KN-53-30 FLOCCULATION RESISTANT PHTHALOCYANINES - II: TEXTURE IMPROVEMENT By: S. F. Kudzin 6/52 - 7/53

Serial No. KN-53-30

Copy No. 5

E. F. KLENKE, JR., NEWPORT

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

NEWARK PLANT
PIGMENT COLOR RESEARCH REPORT
Progress Report

FLOCCULATION RESISTANT PHTHALOCYANINES II - TEXTURE IMPROVEMENT

Period Covered: JUNE, 1952 - JULY, 1953

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NEWARK PLANT

CHEMICAL DIVISION - COLORS

Progress Report

FLOCCULATION RESISTANT PHTHALOCYANINES II - TEXTURE IMPROVEMENT.

JUNE, 1952 - JULY, 1953.

CHARGE: A-II-C-278, 303.

SUBMITTED BY: S. F. Kudzin

APPROVED BY: J. H. Cooper 9/1/53

DATE SUBMITTED: 7/24/53

DATE ISSUED: 9/15/53

INTRODUCTION:

In an earlier report (KN-53-29) three processes were described for the preparation of flocculation resistant phthalocyanine toners. All of the resulting products exhibited extremely poor texture, as manifested in inferior roller mill dispersion in ink and in alkyd.

This report deals with the improvement in texture realized with one of the products described in the aforementioned report, viz., the co-synthesized toner consisting of 93-95% Blue LB, and 7-5% CPC monosulfonic acid. This type of product has been designated "Monastral" Blue BNF.

Three approaches were investigated in attempts to improve the texture of Blue BNF:

I - Treatment of the Blue BNF slurry (N-739) with agents prior to drying.

II - Treatment of the Blue BNF slurry by laking.

III - Modifications in the milling operation of the BNF crude.

SUMMARY & CONCLUSIONS:

I - Treatment of N-739 with various agents prior to drying was found, in practically all cases, to be ineffective as a means of improving the texture of "Monastral" Blue BNF.

II - A "Ramapo" treatment of Blue BNF, similar to that employed in the preparation of BP-173-D, effected a pronounced improvement in texture. The resulting product, coded as BP-366-D, was only slightly inferior to BL-282-D and BP-173-D in texture. In money value it showed a marked advantage over BL-282-D.

III - Incorporation of various agents into the acetone milling of Blue BNF failed to improve the texture of the final products.

The substitution of solvents such as carbon tetrachloride, perclene, orthodichlorobenzene and trichlorobenzene for acetone in the milling operation resulted in a Blue BNF of superior texture.

Salt and dispersion milling of Blue BNF yielded products of good texture.

PATENT STATUS:

Nothing of a patentable nature has been disclosed by this work. The preparation of soft phthalocyahine powders by intimate association with various metallic rosinates is covered in U. S. 2,173,699, issued 9/19/39 to A. Siegel of DuPont.

DISCUSSION:

I - The relative effectiveness of various agents incorporated into a BNF slurry prior to drying is best illustrated by the following table:

TABLE I

EFFECT OF VARIOUS AGENTS ON THE TEXTURE OF BLUE BNF

*GRIT ELIMINATION IN #1 TRANS.

PIGMENT/VEHICLE = 20/30

AGENT	1T	3T	5T	7T
CCl_4	5	6-1/2	6-3/4	6-3/4
Naphthalene-TEA-C_{12} ester	6	6-3/4	7	7
$(NH_4)_2CO_3$	0	6-3/4	6-3/4	7
CCl_4-TEA-C_{12} ester	0	5-1/2	6	6-1/2
Diglycol Stearate	0	5	5-1/2	6
Untreated Control	0	4	5-1/4	6-1/4
BT-304-D, SD-90719	6	7	7	7-1/4

