Newark, New Jersey
March 7, 1951

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DR. J. H. COOPER (3)
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HF MILLING

During February, all of the studies on HF milling have been concentrated on aqueous milling in the presence of Blancol and borax with most of the actual work being directed toward the preparation of the water dispersible Green GWD (GP-511-D). Some attention has also been given to the preparation of the dispersible pastes BT-321-P and GT-689-P and to the linoleum lake BL-288-D.

The method of determining degree of grinding, or particle size reduction, by means of light scattering measurements through transmission curves on the spectrophotometer continues to be of great help in evaluating the grinds being made. Dr. Hanke feels that the method can be extended to a means of estimating the CPC content of dispersible products and a start has been made in this direction with encouraging results. More firm points of departure obtained by a considerable number of conventional analyses will be required before the method can be considered reliable; but the advantages will be tremendous if it can be established.

Filtration of the ground slurries from the borax on the porous stainless steel funnels continues to be interesting but some difficulties have arisen. It seems probable that the success of the operation depends to a considerable extent on the degree of grinding and on the concentration. With poorly ground products, sufficient dilution to give rapid settling of the borax seems to be required and any considerable bed of borax tends to retard filtration seriously and to remove the pigment to some extent. On the other hand, well ground products filter well at fairly high concentrations. There is some evidence that conventional filter cloth may function in a very similar manner, if settling and decantation are practiced.

Studies have been made on the re-use of the borax after decantation and/or filtration with encouraging results both as to quality of the pigment and the over-all loss of borax. However, this operation must be considerably extended before success can be assured.

One laboratory series on Green GWD from Crude Green PC suggests that successful grinds can be obtained with considerably less Blancol than is now employed in GP-511-D. It also appears reasonable to hope that products of considerably higher CPC concentration can be made if they are desirable.

During this month, seven semi-works grinds were made directed toward GP-511-D. A number of variables were studied originally aimed at obtaining data for the design of a plant unit. However, it soon became evident that it would not be possible to specify conditions with any assurance without considerable study; so the immediate efforts at plant design have been discontinued. Nevertheless, these semi-works charges have given much valuable evidence and the work will be continued.

As noted above, efforts at filtration through porous stainless steel have been fraught with difficulties. One attempt with the use of a bayonet filter during agitation was not successful. On the other hand, dilution to approximately 2 or 2-1/2 times the original volume permitted very effective decantation through a filter press.

Viscosity and power consumption seem to be directly related, and the effectiveness of grinding seems to improve with high viscosity. This property has not as yet been adequately studied; marked changes in viscosity can be effected by varying the amount of water added and the temperature of grinding.

The rate of grinding in the semi-works has been somewhat disappointing, requiring 4-5 hours to approach the degree of grinding readily obtained in one hour in the lab unit. However, the pigment loading is considerably higher than a direct scale-up and the over all capacity seems to be satisfactory, if a four hour cycle can be achieved.

Near the end of the month, a shipment of Newport Crude Green paste was received and tested in the lab. This paste has been found to contain a substantial amount of hard pellet-like particles, some of them 1/8" or more in diameter, which are not ground in the normal cycles. It is suggested that these pellets probably originate in the rotating drier and have never been effectively extracted. In any case they must be eliminated if crude green paste is to be used in this process.

A. J. Stratton JHC

A. J. STRATTON
CHEMICAL DIVISION

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