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Synthesis gas prodn. - in which hydrogen cyanide gas is completely removed without changing the hydrogen to carbon monoxide mole ratio

HCN-free synthesis gas is produced by (a) reacting a hydrocarbonaceous feed by partial oxidn. with an O<sub>2</sub>- contg. gas at 1300-3500°F and 1-250 atms. to produce a gas comprising H<sub>2</sub>, CO, CO<sub>2</sub>, HCN, > 1 of H<sub>2</sub>S, COS, CH<sub>4</sub>, N<sub>2</sub>, Ar and NH<sub>3</sub>, and entrained solids; (b) cooling the gas from (a) (after removing solids) to 300-900°F, (c) scrubbing with water to produce a clean synthesis gas stream contg. HCN at a temp. of 100-315°C; and (d) cooling the stream from (c), sepg. condensed water, and contacting with an aq. HCN- absorbant in the liq. phase at 32-120°F to produce an HCN-rich aq. absorbent stream and a clean synthesis gas stream contg. < 0.3 ppm (by wt.) HCN.

**ADVANTAGES**

Substantially all the HCN is removed without changing the H<sub>2</sub>/CO mole ratio, the sepd. HCN being disposable without causing pollution.

**DETAILS**

H(9-D)

24

After step (d), the clean gas stream is treated to remove H<sub>2</sub>S, COS and/or CO<sub>2</sub> and the HCN-rich absorbent is stripped of its HCN and recycled.

The HCN absorption (d) is in a tower at pref. < 100°F (e.g. 50-95°F) and 5-3000 (pref. > 100) psia (e.g. 100-1000 psia), 200-500 (e.g. 250-350) gals. absorbent being introduced to the tower per million s. c. f. clean synthesis gas. The absorbent is water, H<sub>2</sub>SO<sub>4</sub>, or a dil. aq. soln. of one or more Gp. IA (bi) carbonates.

The stripped absorbent (after HCN removal) is pref. used to remove H<sub>2</sub>S, COS and/or CO<sub>2</sub> by acid-gas-absorption. (10pp959).