RATE OF STRENGTH DEVELOPMENT

	1T	3T	5T	7T	vs	7T
BT-304-D, SD-90719	112	100	100	100		100
CCl_4	v.weak	v.weak	115			167
Naphthalene-TEA-C_{12} ester	v.weak	120	115			130
$(NH_4)_2CO_3$	v.weak	110	105			109
CCl_4-TEA-C_{12} ester	v.weak	120	110			115
Diglycol Stearate	v.weak	115	110			150
Untreated Control	v.weak	112	104			170

*Grit Elimination data are obtained by use of a Hegman gauge calibrated from 0 to 8 in the case of dispersions in #1 Transparent Lithographic Varnish and from 0 to 10 in the case of alkyd dispersions. Progressive improvement in grit elimination is indicated by increased numerical readings.

Varying percentages of the agents listed were employed. Whenever possible, the agent was dissolved and added to the N-739 slurry prior to drying. In other cases, emulsification or colloid milling was used to effect maximum dispersion of the treating agent.

In addition to the agents listed in Table I, the following were also employed and found to be relatively ineffective:

1. Fluffium - a hydrolyzed polyacrylonitrile soil conditioner.
2. p-toluene sulfonic acid.
3. Toluene + TEA-C_{12} ester
4. Barium hydroxide
5. 2-Ethyl hexoic acid
6. Triethanolamine titanate-oleate.

II - The following tables illustrate the effectiveness of the "Ramapo" treatment when applied to Blue BNF.

TABLE II

TEXTURE IN SYNTEX 40

RATE OF GRIT ELIMINATION.

PIGMENT/VEHICLE = 20/60

	Mill Base				Enamel	
	1X	3X	5X	7X	3X	7X
BP-366-D	2-1/2	5-1/2	6-1/2	7	6	6
Blue BNF(DBT-348-D)	1	1-1/2	3	3-3/4	2	4
BL-282-D	4	5-3/4	7	7-3/4	6	6-1/2
BP-173-D	5	7	8	8	7-1/2	8
BT-284-D	1	1-1/2	2-1/2	3-3/4	4-1/2	6

RATE OF STRENGTH DEVELOPMENT

	3X vs 7X	7X vs 7X (BT-284-D)
BP-366-D	5% weak	equal
Blue BNF(DBT-348-D)	20% weak	v.weak (20%)
BL-282-D	equal	vs weak
BP-173-D	equal	equal
BT-284-D	10-15% weak	-

One of the more important variables in the "Ramapo" treatment of Blue BNF was found to be the nature of the precipitating ion. Thus, the following table shows calcium to be the preferred precipitant.

TABLE III

RATE OF GRIT ELIMINATION IN #1 TRANS.

PIGMENT/VEHICLE = 20/30

	Met.Ion	1T Sep.	1T Neg.	3T Sep.	3T Neg.	5T Sep.	5T Neg.	7T vs BP-173-D Sep.	7T vs BP-173-D Neg.	7T
1	Al	7+	4	10	6-1/2	10	6-3/4	10	7	125:100
2	Ba	7-	5-1/2	10	6-1/2	10	6-3/4	10	6-3/4	115:100
3	Zn	10	7	10	7	10	7-1/2	10	7-3/4	115:100
4	Mg	5	4-1/2	10	6	10	6	10	6-1/4	165:100
5	Ca	10	6-1/2	10	7	10	7	10	7	105:100
6	BP-173-D	10	7-1/4	10	8	10	8	10	8	100:100

RATE OF STRENGTH DEVELOPMENT

1	v.v.weak	12% weak	equal	100
2	v.v.weak	10% weak	1% weak	↓
3	15% weak	equal	equal	
4	v.v.weak	10% weak	2% weak	
5	10% weak	2% weak	equal	
6	2% weak	equal	equal	

A determination of the lower limit of rosinate essential for satisfactory texture was carried out. As the following tables illustrate, percentages of rosin approaching those specified for BP-173-D were found to be necessary:

TABLE IV

TEXTURE IN #1 TRANS.

