
PREDICTION FOR CALCULATING THE GRINDING CAPACITY COEFFICIENT OF COAL CHARGES

© **D.V. Miroschnichenko**, Doctor of Technical Sciences, **V.V. Koval** (National Technical University "Kharkiv Polytechnic Institute", 61002, Kharkiv, Kirpichev St., 2, Ukraine)

It is shown that the method for determining the grinding ability according to Hardgrove remains and it is the most common, informative and universal of all the methods for assessing the physical and mechanical properties of solid fossil fuels from the point of view of their industrial processing. Therefore, it is of practical interest to formulate the main principles for determining the grind ability of real industrial coal charges by this method.

The actual approved coal charges of the main coke-chemical enterprises of Ukraine at the time of the experiment (January 2022) were taken as objects of study. The components of the charge were distributed by grades, coal of each grade was represented by one typical component of this grade, the participation of which in the charge is the largest. The studied coal grades were subjected to technical, plastometric, petrographic, elemental and granulometric (>13; 3–13; 1–3; 0.5–1; <0.5 mm) analyzes. In addition, the indicators of oxidation of this coal were determined.

The coefficients of grinding ability HGI of coal mixtures, which included coal of different degrees of metamorphism of four main grades, were determined. The presence of systematic deviations of the actual values of HGI coal charges during their joint preparation from their calculated values in the direction of decreasing the HGI coefficient (to harder coal) has been established. It has also been established that as the grind ability coefficient increases, its deviation from the calculated values decreases.

A mathematical dependence has been revealed that makes it possible to predict the HGI value of coal charge according to the data on the grind ability coefficients of individual components. It is shown that forecasting the values of the HGI grind ability coefficients of coal charges by the content of vitrinite in them, as well as by the formula for calculating HGI from V^{daf} , is inappropriate due to the low level of correlation and determination coefficients.

Keywords: coal, coal blends, Hardgrove HGI, additivity, graphical dependencies, mathematical equations.

Corresponding author V.V. Koval, e-mail: kovalen79@gmail.com
