

84-044280/08 BRITISH PETROLEUM PLC 09.07.82-GB-020083 31/04	E17 J04 (15.02.84)	BRPE 09.07.82 *EP -100-607-A B01j-23/89 C07c-29/15 C07c-	E(10-E4E) J(4-E4) N(1-A, 2, 3) 071
Catalyst for prodn. of alcohol(s) from synthesis gas - contains at least four metals including cobalt and alkali metal			ADVANTAGES The catalyst has high selectivity to straight chain satd. primary alcohols, e.g. yields a liq. prod. contg. 30 wt. % methanol, 49% ethanol, 14% n-propanol, 7% butanol, byprods. CH ₄ and CO ₂ , with CO conversion around 20%.
C84-018534	D/S: BE DE FR GB IT NL.		
The catalyst contains (a) Co; (b) one or more of Cu, Ag, Ga, Zr, Zr, Th; (c) one or more of Pd, Pt, Ni; and (d) one or more alkali metals. The components are present in at. ratio (a):(b):(c) or 100:1-400:1-500; with (d) as up to 5 wt. % compsn. The components are pref. present as oxides, or salts thermally decomposable to oxide.			EXAMPLE A pref. catalyst was prepd. by dissolving 48.3g Cu(NO ₃) ₂ · 3H ₂ O and 58.2g Co(NO ₃) ₂ · 6H ₂ O in 200 ml deionised water and adding a soln. of 1.48g Pd acetate dissolved in 10 ml conc. HNO ₃ . The mixt. was added to a soln. of 68.1g K ₂ CO ₃ in 300 ml deionised water at 60°C. The pH was adjusted to 7.0 by adding K ₂ CO ₃ , and the resulting ppte. was filtered, washed and dried. The resulting dark solid was heated in air at 400°C for 4 hr., cooled, pelleted and crushed into granules. The granules were heated at 350°C in slowly flowing H ₂ for 18 hr. before use.
The compsn. is pref. represented by (a) 100 (b) 1-400 (c) 1-500 (d) x.Oy; where x is such that d is up to 5 wt. % compsn. and y is such that the valence requirements for oxygen are satisfied. A pref. compsn. is Co.Cu.PdO. _{0.5} .Kx.Oy.			15 ml Cu Co PdO. _{0.5} Kx Oy catalyst prepd. as above was contacted with a 1:1 mol ratio CO:H ₂ mixt. at 50 bar, 348°C, contact time 2.21s. CO conversion was 19.4% and a liq. organic prod. was obtained comprising 30 wt. % methanol, 49% ethanol, 14% n-propanol, 7% butanol. (10pp91RHDwgNo 0/0).
Alcohols are produced by reacting Co and H ₂ at elevated temp. (pref. 200-450°C) and press. (pref. 25-300 bars) in the presence of the catalyst, pref. for 1-30s. The catalyst is pref. heated in a reducing atmos. before use.			(E)ISR: DE2748097 EP--44740 EP---5492. EP, 100607-A