PIGMENT/VEHICLE = 20/30

% Rosin	1T	3T	5T	7T
5	1-3/4	4	5-3/4	6
10	4	5-1/2	6	6
25	5	6	6-1/2	6-1/2

Further investigation demonstrated the preferred conditions to consist of striking at room temperature followed by development at the boil. pH adjustment after the strike had no detectable influence on the nature of the final product. Physical conditioning of the slurry after the strike, e.g., homogenization or colloid milling, provided only a minor advantage over an untreated sample.

The preferred product, BBP-366-D, prepared according to the procedure appended, showed a marked advantage in money value over BL-282-D as can be seen from the following table:

TABLE V

Relative Cost Per Volume of Paint at Equal Strength

Product	Lacquer	Syntex 55 (Ball milled)	Syntex 40 3X	Syntex 40 7X
BBP-366-D	1.1755	1.0511	1.657	1.437
BP-173-D	1.00	1.00	1.00	1.00
BL-282-D	1.3166	1.3503	2.129	1.846

III - Acetone milling of Blue BNF in the presence of various agents was found to be ineffective as a texturing treatment. In all cases the final product dried as a hard bronzy material, dispersible in ink or alkyd systems only with difficulty. The following agents were tried:

1. Nopco 2125 - Ethylene oxide condensate ex Nopco Chem. Co.
2. Trimethyl ammonium chloride.
3. Victawet 12 - A nonionic wetting agent of the general formula. ex Victor Chem. Works.

$$R\text{-}O\text{-}\underset{\displaystyle OR'}{\overset{\displaystyle OR'}{\overset{|}{\underset{|}{P}}}}=O$$

4. Polyoxyethylene lauryl alcohol.
5. Ethofat C/15 - reaction product of coconut oil acid with 5 moles of ethylene oxide, ex Armour & Company.
6. Sta-sol - Soya Lecithin ex A. E. Staley Company.
7. Nitrobenzene
8. Carbon tetrachloride.
9. Indulin - lignin from Pine wood ex W. Va. Pulp & Paper Co.
10. Acetoacetanilide.
11. Dow Corning Fluid No. 200 - silicone polymer ex Dow Corning Corp.
12. Perclene + Span 80 - latter being sorbitan mono-oleate ex Atlas Powder Company.
13. Triethanolamine titanate - oleate ex Du Pont.

The failure of various agents and treatments subsequent to the milling operation aroused suspicion as to the effect of the milling per se on the texture of Blue BNF. Consequently, solvents other than acetone were used for BNF milling. The most promising results, summarized in the following tables, were obtained with carbon tetrachloride, Perclene, ortho-dichlorobenzene and trichlorobenzene.

TABLE VI

TEXTURE TESTS IN SYNTEX 40

PIGMENT/VEHICLE = 20/60

RATE OF GRIT ELIMINATION.

BNF	MILL BASES				ENAMELS	
MILLED IN	1X	3X	5X	7X	3X	7X
Acetone	1	4	4-1/2	5-1/4	4	5
CCl_4	7	8	8-1/2	9-1/4	7-3/4	8
Perclene	7	8	8-1/2	9-1/4	7-3/4	8
ODCB	6	7-1/2	8	8-1/2	7	8
TCB	7	8	8-1/2	9	7-1/2	8-1/4
BL-282-D	4-1/4	6-1/2	7-3/4	9	7	8
BP-366-D	2-1/2	7	7-1/4	8	6-1/2	7
BT-284-D	1	2	2-1/2	3-3/4	2	4

RATE OF STRENGTH DEVELOPMENT

BNF MILLED IN	3X vs 7X	7X vs BP-366-D at 7X*
Acetone	20% weak	20-30% weak
CCl_4	10% weak	7-8% weak
Perclene	5% weak	vs strong, green
ODCB	5% weak	vs weak, green
TCB	10% weak	10% weak
BL-282-D	10% weak	5% weak, red
BP-366-D	5% weak	- - -
BT-284-D	10% weak	10-15% weak, red

*Compared on an equal toner basis.

