Research Center Mineral Prod. Res. Lab.

Cleveland Auxiliaries January 5, 1962

J. V. Hunn

File

MINERAL PRODUCTS RESEARCH LABORATORY
WEEKLY REPORT—WEEK OF JANUARY 1-5, 1962 (also includes Dec. 27,28,29, 1961)

TITANIUM DIOXIDE COLORED

We had previously established that a well-mixed slurry of nickel carbonate, antimony oxide and titanium dioxide would produce a good pigment. This week we tried a number of dry blending and dry ball milling variations to see if the slurrying and filtering step could be eliminated. These experiments were not successful. All samples of pigment produced with a dry mix were much paler in color than those with a slurry. One more experiment in this series is in process but not complete as yet. In this experiment, the dry ingredients are blended in a Mikro Pulverizer. Results will be reported next week.

Also, a great deal of work was done with the Color Eye on comparisons of Titan Yellow pigments calcined at different temperatures, and for different lengths of time. Intensity of color goes up almost linearly with temperature in the 1000-1100 range, but dominant wavelength is virtually the same for the entire range. Density of the pigment also rises steadily with temperature.

ZINC OXIDE COPPER REMOVAL

Anaconda fume was heated at higher temperatures and longer times than before with zinc chloride, but the copper was immovable. Within the next week or so, we will have completed all the variations we can think of with respect to the volatilization method, and will abandon it unless we or someone in Coffeyville or Cleveland can suggest some new variations to try.

LEAD SULFIDE UTILIZATION

Darrell Spencer, who has been in charge of this project, is leaving the company and has spent this week preparing a writeup of his accomplishments. These will be circulated when complete. Meanwhile, some of the samples of kiln runs for this project were examined, their visual appearance noted and discussed. A memo was written giving details of this, and has been sent out under separate cover.

LITHOPONE NONTOXICITY

A literature survey was made indicating that lithopone is safe and nontoxic. On Dec. 22, a report was sent out covering this. Since then, we have received photostats of several pertinent articles in this field. The most important is the U.S. Public Health Service pamphlet, "The Biological, Hygenic and Medical Properties of Zinc and Zinc Compounds" (44 pages, 1945.) In brief, this confirms our Dec. 22 report.

CHROMATED LEADED ZINC.

Study of this project has just been resumed.

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cc: SBC GFW VRH MVL

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May 24, 1962

5. BARIUM HYDROXIDE.

Several points remain to be studied on the improvement of the barium hydroxide process. Coffeyville has used stronger sulfide liquors recently and believes this has improved the conversion. It is not known how far this process can be carried and what would be the maximum concentration at which we could operate. We can try out higher strengths of barium sulfide solution and learn the effects. We will also do some further study and consideration of the possibility of using ammonia as an intermediate in a new process for manufacturing barium hydroxide.

On the chloride modification, two or three additional recyclings will be made to extend our series, which is now seven cycles in length, to show the continuing reactivity of recycled copper oxide.

6. ZINC OXIDE COPPER REMOVAL.

This project will be continued and worked up into a process whose recoveries and losses can be estimated more closely than at present. The possibility of recycling the cyanide solution will be proved or disproved, as well as the determination of material balances. Anaconda fume as well as Bunker Hill fume is to be tried.

7. VANADIUM ANTIMONY TITANIUM GRAY.

Additional experiments will be made to find how to make this material in the rotary kiln. A summary of other available colors and our present status on each of them will also be prepared.

8. LEADED ZINC OXIDE - COLORED.

A proposal will be worked out and submitted concerning colors which might be developed.

9. SODIUM HYDROSULFITE (SODIUM DITHIONITE).

As a high priority item, a brief survey will be made of the chemistry and economics of manufacturing sodium hydrosulfite with zinc oxide as a by-product. A report will be written and submitted, and a possible future experimental program will be presented.

10. BARIUM CARBONATE.

Although Coffeyville is to have the major responsibility for making a technical and economic study of the various processes for barium carbonate, our laboratory will cooperate with this and help in any ways which may be appropiate.

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