33406

33406 E/17 E17 FARH 11.10.80
HOECHST AG *EP --49-863
11.10.80-DE-038448 *(21.04.82)* C07c-27/06 C07c-29/15 C07c-31/08 C07c-45/49 C07c-47/06 C07c-51/10

Prodn. of acetic acid, acetaldehyde and ethanol - from synthesis gas, with controlled heating of rhodium catalyst

D/S: E(BE DE FR GB IT NL)

Prodn. of acetic acid (I), acetaldehyde (II) and ethanol (III) comprises gas phase reaction of CO and H_2 over opt. promoted rhodium catalysts at elevated temp. and pressure. In the initial stage, when the catalyst is being heated to its long-term operating temp., TR, the temp. is increased from To (which is 75-125°C below TR) to TR either continuously or in stages of at most 10°C over 100-1000 hr. The increase in temp. in any given 10 hr. period is at most 10°C and most pref. the temp. increase from To to TR takes 120-800 hr.

ADVANTAGES

The lifetime and selectivity of the catalyst are both improved; esp. selectivity for (I) is increased but that for methane is reduced.

DETAILS

E(10-C4J, 10-D1C, 10-E4E) N(2-E)

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Generally TR is 200-450 (esp. 250-375)°C and the operating pressure is 1-300 (esp. 20-200) bars. Esp. pref. catalysts are 0.5-10 wt. % Rh on a carrier and suitable promoters-activators are Mg plus halides or Mn.

EXAMPLE

A catalyst comprises 2.8 wt. % Rh; 0.25% Mg and 1.4% Cl on silica gel of BET surface area 270 m^2/g. 45 g of this were packed into a 1 m x 16 mm tube and heated while passing through 200 l/hr. of 1 : 1 synthesis gas. After 2.5 hr. the temp. reached 200°C, heating was continued at 5°C per 10 hr. to a final temp. of 300°C. The reaction pressure was maintained at 80 bar. After 200 hr. the space-time yield was 385 g/l/hr. with selectivities (mole %, based on CO converted) (I) 75%, (II) 6%; (III) 3% and methane 9%.(12pp1251).
(G) ISR: DE2850201 DE2814427