Regardless of the very heterogeneous and often incomplete analytical data, some fundamental differences in the patterns of occurrence and concentrations of individual elements in coal seams can be recognized. Apart from sulfur, germanium and arsenic were the elements most frequently analyzed. The contents of germanium showed a decrease with increase in the rank of the coal. Contents of arsenic which, like the elements Cu, Ni, Pb, and Zn, increases with the sulfur content, particularly when sulfur is contained in pyrite and organic matter. The database also revealed that higher concentrations of Cr, Ga, Rb, Sc, and Ti occur in coal ash with a high proportion of clay minerals. Numerous elements (Be, Co, Sb, Sr, U, V and Zr) showed no correlation with either the ash, sulfur or carbon contents.

## Key words

hard coal, Upper Paleozoic coal deposits in the Czech Republic, sulfur, trace elements, reflectance, rank, macerals