

ABSTRACT

Disclosed is a fluidized bed reactor for producing para-xylene and co-producing light olefins from benzene and methanol and/or dimethyl ether, comprising a first distributor and a second distributor. The first distributor is located at the bottom of the fluidized bed, and the
5 second distributor is located at the downstream of the first distributor along a gas flow direction. Disclosed is a method for producing para-xylene and co-producing light olefins, mainly comprising the following steps: (1) a material stream A enters a reaction zone of the fluidized bed reactor from the first gas distributor; (2) a material stream B enters the reaction zone of the fluidized bed reactor from the second gas distributor; (3) a reactant contacts a catalyst in the
10 reaction zone to generate a gas phase stream comprising para-xylene and light olefins. The present invention coordinates and optimizes the competition between a benzene alkylation reaction and an MTO reaction by controlling the mass transfer to facilitate a synergistic effect between two reactions, so that the conversion rate of benzene and the yield of para-xylene are greatly increased.