

JUSTIFICATION OF THE INCLUSION OF DOMESTIC COAL OF THE LUBELSKIE FIELD IN THE BOILERS OF OPERATING COKE-CHEMICAL ENTERPRISES OF UKRAINE. Report 2. USE OF COAL FROM SEAM P7 OF THE “LYUBELSKA” SITE No. 3 IN AMKR COKING BLENDS: FORMULATION AND QUALITY ASSESSMENT OF COKE

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This study is a continuation of the work presented in Report 1 [1], in which a comprehensive petrographic and technological assessment of coal from Seam n7 of Site No. 3 of the Lubelska deposit of the Lviv-Volyn Coal Basin was carried out, confirming its high coking value.

This paper examines the potential for extensive integration of this coal into industrial blends of the coking production at ArcelorMittal Kryvyi Rih (AMKR) to produce high-quality blast-furnace coke. Based on three variants of gravity-loaded and three stamped blends—formed by partial or full replacement of imported and domestic coals with coal from Site No. 3—a comprehensive evaluation was performed, including granulometric, petrographic, and technological parameters, as well as an assessment of the quality characteristics of the resulting laboratory cokes.

An increasing share of Lubelska coal in the blends leads to a decrease in ash content down to 6.6% (gravity) and 7.5% (stamped), and to an increase in plastic-layer thickness up to 16 mm and 14 mm, respectively. Laboratory coking revealed improvements in Coke Reactivity Index (CRI) and Coke Strength after Reaction (CSR) when high-basicity coals were replaced with Elk Romeo Creek coal and Lubelska coal. For gravity blends, improvements in CRI/CSR reached 3.6% / 3.4% (variant 2) and 1.0% / 0.5% (variant 3), while for stamped blends the increase was 1.7% / 4.2% (variant 2).

In the variant with the maximum feasible proportion of Site No. 3 coal (70% K-rank + 30% Haju G-rank), the projected coke quality indicators are $Ad \approx 6.0\%$, $Sdt \approx 0.59\%$, $CRI \approx 31.0\%$, and $CSR \approx 58.0\%$, surpassing the values of current operational blends.

The results confirm both the technological efficiency and industrial feasibility of extensive use of coal from the Lubelska deposit in gravity-loaded and stamped blends.

Keywords: Lubelska coal deposit, coal blend composition, stamping, gravity charging, coke quality, coke reactivity and post-reaction strength.

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