

ABSTRACT

This invention relates to a method for preparing p-xylene and co-producing propylene with a high selectivity. Toluene and methanol and/or dimethyl ether as raw materials are brought into contact with a catalyst in a reaction system for reaction, and after the resultant product is separated via a separation system, an ethylene-enriched C_2^- component (hydrocarbons having carbon number less than or equal to 2, CO, CO₂, and H₂) therein is returned to the reaction system for further reaction, a C_6^+ component (aromatic hydrocarbons having carbon number greater than or equal to 6) is subjected to further separation to obtain p-xylene, and a C_3 component (propylene and propane having a carbon number equal to 3) is subjected to further separation to obtain propylene. This method prepares p-xylene and co-produces propylene with a high selectivity, by coupling two reaction processes, an alkylation reaction of toluene with methanol and/or dimethyl ether and an alkylation reaction of ethylene with methanol and/or dimethyl ether, recycling an ethylene-enriched C_2^- component in reaction byproducts of alkylation of toluene and methanol and/or dimethyl ether, and performing alkylation reaction with methanol and/or dimethyl ether in the presence of catalysts.