

INFLUENCE OF MOISTURE CONTENT OF COAL CHARGE ON ITS BULK DENSITY

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The necessity of determining the bulk density of the coal charge for calculating the operation of coke ovens is argued, since this indicator affects the physicochemical properties of coke and the productivity of coke ovens. The diagram of the apparatus is provided and the method for determining the bulk density of the coal charge is presented. Each value obtained is the average of five parallel determinations.

There has been presented the study of the dependence of the bulk density on moisture content for two research coal blends of different grades, compiled with the participation of domestic and imported grades of coal.

For charge No. 1, it was concluded that the bulk density of the coal charge significantly depends on its working moisture. The minimum bulk density (798 kg/m^3) is achieved at a working moisture of about 7 %. With a decrease in the value of the working moisture to 4 % or its growth to 12 %, the value of the bulk density of the coal charge increases to 820 and 871 kg/m^3 , respectively. The minimum value of the bulk density of charge No. 2 (779 kg/m^3) is noted at a working moisture of 7-8%. With a decrease in the value of the working moisture to 4.5 % or its increase to 12 %, the value of the bulk density of the coal charge increases to 845 and 892 kg/m^3 , respectively.

Based on the generalization of the results obtained, mathematical and graphic dependencies have been developed. They describe the effect of an increase in the moisture content of coal charges on the content of a class less than 0.5 mm in them, as well as the values of the average diameter of coal grains and bulk density. It was found that coal charges are characterized by a minimum bulk density at a moisture content of 7.2 %. With an increase in the moisture content of coal charges to 12 %, there is a sharp decrease in the content of the class less than 0.5 mm. This is due to the pelletization of small coal grains, which is reflected in an increase in their average diameter.

Keywords: coal charge, bulk density, moisture content, particle size distribution, mathematical relationships.

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