TABLE VII

FLOCCULATION RESISTANCE AND COLOR READINGS

IN GE-2454

BNF MILLED IN	FLOCCULATION RESISTANCE*(1)	COLOR READINGS*(2)
Acetone	9W	equal, green
CCl_4	7W*	equal, green
Perclene	7W	equal, green
ODCB	7W	equal, green
TCB	8W	vs weak, green
BL-282-D	8W	Control
BP-366-D	6W	equal, green
BT-284-D	3S	very weak
BT-348-D, Lot 0	7W	equal, green

(1) Tested by rubbing.
(2) Sprayed portions were read.
* The following numerical system has been used to designate the degrees of flocculation observed:

10 - no color change
8 - slight color change
6 - considerable color change
4 - bad color change
2 - v.bad " "
0 - extreme " "

S = strong, i.e. rubbed area is stronger than sprayed area (i.e. flocculation).

W = weak, i.e. rubbed area is weaker than sprayed area (i.e. flooding).

Increase in strength on rubbing is the phenomenon commonly associated with flocculation, whereas flooding is recognized by a lighter (i.e., weaker) rubbed portion. It was demonstrated that flooding, in the case of CPC, is essentially the reverse of flocculation. Consequently, it is possible to combine a flooding pigment with one that flocculates in proportions that are empirically determinable and obtain a product that is flocculation resistant.

Kerosene, water, ethyl alcohol and mixes of acetone + kerosene and acetone + carbon tetrachloride were unsuitable grinding media.

Further modifications in the milling of Blue BNF consisted of dispersion and salt milling. The following tables summarize the comparative evaluation of Blue BNF toners finished by the methods indicated.

TABLE VIII

GRIT ELIMINATION IN #1 TRANS. PIGMENT VEHICLE = 20/30

METHOD	1T	3T	5T	7T
Solv.Mill (acetone)	3	3	6	6.5
Dispersion Mill	6.5	6.5	6.75	7
Salt Mill	6.5	7	7	7
BT-304-D, Std.	5	6.5	7	7.25

RATE OF STRENGTH DEVELOPMENT.

METHOD	1T	3T	5T	7T	vs BT-304-D 7T
Solv.Mill(Acetone)	v.v.weak	v.v.weak	v.weak	100	v.weak (30%)
Dispersion Mill	v.v.weak	3% weak	5% weak	↓	weak (20%)
Salt Mill	v.v.weak	1% weak	1% weak		weak (15%)
BT-304-D	v.weak	5% weak	3% weak		-

TABLE IX

GRIT ELIMINATION IN SYNTEX 40

PIGMENT/VEHICLE = 20/60

METHOD	MILL BASE 1X	3X	5X	7X	ENAMEL 3X	7X
Solv.Mill(Acetone)	1	2	2.5	3.5	2.5	3.5
Dispersion Mill	3	4	5	5.5	3	4
Salt Mill	3	4.5	5.5	6.5	4	5.5
BT-284-D	1	2	3	4	2	3.5

RATE OF STRENGTH DEVELOPMENT

METHOD	3X vs 7X	7X vs BT-284-D 7X
Solv.Mill(Acetone)	10-15% weak	v.v.weak (40-50%)
Dispersion Mill	20-30% weak	10% weak
Salt Mill	10% weak	10% strong
BT-284-D	15% weak	- -

EXPERIMENTAL DETAILS:

I - Treatment of Blue BNF with Carbon Tetrachloride Emulsified in TEA-C_{12} Ester Solution.

Into a 4-liter beaker was weighed 256 grams of N-739, S.W.3073 (60 grams dry weight). The volume was adjusted to 1200 ml. with water and the slurry then agitated by means of a "Lightnin" mixer. The pH was then adjusted to 5.35 with dilute HCl. The slurry was heated to 90°C and to it was added an emulsion prepared as follows:

1.2 grams of TEA-C_{12} ester was added to 125 ml. of hot water.

