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TRANSLATION OF PAGES

1302 - 1306 OF TECHNICAL OIL

MISSION MICROFILM REEL NO. 14

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Bag Target

00001303-1306

3043-30/4.02  
December 6, 1942

To the Commissioner for the  
Four Year Plan - Special Chemical Problems  
Doctor Altpeter  
Berlin W 9

January 14, 1943

Toluene from Witol-Residue Waldenberg

In your above letter to us you suggested the conversion of xylenes and higher alkylated benzenes obtained at Waldenberg to toluene according to German patent 428/40 to Bruckner. In our letter of December 17, 1942, we informed you that we had considered the Bruckner process too difficult owing to the high reaction temperature and the aggressive contact material and proposed other solutions.

Today we are able to state that for some time we have carried out work on the production of high-aromatic motor fuels from aromatic middle oils and have developed a new process allowing us to obtain a mixture of about 2/3 toluene and 1/3 benzene boiling below the Witol residue, after removal of 5-10% residue, in a yield slightly below the theoretical. The toluene can be produced in quality for explosive production. The benzene contains a certain amount of hydroaromatics which, if necessary, might be removed by a washing process in order to render the benzene suitable for Waldenburg, provided it cannot be exchanged directly against other benzene at some other place for chemical treatment. The use of the Witol residual distillate, that is, the separation of methyl groups in the form of methane, is done under high pressure in an atmosphere of hydrogen over a special catalyst. The reaction product is finally worked up in a series of distillations into a close out distillation to pure benzene. From 1 ton of Waldenburg Witol residual distillate, about 680 (?) kg. of liquid products are presumably obtained, of which 450 kg. consist of toluene and 230 kg. of benzene.

Since our new dealkylation process may find a more general application and may be modified after small changes have been made in the apparatus, the aromatic residual distillate of HF plants and DHD plants may be used, after separation of small amounts of higher boiling constituents, to produce lower molecular aromatics, and these amounts, which previously were lost in aviation fuels, may thus be rendered available in the high power aviation fuel production.

As you know, at the beginning of February of this year, we shall visit the AT 244-plant in Leuna and simultaneously introduce the T 52 production. In this way the high pressure plants for hydrogenation of diisobutylene and part of the distillation plants will be set free. This equipment may be rebuilt with comparatively small changes to a large scale experimental plant for working up the Witol distillation residue. Although we are at the present time unable to give any final data on the presumable capacity of this plant, since the process requires further modification, we nevertheless believe that up to 1,500 tons per month of Waldenburg Witol distillation residue can be treated so that the total residue resulting from a production of 36,000 tons/year of toluene could be treated. The simultaneous production of methane would mean a desirable addition for use as a power gas in our plant.

In total, about 400 tons of material - 40 tons for construction? (illegible) -- would be required. The total investment would be about 800,000 RM: 100,000 RM for bulk construction(?). The beginning of the operation would presumably require 6 months after the grant of the first iron contingents, including constructional iron, if certain short cuts can be found with your help. A 20 m<sup>3</sup> injection pump, preferably operating at 250 atm. is necessary to be placed to our disposal for the hydrogenation and we must get a permit of erecting an 800 m<sup>3</sup> tank for toluene. For power there is required about 7 tons of steam per hour and 500 kw(?) current per hour. This amount may at the start be taken from the usual net current. The power requirements will either be requested subsequently or in a larger constructive program.

The details of the process are included in the attached description of the process and the attached flow sheet.

With reference to the very favorable conditions in Leuna we therefore propose the installation of such a plant and ask your acceptance thereof.

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Heil Hitler

Ammonia Works Merseburg

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Enclosure of letter of January 14, 1943  
AWF/Dr. Lgh./K.730 463

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DESCRIPTION OF PROCESS

The xylene fraction preliminarily distilled in Waldenburg, having a boiling range of 115 to about 250°C., is mixed in the ratio of about 1:1 with the oven-B product, not converted in one passage through the oven, and is treated with hydrogen under a pressure of 200 atm total pressure at 460-480°C. over an aluminum silicate base catalyst. The catalyst charge is about between 0.5 and 1.0 kg/liter catalyst/hour. In order to control the strong exothermic process, cool gas is supplied at various points of the high pressure oven. The total amount of circulating gas is 5,000 times that of the liquid of the oven.

Since large amounts of methane are produced in the process (through the demethylation) a methane washer must be included in the circuit.

The oven product leaving the high pressure system has about the following composition:

50 parts of toluene + benzene together with the methane formed, and  
50 parts of higher boiling products

In a first distillation the liquid product from the oven is freed from these high boiling constituents (E-product). This product is returned to the process. A distillation with an auxiliary substance is provided for the presumable presence of non-aromatic constituents in the overhead product, yielding a toluene which is brought up to the requirements for producing explosives in a further close cut distillation. The benzene, which is also obtained, is available for other uses. Methanol has been used as the auxiliary solvent in the distillation, being obtained from the production of our own plant, and is reused.

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Amounts in Moto

