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NEWARK PLANT
PIGMENT COLOR RESEARCH REPORT

RT-357-D DEVELOPMENT AND STANDARDIZATION
OF ECONOMY PROCESS, K-2301.

Period Covered: November 1944 - July 1946.

FILE:

DATE: 11/27/46

Serial No. KN-46-80

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NEWARK PLANT

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Final Report

Title: RT-357-D DEVELOPMENT AND STANDARDIZATION OF
ECONOMY PROCESS, K-2301.

Period Covered: November 1944 - July 1946.

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DATE SUBMITTED: Nov. 15, 1946

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Nov 26, 1946

DATE ISSUED: 11/27/46

INTRODUCTION

The formerly prevailing small batch size and consequent high making-labor cost on PTMA colors made it necessary to investigate ways and means of lowering costs. In the case of RT-357-D, increase in batch size together with slight ingredient changes have effected savings in the order of twenty five cents per pound.

SUMMARY AND CONCLUSIONS

The laboratory economy formula, 1112-230, was set up on a batch size approximately three times that of the regular plant procedure, K-1090. Increases in the PTMA and dye concentration and slight adjustments in the dye and the molybdate-tungstate ratio were also introduced.

After satisfactory Semi-Works trials a number of plant batches were made to check the laboratory formula. Quality performance was fairly satisfactory.

Based on a decision to set up a "free-flowing" standard, a candidate mix of plant production, lot 8139, treated with 3% Diphenyl guanidine, was evaluated. This material showed better ink consistency characteristics than RT-392-D (the original "free-flow" standard) but an objectionable "oil bleed" resulted. Lowering the DPG content to 2% by mixing in more untreated toner gave satisfactory ink consistency and oil bleed. This mix, lot 8198, was set up as a new RT-357-D standard on October 30, 1945. A comparison of the new versus the old RT-357-D standard follows:
lot 8198 vs lot 33842: lt, a dull - vs blue - vs wk - a blue, dirty
Light fastness: equal

A formula based on the above was written and coded RT-357-D standard, K-2172.

In subsequent manufacture, difficulties with weakness and blueness of tint made it necessary to apply corrective measures (the strike temperature was decreased from 180°F. to 170°F). A new standard formula was written on this basis and coded K-2301.

The plant accepted supervision of RT-357-D manufacture on July 1, 1946.

DISCUSSION:

The laboratory economy formula, 1112-230, differed from the standard, K-1090, as follows:

1. The batch size was increased to three times that of K-1090.
2. A 66% cut in the PTMA volume and a 54% cut in the dye volume was used to fit plant equipment.
3. The dye amount was cut by 3%.
4. The tungstate-molybdate ratio was cut from 51.2 - 1. to 16.6 - 1.

A check to laboratory 1112-230 in the Semi-Works finished up dark in masstone but otherwise close to the laboratory product and about 5% strong, blue, slightly dull in tint versus the RT-357-D standard, lot 33842. A 5% cut in dye gave a product slightly weak versus the standard.

The first three plant batches were close checks (ignoring masstone which is unimportant in PTMA colors) and averaged 5% stronger and very slightly yellower and duller than the RT-357-D standard.

The addition of 3% DPG (ground in) in the next three batches gave lighter masstone products which were equal in strength but bluer and duller than the standard and weaker, bluer and duller than untreated control samples. Material of this type is stronger and yellower than RT-329-D (light, weak, blue type Rhodamine toner) and RT-392-D (DPG treated RT-329-D). The objectionable linseed oil bleed with the 3% DPG treatment made it necessary to shade this material with untreated toner.

Subsequently, a 2% DPG treatment was found to give desirable ink properties at the expense of only a slight deficiency in oil bleed, and lot 8198, a composite of five plant batches treated with 2% DPG was set up as the RT-357-D standard on this basis.

Production on the K-2301 formula subsequent to standardization gave fairly high "OK straight" performance. Of the eighteen batches made under Development Section supervision, fifteen or 83% were satisfactory to ship straight.

RT-329-D and RT-392-D have been obsolete in favor of the new RT-357-D pigment.

EXPERIMENTAL DETAILS

DSN - 46-50

GLOSSARY

PTMA: Phospho- tungsto-molybdic acid complex.

RT-357-D: A PTMA toner of Rhodamine 6GDN ground with 2% DPG.

RT-329-D: A PTMA toner of Rhodamine 6GDN (lighter, weaker and bluer than RT-357-D).

RT-392-D: RT-329-D ground with 5% DPG.

DPG : Diphenyl guanidine.

Rhodamine: 6GDN; Rhodamine 5GDN plus a small amount of Auramine.

Rhodamine: 5GDN: Similar to Color Index 752.

Auramine: Color Index 655.