

Chicago

Auxiliaries Research

St. Louis

PC and C

August 31, 1953

H. B. Caywood

Davis Paint Company
Lithopene

August 7 and August 20, 1953

We have made an attempt to try to run down the potential cause of Willard's trouble on lithopene, in that he gets very bad settling with our lithopene in their Perch and Deck Enamel. To complete the record, he has indicated also that he has on various occasions run into similar trouble with du Pont's lithopene. This settling trouble is also apparently coupled with residue on the roller mills on various occasions. Our attempt, therefore, to solve the problem, has been directed toward using a finer lithopene, such as Bird lithopene, to eliminate the residue, and in the hope also that the finer particle lithopene might delay settling, realizing that once fine lithopenes, or any other pigment settle, the settled portion usually is harder than the coarser material. The Bird lithopene did not seem to eliminate all of his trouble, although the last information seems to be directed principally at settling rather than residue.

As you will recall, Mr. Vasterling sent us the following materials with the idea of trying to run down the potential cause:

- 1 gal. Floor Enamel, filled July 30, AURL 26160
- 1 gal. Vehicle, AURL 26160
- 1 gal. Permalith 4QMR7 Bird, Lot C5386A, AURL 2616A
- 1 gal. Permalith 4QMR7 Bird, Lot C5386C, AURL 2616B

The two lots of lithopene represent the material that was included in the carload to them. The one gallon of Floor Enamel is typical of the type of settling they get. Mr. Vasterling has indicated that the vehicle is a modified Phenolic, 22 1/2 gallons long, approximately 80% Oiticica, 20% Linseed with Beckmets 1106, and that he uses Lead Manganese and Cobalt Naphthenate Driers. The label analysis shows

Pigment	34.9%	(Lithopene 100%)
Varnish	65.1%	(Ester Gum - Tung - Linseed 50% NVH)

From this information we have built up the following formula:

35.4	9.86 Gal.	Lithopene
14.2	19.4 Gal.	Varnish X-168
51.8	70.8 Gal.	Varnish X-168
6.75	.90 Gal.	Lead Naphthenate 10%
1.6	.23 Gal.	Manganese Naphthenate 2%
Total 103.15	101.30 Gal.	
T.Wt./Gal. 10.20		

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You will note from the above that no suspension/agent, however, was used in these paints. Due to the comparatively low viscosity which we obtained, we thought that bad settling would result; however, much to our surprise, after 11 days, the lithopones tested are in surprisingly good condition. The following lithopones were tested:

1. Permalith 4QMR7 Bird, AURL 2616A
2. Permalith 4QMR7 Bird, AURL 2616B
3. Permalith 4QMR7, AURL 943 (Lot 03400) (This is typical of the old 4QMR reduction.)
4. Penolith FL133, AURL 2553
5. Penolith NR8, AURL 2563
6. Penolith LR142, AURL 2265

As a control we also used a pint sample of the thoroughly mixed gray enamel which was submitted. After 12 days all the laboratory samples which were ground on the roller mill at 5 to 5 3/4 Hegman grind show surprisingly good suspension properties, with no settling in the bottom, with the exception of the Penolith LR142 which shows slight soft settling. In most cases the pigment was still in contact with the surface, but in some cases there was a slight film of clear oil on top. In the case of the gray Porch and Deck Enamel, it had again, as Mr. Vasterling indicated, settled rather badly in the bottom to a tight gummy condition, which was difficult to bring back into suspension.

I must admit that we were surprised that the lithopone, without the addition of a suspension agent, did not settle in this vehicle, even though the consistency was quite low. We cannot from the basis of this work, determine the cause of the settling problem which Mr. Vasterling is experiencing. There are several things that lead us to believe, however, that it is not in the lithopone. Most important of these is that none of the lithopone samples settled. We will, however, hold these lithopone samples indefinitely to see if they do settle. As I indicated above, our experience has been that the Bird lithopone settles somewhat slower, but once it settles, it, like any fine pigment, will be harder than a coarser pigment.

In order to try to run down the cause of the trouble, we are wondering now whether or not Mr. Vasterling is experiencing this trouble in all colors, or whether it is peculiar to the gray. What we are thinking about here is that the pigment manufacturers, in some cases, in order to eliminate floccing and floating, have resorted to the use of treatment of certain pigments. Since black pigments are notoriously bad for floating, we are wondering if the black used in this paint might not be the source of the trouble. If the settling condition is typical to all colors, of course this would be eliminated.

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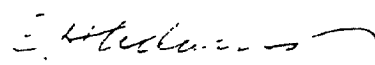
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The second suggestion that we have is similar to this in that it is based on the extended usage in the last few years, particularly of treating varnishes with silicones to obtain certain desired effects. This, as we have found to our sorrow in many cases, results in many undesirable properties while eliminating certain undesirable properties. Hence, the reason I ask if the trouble is not limited to the grays, could it be that silicone is being used as a treating agent in the varnish? This certainly could cause bad settling.

I would like to point out also that of the 3 du Pont lithopone samples tested, and these are recent samples, one did show some tendency toward settling, while none of the other samples, including our own, showed this tendency.

The fact that Mr. Vasterling has indicated that the trouble is rather elusive and occurs periodically indicates to me that it might very well be the fault of some agent being used. This would parallel the same trouble we had in lithographing where silicones were used. It made it very difficult to run down the final cause.

We will hold the samples of paint for further test on settling, and if anything develops we will let you know. In the meantime I think it might be wise to talk this over again with Mr. Vasterling to see if another cause might not be found for his trouble. If you or Mr. Vasterling feel that additional work should be done in testing lithopone in their vehicle we shall be happy to do further work, but until we get similar conditions here it will, of course, be difficult to run down.


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