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NEWARK PLANT
PIGMENT COLOR RESEARCH REPORT

RT-427-D ECONOMY PROCESS. SEMI-WORKS AND
PLANT PRODUCTION.

Period Covered: December 1945 to August 1946.

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NEWARK PLANT

PIGMENT COLOR RESEARCH REPORT

Progress
Final Report

Title: BT-427-D ECONOMY PROCESS. SEMI-WORKS AND PLANT
PRODUCTION .

Period Covered: December 1945 to August 1946.

SUBMITTED BY: O.J.C. Klein

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INTRODUCTION

This report describes semi-works and plant development work done on K-2244, a 3.97 mol size laboratory formula for RT-427-D which showed a saving estimated at about \$0.10 per pound in total mill cost.

SUMMARY AND CONCLUSIONS

1. A new plant formula, K-2275, based on the laboratory K-2244, was developed.

2. A new plant standard, SD 48474, (lot 47998) was established. Evaluation by the Sales Service Laboratory gave the following grading to the new standard versus the old standard SD 47868 (lot 29049)

<u>Massstone</u>	<u>Strength</u>	<u>Tint</u>	<u>Light Fastness</u>
a. light, yellow	vvs strong	trace yellow	equal

3. The long-standing difficulty with lightness, dullness, and yellowness of massstone continued in the development of the economy formula, but performance on the new process is more or less equal to the old. The new standard, however, should be more nearly representative of current production.

EXPERIMENTAL DETAILS

One semi-works batch, made on the laboratory formula K-2244, was a reasonable check to the standard then in use (lot 29049), so plant production was begun immediately afterward, on December 13, 1945. Thirty-two plant batches were made under development supervision.

The laboratory formula K-2244 differed from the previous standard formula K-2079 as specified below.

- (a) Doubled batch size.
- (b) Reversed coupling (beta-naphthol into diazo).
- (c) Decreased coupling volume, (allowing the increase in batch size).
- (d) Omission of filtration of diazo solution.
- (e) Substitution of sulfamic acid for urea.
- (f) Slight decrease in beta-naphthol from amount used in K-2079.
- (g) Elimination of about 3.6 mols of hydrochloric acid per mol of pigment.

The standard formula K-2275 which was evolved differed from K-2244 in the following details, without noticeable effect on tinctorial properties:

- (a) Nitrite was reduced from 284 pounds to 279 $\frac{1}{2}$, to reduce the amount of sulfamic acid required.
- (b) Beta-naphthol was increased from 560 to 568 pounds, to reduce over-large diazo excesses.

The Abbe-Lenart mixer was used on the first plant batch to slurry the PCONA, but in all subsequent batches the PCONA was slurried in the diazo vat in the normal manner.

Because of the large batch size, filtration was carried out in four press-loads. Considerable differences were noted among the tinctorial properties of the different portions from the same coupling, probably due to difference in completeness of washing and in drying time and temperature.

Goal yield determinations on K-2275 gave 1269 pounds, while the plant average for 31 batches was 1237 pounds, or 97.5% of goal.

The standard mix was made of material manufactured under plant supervision after the development program was completed.

Further details on the batches made in this study may be found in DSN-46-46.

REFERENCES

- KN-46-75. Laboratory development of K-2244.
- KN-45-72. Economy Study; Red Toner RT-427-D, Laboratory, Semi-Works and Plant.
- KN-43-172. Red Toner RT-427-D. Ingredient and process savings.
- KN-40-247. Substitution of crude PCONA for "Lithosol" Acid PCO in RT-427-D.
- KN-40-7. Plant Production, RT-427-D.
- DSN-46-46.

GLOSSARY

- RT-427-D. Pigment dyestuff - a coupling of diazotised Para chlor ortho nitraniline and Beta naphthol.
- DSN. - Development Section Notebook.