

C425549 : MAJOR CHEMICAL TECHNOLOGY

KEY WORD: PALMYRA PALM SHELL/ ACTIVATED CARBON/ FLUIDIZED BED

BOONCHAI THAKUNMAHACHAI : PRODUCTION OF ACTIVATED CARBON FROM
PALMYRA PALM SHELL IN FLUIDIZED BED. THESIS ADVISOR :

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The activated carbon could be produced from palmyra palm shell by physical or chemical method. In this work, the physical activation in the fluidized bed and the chemical activation in the fixed bed were studied.

In order to get the charcoal which could be ground easily, the palmyra palm shell was carbonized at temperature of 200 C for 2 h. The sample of charcoal was mixed the solution of 60 % (wt) Zinc chloride at the ratio of 3:2 in the porcelain crucible for 72 h. The optimum condition for the charcoal particle size of 1.68-2.38 mm was at activation temperature 500 C for 1 h. The properties of the activated carbon was 1,600-1,700 sq.m/g surface area, 1,100-1,200 mg/g iodine adsorption, 350-400 mg/g methylene blue adsorption, 2-5 % ash and 40-45 % yield.

The palmyra palm shell was physically activated with the mixed gas of flue gas which obtained from diesel oil and superheated steam in fluidized bed. The optimum condition for charcoal particle size of 1.19-1.68 mm was at activation temperature of 900 C for 5 min and gas velocity of 6.44 m/sec. The properties of activated carbon was 1,800-1,900 sq.m/g surface area, 1,000-1,300 mg/g iodine adsorption, 250-350 mg/g methylene blue adsorption, 10-15 % ash and 30-45 % yield.