

EFFECT OF KOH RATIO ON THE FORMATION OF ACTIVATED CARBON FROM PRESSED WOOD RESIDUES

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Abstract

The present work concern the production of activated carbon of reasonably good properties from cheap sources. The results of preparation of activated carbon from compressed wood sheets residues used in the furniture industry are presented. The preparation method entails the conversion of the wood sheets to a small size pellets and reacting these pellets with the activating agent FeCl_3 (3% w/w). The mixture was heated at 300 °C for a period of 3 hours. The product was allowed to cool to room temperature, followed by carbonization at high temperatures with KOH. The effects of carbonization time periods of 3 and 12 hours and the ratios of wood pellets to potassium hydroxide (1:0.5, 1:1, 1:1.5 and 1:2) were investigated in order to determine the best operating conditions. The quality of the activated carbon produced was assessed by different methods such as density, humidity, ash content, iodine adsorption and the ability for methylene blue pigment removal from aqueous solution. The density of product decreases with increasing the carbonizing agent ratio. Humidity increasing with increasing carbonizing agent ratio. The ash content also increasing with increasing KOH ratio. There was an increase in iodine number and methylene blue adsorption as carbonizing material increasing. All the values show on difference between the samples heated for 3 and 12 hours indicating that the time of carbonization has no clear effect.

Keyword

Activated carbon, Pellets, Carbonization, Iodine number, Methylene blu