

Abstract

5 The present invention refers to a fast fluidized-bed reactor, device and method for preparing propylene and C4
hydrocarbons from oxygen-containing compounds. The device comprises the fast fluidized-bed reactor and a
fluidized-bed regenerator for regenerating a catalyst. The method includes: a) feeding a raw material
containing the oxygen-containing compounds from n reactor feed distributors to a dense phase zone of the fast
10 fluidized-bed reactor, and contacting the raw material with a catalyst, to generate a stream containing target
product and a spent catalyst containing carbon; b) sending the stream discharged from the fast fluidized-bed
reactor containing target product into a product separation system, obtaining propylene, C4 hydrocarbons, light
fractions and the like after separation, returning 70 wt.% or more of the light fractions to the dense phase zone
of the fast fluidized-bed reactor from the reactor feed distributor at the bottom-most of the fast fluidized-bed
15 reactor, and reacting ethylene and the oxygen-containing compounds to perform an alkylation reaction in
presence of the catalyst, to produce products of propylene and the like. The method and device of the present
invention improve the reaction rate of ethylene alkylation, and the unit volume production capacity of reactor
is high.