

Chicago

Auxiliaries Research

Coffeyville

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J. B. Buchner

"EC-type" Lithopone

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As you know, there has been a considerable demand on the part of our Sales Department, backed up by customer requests, to supply a grade of lithopone similar to Pemolith EC and ECW. Based on a considerable amount of work done here in the laboratory, we now feel that we should be in a position to make such a type providing we have the necessary base for treatment. This would also satisfy the problem we have been working on for National Gypsum; and, I am sure, would be a better answer than the so-called No. 1. This statement is based not only on the fact that National Gypsum was using Pemolith ECW previously, but also on tests of our laboratory preparations of the ECW type made up in their formulation.

After trying a considerable number of treatment variations, we have found that the calcium silicate treatment appears to give the best results and produce a lithopone most nearly like Pemolith EC (and Albalith 362). Among other things, the calcium silicate treatment seems to produce a considerably higher degree of high-dry-hiding than does, say, an aluminum silicate treatment at the same silicate level.

In addition to the particular type treatment, I think we agree that several other things are necessary. The base lithopone should be an especially good 60H, low in soluble salts. After treatment the lithopone must be washed sufficiently to remove the bulk of the sodium chloride formed by the treatment, as well as any excess soluble calcium. This is very important. Finally, the lithopone should receive a less intensive milling than we use for our regular grades. This probably also means that we should take care during drying to avoid any hard caking or sintering.

Following is a brief summary of the conditions of the treatment which we have been using in the laboratory to produce this type of lithopone.

Conc. of lithopone slurry	40% Solids
or	575 gms./L
3-Grade sodium silicate	
5 addition, lithopone basis	5.06%
(as SiO ₂ lithopone basis)	1.25%
Diluted: 200 gms. (original soln.) per liter.	

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Calcium Chloride		
5 addition, lithopone basis		0.58% CaCl_2
Conc: 100 gms./l CaCl_2		

Example:		
Lithopone	1000 gms.	
Slurry		2500 gms.
8-Grade sodium silicate	50.6 gms.	
Diluted Solution		253 ml.
Calcium Chloride	25.8 gms.	
Solution		58 ml.

or 7.7 gms. $\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$.

I do not believe it is important whether the sodium silicate be added full strength or diluted. It was simply convenient for us to handle it in the diluted form in the laboratory. However, we would suggest that you use the same concentration of calcium chloride. During addition of the calcium chloride, agitation should be sufficient to provide good and rapid mixing. High speed or "turbo-type" agitation is probably undesirable. The rate of addition of the calcium chloride should not be too rapid and will depend upon the efficiency of the mixer.

In the laboratory, of course, we filtered on Buchners and we used 600 grams of wash water per kilo of lithopone (dry basis). Using this amount of wash, our finished lithopones gave specific resistance values of 4,000 - 5,000 ohms. I suppose the amount of wash you will need will depend on the washing system available to you. Whatever it is, we feel definitely that it ought to give you a finished lithopone with a minimum specific resistance of at least 3,500 ohms.

You will note that we have specified 8-Grade sodium silicate rather than F-Grade. Our work has indicated that there is not too much difference in the results obtained between the two grades, but it is a little in favor of the 8-Grade. It requires a little less calcium chloride and less time, even if only slightly, the problem of washing out the residual soluble salts.

We hope that you will be able to find time to make a trial run on this type of lithopone in the near future. If it proves satisfactory, we should be able to take care of National Gypsum, as we indicated previously, by addition of 0.4% of tetrasodium pyrophosphate.

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Incidentally, are we correct in assuming that the proper code for this new lithopone would be W-660 for the HD type and W-661 for the BCW type carrying the added pyrophosphate? I hope we have covered everything of importance, and if not, we suppose you will call it to our attention.

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