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J.H.C.

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AQUEOUS GRINDING OF CPC

Report for period Nov. 16, 1951 to December 12, 1951

During this period active study of the preparation of a CPC Green dispersed paste to replace GT-675-P has been continued in the 100 gal. Cowles unit and accessory equipment. Three additional charges have been made (or a total of 8) and all charges have been finished to pastes ready for standardization. No unexpected problems have been encountered in these operations.

A decision was rendered by Sales to standardize these products at the brushout strength level of GT-689-P (22% solids at present) in the hope that the new product will replace both GT-675-P and GT-689-P. Such a standardized paste has been prepared in the laboratory at 16.6% solids. Preliminary brushout tests indicate that the solids should probably be slightly higher (perhaps 17% to 17.5%). The product is blue and intense vs. the present standards. As noted some months ago, high strength brushouts (20-25% color in TiO_2) do not exhibit the excellent strength shown by the weak brushouts. The significance of this observation is not yet clear. In any case, the proposed sample is being given a careful evaluation in uses in aqueous systems by the Sales Service laboratory.

The operation of the Cowles unit has continued to be satisfactory in every respect. The 22 inch smooth disc has given full utilization of the power available, except in the last run in which the inadvertent addition of too much water resulted in a power consumption of about 20-23 H.P. Some limited evidence suggests that this disc does its effective grinding rather rapidly at high power consumption, but does not accomplish any more than the 18 inch Cowles disc. This concept agrees with laboratory evidence of a maximum degree of grinding when 10% Blancol is used.

In the last batch made, fresh borax was used to compare the degree of grinding to that obtained with re-used borax. Unfortunately, the addition of too much water makes it necessary to discount the results when available. No tests have been completed as yet.

The operation of the rake classifier has developed into a rather routine procedure. There has been some difficulty in maintaining uniform flow to the classifier, but this is believed to be strictly a mechanical problem. Arrangements are being made to introduce a small vacuum filter box at the end of the classifier trough in an attempt to get a drier sludge.

Flocculation with Diphenyl Guanidine during the acid extraction step has continued to give good filtration, and the quality of the batches tested has been quite uniformly of the high level reported previously.

The recovery of pigment in this process has been low for reasons which are not yet clear. In the first 7 batches, 520 lbs. of CPC Green crude was charged to the system together with 52 lbs. of Blancol and about 30 lbs. of DPG. The recovered solids in these 7 batches total 425 lbs., about 85% based on crude pigment or 73% based on total solids charged, when one adds an estimated 15 lbs. of recycle solids remaining in the borax sludge. There has been no evidence of significant pigment loss at any stage in the operation, except once when the classifier was washed out. One is forced to suspect that the crude is highly impure or possibly that some of the pigment is being destroyed in the process. Analyses of in-process samples are now under way in an effort to define the problem.

In these same 7 batches the consumption of borax has averaged 2 lbs. per lb. of crude charged. Although this includes some known losses, it is probably a fair average figure for over-all usage.

A preliminary calculation of costs has been undertaken by the Newark Plant Technician, but the final figures are not yet available.

The charges ground thus far have included four different batches of Newport crude Green. Although there are differences in the final results, they are not large, and it appears that all have been successfully ground.

In standardizing this material for consideration for sale, the pastes have been diluted to the desired solids content, preferably put through a colloid mill to disintegrate small lumps of paste which do not readily break up on simple agitation, and thickened with $BaCl_2$. From 1% to 2% $BaCl_2$, based on total solids, is required (more than this gives too stiff a paste). Such products have shown no settling and little water separation on standing.

A laboratory study has confirmed previous evidence that the use of DPG to flocculate the Blancol causes a loss in strength, which may be as much as 10%. However, filtration in the absence of DPG is impossibly slow. The obvious goal is to find a means of re-activating the Blancol during the standardization step, but nothing has yet been done on this.

A laboratory study of different crude greens confirmed the plant evidence that different lots of Newport green gave comparable results. It also confirmed reports from Jackson Laboratory that Orchem eutectic crudes gave poor results in this method. There was an excessive amount of recycled material in the borax and the ground paste was below the expected strength level.

The semi-works has started the study of grinding CPC-LB in this

process and the spectrophotometric transmission curves on two grinds suggest that excellent particle size reduction had been obtained. No other tests have been completed on the samples.

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