The solution was agitated vigorously and to it was added

3.0 grams of carbon tetrachloride.

The mixture was then heated to 90°C.

The resulting slurry was held at 90°C for 30 minutes with continued agitation. It was then filtered, washed free of chloride, and dried at 140°F.

II - Preparation of BP-366-D

A quantity of N-739 equivalent to 100 grams on a dry weight basis was added to an 8 liter jar. The volume was adjusted to 2 liters with water. To the resulting slurry was added a solution of Staybelite rosin containing 31.2 grams of rosin. The slurry was agitated and to it was added, in a dropwise fashion, 120 ml. of a solution containing 12.0 grams of calcium chloride. At the completion of the strike the slurry was brought to a boil and maintained at a boil for 30 minutes. To it was then added 17.8 grams of Blanc Fixe, and the slurry agitated and boiled an additional 15 minutes. The slurry was filtered, washed free of chloride and dried at 140°F.

Plant formula is appended.

Preparation of Staybelite Rosin Solution.

60 grams of Staybelite rosin was dissolved in 510 ml. of water containing 8 grams of sodium hydroxide by heating to a boil. The solution was allowed to cool, and the volume adjusted to 600 ml. with water.

III - Solvent Milling

Use of Agents - A 1/2 pint jar was charged as follows:

600 grams steel shot - 1/8"
12 grams crude Blue BNF
100 ml. Acetone
1.2 grams Indulin

The sample was milled for five days on the semi-works roller mill. It was then screened free of steel shot, boiled till free of solvent, and then acid extracted and finished in the usual way.

Use of Different Solvents. - The procedure in these experiments is identical with that described in the preceding paragraph except for the substitution of acetone with another solvent, and the elimination of the use of agents.

Salt and Dispersing Milling

Salt Milling - A one quart paint can was charged as follows:

16 grams crude Blue BNF
100 grams salt (N-71)
150 grams roofing nails
1500 grams steel shot (1/4" - 1/2")

The sample was milled for 24 hours on the semi-works roller mill. It was then screened free of shot and roofing nails, and extracted and finished in the usual way.

Dispersion Milling - A one quart can was charged as follows:

16 grams crude Blue BNF
135 grams salt (N-71)
150 grams roofing nails
1500 grams steel shot (1/4" - 1/2")
3 grams Perclene
0.15 grams Span 80

The sample was milled for 24 hours on the semi-works roller mill. It was then screened free of steel shot and roofing nails, and extracted and finished in the usual way.

Additional data may be found in the following references:

I - Treatment of N-739 with agents prior to drying:

N.B. 1436

Expt. No. 30 - Fluffium
32 - pH
33 - N-623 + N-639
34 - Acetone
35 - Ammonium Carbonate
36 - p-toluene sulfonic acid
37 - Colloid milling
38 - Toluene + TEA-C_{12}
39 - CCl_4 + TEA-C_{12}
41 - Naphthalene + TEA-C_{12}
43 - " "
44 - Ammonium Carbonate
46 - Diglycol Stearate
47 - Barium Hydroxide
59 - 2-Ethyl Hexoic Acid
64 - Titanium dispersing agents.

