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HYDROCARBON SYNTHESIS
2001-2-P 11-8-55

THE TEXAS COMPANY

RESEARCH AND TECHNICAL DEPARTMENT

REPORT ON

HYDROCARBON SYNTHESIS

EFFECT OF REDUCTION TEMPERATURE ON SYNTHESIS CATALYST

RUNS 63, 64, 65, AND 66

Laboratory Montebello

Report No. 2001-2-P

Date November 8, 1955

PERSONAL AND CONFIDENTIAL

BRIEF OF PARTIAL REPORT

Laboratory Montebello
Date Approved November 8, 1955
Date Work Completed February 4, 1952

Experiment No. 2001
Partial Report No. 2
Subject: Hydrocarbon Synthesis

Subject: Hydrocarbon Synthesis: Effect of Reduction Temperature on Synthesis Catalyst

Object: (1) To determine whether the poor yields at the Carthage Hydrocol, Inc., plant at Brownsville, Texas, were due in part to methods of catalyst preparation. (2) To determine whether high reduction temperature could be used to speed the preparation of catalyst without affecting catalyst quality.

History: The yields at the Carthage Hydrocol, Inc., plant had never reached design level nor had they ever been as high as those obtained in pilot plants. It was desired to increase the capacity of the catalyst reduction facilities and one possibility was to use higher reduction temperatures.

Experimental Work: A run was made with the Montebello hydrocarbon synthesis reactor evaluating Bethlehem mill scale catalyst promoted, sized, and reduced at Brownsville. Three additional runs were made using Bethlehem mill scale catalysts reduced at different temperatures. During part of one run the effects of recycle/fresh feed ratio were investigated. Near the end of another run, an attempt was made to increase the promoter on the catalyst by the addition of anhydrous potassium carbonate.

Conclusions:

1. The mill scale catalyst treated and reduced at Brownsville exhibited no difference from mill scale catalysts prepared at Montebello.
2. Variation of the catalyst reduction temperature in the range of 650°F to 800°F had no effect on the quality of the catalyst.
3. Increasing the recycle/fresh feed ratio in the range of 0.06/1 to 2.0/1 increased the yields of saleable liquid products and suppressed the yields of methane and CO_2.
4. The addition of anhydrous potassium carbonate to the catalyst bed during a run had no effect on the synthesis reaction.

WLS-EW

(WEK-WAMcM)-WJC(2)-RWH-HDM(2)-RLSr(2)-duBE(2)
WMS-RP-CEL-GK-FHH-[redacted] JCW

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PARTIAL REPORT NO. 2

Montebello Research Laboratory | Experiment No. 2001
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EFFECT OF REDUCTION TEMPERATURE ON SYNTHESIS CATALYST

RUNS 63, 64, 65, AND 66

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