

Influence of pore characteristic on mechanical strength of coal-based activated coke

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Abstract

Through the correlation study between the abrasive resistance, compressive strength and pore characteristics indexes of coal-based activated coke (AC) for desulfurization and denitration, the effect of pore structure on mechanical strength of AC was clarified. The results show that the open pore is the main pore type that reduces the compressive strength. The open pore with diameter between 2 and 500 nm have the most serious damage to the compressive strength. The opening and closing state of the pore has no obvious effect on the abrasive resistance. The pores with diameter between 0 and 2 nm have the most serious damage to the abrasive resistance. With the increase of the number of recycling times, the AC pore structure further developed, and the compressive strength and abrasion resistance both decreases correspondingly. After recycled in the flue gas purification facility, AC average compressive strength reduces from 499 N to 340 N, while the abrasion resistance increases from 97.18% to 98.88% because its surface is smoothed during recycling.

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