

E. I. DU PONT DE NEMOURS & COMPANY
PIGMENTS DEPARTMENT
256 VANDERPOOL STREET
NEWARK, NEW JERSEY

RECEIVED OCT 11 1945

NEWARK PLANT
PIGMENT COLOR RESEARCH REPORT

Final Report

SCARLET TONER DYE, TONER AND LAKE, RT-488-D & RM-473-D
SEMI-WORKS AND PLANT STUDY

Period Covered: January 1944 to September 1945

FILE: 222.25

DATE: 11-19-45

KN-45-70

22.25

Serial No. KN-45-70

Copy No. 1

Copy to:

- #1 - Numerical File
- 2 - Research Office (222.25)
- 3 - Library File (222.25)
- 4 - #10 Building File
- 5 - Imperial Chemical Industries, Ltd. } Not sent to
- 6 - " " " " } ICI copies destroyed
- 7 - " " " " } 4/18/46
- 8 - D. H. Dawson, Newark Rec'd 11-26-45

NEWARK PLANT
PIGMENT COLOR RESEARCH REPORT
Final Report

Title: SCARLET ZYLN DYE, TONER AND LAKE - RT-488-D & RM-473-D
SEMI-WORKS AND PLANT STUDY

Period Covered: January 1944 to September 1945

SUBMITTED BY: V. Chalupski

DATE SUBMITTED: 10-29-45

V. Chalupski Nov 15, 1945

APPROVED BY: V. Chalupski

DATE ISSUED:

11-19-45

INTRODUCTION

During this period, dye manufacture was largely confined to the semi-works, because of poor quality of a few batches of dye made in the plant in 1943 and 1944. Pigment was manufactured in both the semi-works and plant; the toner process, while not entirely duplicable, for the most part reflected the quality of the dye used. A number of plant batches, made with good quality semi-works dye, gave super standard pigment. Much of the pigment made was converted to the lake, RM-473-D, by dry mixing.

Because of production limitations, the Chambers Works informed us that they could no longer supply 2YLN intermediate or dye; because of this, early in 1945, it was decided to convert all existing dye, good and bad, to toner and to dispose of this material. When this has been accomplished it is planned to obsolete RT-488-D and RM-473-D, neither of which are profitable items.

SUMMARY AND CONCLUSIONS

The following are discussed in this report:

- 47 batches of toner made in semi-works.
- 19 batches of toner made in plant.
- 22 batches of dye made in semi-works.
- 2 batches of dye made in plant.

Twenty-four semi-works batches of toner, varying in size from 60 to 180 lbs., were made from dye purchased from Orchem. This dye was supplied as 2YL, but its quality was actually satisfactory as 2YLN. All of the semi-works batches of toner were satisfactory in quality. The basic formula was the standard, K-1436, but using the dye on an analyzed basis, which actually means an increase in amount of dye, and a 25% decrease in amount of calcium chloride. Discussion of these formula changes may be found in the previous research report KN-44-52. A number of batches were made with increases in the rosin (25 and 50%) in order to obtain darker masstone. A number of other variables - slight changes in dye concentration, reduction in amount of rosin, and reduction in development temperature showed no positive results.

Fourteen semi-works batches were made to test and consume a number of plant batches of dye. Most of these batches of pigment were inferior to standard, reflecting dye quality. Attempts to improve quality by changes in toner formulation were not successful. Nine semi-works batches were made to test the quality of semi-works batches of dye. All of these were dark, strong and blue, as desired.

Plant production of toner during this period may be summarized as follows:

- 2 batches made with Chambers Works dye - Satisfactory quality.
- 5 batches made with Semi-Works dye - " "
- 4 batches made with mixture of Semi-Works and Plant dye - Fair quality.
- 8 batches made with sub-standard plant dye. - Poor quality.

The base toner formula used in the plant toner was the same as in the semi-works, as described above. No important formula changes were tried. Slurrying of the dye in the Abbé Lenart mixer was found to be convenient in plant operation.

Two batches of dye were made in the plant late in 1944. These were made in a vat not suited for the purpose and this may have been the reason for poor quality. Because of this, dye manufacture was transferred to the semi-works. Most of the semi-works batches were made with 2% of para-toluidine-ortho-sulfonic acid as an accessory agent to obtain dark, strong, blue material needed for shading sub-standard toner. As indicated in the previous discussion, all of this dye was quite satisfactory in quality.

It may be concluded that dye manufacture in the semi-works at 125 and 250 lb. batch sizes is under fair control, but satisfactory control has not been achieved in the plant. The toner formula used during this period, while not giving good duplicability, seems to follow the quality of the dye fairly well, and if large production could be maintained, standardization could be achieved if good dye were available. Quality of the lake RM-473-D depends on the quality of the RT-488-D from which it is made.

EXPERIMENTAL DETAILS

For details on dye manufacture see Development Section Data Book DSN-45-13. For details on toner manufacture see DSN-45-14.