

<p>86-245682/38 H09 KOBM 01.02.85 KOBE SEIKO SHO KK (IDEK ASIA- NIBR-) *AU 8652-914-A 01.02.85-JP-019041 (+ JP-019040) (07.08.86) C10g-01/08 Liquefying coal by hydrogenation, with controlled prod. gas recycle - to reactor, so stripping light oil from solvent in reactor and increasing its yield, and allowing use of lighter solvent for slurring coal C86-105708</p>	H(9-A1)
<p>Method for hydroliquefying coal includes: (i) preheating a slurry comprising pulverized coal and a solvent, which is then supplied to a number of reactors; (ii) sepg. a gas fraction from the prods; (iii) dehydrating the gas fraction and removing a light oil from it; and (iv) recycling the H₂-contg. gas which remains at least to the first reactor, at its bottom, so stripping the light oil content of the solvent.</p> <p><u>ADVANTAGE</u> The valuable light oil being stripped out, losses due to its hydrocracking are reduced. The remaining solvent becomes more highly polymerized, so that the hydrocracking conditions required are less severe. Light solvent can be added when slurring, so facilitating pumping and preheating, without the usual adverse effect on hydrocracking. Heavy oil recycle without choking is facilitated, leading to increased prodn. of light and medium oils. By the combined effect of stripping</p>	<p>and recycle of 50% of the heavy oil prod., the yield of light and medium oils on coal is increased e.g. from 21 to 46%.</p> <p><u>PROCESS</u> The rate of stripping is pref. such that in the reactor, the ratio of the amount of solvent of normal b.pt. 300-420°C to the amt. of coal plus solvent of b.pt. above 420°C is 0.20 to 1.20 by wt.</p> <p><u>EMBODIMENT</u> The coal liquefaction plant comprises a primary and a secondary hydrocracking section, each with 3 reactors in series (1-3 and 4-6). Coal, catalyst and solvent are slurried, H₂ added, and the mixt. preheated and fed to the bottoms of reactors 1, 2 and 3 in sequence. The effluent from reactor 3 passes to a hot separator, where it is divided between an oil, which passes to a distn. column (I), and a vapour, which passes to a condenser, where it is divided into light oil prod. and H₂-rich gas. The H₂-rich gas is partly exhausted, and partly heated and recycled to the bottoms of reactors 1,2 and 3. From (I) are collected light and medium oil and solvent fractions and a residual sludge.</p> <p style="text-align: right;">AU8652914-A*</p>

The sludge is filtered, and partly recycled to the slurry pump before reactor 1, and partly mixed with fresh H_2 , preheated, and sent to reactors 4-6 in sequence. The prod. mixt. from reactor 6 passes to a condenser, from which the gas fraction is entirely exhausted (without recycle), and the liq. fraction passes to a second distn. column (II) for fractionation as in (I). Part of the filtered residual sludge from (II) is recycled to join the corresponding stream from (I), before reactor 1. (36pp1492RKMHDwgNo0/7).

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