

C325649 : MAJOR CHEMICAL TECHNOLOGY

KEY WORD : CARBON DIOXIDE/METHANE/STEAM/REFORMING/FLUIDIZED BED

LAWAN THIENDHAVORN: CARBON DIOXIDE- METHANE- STEAM REFORMING ON NICKEL/ALUMINA CATALYST IN FLUIDIZED BED. THESIS ADVISORS : ASSIST. PROF.THARAPONG VITIDSANT, Dr.Ing., PROF.SOMSAK DAMRONGLERD, Dr.Ing. 171 pp. ISBN 974-581-314-1

The study of carbon dioxide-methane-steam reforming on nickel/alumina catalyst in fluidized bed was made by using methane from the Separation Gas Plant of Petroleum Authority of Thailand. The number of spherical catalyst particles, 230 m²/g specific area and 1,610 kg/m³ density were fluidized in the cylindrical reactor with 10.7 cm. diameter and 30.0 cm. in height. The experimental variables were ratio of reactants, temperature, velocity of reactants and volume of catalyst.

The experimental results could be concluded that the optimum conditions to produce synthesis gas for petrochemical industries are temperature range from 650 to 800 °C and ratio of steam, carbon dioxide, methane between 1.0:4.0:1.0 and 3.0:4.0:1.0. Moreover, they explicated that the percent conversion of methane depends on the velocity of reactants and volume of catalyst.

Comparing the experimental data with thermodynamics acknowledgement finally found that three reactions occurred in the reforming methane with steam and carbon dioxide are

