J. V. Hunn

CONFIDENTIAL

Chicago — Auxiliaries Research

Coffeyville

J. B. Beckmar

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du Pont Lithopone

I am sending this letter under confidential cover in order to protect the source of information in case he has been somewhat previous in disclosing the possibility that du Pont may go out of the lithopone business in the very near future. It would be rather untimely for us to advertise this thing when du Pont is in a position to help us in obtaining new business should they discontinue operation.

I am told that we will be given preferential consideration, both as regards to customers and method of manufacture should they discontinue operation. Naturally we don't want to jeopardize this position by disclosing prematurely, particularly to our customers, that they may not be able to get du Pont lithopone in the very near future.

I believe you will be interested in some of the things that were told me as regards their manufacture. This information was from a salesman who has had 8 years of experience selling and 13 years experience before that in the lithopone plant, so I believe it is reliable from a know-how standpoint, and knowing the source, I believe we heard it straight.

du Pont owns 2 lithopone plants. I am not sure, but I think one of them has now been discontinued. These two plants differ materially as to calcination, and the reason for keeping the one plant over the other is based entirely on this phase, as will be mentioned below.

1. du Pont controls body of their lithopone largely through striking. Some variation is produced through change in temperature of calcination, but this is supposed to be minor.

2. Strike is made in small tubs, electrically controlled, requiring little or no supervision when once set for the given type of strike. It apparently is reliably automatic. The strike is simultaneous but he did not state the pH at which struck.

3. A portion of the struck material is recycled through the strike tank. This gives them a better material and more uniformity. As a matter of fact,he mentioned very specifically that they could run the liquors through the strike tank so fast that no precipitate would occur. I think you have noticed this tendency also with barium sulfide and zinc sulfate. The kinetics of the reactions are apparently on the slow side.

4. The sodium chloride content in the strike is very carefully controlled. This may be adjusted up or down to control body. The barium liquor is the main source of extraneous sodium chloride and this is checked regularly as a guide in addition. Very little sodium chloride is present

in their zinc liquor. They seldom add other agents to the strike liquors. In the past they have used cobalt and apparently do even at the present time to control light resistance. During the war this practice was discontinued temporarily.

5. The strike is finished in the large tubs using nickel as an indicator. This is not altogether clear, as he did not elaborate on the processing, but the strike is continuous and not batch.

6. From the large finished tub the liquor is pumped direct to the filter. No thickeners are used; from the filter it goes to the drier. I did not discuss with him the type of drier they used on their crude cake, but he did mention that it left a good percentage of moisture (no specific amount stated) on the dried crude cake. This no doubt is comparable to ours.

7. At this point the two plants formerly in operation differed. One used a large calciner, the other several small calciners. The plant with the large calciner was shut down and the other one retained because it gave them more flexibility of operation, in spite of the fact that it required more control. In other words, they can operate the multiple unit at low production to better advantage than they could the larger one. Their kilns were operated at apparently larger load than what we use, although this comparison is not exact. In order to obtain a maximum load they used a baffle or bridge near the center. Temperatures were kept regularly at 3 points, at each end and near the center. They felt that the hot end and the center were the important controls, and made special effort to see that the heat reached the center of the kiln. In other words, they resorted to the use of steam in order to increase the length of their heat zone. Also, the steam reduced the oxygen.

8. Temperature in general apparently was more constant than ours in that they did not use this to full advantage in controlling body. I gathered, though, that they may operate at a higher temperature than we normally do, although again this may be entirely a question of location of thermocouple. In the center of the kiln it was almost certainly in the bed and I believe also at the ends. This is subject to confirmation, however.

9. All lithopone is treated in the quench box with sodium silicate. They felt this was absolutely essential for proper milling and classification. In fact they were rather specific in indicating that very inefficient classification resulted without dispersion. They used the usual pebble mill, Dorr classifier, and hydro-separator. Roughly, it appears that the average particle size of the hydro-separator overflow material is about 0.2 microns with none over 2 microns. This is based on tests using Stokes law.

10. The hydro-separator overflow is pumped directly to the conditioning tank. They have no thickeners; it is treated in the conditioning tank with sulfuric acid to flocculate. It may be blued at this point also. It is then siphoned off after settling sometimes as long as 24-48 hours before filtering. These tanks would correspond, of course, to our equalizers, with the exception that their use is for dual purpose. Some lithopones settle very fast, others very slowly, depending on the process.

The HR grade is finished with barium hydrate instead of barium sulfide. This removes all soluble sulfates and reduces the soluble salt content to very low value, as you know. It apparently also gives them less hiding.

