

SINCLAIR REFINING COMPANY

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Item 24

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S-94

Summary of Information Concerning Preparation of Kieselgur for Ruhrchemie

Prepared by M. Beth

Ruhrchemie resp. Ruhrbenzin, at Oberhausen-Holten was a catalyst factory which supplied a great number of German plants (Krupp, Victor, Brabag, Rheinpreussen) with catalysts.

Very early - already before the outbreak of the war - they had found out that only "kieselgur" (diatomaceous earth) could be used as a support for their catalysts.

Scanning the various gur deposits of Germany they found that only the deposits at the Lüneburger Heide, and there only the deposits mined from definite mines (Else, Buscherhoff, etc.) and mixed in a specific proportion, could be used for their commercial catalyst production.

They found, furthermore, that gur stored in the open air was not suitable, probably because the soluble iron contained in it entered a higher stage of oxidation.

For this reason, they insisted that the freshly worked gur would immediately be subjected to a suitable treatment.

Initially, gur had been mined only during the summer months, heaped in piles under sheds where it remained sometimes as long as two years. Then it was subject to a "pile charring" process (with air deficiency). Afterwards, it was ground, sometimes also sifted, and finally ignited in a revolving furnace at temperatures of 1000° to 1050°.

Ruhrchemie found the "pile charring" process inadequate, because it produced a very heterogeneous material. Therefore, they had "roasting furnaces" constructed near the mines, where the fresh gurs were roasted at about 700° (actually more than 800°) (probably for an hour) as soon as possible after being worked (with an air excess).

The revolving furnace proving a bottleneck, Ruhrchemie tried to use the roasted gurs, without igniting them, and found them harder, less expensive, and otherwise equal to the ignited 120-gur. They were being tried out on a commercial scale, and the consumers were, on the average, satisfied, excepting which reported a reduction in the conversion rate.

It was very important to obtain gurs having low contents of soluble iron. A special bonus was to be paid for such gurs. Furthermore, it was found that the presence of very fine filterable particles proved injurious. Ruhrchemie thought that the presence of such particles was due to the presence of a great number of "broken down" or "decomposed" diatoms in the "raw gur;" only raw gur containing well preserved diatoms, is suitable for catalysts.

The specifications for kieselgur to be used in the catalyst production (page 458) are based on experiences gained over a period of more than ten years.

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