

JUSTIFICATION OF THE INCLUSION OF DOMESTIC COAL OF THE LUBELSKIE FIELD IN THE BOILERS OF OPERATING COKE-CHEMICAL ENTERPRISES OF UKRAINE**Report 1. RESEARCH OF THE QUALITY OF COAL OF THE P7 SEAM OF THE “LUBELSKIE” SITE No. 3 AND COAL CONCENTRATES**

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The relevance of this research is determined by the growing demand for the production of high-quality blast furnace coke against the backdrop of limited opportunities for the supply of premium coking coal to Ukraine and the urgent need to establish a domestic resource base to ensure the stable operation of the metallurgical sector. Under these conditions, the study of domestic resources, in particular run-of-mine coal from the Lubel deposit, is of strategic importance for maintaining the stability and competitiveness of Ukraine’s metallurgical industry.

The purpose of the study is to conduct a petrological and technological assessment of the potential of run-of-mine coal from the Lubel deposit in terms of its efficient and environmentally safe processing as a high-quality feedstock for coking.

This research is dedicated to evaluating the quality of coal from seam n7 of the “Lubelska” site No. 3 in the Lviv-Volyn Basin and its suitability for use in coal blends at the coking facilities of PJSC “ArcelorMittal Kryvyi Rih” (AMKR). Coal from seam n7 was studied using a set of standardized methods in accordance with DSTU 7724:2015 and DSTU 3472:2015 classifications. Petrological characteristics, including maceral composition and vitrinite reflectance, as well as technological properties such as ash yield, sulfur content, volatile matter yield, plastometric parameters, grindability index, and coking pressure, were analyzed. A comprehensive methodology was applied, encompassing geological and petrographic analyses, maceral composition and vitrinite reflectance studies, indirect analysis, characterization of plastic-viscous behavior, and determination of the base index. Based on the results, coal from the Lubel deposit (section No. 3, seam No. 7) was classified according to the International Classification of Hard Coals (bituminous coal and anthracite) adopted by the United Nations Economic Commission for Europe (UNECE).

The findings revealed a high vitrinite content (72 %) and an average random reflectance value of 1.21 %, corresponding to a medium rank of coalification and confirming the coking value of the coal. The run-of-mine coal has a low ash content (4.7 %) and sulfur content (0.91 %), which are favorable indicators for coking. The coal is easily grindable (HGI = 76) and exhibits moderate coking pressure (12.8–14.2 kPa), ensuring safe operation of coke ovens.

A comparison with other coal concentrates used in the AMKR blend demonstrated the competitive advantages of Lubel coal in terms of quality and economic feasibility. Its petrological and technological characteristics are comparable to coals from leading international basins (USA, Australia, Czech Republic), confirming the high industrial potential of the deposit.

Thus, coal from seam n₇ of the “Lubelska” site No. 3 can be considered a promising component of blends for the production of high-quality blast furnace coke at domestic enterprises.

Keywords: Lubel coal deposit, coal concentrates, petrographic characteristics, metamorphic stage, plastometric analysis, international coal classification system.

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