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NEWARK PLANT
PIGMENT COLOR RESEARCH REPORT

GT-347-D: PLANT AND SEMI-WORKS DEVELOPMENT
AND STANDARDIZATION OF INCREASED BATCH SIZE
ECONOMY FORMULA K-2294.

Period Covered: November 1944 - April 1946.

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NEWARK PLANT

PIGMENT COLOR RESEARCH REPORT

Final Report

Title: GT-347-D: Plant and Semi-Works Development and
Standardization of Increased Batch Size Economy
Formula K-2294.

Period Covered: November 1944 - April 1946.

SUBMITTED BY: E. J. Hess *E. J. Hess*

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APPROVED BY: J. O. Morrison *J. O. Morrison*

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INTRODUCTION

The small batch size and consequent high making labor cost on PTMA (phospho-tungsto-molybdic acid) pigments made it desirable to investigate ways and means of lowering costs.

A general laboratory survey showed that savings in the order of 10-12 cents per pound could be realized by increasing the batch size to 2 or 2 1/2 times the existing standard size. In most cases this necessitated increase in dye and precipitant solution concentrations when using available plant equipment but, in general, color quality was only very slightly affected.

The green toner, GT-347-D (a PTMA toner of the dyestuffs Brilliant Green B and Thioflavine TCM in about a 2:3 molar ratio), falls into the group in which the entire saving is based on the increased batch size.

SUMMARY & CONCLUSIONS

After successful trial in the Semi-Works a formula based on a batch size 2 1/2 times that of the former standard, K-9689, was taken to the plant.

Over-all quality and yield performance has been fairly satisfactory although some slight difficulty has been encountered with dull tints. This has been a chronic problem with GT-347-D production for a considerable period, however, and is not a result of the use of the economy formula.

A new standard GT-347-D formula based on this work has been written and coded K-2294 replacing K-9689.

The new standard sample, Lot 8448, is composed of three plant batches made on the K-2294 procedure and compares with the previous GT-347-D standard as follows: Lot 8448 vs lot 38175: lt - vs dull - vs wk - s dull; light stability: OK.

The plant took over supervision of production by the K-2294 procedure in April, 1946.

DISCUSSION OF RESULTS

As there had been no preliminary laboratory work on GT-347-D the first Semi-Works trial was based on general experience in the laboratory on PTMA colors plus consideration of plant equipment volumes. A two fold increase in the dye concentration and a 25% increase in the precipitant concentration gave a product that was a close check to a control batch made on the K-9689 formula. Both of the Semi-Works batches made were slightly strong and clean in tint and somewhat better in light fastness versus the GT-347-D standard.

A trial run of two plant batches was then made; both were finished as GT-69-P, the pulp counterpart of GT-347-D. Some trouble was encountered with low pH of the PTMA complex in the first batch and this was corrected for by a 5% cut in acid. A slight improvement in cleanness of tint was obtained with the normal PTMA complex pH of 1.0 (low acid formula).

The first three batches of dry color processed in the plant averaged equal in strength and slightly dull in tint compared with the standard, lot 38175. It was from these three batches that the new GT-347-D standard, lot 8448, was prepared.

The majority of the twenty five batches of dry color reported were made using the low acid figure. There was some fluctuation in pH of the PTMA complex solution, with indications that the standard acid amount was about as good as the lower acid figure as a starting point for controlling the pH.

Rubout strength on most of these batches was fairly close to standard (5% weak to 5% strong) but tints were mostly slightly dull. Variations in hue from slightly blue to slightly yellow are probably a result of slight variations in dye quality.

Experience with these batches show that it will be necessary to carefully control the pH of the PTMA complex within the formulated range in order to lower the possibility of obtaining very weak or very dull tint products.

The K-2294 formula differs from the previous K-9689 procedure as follows:

1. The batch size is increased to 240# equivalent to 2 1/2 times that of K-9689. This is pressed in a full press in 11 Press (22 1/2 cubic feet pressing volume).
2. The dye solution concentration is doubled.
3. The PTMA complex solution concentration is increased by about 25%.

Most of the plant manufacture has been made on a .9 standard batch size (216#) to fit a more frequently available press (12 Press; 18-20 cubic feet pressing volume).

EXPERIMENTAL DETAILS:

DSN-46-38.