

Catalytic Cracking of Naphtha in a Circulating Fluidized Bed

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This Study is catalytic naphtha cracking using circulating fluidized bed. Conventional naphtha cracking is thermal cracking process which uses a lot of furnace. However catalytic naphtha cracking process uses one reactor which is a circulating fluidized bed. Fluidization regime map with gas velocity and catalyst flux is obtained by cold model which is ID 5.0 cm and Height 6.55 m. This study observes ethylene and propylene yields with gas velocity in a hot model. The hot model is ID 4.12 cm and Height 6.59 m. This is made by Alloy 600 and SUS. Bed material is a SK's proprietary ZSM-5 Catalyst. Catalyst mean size is 90 micron and Catalyst density is 2.028 kg/m³. Olefins yield in a fast fluidization regime is higher than pneumatic flow. The reaction temperature in a catalytic naphtha cracking process is about 200 °C lower than convention process. Ultimate olefins yield is about 20% increased than conventional process.