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NEWARK, N.J.

PIGMENTS DEPARTMENT

NOVEMBER 3, 1950.

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NOV 8 1950

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SPECIAL GRINDING STUDIES

A-II-C-261 - 55%

The following summarizes the work on special grinding studies in October. The work has been nearly all related to aqueous milling and covers both HF and ball mill studies.

An evaluation of the properties in alkyds of some of the better samples made by HF milling in water was disappointing in that they were poor in both strength and resistance to flocculation.

The comparison of hot and cold HF grinds with Blancol and Borax showed small differences but tended to favor the cold grinds.

Several of the Hypodynes were tried as grinding aids and showed no promise when used alone. When used with Blancol, there was some slight evidence of benefit. Methyl cellulose showed no interest as a grinding aid when used alone.

Three samples of CMC were evaluated and gave results similar to Blancol with little differences between the samples. These samples, as pastes, are easily redispersed in dilute NH_4OH and show some promise as dispersed colors. This is being studied further.

Ball Mill Studies on Blue

Continuing the work previously reported on ball mill grinding with Blancol and borax in water, the process has shown good reproducibility, but the ultimate strength reached is considerably below that desired and somewhat below the best obtained by HF milling. The peculiar advantage obtained with the combination of borax with Blancol has been confirmed, though there is some evidence that similar advantages can be gained by replacing the borax with tetra sodium pyrophosphate or with trisodium phosphate. The advantage is also apparent with some other agents than Blancol, but none of these agents have equalled Blancol in over all value.



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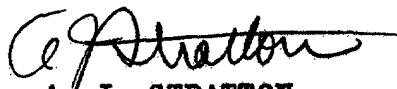
In applying the process to different crude pigments, very poor results were obtained with a crude known to contain a high amount of kerosene. Poor results were also obtained with a phthalonitrile baker crude.

Ball Mill Studies on Green

The qualitative benefit of a combination of borax and Blancol in aqueous grinds has been shown on green as well as on blue. For the first time an actual strength increase above the crude has been obtained in aqueous grinds of green. However, they are still far from the desired goal. TSP is probably just as good as borax in these grinds. 25% acetone does not give much better grinds than water plus Blancol.

Miscellaneous

Electron micrographs have been obtained on several typical water ground samples as well as on standard BT-304-D. Although none of the pictures show the resolution of individual particles which would be desirable, it appears that some of the aqueous ground pigments have a fairly uniform particle size, at least as small as that of standard BT-304-D. This is directly contrary to the evidence on strength which shows 15-20% weakness. Some of these samples have been submitted for surface area measurements before final conclusions are drawn.


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