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Hydrogen cyanide removal from gas stream by catalytic conversion - using GP/IIIA and/or GP/IVA metal on support contg. silica
C85-128681

E(32-B) J(1-E3, 4-E1) N(3-A, 3-B)

PREFERRED CONDITIONS

Treatment is carried out at 225-350°C and a spatial velocity of 500-5000 NI gas/unit vol. catalyst-hour. The synthesis gas is contacted with the catalyst after removal of particles of slag.

HCN is sepd. from a gas stream by contact with a catalyst (I) contg. gp. IIIa and/or IVa metal(s) on a support contg. SiO₂ in the presence of water at 200-500°C.

ADVANTAGE/USE

The process is claimed for the treatment of a synthesis gas stream obt'd. by partial combustion of (solid) carbonaceous fuel with gas contg. O₂. The gas stream may also contain HCl, COS and/or CS₂.

Even small amts. of HCN can be removed and HCN and COS can be removed simultaneously.

PREFERRED COMPONENTS

The catalyst contains the metal(s) in the form of oxide(s) or salt(s), pref. Ti, Zr and/or Th oxide(s), in an atomic ratio of metal : Si of 0.001 : 1, pref. 0.03 : 1 to 0.3 : 1. The catalyst contains at least 75, pref. at least 90wt. % SiO₂

EXAMPLE

500ml (223.3g) spherical SiO₂ gel was impregnated with 234.5ml soln. of 135.74g tetraisopropyl orthotitanate in 2-propanol, dried and calcined to give a catalyst (Ia) with a Ti:Si atomic ratio of 0.08.

(A, B, C) 3000, (D, E, F) 1500 Nm³/m³-h gas contg. (A, B, D, E) 5, (C) 8, (F) 12 vol. % H₂O and (A) 213, (B) 187, (C) 220, (D) 196, (E) 198, (F) 233 ppmv HCN were contacted with (IA) at (A) 235, (B, C, E, F) 250, (D) 300°C. The HCN conversion was (A) 81, (B) 84, (C) 91, (D) 99, (E, F) more than 99%. (7pp016RBHDwgNo0/0)

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