

THE SHERWIN-WILLIAMS CO.

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INTER-OFFICE LETTER

FROM Chicago

OFFICE Auxiliaries Research

DEPT

FOR Cleveland

OFFICE

DATE July 9, 1952

MR. J. V. HURN

SUBJECT Lithopone - German

ANSWERING LETTER OF

DICTATED BY

Some time ago two German chemists, representing the German Lead Pigment Manufacturers, and the Pigment and Paint Society of German Chemists, made a tour of the United States and called at the Sherwin-Williams plant here at Chicago. While here they requested an interview with us. Mr. Verduin, Mr. Craig, and the writer, along with Mr. Walter Asbeck of the Paint Research Department who acted as interpreter, spent some three hours with these two representatives, whose official capacities are indicated below:

Dr. Erich A. Becker, Director of the Laboratories of the Lithopone-Kontor, and President of the Group "Pigment and Paints" of the Society of German Chemists, 34 Weerth-Strasse, Cologne 16 (Western Germany), and

Dr. Frits Weber, Director of the Laboratories of the Association of German Lead Pigment Manufacturers, 24 Markt, Bonn-Rh. (Western Germany).

We discussed the manufacture of lithopone as practiced in Germany and also briefly the manufacture of basic carbonate of white lead. They were high-class representatives but preferred to do more talking than listening, and this was perfectly satisfactory to us, as we had to give very little information to obtain, I believe, a considerable knowledge of the working of the German lithopone manufacture. The report of this meeting is attached. Dr. Weber was very much interested in obtaining any information that he could on lead pigments, and asked for a copy of our paper on columed leaded zinc oxide. He further requested a sample of our lithopone.

I personally see no reason why we shouldn't send them the samples of lithopone and a copy of the paper on leaded zinc oxide, but before doing this thought we had better clear with you, in view of the fact that we did not know what the policy was in this regard.

You will be interested to know that they have a very definite reason for manufacturing low bodied lithopone. It is peculiar to their process and they have more or less no alternative; however, there is more to it than this, and as Dr. Becker indicated, at one time they did attempt to market a medium oil absorption type of lithopone and were unable to interest the trade in its use. Their process is such that extremely large amounts of sodium chloride are present in the strike, or at least formed during striking. The reason for this is because they use zinc sulfide ores and roast with sodium chloride. This gives them zinc chloride and sodium sulfate. The strike is then made with barium sulfide to yield zinc sulfide, barium sulfate, and two mols of sodium chloride. Calcination is made at a

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very low temperature, 650°C. This, of course, is possible because of the high sodium chloride content. Further details are given in the attached report, including a method used to manufacture high strength lithopone.

This method of roasting zinc sulfide with sodium chloride to form zinc chloride and sodium sulfate should be of interest to us, particularly when considering the National Lead process for making zinc sulfate.

They indicated that lithopone enjoys a wide use in Europe, particularly in Germany, both as exterior and interior finishes because of the lack of competition from titanium interests and also because of the scarcity of wood. Practically all homes are constructed of stone, brick or stucco, and as a result exterior paints assume less importance in Germany than in this country.

They further indicated that there was only one titanium plant in Germany and that this was operated by National Lead Company in cooperation with German interests before the war, but now apparently is completely owned by National Lead Company.

It would appear from the above that National Lead Company's process of making zinc sulfate would be ideal for use in Germany with their zinc sulfide ores, and certainly would change the picture considerably if they eliminated the sodium chloride. Another interesting phase of their process was that they used Turbo Dryers for both the crude lithopone and finished lithopone. These Turbo Dryers are simply vertical continuous process dryers utilizing steam as a source of heat, and apparently are very efficient.

Their general operation of the lithopone plant outside of the utilization of zinc chloride in the strike, and the use of Turbo Dryers is not greatly different from our process. They use no centrifuges for classification, but do use ordinary rake classifiers and hydro-separators. It is of course essential to wash the lithopone because of the presence of a large amount of sodium chloride. For this purpose they use Dorr washers similar to what we have at Coffeyville in the zinc sulfide plant.

Further details are given in the attached report of this meeting, by Mr. Verduin. Attached also is a report by Mr. Craig covering the discussion of lead pigment with Dr. Weber.

C. E. Adams

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Mineral Products Laboratory

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4027 - LITHOPONE

Special Report: Conference with Drs. Weber and Becker
re: Manufacture of Lithopone

Present: C. H. Adams, W. E. Asbeck, F. C. Verduin, Dr.
Erich A. Weber and Dr. Fritz Becker

Dr. Weber and Dr. Becker are technical representatives from Germany in the Lead Pigment and Lithopone industries, respectively. The following is a summary of the information obtained in discussion with Dr. Becker on the German production of Lithopone.

Germany apparently does not have a source of primary zinc ore. Their zinc is obtained as a secondary metal from pyrites. The pyrites is first roasted to produce SO_2 for sulfuric acid manufacture. The residues are then further processed by the lithopone manufacturer to recover the zinc values. The slag is roasted with salt according to this reaction:



There was no discussion about the purification of the zinc liquor.

The crude lithopone is prepared by striking with barium hydrosulfide liquor.



Obviously their strike is therefore made and conditioned in the presence of a considerable concentration of sodium chloride. This necessitates a much more elaborate washing cycle than we employ, and for this they use Dorr thickeners. They do not dry either their crude lithopone slurry or their wet-milled lithopone slurry in rotary kilns, but in special "Turbo-Dryers". Dr. Becker was very enthusiastic about the operation and efficiency of these machines. The Turbo-Dryer is essentially a vertical, rotary, multiple tier, segmented pan arrangement. Turbo fans are mounted in the center of the dryer with the pans rotating around the fans and steam coils at the periphery. The fans move the air across the steam coils and thence over the surface of the pans. They are top fed and one scraper on each tier drops the lithopone to the next level.

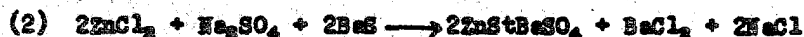
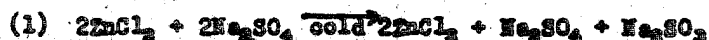
Because of the effect of the salt in the strike, they cannot make high oil absorption grades by control of calcination. They calcine only to obtain maximum testing strength. Their calcination temperature is around $650^\circ C$. They do not in fact make high oil absorption grades

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because there is no market for them. At one time they made a high oil absorption lithopone by a simultaneous strike technique, but were unable to establish a market for such a product.

They also make a high strength lithopone containing about 60% ZnS, but by a different technique than used in this country. By cooling their zinc liquor they freeze out approximately 50% of the sodium sulfate. This is then reacted with barium liquor to obtain a 60% lithopone.



From the 60% grade they then make two types of lithopone of various strengths; viz.: 50% ZnS, 40% ZnS, etc. One type is made by blending the high strength lithopone with single strength. The second type is made by blending the high strength lithopone with natural barytes. The second type has a lower oil absorption than the first.

Classification of the wet-milled product is obtained with rake-classifiers and hydroseparators. They do not as yet employ centrifuges for lithopone classification in any of their plants. Because of the limited time available, we did not get a picture of their dry milling equipment.

There is apparently only one titanium plant in Germany, which before the war was co-operated by National Lead Co. and German interests, but now is owned completely by National Lead. This lack of competition from titanium results in a wider application of lithopone to paints in Germany. Lithopone is used in both exterior and interior finishes. However, because of the scarcity of wood, practically all homes are of stone, brick or stucco construction; and exterior paints assume less importance in Germany than in this country.

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F. C. Verduin:ff

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