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

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NEWARK PLANT
CHEMICAL DIVISION - COLORS

BLUE 2R - FROM BLUE LB PLUS VIOLET 4RN

Period Covered DECEMBER 1949 - MAY 1951

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NEWARK PLANT
PIGMENT COLOR RESEARCH REPORT
FINAL REPORT

TITLE: BLUE 2R - FROM BLUE LB PLUS VIOLET 4RN

PERIOD COVERED: DECEMBER 1949 - MAY 1951

CHARGE: A-IC-20

SUBMITTED BY: F. F. EHRICH — DATE SUBMITTED: 7/16/53

APPROVED BY: J. H. COOPER 8/7/53 — DATE ISSUED:

INTRODUCTION:

The original plans for the Pigments Department phthalocyanine plant at Newport called for the eventual manufacture of a red shade of blue similar to that purchased from Orchem as "Monastral" Fast Blue RL and which is sold as the barium rosinate lake "Pocono Blue" BP-243-D.

The imminent non-availability of "Monastral" Fast Blue RL (formerly 2R, co-acid-pasted Blue N plus "Lithosol" Violet) from Orchem for the production of "Pocono" Blue BP-243-D has necessitated the study of a means to produce its equivalent at Newark. Three approaches to this problem were indicated; first, the use of Newport finished Blue LB and Orchem's acid pasted "Lithosol" Violet 4RN both of which are standard raw materials in use at Newark; second, the co-solvent-milling of the respective crudes and third, the combination of Newport finished Blue LB and separately solvent-milled "Lithosol" Violet 4RN (see KN-53-18).

The objective set by Sales for this work was a product which would have a 5% strength advantage, and be slightly red versus standard BP-243-D.

SUMMARY AND CONCLUSIONS:

Rosination of a co-solvent-milled or co-acetone HF milled blend of "Lithosol" Violet 4RN crude with Blue LB (17.5/82.5 ratio) yields strong, intense products versus BP-243-D "Pocono" Blue Lake.

Rosination of a pulp blend of BP-73-P and BP-299-P(E) in a 3:1 ratio (solids basis) yields a "Pocono" Blue lake red and 5% strong against standard BP-243-D. Preliminary cost estimates do not present this product in a favorable light against the present standard process

DISCUSSION OF RESULTS:

Solvent-Milling of Components

Co-solvent milling of "Lithosol" Violet 4RN/Blue LB (17.5/82.5 ratio) in acetone yielded an intense toner product against standard "Pocono" BP-243-D (100 parts=125 parts on equal toner content basis). The 15/85 ratio co-solvent milled product was green and intense. Conversion of the 17.5/82.5 ratio material to a "Pocono" lake yielded a very strong product against standard BP-243-D and against the control (prepared using N-612, Orchem acid-pasted "Lithosol" Violet). The product was also strong against a BP-243-D prepared by laking (rosinating) a pulp mix of separately solvent-milled Blue LB and "Lithosol" Violet. The latter BP-243-D was also distinctly stronger than standard BP-243-D and against the control. "Pocono" lakes

prepared from pulp mixes of separately solvent ground "Lithosol" Violet and Blue LB in a 15/85 ratio were green, intense, and strong against standard BP-243-D.

Acetone appears to be the most desirable grinding medium compared to mineral spirits or 3A alcohol.

As expected, co-solvent-milled mixtures of Blue LB plus "Lithosol" Violet are redder than the corresponding mixtures using chlorine-free CPC.

BP-243-D lakes prepared by blending N-623 (Blue LB pulp) with solvent milled "Lithosol" Violet in suitable proportions and then laking, appear to be fully equal to the standard in ink mill behavior, texture, strength development, and considerably superior in ultimate strength. A corresponding product prepared by laking the co-solvent milled Blue LB/"Lithosol" Violet possesses a marked strength advantage over either of the foregoing but is inferior in rate of strength development. Evaluation in alkyd enamel against the standard shows the product to be slightly stronger, and equal in bleed (baked white overstripe).

HF-Milling of Components

Acetone HF-co-milling of Blue LB crude plus "Lithosol" Violet 4RN crude yielded a product strong against the control using "Monastral" Fast Blue 2R.

Dry Blending

Satisfactory results, costwise, were obtained by dry blending BP-173-D with (E)BP-273-D on the Hoover Muller. A blend consisting of 16.7% (E)BP-273-D and 83.3% BP-173-D was red and 5% strong versus BP-243-D standard.

Alkyd enamels prepared by co-grinding BP-173-D (80%) and (E)BP-273-D (20%) were red and 10% strong versus standard BP-243-D. Three different plant lots of (E)BP-273-D were used. Such dry blends present a satisfactory cost picture.

Pulp Blending

Plant pulps of BP-173-D (BP-73-P, sodium rosinate process from N-623) and (E)BP-299-D (pulp of BP-273-D, ammonium rosinate process from N-612) were blended so as to obtain the goal product 5% strong and sl red against standard BP-243-D. A product containing 25% of the violet lake and 75% of the blue lake (dry basis) proved to be red and 5% strong (170 parts-180 parts) against BP-243-D standard. The masstone was vvs dark against this standard.

Attempts to prepare the goal "Pocono" Blue lake (5% strong and sl red against standard BP-243-D) by rosinating blended pulps

of N-623 (Blue LB) and N-612 (acid-pasted "Lithosol" Violet) required one part of violet (dry basis) to three parts of blue (dry basis). The product was 10% strong and sl red against standard BP-243-D.

Semi-works Studies

A modified BP-243-D ("C" formula) "Pocono" Blue Red Shade Lake has been prepared in the Semi-works Abbe'-Lenart mixer from a pulp mix of plant production of BP-73-P (Pulp of BP-173-D) and BP-299-P (pulp of (E)BP-273-D) using a 3:1 solids basis ratio. The starting BP-73-P (dried) was intense, sl green to green and 101:100 in strength against BP-173-D standard, and the BP-299-P (dried) was v blue, sl dull, and 97:100 in strength versus BP-273-D standard. The resultant BP-243-D(C) was vvs green, vs intense and 5-6% strong against standard BP-243-D. Costs are discussed in JHC's letter to DBK (4/18/51)(see appendix).

EXPERIMENTAL DETAILS:

The work summarized in this report is recorded in the following notebooks:

NB-1357
NB-1358

jc

K-13368

FORMULA SHEET

COLOR CODE BP-243-D(C) DATE 5/28/51 NAME "Pocono" Blue Red Shade K-

OBJECT Manufactured from pulp mix of BP-73-P and BP-299-P(E)

BASED ON Lab 1378-11

BATCH SIZE-MOLS. BATCH No. OF "K" SAMPLE Lab. 1378-12

LBS. OR GMS.	MATERIAL	100% WT.	GAL.	C. C.	MANIPULATION	No.
2721	BP-73-P (25% solids)	680.25			Place in 1 gal. Abbe'-Lenart mixer	
974	BP-299-P(E) (23.27% solids)	226.63				
500	Water			500	Mix until a smooth paste is obtained. Add water as necessary to permit good mixing.	
					Run into pans.	
					Dry at 140°F	

PACKAGE

GOAL YIELD LBS. PER 90% gr.

COST GROUP 20 SIGNATURE F. F. Ehrich

DUP050069360