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E36 H08

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Prod'n. of synthesis gas from hydrocarbonaceous feed - by partial oxidn. at high space velocity and with low oxygen demand

C019-021139 R(AT BE CH DE ES FR GB GR IT LI LU NL SE)

E(31-A1) H(4-E4, 4-F2E) N(6)

Synthesis gas is produced from a hydrocarbonaceous feed-stock (I) by introducing a completely mixed gaseous mixt. (II) of (I), oxygen or oxygen-contg. gas, and opt. steam to a catalytic partial oxidation zone, and partially oxidising (I) to produce a gas mixt. consisting essentially of methane, carbon oxides, hydrogen and steam. The process is characterised by a steam:carbon mole ratio in (II) of 0:1 to 3.0:0.1, and an oxygen/carbon mole ratio 0.3:1 to 0.8:1; (II) is introduced to the said zone at a temp. not lower than 93°C. below its autoignition temp.; the catalyst has a ratio of geometric surface area to volume at least 5 cm²/cm³.

ADVANTAGES

(I) is converted to synthesis gas efficiently at relatively high space velocity, so that reactor size can be kept to a minimum and cost thus reduced; a relatively inexpensive catalyst may be used. There is a relatively low oxygen

demand and temp. is relatively low. Conditions may be adjusted to produce synthesis gas suitable for prodn. of town gas, or of ammonia, methanol or hydrogen and carbon monoxide.

PREFERRED EMBODIMENT

Natural gas is mixed with steam in a steam:carbon mole ratio 0.3:1 to 2.0:1, the mixt. heated to 340-650°C. and admixed with oxygen or oxygen-contg. gas which has been heated to 65-650°C.. The resultant mixt. is introduced to a catalytic partial oxidation zone before autoignition time delay elapses, and passed through the catalyst bed with space velocity 20,000-500,000 hr⁻¹; partial oxidation takes place at 760-1099°C.. (16pp1644CGDwgNo0/10).
(E) ISR: No Search Report.

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