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NEWARK PLANT
PIGMENT COLOR RESEARCH REPORT

ECONOMY FORMULA FOR RT-521-D, K-2296
(Mn toner of Tobias Acid → BON).

Period Covered: October 24, 1945 to April 29, 1946

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NEWARK PLANT
PIGMENT COLOR RESEARCH REPORT

Final Report

Title: ECONOMY FORMULA FOR BT-521-B, K-2296
(In toner of Toluic Acid $\rightarrow$ BOW).

Period Covered: October 24, 1945 to April 29, 1946

SUBMITTED BY: A. D. Reidingen

DATE SUBMITTED: June 24, 1946

APPROVED BY: *A. D. Reidingen*
A. E. Brisselers

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INTRODUCTION

As a means of effecting economies in the manufacture of Maroon Toner RT-521-B, it was proposed to modify the coupling procedure so as to utilize the alkalinity of the Manganese hydrate to promote the coupling reaction. Since the manganese salt of the dye would probably be formed simultaneously, the dilution and acidification in the present formula, K-2128 could be eliminated with resulting savings from omission of the acetic acid. It was also expected that use of a lower development volume might be possible with resulting increase in batch size and consequent savings.

SUMMARY

A formula K-2296 embodying the proposed changes was written on the basis of a 2.0 mol plant charge as compared to 0.75 mol for RT-521-B. By alkyl enamel grind, the product obtained in the laboratory was less intense and somewhat bluer and weaker than the current standard. However, it is anticipated that these differences will be lessened in larger scale trials, since some deficiency in these properties was experienced on standard formula during the work on this problem.

Utilization of the formula on a plant scale is predicated on the availability of a larger TON diazo vat. For cost purposes, it has been assumed that one of the present tile lined vats could be used satisfactorily.

DISCUSSION OF RESULTS

The modified procedure consists of running the diazo into the BON solution (the latter containing only a slight excess of caustic soda over that needed to dissolve the BON) and effecting coupling by addition of the manganese hydroxide slurry. The manganese salt is then developed without further dilution by heating to the boil and additional manganese is precipitated with soda ash.

Since the pH of the diazo - BON mixture remains low until nearly all the hydrate has been added, simultaneous coupling and formation of the manganese toner probably take place. Coupling is not complete however until after 1 - 1 1/2 hours stirring at pH 8.3 - 8.5.

The addition of soda ash after development was for the purpose of increasing yield to equal that of the standard formula.

The following variations of the formula have also been studied.

DIAZO

The use of Brocman's acid has the same effect as in the standard RT-521-B formula. The amount used in K-2296 was reduced to obtain a lighter and stronger product.

Since the volume of the diazo would prevent making the proposed charge in the available TON diazo vat, an attempt was made to use lower volumes at a concentration sufficient to permit use of the present equipment, diazos became brown in color and products were slightly duller and weaker.

ORDER OF COUPLING

Addition of diazo to the BON seems to be preferable to the opposite procedure. Tintorial differences were slight but in the latter case, coupling was invariably complete.

ALKALINITY OF COUPLING

Slight increases in alkalinity (above pH 8.4) have not been tried but addition of all the alkali at this point resulted in weak presumably hard products.

ALKALINITY OF DEVELOPMENT

Use of soda ash after development instead of caustic soda resulted in lighter, somewhat more intense products. Softer stronger products were obtained by addition of this point.

TURKEY RED OIL

Use of Turkey Red Oil improves strength and adds to the yield.

Since the mixture of diazo and BON is stronger acid, it is not advisable to add Turkey Red Oil until the manganese hydrate has been run in.

GOAL YIELD

Goal Yield for K-2296 is 1350g as is (containing 4.5% moisture), equivalent to 1290g anhydrous color. This is comparable to 496g containing 5.6% moisture or 468g anhydrous for RT-521-D, K-2128.

EXPERIMENTAL DETAILS

See N.S. 1147 and 1188.

1147-18, 19

1188-6, 9, 11, 13-20, 22-31, 33, 35, 36, 38.