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A-IIC-261 AJS - 75%
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AQUEOUS MILLING CPC

REPORT FOR THE PERIOD
SEPT. 20, 1951 TO OCT. 18, 1951

One additional laboratory trial of Pluronic F-68 did not add materially to the previous information that it is an interesting agent, but not quite as effective as Blancol. This problem is being deferred under the pressure of more urgent development problems.

Three attempts to make linoleum lakes from pastes containing 10% or more Blancol were not successful. Since control lakes did not reflect the observed strength of the aqueous pastes, there is some suspicion of the laking technique. At present it can only be concluded that the successful preparation of linoleum lakes requires intensive study when typical pastes are available in quantity.

No additional work has been done on the use of low borax to pigment ratios but this deserves large scale study, which will be required to balance the cost of the required cycle against the increased pigment charge.

The sample of chlorine-free CPC crude crystallized by exposure to toluene, is 100% beta form in contrast to 60% beta form in the original. The crystals, as observed in the electron microscope, appear to be better formed, but only slightly larger than the original. In each case there is evidence of many very small particles.

On grinding these two materials in typical aqueous grinding procedures, there appears to be little evidence of any significant difference in grinding rate. The finished dispersed pastes from the crystalline material appear slightly weaker and distinctly greener than those from the original which is in line with the previously known characteristics of beta CPC (Blue BG). Perhaps an attempt should be made to obtain really large crystals before conclusions are drawn as to relative ease of grinding crystalline CPC vs ordinary crude CPC.

Experiments have been started to show whether it is possible to disperse a CPC ground with a small amount of agent by adding more agents in a subsequent mixing step. The results are not complete, but there is some evidence of marked improvement on the addition of the agent after grinding. Whether it will be equal to the use of the agent in the grind is not yet clear, and whether an acceptable WD lake can be made in this way remains to be shown. However, the possible simplification of process makes it worthy of careful study.

New samples of both CPC-LB and CPC Green crudes have been examined in the HF process in the laboratory. The new sample of current green crude is essentially like the previous sample now being used. The new sample of CPC-LB gave slightly weaker and slightly greener dispersed pastes than the previous sample, but the differences were not great. It suggests that further observation of the response of various lots may be in order.

The second series of semi-works grinds on CPC Green with 5% Blancol and re-use of borax was inferior to the first series. Since the final sample has not yet been tested, final conclusions cannot be drawn.

Two semi works grinds were made in succession, using 10% Blancol. The control tests indicate excellent strength and intensity with maximum strength in about 2 hours. The final samples are not yet tested.

During the course of this work, a method has been developed for estimating borax in borax sludges and in slurries. Though the method is somewhat empirical, it seems to give reproducible results. The procedure involves a titration with standard acid to a sharp pH deflection point close to a pH of 4.1. It has been possible with this method to account for substantially all the borax charged to a given system and to show its partition between the pigment slurry and the borax sludge. It has also been shown that the Blancol has a negligible effect on this titration.

During this period the new 100 gal. HF unit in 10 Bldg. became available for operation, and one run has been completed to the point of the extraction of the pigment. The work may be summarized in steps as follows:

1. The Cowles Dissolver was operated with an 18 inch toothed disc. It requires a considerably larger charge than the direct scale-up from the 14 Bldg. unit. The charge was added in increments to a total of 70 lbs. of pigment and could be larger. With this charge, the load approached full usage of the 30 HP motor. Because of the incremental charging, the time of grinding is not fully significant. Nevertheless, maximum strength was achieved in about 1-1/2 hrs. after the last crude was added. Further grinding did not seem to increase strength. The strength achieved was somewhat better than that of the sample of aqueous milled GT-675-P submitted to Pabco in September. It is concluded that the Cowles Dissolver performs as anticipated.

2
The charge was easily pumped through the Jabsco pump to the dilution vat. Subsequent charges should be divided between two of the 225 gal. vats available in order to realize more dilution and better settling. The equipment for pumping to the rake classifier is inadequate and the situation was temporarily resolved by pumping into a 5 gal. agitated head tank over the classifier. Some difficulty was experienced in getting a complete separation in the classifier, but it was possible to remove a borax sludge of close to 70% borax content by means of intermittent operation of the rakes. The operation as carried out was not at all satisfactory, but the problems seem to be mostly mechanical and the general attitude is one of optimism that the process will be successful.

Titration of the slurry indicates a borax content of about 7.5 gm per 100 gm of slurry or a total of about 160 lbs. of borax lost. This compares favorably with experience in 14 Bldg. operation; but the laboratory has done considerably better.

Extraction of a portion of the borax sludge yielded about 5.2 gm of pigment solids per pound of sludge. This approximates 10% of the pigment remaining with the borax, which is a reasonable figure for one decantation

Quality results reported above were based on laboratory extractions of control samples. The final slurry is being studied in the laboratory, but results are not yet available.

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