



Thermal Analysis of Coking Coal for the Heat Consumption during Carbonization

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The heat consumption per kilogram coal during carbonization process defines the cost of under firing. The consumption is influenced on the one hand, by the oven design and method of operation and on the other hand, by the thermal characteristics of coking coal charged. In order to make in-depth fundamental studies of the actual amount of heat required for the conversion of coal into coke, adiabatic calorimeter and TG-DSC was used for determining the heat of carbonization of a number of coking coals. Heat of carbonization value of 16 coals and coal blends ranging in volatile matter from 17.6 to 34.7% was found in the range of 247 to 406 kcal/kg of dry coal and activation energy in range from 151.6 to 304.2 kJ/mol. It seems that heat of carbonization is an additive property of coal and most coking coal appears to be exothermic reaction during carbonization process. The oxygen contents of coking coals seem to influence the activation energy of coals and heat of carbonization during carbonization process. Heat consumption and H/C found to have negative relationship for both hard and soft coking coal.