

The Benzene hydrocarbons formed by the Fischer-Tropsch process cannot be used advantageously and economically unless further steps are taken to refine them.

It is of great importance to certain secondary processes that the hydrocarbons produced structurally are to be considered as "normal". The octane number is very

low. Research work done was directed in the following way

- 1) To change the primary benzenes into benzenes of high octane number and other valuable products.
- 2) To work up the by products.
- 3) To prepare different products by the reaction of Diesel-fuels.
- 4) To oxidize bituminous coals for the production of aromatic acids.
- 5) To prepare lubricants especially for low temperature consistency.
- 6) To prepare olefinic hydrocarbons by pressure synthesis.

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- a) Isomerisation
- b) catalytic cracking
- c) catalytic dehydrogenation
(preparation of olefins)
- d) cyclization
(preparation of toluene from heptane)
- e) polymerisation

ad/ 2)

- a) To prepare soaps by the reaction of fatty acids
- b) To prepare olefins by the dehydration of alcohols.
- c) To prepare waxes *et.c.* from high molecular, solid paraffin by the oxidation using VO_2 as catalyst.

ad 3)

Starting from olefins of the Diesel fuel (C_{12} - C_{16}) type, the oxo process was carried out to add water gas under pressure to the free bond of the hydrocarbon chain. Aldehydes are formed which can easily be transformed into fatty acids or alcohols. By this process soaps, fine cleansing powders, wetting agents can be prepared.

Experiments

ad 4)

The oxidation of bituminous coal was carried out to prepare benzenecarboxylic acids which by decarboxylation could be transformed into aromatic hydrocarbons such as Benzene, Toluene, Xylene *et.c.*

ad.

- 5) In the line of lubricating oils research was done especially for the preparation of oils of low temperature consistency.

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- 6) The scarcity of cobalt metal led to experiments to use different catalysts for synthesis of Benzine. Using higher pressures iron catalysts were found to be qualified for the production of paraffinic and olefinic hydrocarbons. The tendency was prevalent to

2.)

prepare olefinic hydrocarbons, as they are especially fit as starting products for the production of lubricants and the Oxo process.

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