Irreversible Coke Expansion Inhibition
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In graphitization, baked petroleum coke base carbon bodies undergo significant dimensional changes which are caused by irreversible changes in crystallite structure of the coke filler. The dilatation phenomena of petroleum coke heat treated through the graphitization range and methods of control have been studied on test rods formed from a mixture of calcined coke flour, coke particles, coal tar pitch binder and additions of ferric oxide. The effectiveness of the additive in suppressing the irreversible expansion and contraction of baked carbons as a function of baking temperature has been determined by baking the test rods to successively higher temperatures ranging from 1000°C to 2700°C. After holding the test rods at a fixed temperature for 40 minutes and subsequent cooling to room temperature, a 1 inch diameter plug was cut from one end of each rod and submitted for analysis. The kinetics of the expansion and contraction phenomena of baked carbons will be discussed in relation to the room temperature properties of the thermally treated test specimen. (25 minutes).