

IMPROVEMENT OF THE DEVICE FOR DETERMINING THE RESISTIVITY OF COKE

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The two-probe method is the most acceptable for an objective assessment of the resistivity of coke, as it allows obtaining a representative sample with minimal time and labor. However, the standards developed on the basis of this method are characterized by large values of random errors, difficulties in taking them into account and eliminating the influence of transient electrical resistances between the electrodes and the coke powder sample due to the inability to ensure the stability of the bulk mass of its column at constant pressure. Elimination of the influence of transient resistances on the measurement result was ensured by improving the pressing unit and the design of the two-probe matrix, as well as replacing the potentiometer, milliammeter, voltmeter, rheostat and battery with a modern measuring unit. DSTU 8831:2019 was developed and put into effect, which makes it possible to obtain the most reliable results of the coke resistivity.

To determine the value of the absolute total error, a series of measurements were made on industrial coke from two leading coke plants in Ukraine and laboratory coke produced in the experimental coke oven of the SE "UKHIN" with electric heating. The obtained results show that the values of the resistivity determined from the same sample but at different size classes differ significantly. The requirement to limit the content of the prepared analytical sample to a class of less than 0.05 mm is substantiated. In several cases, the resistivity of samples with the same volatile yield differs significantly, which confirms the thesis that the resistivity of coke is related to its readiness. The confidence interval of the measured resistivity values is significantly lower than its limit value provided by the standard. This makes it possible to use the improved device in studies of the resistivity of coke.

Keywords: hard coal coke, resistivity, determination method, measurement error, coke readiness.

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