
INFLUENCE OF RAW MATERIALS AND TECHNOLOGICAL FACTORS ON THE SORPTION PROPERTIES OF BLAST-FUEL COKE

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The influence of raw material factors (component composition of batches, petrographic characteristics, indicators of proximate and plastometric analyses, granulometric composition) and technological factors (coking period, process temperature) on the sorption properties of the carbonized product (coke) has been studied. Based on the research results, it is shown that such characteristics of coke as low humidity and ash, minimal yield of volatile matters, developed pore system and low cost make its use as a sorbent promising and economically justified. Standardized methods for studying the technological properties of coal and coal blends (particle size distribution, technical analysis, petrographic analysis), as well as special methods for determining the sorption capacity (for alkali and acid) and adsorption activity (for iodine and methyl blue) were used in the study. The qualitative characteristics of coke were studied using physical, mechanical and thermochemical methods to investigate standardized indicators: particle size distribution, fractility (M_{25}), abrasion (M_{10}), reactivity (CRI), and post-reaction strength (CSR). Mathematical statistics methods were used to analyze the influence of raw material factors on the characteristics of coke sorbent. The conducted research made it possible to establish the dependence of the sorption characteristics of coke on the structural features and nature of coal raw materials (yield of volatile matters, vitrinite content) and the structure and degree of readiness of coke (yield of volatile matters coke). The obtained dependences for predicting the alkali and acid sorption capacity and iodine adsorption activity, taking into account the vitrinite content and the volatile matter yield of the charge, are characterised by high correlation coefficients r (0.912 and 0.927 and 0.937, respectively), so they can be recommended for predicting these indicators.

Keywords: carbon adsorbents, coke sorbent, sorption capacity, adsorption activity, activation.

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