

DERWENT PUBLICATIONS LTD.

49757

49757C/28 H09 GULO 15.12.78
 GULF OIL CORP *WP 8001-282

15.12.78-US-969803 (26.06.80) C10g-01
 Coal liquefaction process with slurry recycle - with added extraneous catalytic mineral particles of controlled size

D/S: N(BR, JA, SU)+E(DT, FR, GB, NL).

A coal liquefaction process, partic. for incorporation in an integrated liquefaction/gasification system, is claimed the process employing addition of an extraneous catalytic mineral (esp. an Fe cpd. derived from pyrite obtained in the water-washing of coal) in the liquefaction zone in addition to recycle of normally solid dissolved coal and mineral residue from the liquefaction effluent separator. The improvement relates to the control of the solids concn. in the recycle slurry when processing high-ash (contg. ≥ 15 , esp. ≥ 20 , wt.% inorganic matter on a dry basis) feed coals.

Specifically, the liquefaction zone effluent is passed to a vapour-liquid separator where H_2 , hydrocarbon gases and naphtha are removed overhead. The residue slurry is split into three streams, the first (A) being recycled to the liquefaction zone, the second (B) being passed to a product separator and the third (C) to a hydrocyclone.

H(9-A1, 9-C) N(2-A, 6).

80

The hydrocyclone provides an overflow slurry (I) comprising liquid coal, normally solid dissolved coal with suspended mineral residue and a higher than aliquot wt. proportion of suspended particles of the extraneous catalytic mineral, and an underflow slurry (II). (I) is recycled to the liquefaction zone and (II) to the product separator.

ADVANTAGES

The recycle of (I) reduces the median dia. of particles recycled to the liquefaction zone and selectively increases the proportion of the extraneous catalytic mineral. The dilution reduces the amt. of recycled solids while still maintaining adequate catalytic activity or enhances catalytic activity for a given solids level.

DETAILS

The extraneous mineral has a superior catalytic activity compared to a similar wt. of recycle mineral residue derived from the feed coal. It is added to the process in the form of particles having a median dia. larger than, similar to, or smaller than the median dia. of the particles in (A).

WP8001282+

The residue slurry contains 5-40 wt.% solids. (C) comprises 10-75 wt.% of the total residue slurry. (I) contains 0.2-20 wt.% solids with a median dia. of 0.5-5 μ . (II), which comprises 20-60 wt.% of (C) and contains 10-50 wt.% solids, is passed to the product separator, either independently or together with (B). (41pp920).
(E) ISR: US4102775; US4090943; US3962070; US3884796; US3540995; 4 Journal References.