

EFFICIENCY OF COKE UTILISATION WITH SPECIFIED VALUES OF ELECTRICAL RESISTIVITY

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The article shows that ensuring the specified values of coke resistivity for different directions of its use allows achieving a positive effect in metallurgical production. It is noted that the resistivity of coke for modern blast furnaces using pulverised coal should be minimal. This is ensured by the proper final coking temperature, which makes it possible to obtain coke with the required level of readiness – the final temperature should be at least 1100 °C. This reduces not only the specific electrical resistance of coke, but also its reactivity. The post-reaction strength of the coke is also significantly increased. This makes it possible to reduce coke consumption for pig iron production and increase the productivity of blast furnaces. As a result, it can be achieved the generation of an additional profit of UAH 377.20 per ton of coke. The resistivity of ferroalloy coke, unlike blast furnace coke, should be as high as possible, which will increase the amount of heat generated in the electric circuit of ferroalloy furnaces and used for endothermic reduction reactions. Therefore, lower coke readiness and lower final coking temperatures are sufficient to produce ferroalloy coke. The use of such coke makes it possible to increase the productivity of electric furnaces for smelting ferroalloys and reduce the consumption of raw materials and electricity. According to the results presented in this article, the additional profit is 4741.37 UAH per ton of coke. The weighted average efficiency of the use of coke with given values of resistivity in the national economy, determined by the volume of coke use in various industries, is 464.48 UAH per ton of coke.

Keywords: coal coke, electrical resistivity, post-reaction strength, blast furnace production, ferroalloy production, economic efficiency.

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