

~~FILM STUDY GROUP~~

SUBJECT INDEX AND REPORT

T.O.M. REEL NO. 116

Prepared by

STANDARD OIL DEVELOPMENT COMPANY

STANDARD OIL DEVELOPMENT COMPANY

ABSTRACT AND INDEX OF TECHNICAL OIL MISSION

MICROFILM

REEL NO. 116

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Item V-4 - Foot 9, Frame 11

Schematic flow sheet for adipic acid production for the month of April, 1944.

Item V-4 - Foot 10, Frame 1

Schematic flow plant for conversion of phenols to cyclohexanol and cyclohexanone.

Item V-4 - Foot 10, Frame 3

Schematic flowsheet for conversion of cresols to methyl cyclohexanol and methyl cyclohexanone.

Item V-4 - Foot 10, Frame 6

Schematic flowsheet for methyl adipic acid.

The above schematic flowsheets include material balances.

Item V-5 - Foot 12, Frame 5

Simplified process flowsheet for preparation of propionyl aldehyde from propyl alcohol and amyl alcohol from acetaldehyde.

Item V-5 - Foot 12, Frames 6-7

Simplified process flowsheets for dephenolizing water.

Item V-5 - Foot 13, Frame 3

Elevation flowsheet of adipic acid plant.

Item V-5 - Foot 14, Frames 8-9

Oxo pilot plant.

Item V-5 - Foot 15, Frames 1-3

~~I.G. Fischer synthesis pilot plant and iron catalyst reduction plant.~~

Item V-5 - Foot 16, Frame 8

Isometric drawing of a nepasin plant (preparation of sulfonyl chlorides).

Item V-6 - Foot 17, Frames 2 and 4 to Foot 18, Frame 1

Lurgi information on pressure conversion of carbon monoxide and steam to hydrogen and  $\text{CO}_2$  in the form of flowsheets and equilibrium.

Item V-10 - Foot 20, Frame 10 to Foot 25, Frame 7

Hydrogenation of coke oven tar. The subject matter of this report is given in the index on Foot 20, Frame 11.

Item V-11 - Foot 25, Frame 9 to Foot 29, Frame 9

Calculation of gas productin using the Winkler method.

Item V-12(1) - Foot 30, Frames 3-4

Brief description of the preparation of trimethylol ethane by the condensation of propionaldehyde with formaldehyde in the presence of caustic at  $30^\circ\text{C}$ . A flowsheet of the process is included.

Item V-12(1) - Foot 30, Frames 5-6

Brief description of a process for the preparation of propionaldehyde from normal propyl alcohol by air oxidation. It includes a flowsheet for this process.

Item V-12(1) - Foot 30, Frame 9

Brief description of a process for the preparation of formaldehyde by passing a methanol-water-air mixture over catalysts at a temperature of  $560-600^\circ\text{C}$ .

Item V-12(4) - Foot 32, Frames 13-15

Preparation of acetic acid by the reaction of methyl alcohol with  $\text{CO}$  at 700 atms. and  $300-350^\circ\text{C}$ . in the presence of an aqueous liquid catalyst. In addition to the acetic acid, dimethyl ether and methyl acetate are byproducts. The acetic acid is recovered from the water by extraction with propyl ether. Flowsheets for the process are included.

Item V-12(9) - Foot 35, Frames 10-11 and 14

Flowsheet of sulfuric acid concentration system used at Lurgi. Frame 14 is a memo describing the equipment in the flowsheet.

Item V-12(18) - Foot 42, Frame 12 to Foot 43, Frame 15

This section deals with a plant for making aliphatic acids from the corresponding alcohols by treatment of the former with either solid caustic or 50% caustic at about  $250^\circ\text{C}$ . at

Item V-12(18) Cont'd.

atmospheric pressure. The process can also be carried out at elevated pressures at temperatures up to 300° to speed up the reaction. After removal of the unreacted feed, the acid is recovered from its sodium salt by treatment with 75% sulfuric acid and the liberated acid steam distilled. Information is given in this section on details of the process including a flow sheet and equipment requirements for the process. No mention is made of the application of this process to glycols but if it works for glycols, it would be a means of producing dibasic acids.

Item V-12(18) - Foot 43, Frame 16

A list of some patent applications which includes a non-foaming water soluble oil.

Item V-12(21) - Foot 48, Frames 7-9

This section gives a brief description including a flowsheet of a process for the preparation of adipic acid by the oxidation of cyclohexanone with concentrated nitric acid at 60-70°C. The process is also applicable to methyl adipic acid preparation from methyl cyclohexanone.

Item V-12(21) - Foot 48, Frames 10-15

This section gives a brief description of a process for the preparation of the lactam of cyclohexanone which involves the reaction of cyclohexanone with hydroxylamine sulfate (made by the reaction of an ammonium nitrite with ammonium bisulfide) to produce cyclohexanone oxime; the latter being converted into the lactam by treatment with dilute sulfuric acid. The latter treatment results in a Beckmann rearrangement of the cyclohexanol oxime to the lactam. There is also some information including the flowsheet on the production of ammonium bisulfite.

Item V-12(24) - Foot 53, Frames 2-4

Preparation of dimethyl amine by the reaction of monomethyl amine at room temperature with aqueous formaldehyde followed by catalytic hydrogenation of the resulting oxy base.

Item V-13 - Foot 61, Frame 11, to Foot 62, Frame 17

1944 information on gasification by the Winkler process. This also includes earlier data on oxygen valves for Winkler generators and sketches of the generators.