11. They make several grades. The letter in the name indicates a base material, although I think, like our system, they are inconsistent, as practice has changed things. It appears that from the salesmen's standpoint, and present usage, that they would limit their grades to not more than 2 or 3. I don't believe this would be followed in actual practice. Their salesmen indicates that the preferred grade for emulsion paints is the HR type, and the HDW type is not too important from a sales angle, but they do make it because of their past demand. Actually, I don't think it would be this simple even if they stayed in business, so whatever is said about grade doesn't have too much meaning at the present time, and suffice it to say that they probably would prefer just the HR, the HDW, and possibly one other grade. The soap treated J treatment has very little demand.

I was rather surprised about the comments on HDW. Admittedly, it reduces the washability and is used largely to reduce milling and to give body and whitening power. The W treatment, I am sure, is pyrophosphate. The HC treatment was not disclosed, but is not altogether an equalizer treatment; in fact, to my surprise, some of the organic treatments are given in the equalizer. It costs them about 2 cents a pound to make the HDW grade. The profits from this material are considerably less than regular material. I gathered that they do not do too much organic treating, but HC may be an exception in addition to their J treatment, but he was reluctant to discuss this. The big difference in our plant, outside of the thickeners and sodium silicate treatment, is in the drier and milling. Drying is done by special type of screen drier at low temperature, using spent steam as a source of heat. A rough sketch of this is attached. Their filter is a part of a drier, as you will note. Possibly you have a name for it, but I rather think the drier is a special design of their own. The screen is made out of aluminum, but they have used other things in past years.

12. Milling. To my surprise, milling is considered the least important to them. A Stedman mill or micropulveriser is equally satisfactory. Raymond mills are taboo and were discarded years ago as unnecessary and undesirable. Their micropulveriser, which is what they use rather than the Stedman for dry milling, is equipped with a special 1/8 inch round hole screen. Herringbone screens are too fragile and unnecessary. The round hole screen is made heavier than what we use. It was indicated that milling is so unimportant that they may go for hours or days before discovering a hole in the screen. In other words, they consider processing as the important controlling factors in texture and in milling. He repeatedly said that our lithopone was much harder and difficult to grind than theirs.

He mentioned that to improve the hiding power of lithopone they might use as much as 1/2% bentonite. The claim was made that this was very effective and not considered an impurity. I think this is worth trying along with bentone, although the use of either one of these must be treated cautiously, as bentone, at least of the 34 type, cannot be used in emulsion paints. The less reactive type possibly could. Bentonite can be used. I suspect that the EC treatment involved bentonite, but this is only one phase of it. Their preference for emulsion paint is the HR grade.

I probably will be talking to this salesman again in the not too distant future, and I will try to pick up more details on various phases here. I am sorry that I can't be more definite, but he was not willing, at this stage of the game, to disclose exactly their procedures.

I hope that the above doesn't confuse more than clarify.

C. H. Adams
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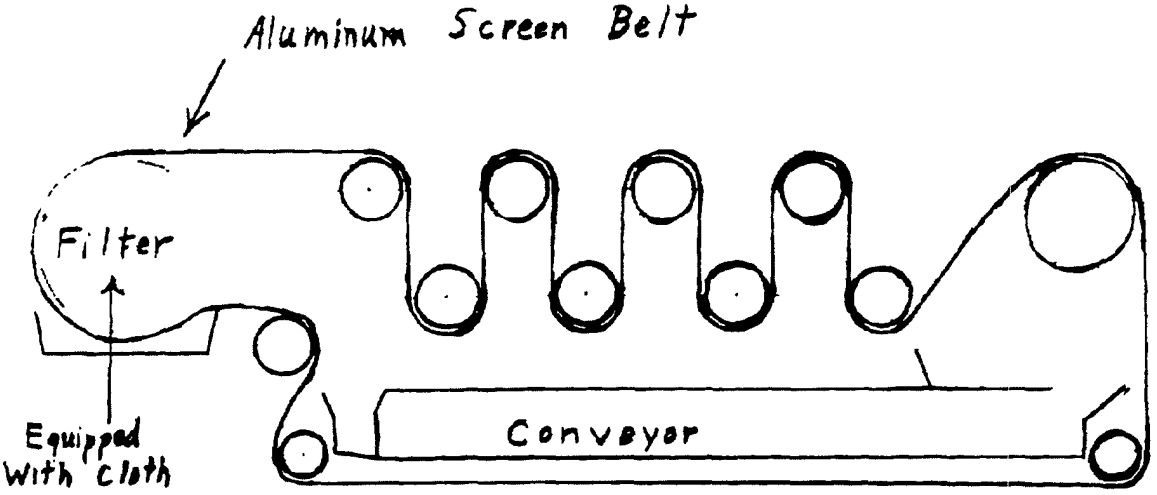
CHA:ff

cc: SBC, Jr. JVH GPW CED

Finish Drier (Crude Sketch)



can be an Oliver Filter