
UTILISATION OF COKE FINES AND SLUDGE BY BRIQUETTING WITH A BINDER

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The article is devoted to the issues of rational use of secondary carbon-containing solid products of coke production: coke sludge, dust from aspiration units and coke fines. These issues are particularly relevant in the context of a widespread deterioration in the raw material base and, in particular, a shortage of coking coal, which leads to a deterioration in both coke yield and quality. This state of the coal raw material base is expected to continue for a long time. Therefore, for coke plants, the problem of waste-free, rational utilisation of small products of blast furnace coke production is of particular relevance.

The article presents the results of studies of coke fines and argues the main directions of their qualified use. The technologies and schemes of design solutions for the qualified utilisation of solid fines of coke products and their transformation into highly liquid marketable products are considered. A review of modern methods of "cold" briquetting using water-soluble binders such as lignosulfonate, molasses, starch, liquid glass, urea-formaldehyde resin, etc. was carried out.

The possibility of replacing up to 15 % of the main binding materials with coke production products: coal tar, polymers of the benzene department, and tar from a biochemical plant was established. It is shown that the addition of acidic resin worsens the strength of coke oven briquettes and cannot be recommended for use. The time and temperature of heat treatment of briquettes were determined experimentally: 15 min and 300 °C, respectively. A basic technological scheme for the production of 5-10 mm class from coke fines and coke briquettes for ferroalloy and blast furnaces is proposed. A technological scheme for the production of coke briquettes and a new apparatus for their heat treatment are proposed. The basic technological requirements for the quality of carbon reducing agents are formulated.

Keywords: coke fines, coke sludge, charge, binder, coke briquette, heat treatment.

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