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USE OF RELATED RESIN-OIL PRODUCTS IN COAL MIXTURES FOR COKING

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In accordance with the previously formulated basic principles for the use of secondary raw materials in coke production, work has been carried out on the experimental and industrial coking of coal charges with the addition of tar-oil by-products. In coke chemical production, the most voluminous products are a mixture of tar and coal fines (MTCF, or so-called "fuses"), which are formed during the loading of the charge into the coking chambers and are subsequently separated in mechanized clarifiers in the gas cooling and tar condensation sections of the coke chemical product recovery workshops. It has been established that when 1 to 10 % of MTCF is added to the charge, the grindability of laboratory coke improves by 0.3–4.6 %, and its abrasion resistance by 0.2–1.3 %. However, the coke yield from the charge decreases by 0.9–3.3 %. The addition of MTCF allows the bulk density of the charge to be increased, so that with a small amount of MTCF added (1 %), the single load and coke yield from one chamber increase. However, in the future, the bulk density of the charge increases more slowly than the coke yield from the charge decreases, and the increase in bulk density does not compensate for the decrease in coke yield from the chamber – the latter value begins to decrease. Based on this, the dose of MTCF added to the charge was determined to be 1 % – at the maximum coke yield from one chamber. This allows for the complete utilisation of MTCF, which are formed in significantly smaller quantities – 0.04–0.06 % of the charge mass. The results obtained in the laboratory were confirmed during experimental industrial coking: when 1 % of MTCF was added to the charge, the strength of the coke improved: by 0.2 % according to the M25 indicator and by 0.1 % according to the M10 indicator. A number of other tar-oil by-products can be used in batches in a similar way, in particular resins and oils extracted from wastewater from coke production, mixtures of coal tar with coke oven waste formed as a result of spill clean-up in chemical workshops, waste from gas pipeline steaming, sludge and naphthalene from cleaning tanks and chemical equipment.

Keywords: environmental protection, coke production, coking, secondary raw materials, by-products, coal tar, a mixture of tar and coal fines, charging into the coal blend.

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