
USE OF THE RESISTIVITY INDICATOR FOR EVALUATION OF THE COOKING READINESS OF COKE (review)

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The article provides a review of scientific information on the use of the resistivity index to assess the readiness of coke, which is ultimately determined by the degree of orderliness of the macromolecular structure in the form of graphite-like blocks. In this process, coke acquires semiconductor properties and its resistivity decreases. Coke for modern blast furnaces using pulverized coal should have a minimum resistivity of 0.1 ohm-cm or less. For other applications (in particular, in ferroalloy production), the resistivity of coke should be higher. It has been shown that the most acceptable method for an objective assessment of the resistivity is the two-probe method of measuring the resistivity of coke powder, a representative sample for which is obtained with minimal time and labor. The main factor that affects the resistivity of the coke produced is the final coking temperature, i.e. this characteristic is indeed an objective indicator of coke readiness. With the increase of the final coking temperature, the supramolecular structure of coke is streamlined, which in a certain way approaches the structure of graphite, and this leads to a decrease in the resistivity of coke.

It is concluded that it is necessary to theoretically analyze the processes that lead to changes in the electrical conductivity of coke. This will make it possible to reasonably determine the nature of the dependence of the coke resistivity on the final coking temperature. Determination of the numerical parameters of this dependence, in turn, will make it possible to establish a rational level of the final temperature for coke production for various applications, which is of great practical importance.

Keywords: hard coal coke, electrical resistivity, coke readiness, blast furnace coke, ferroalloy coke.

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