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 RUHRCHEMIE AG *EP --49-888
 11.10.80-DE-03845C (21.04.82) B01j-23/84 C07c-01/02 C07c-11
 Olefin prodn. by hydrogenation of carbon oxide - over sulphur-contg.
 iron, vanadium and potassium oxide-contg. catalyst

A(1-D13) E(10-J2C3).H(4-E5, 4-F2E) N(1-A1, 2-A, 3-C, 4-C)

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hydroxide. It is generally used as a fixed bed, the reaction being at 220-400°C and up to 30 bars. The olefins are recovered from the effluent gases either by deep cooling or by adsorptive sepn.

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

Prodn. of unsatd., lower hydrocarbons (I) is effected by hydrogenating C oxides in the presence of a catalyst consisting of 100 wt. pts. Fe, 50-100 wt. pts. V, up to 10 wt. pts. MgO, 3-5 wt. pts. K₂O and 10-150 ppm (on total catalyst wt.) of sulphur. The MgO is pref. used in amts. of 2-10 wt. pts. per 100 wt. pts. Fe and the S is pref. introduced as sulphate-contg. MgO.

ADVANTAGES

The inclusion of S increases the lifetime of the catalyst (by 50-100%) and enhances its activity and selectivity, giving 40-50% higher yields of olefins. The major prod. is ethylene together with some propylene and butylene, and alkanes are also formed as a by-prods.

DETAILS

The catalyst is prepd. e.g. by pptn. from an aq. soln. using standard pptn. agents such as alkali carbonate or

EXAMPLE

A 15m by 20mm reaction tube was packed with a 96 cm bed of catalyst (Fe:V:MgO:K₂O is 100:80:7:4; the MgO contained 0.5% sulphate). After 383 hrs. operation at 330°C and 10.1 bars with a GHSV of 878, conversion of synthesis gas was 85% (96.1% conversion of CO) and the yield of 2-4C olefins was 58.7g per cu.m. The olefin selectivity was 33.1% based on CO plus H₂ and 29.3% on CO.(2ppl251).

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