

DEVICE AND METHOD FOR PREPARING AROMATIC HYDROCARBONS BY COUPLING NAPHTHA AND METHANOL

Abstract

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The present application discloses a device and method for preparing aromatic hydrocarbons by coupling naphtha and methanol. By adopting the device, under an action of a catalyst, the naphtha and the methanol react to generate product gas with aromatic hydrocarbons and a low-carbon olefin as main components. By the method of the application, linear-chain and branched-chain aliphatic hydrocarbons can be efficiently converted into aromatic hydrocarbons in a highly selective mode, a yield of p-xylene is also increased through a methylation reaction of aromatic hydrocarbons, and a content of p-xylene in a xylene mixture is greater than 75wt%. By a naphtha and methanol coupled aromatic hydrocarbon preparation reactor in the application, the yield of the p-xylene is increased by controlling a process of a cascade reaction (naphtha→benzene and toluene→p-xylene), and in addition, heat is provided in situ for a naphtha and methanol coupled aromatic hydrocarbon preparation reaction through a methylation reaction of benzene and toluene with methanol, so that self-heating balance is achieved.