

Regeneration of Activated Carbon adsorbed BTX by Microwave

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For the removal of VOCs(Volatile Organic Compounds) from the chemical and petrochemical industries, adsorption technology on the activated carbon has been applied. Until now, for reusing activated carbon, PSA(Pressure Swing Adsorption) and TSA(Temperature Swing Adsorption) technologies have been applied in the adsorption processes. Microwave induced adsorption method has been studied for the regeneration of activated carbon in the BTX removal process. The microwave energy induced in the carbon bed that BTX had been adsorbed increased bed temperature for regeneration of activated carbon, and playing as a catalyst, recover of BTX occurred in the lower temperature than TSA. BTX were removed from carbon molecules in the bed temperature of 250 °C mostly. Some of BTX reacted with oxygen or hydrogen, and generated lower hydrocarbons, such as methane, ethane, etc. The activated carbon which was regenerated, could be used in the adsorption process again, and it's essential characteristics of adsorption was maintained more than 5 cycles.