
THE MOISTURE CONSUMPTION DURING PREPARATION OF COALS FOR COKING

© **V. I. Meshchanin** (State Enterprise "Ukrainian State Research Institute for Carbochemistry (UKHIN)", 61023, Kharkiv, Vesnina st., 7, Ukraine), **D. V. Miroshnichenko**, Doctor of Technical Sciences (National Technical University "Kharkiv Polytechnic Institute", 61002, Kharkiv, Kirpicheva st., 2, Ukraine)

The paper presents the results of research for determination of the change in moisture content in coal concentrates during the process of their transportation from the tipper to the top of the silos of the coal preparation department at different environment air temperatures, namely in April (+4.0 °C) and August (+23.5 °C) at one of the coke-chemical enterprises of Ukraine.

Eight coal concentrates of different degrees of metamorphism were selected for the study: Shchedruchinskaya CEP, brend "G", Uskovskaya mine, brend "G"; Carter Roag, brend "Zh", Toms Creek, brend "Zh", EP "St. Barbarian", brend "K", Goonyella, brend "K", EP "Berezovskaya", brend "K", mine "Bachatsky", brend "K".

The loss of moisture in coal concentrates during their transportation significantly depends on the ambient temperature: the higher the temperature, the more moisture is lost, and vice versa. It was established that unloading and transportation of coal from closed silo is accompanied by loss of ~ 0.9 % of moisture at an environment air temperature of 23.5 °C and ~ 0.2 % at a temperature of +4 °C.

The change in the working moisture of the charge in the process of its transportation and crushing has been determined in April, June and August. The research was performed as follows: the conveyor supplying coal concentrates from closed coal silos for crushing has been stopped, and then, taking into account the value of the loading on the belt, the average dynamic value of humidity of the whole coal charge has been calculated. At the same time, the conveyor after the crusher and the conveyor in front of the coal tower have been stopped and coal samples (weighing 80–100 kg) have been taken from the conveyor belt section length of 1 meter across its entire width.

When crushing and transporting the coal charge to the coal tower of the coke oven battery, the change in its actual weight was ~ 0.1 % at an environment air temperature of +4 °C and 0.7 % at an environment air temperature of + 23.5 ÷ 25.5 °C.

The practical use of the obtained results makes it possible to save coke oven gas for heating coke ovens due to the reduction of the working humidity of the charge. For the production of 1 million tons of gross coke, this savings will amount to 3.84 million m³ of gas, or about UAH 59.8 million.

Keywords: coal, preparation scheme, crushing, moisture, economic calculation..

Corresponding author D. V. Miroshnichenko, e-mail: dvmir79@gmail.com
