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 Hydrocarbon synthesis catalysts based on silicalite - contg. Gp/VIII
 metal and Gp/10 gp/11a metal

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Catalysts (I) comprise (a) Fe, Co, Ni and/or Ru and (b) Li, Na, K, Ca and/or Mg supported on silicalite, the (a) + (b) content being 0.5-15 wt. %.

Also claimed are (i) catalysts (II) comprising (I) combined with an H-MFI zeolite, (ii) prodn. of olefinic hydrocarbons from synthesis gas using (I) as catalyst, and (iii) prodn. of gasoline-range hydrocarbons from synthesis gas using (II) as catalyst.

ADVANTAGES

(I) give high yields of 2-4C olefins, e.g. 25-26% selectivity at 26-32% conversion. (II) give high yields of gasoline with a high aromatics content.

DETAILS

(I) may also contain Th, Zr and/or Mn. A prefd. catalyst (I) contains Fe, Ru and K. (I) may be prepd. by impregnating

A(1-D13) E(10-J2C3) H(4-D, 4-E5, 4-F2D, 4-F2E) N(1-A, 1-B, 2, 3-A, 3-B, 3-E, 6-A)

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the silicalite with an aq. soln. of a hydroxide or salt of metal (b) and then impregnating with a nonaqueous soln. of a carbonyl of metal (a) or with an aq. soln. of a salt of metal (a).

(II) may be prepd. by mixing (I) with a NH_4 -MFI zeolite and heating the mixt. The ratio of (I) to zeolite may be 10:1 to 1:10.

EXAMPLE

A mixt. of 3.36g RuCl_3 in 50ml H_2O , 13.02g $\text{Fe}(\text{NO}_3)_3$ in 50ml H_2O and 2.16g KOH in 50ml H_2O was added to 40.92g silicalite, shaken for 1-min., evapd. in vacuo, heated in air at 120°C , and reduced in H_2 at 125, 225 and 320°C , each for 2 hr. (16pp367APSDwgNo0/0)
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