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 UNION CARBIDE CORP \*US 4345-103  
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Hydroxy-methylation of carbon residue of organo silicon cpds. - with carbon mon:oxide and hydrogen over ruthenium carbonyl catalyst

Suitable Ru catalysts are described in US2535060; and suitable solvents are ketones, esters, lactones, amides, lactams, sulphones, sulphoxides, aromatic hydrocarbons and ethers. A promotor may also be present. Ratio of CO to H<sub>2</sub> is pref. 40 : 1 - 1 : 40, esp. 10 : 1 - 1 : 10. Amt. of Ru catalyst is pref. 10<sup>-3</sup> - 20 wt. % and amt. of (II) 10<sup>-3</sup> - 100 wt. %.

Prepn. of alcohols (I) comprises reacting, in the homogeneous liq. phase, an organosilicon cpd. (II) with carbon monoxide and hydrogen in the presence of a ruthenium carbonyl catalyst. (II) has a carbon residue (R), and a gp. X, which is such that a transition metal can add across its bond to Si, bonded to the Si, and (I) has 1 C-atom and 1 O-atom more than the R of (II).

#### EXAMPLE

80 ml Trihexylsilane were reacted at 270°C and 8000 psig for 4 hr. at CO : H<sub>2</sub> ratio 1 : 1 using 1 mmole Ru<sub>3</sub>(CO)<sub>12</sub> catalyst. After 1 hr. the prod. contained 1.4g MeOH, 0.41g ethylene glycol and 5.6g n-heptanol. After 4 hrs. the prod. contained 3.9g MeOH, 0.64g ethylene glycol and 17g n-heptanol. A similar experiment using no Ru<sub>3</sub>(CO)<sub>12</sub> gave, after 4 hr., 0.23g MeOH and no ethylene glycol or n-heptanol.(9pp985).

Pref. X is H and (II) is esp. a mono-, di- or tri-alkylsilane. Reaction is pref. at 50-400°C and 100-15000 psia in a solvent and unreacted CO and H<sub>2</sub> are recycled to the liq. phase.

#### ADVANTAGE

Process is a relatively low pressure conversion of synthesis gas to alcohols. The Ru cpd. and (II) show a synergistic effect in the prepn. of MeOH, ethylene glycol and (I).

#### DETAILS

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