

Abstract

The diploma thesis provides an overview of history of exploration, geological and stratigraphical settings and coal mining of the Karaganda and Ekibastuz basins in NE Kazakhstan; the two most important hard coal deposits of the country. Although the coal-bearing strata of both basins are identical (*visé*), the mining conditions and quality of coal significantly differ. The seams No. 1, 2 and 3 of the Bogatyr Opencast (Ekibastuz Basin) are merged into a single coal-bearing horizon reaching a cumulative thickness between 150 and 170 meters located in shallow depth. On the opposite, seams of the Saranska Mine (K10, K12 and K18) in the Karaganda Basin are usually only few metres (locally up to 5 m) thick and in most part of the coalfield are situated in depth up to several hundred metres. Seam and overburden thicknesses affect the mining methods. In the Karaganda Basin coal is extracted in deep mines whereas in the Ekibastuz Basin in huge opencast mines.

To provide a comparison of extracted coal, samples taken from the Bogatyr Opencast (Ekibastuz Basin) and from the Saranska Mine (Karaganda Basin) were analysed for their petrographic (maceral) composition and chemical and technological properties. The results show that in the seams Nos. 2, 3v, 3G, 3D, 3E, 3Z and 3Z from the Bogatyr Opencast and seam K10, K12 from the Saranska Mine inertinite prevails over other maceral groups. In the samples from the seams Nos. 1, 3 (Bogatyr) and K18 (Saranska), however, vitrinite prevails over other groups. The exception is the seam 3b, where minerals outweigh the maceral groups. Reflectance value, the content of volatiles in the organic matter and petrographic composition suggest that coal Karaganda and Ekibastuz pelvis are medium rank coal or high volatile bituminous coal, while Ekibastuz is weakly coking coal karaganda than coal.

Petrographic composition of the studied coals indicates that they originated from different types of environments. Ash yield-rich and vitrinite-prevailing Ekibastuz coals suggest they were formed in planar (rheotrophic) peat swamps with water table around the peat surface or above allowing for deposition of clay suspension during flood events. On the opposite, inertinite-rich and low ash-yield Karaganda coal samples indicates that they were formed from peat precursor deposited in meso- to ombrotrophic peat swamps where water table often dropped below the peat surface thus excluding its supply by sediment suspension rich flood waters.

Keywords: Coal, coal basin, macerals, Ekibastuz, Karaganda, Kazakhstan.