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PIGMENT COLOR RESEARCH REPORT

Final Report

C.P. CHROME YELLOWS Y-404-D, Y-405-D, Y-469-D
REDUCTION IN TEMPERATURE OF DEVELOPMENT

Period Covered: SEPTEMBER 15, 1943 - MARCH 31, 1944.

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Final Report

C.P. CHROME YELLOWS Y-404-D, Y-405-D, Y-469-D
REDUCTION IN TEMPERATURE OF DEVELOPMENT

SEPTEMBER 15, 1943 - MARCH 31, 1944.

SUBMITTED BY: A. D. Reidinger

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APPROVED BY: V. Chalupski

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INTRODUCTION:

Because of the threatened shortage of fuel during the past year and also for the purpose of effecting whatever savings were possible, it was decided to investigate more completely the substitution for the heating cycle employed in the development of some chrome yellows of a stirring period at a temperature lower than now employed. In the case of Y-404-D, Y-405-D and Y-469-D, and related codes, development of the yellow by stirring at the strike temperature of 80 or 90°F instead of by heating to 150-160°F as done at present, would result in a savings of about \$1300 per year (on basis of 1943 production). Previously, reduction in development temperature from 180-200°F to the present point had been made.

SUMMARY & CONCLUSIONS:

Laboratory experiments on slurry samples from plant batches of the three shades of yellow indicated that equal tinctorial properties and equal lightfastness could be obtained at lower temperatures if the stirring time was prolonged. For example, at the strike temperature of 80-90°F, a three-hour stirring period was required to develop the yellow completely. This was especially apparent in the case of the light yellows, Y-404-D and Y-405-D, which undergo a definite change in characteristics during the stirring or heating period. At slightly higher temperatures such as 105-110°F, only 30 to 60 minutes stirring were required.

Plant trials of Y-405-D and Y-469-D, developed by stirring at 80 and 90°F for two hours, which was the maximum time practical, showed greater dullness of masstone and also poorer lithographic bleed than could be tolerated. Poor settling during washing occurred in the case of Y-469-D.

A number of batches of all three codes were then developed at 110°F with stirring times ranging from 60 to 90 minutes for the light yellows and from 30 to 60 minutes for the medium shade. Most of these still showed a slight dullness of masstone.

At 120°F, passable tinctorial properties and satisfactory lightfastness were obtained with fair regularity when the amount of salt used was also adjusted. However, lithographic bleed of many batches was inferior to the respective standards. Although this defect was occurring in production on standard formulas, batches developed at the lower temperatures appeared to be somewhat poorer. Mixes of Y-468-D (Y-469-D) and Y-405-D proposed for replacement standards of these codes were rejected because of lithographic bleed although equal to current standards in other respects.

A definite improvement in this property was obtained in one batch of Y-468-D in which the "L" treatment was made after the third water instead of the fourth. This permits drawing an additional water after the treatment. The fact that the batch was also high speed pulverized may have to be considered.

In the case of Y-404-D, it was proposed to restandardize on the lighter product which is now obtained when unshaded, but inferiority in lithographic bleed made this impossible.

In view of the difficulties in standardization and of the decreased savings resulting from use of the intermediate temperature of 120°F, and because of other proposed changes in the chrome yellow processes, further work on reduction of development temperature was not justified and the problem was closed out.

EXPERIMENTAL DETAILS:

In carrying out this study, 24 batches of Y-469-D, 14 batches of Y-405-D and 11 batches of Y-404-D were made. Process sheets for these are filed in DSN-44-8. For other details refer to the following:

Laboratory work N.B. 1044

Ink evaluations	10680
	10681
	10696
	10701
	10780
	10816

Paint Exposure Tests Series 6806