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GRINDING STUDIES
HF PROCESS

This will represent an informal progress report on the grinding studies which will henceforth be known as the "HF Process" adopting the terminology used by the group at Orchem.

Some studies have been made on each of the three products currently of interest in the CPC program. With chlorine free blue, no phase change has been obtained so that the products have been more red than current LB standards. The best product is close to BT-284-D in strength but considerably weaker than BT-304-D.

The best green obtained to date is from an old Orchem eutectic crude and approximates the strength of GT-486-D which is 20-25% less than has been obtained from this same crude. A rather poor Newport crude also showed about the strength of GT-486-D and more or less the same quality as previously shown in a ball mill.

Most of the effort has been given to grinding Blue LB and a strength level only 5-10% below BT-304-D has been attained. The hue is quite close to standard.

It is believed these results fully justify the urgent attention which has been given this problem, but the experimental details point to the probability that there is no easy solution to the attainment of the last few percent of required strength.

The following variables have been studied to some extent but it is obvious that the few experiments have only scratched the surface.

1. Grinding medium - Other conditions remaining constant NaCl has given much greater strength than sand. Shot cannot be suspended at the speed commonly used. At a much higher speed it gave results similar to NaCl.

2. Pigment-acetone ratio - Within the limits studied thinner slurries give better grinding.

3. Time of grinding - In common with other methods, the rate of grinding curve is steep during the first hour and then tapers off sharply. It has not been carried beyond 3 hours but appears to be still rising at that point.

4. Some variations in speed have been made but no conclusions are possible.

Aside from the above conclusions resulting from systematic studies, it is clear that there is much to be learned about the conditions in the mixer. The action is peculiar and very poorly understood. With adequate cooling there is very little solvent evaporation but heat will develop rapidly in the absence of cooling.

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