II - Treatment of Blue BNF by laking:

N.B. 1436

Expt. No. 40 - 50% Ramapo Lake
42 - Aluminum Rosinate Lake
48 - Ba, Al, Zn, Mg, Ca.
49 - Ramapo + CCl_4
50 - Ramapo + Naphthalene
51 - Blancol + Ramapo
52 - Ramapo - Reverse Strike
55 - Zn Resinate
56 - Ca Resinate
57 - Ca Resinate - Variable Study
60 - Ca Resinate + Naphthalene
61 - Ca Resinate - Variable Study
62 - Ca Resinate - " "
63 - Ca Resinate - " "
65 - ABP-366-D for evaluation
66 - ABP-366-D - pH variable
68 - BP-366-D - money value
69 - BP-366-D - Period of Development
70 - BP-366-D - N-739 vs N-739 homogenized
73 - Lake of lignin sulfonic acid
78 - BP-366-D - ex lot O-5, N-739
82 - BP-366-D - ex lot O-5, N-739 homogenized

N.B. 1452

Expt. No. 14 - BP-366-D ex Orchem samples.
18 - BP-366-D ex crude lots 841-845
19 - BP-366-D ex N-739, lots 6-9
22 - BP-366-D Evaluation

III - Milling Modifications

Agents in the Grind

N.B. 1436

Expt. No. 67 - Titanium Dispersing Agents.
75 - Nopco 2125, trimethyl ammonium chloride.
76 - Victawet, polyoxyethylene lauryl alcohol. ethofat C-15.
77 - Sta-sol, nitrobenzene, carbon tetrachloride.
83 - Indulin, acetoacetanilide

N.B. 1452

Expt. No. 1 - Perclene + Span 80
8 - Dow Corning 200 Fluid.

Use of Different Solvents

N.B. 1452

Expt. No. 10 - Kerosene and CCl_4
11 - Mixed Solvents
15 - H_2O and CCl_4
16 - Ethyl Alcohol and acetone/CCl_4 mix
28 - Perclene, ODCB, TCB
34 - Acetone and CCl_4
35 - CCl_4 and ODCB
57 - Perclene milling
58 - " "
60 - " "

Salt and Dispersion Milling

N.B. 1436

Expt. No. 58 - Salt and Dispersion Milling
71 - Semi-Works Salt Milling
72 - Semi-Works Dispersion Milling
80 - Semi-Works " "

N.B. 1452

Expt. No. 2 - Semi-Works Dispersion Milling
5 - Semi-Works " "

OTHER REFERENCES:

1. Sales Service Report 20-40 and 20-41
2. Exposure Series 10368, 10383

(3607)

U.S. Pat. 2,173,699
2,556,727

CODE: ____ K# ABP-366-D
GOAL: 1312# SIZE:
DIAZO VAT:
COUPLING VAT:
STRIKE VAT: 209, 211

APPROVED BY:
SFK - 10/17/52
JHC - 10/17/52

VAT	NAME: "RAMAPO" BLUE BNF/CG-20 INSTRUCTIONS	USE LBS.	N-CODE	ACCT. LBS.
PREP. 1.	1. Chop to 1/2" diameter or less, weigh, and hold at vat 313 for step 8. Staybelite Rosin	312	528	312
	2. Weigh and hold at vat 307 for step 18.	120	20	120
S.V. 2.	3. Pump or run into strike vat thru 20 mesh screen (1000#, 100%)		739	1000
	____ # Lot ____		739	
	____ # Lot ____			
	4. Adjust to 35" (1312 G.)			
313 3.	5. Run 21" (815 G.) water into vat 313			
	6. Weigh in drum and pour in M____ ____ %	____	7	42
	7. Turn on agitation and steam			
	8. Dump in N-528 prepared in step 1.			
	9. Heat to boil.			
	10. Boil 10 minutes			
	11. Test and Record: CY ____, must be vvs +			
	12. If necessary, adjust to vvs + CY with N-7 Record: CY____			
	13. Reheat to boil.			
	14. Stir an additional 10-20 minutes at boil to dissolve			
S.V. 4.	15. Run vat 313 into strike vat thru 20 mesh screen.			
307 5.	16. Run 14" (176 G.) water into vat 307			
	17. Turn on agitator and steam			
	18. Dump in N-20 weighed in step 2			
	19. Adjust to 18" (230 G) at 150-155°F.			
	20. Stir until dissolved.			
S.V. 6.	21 Strike vat 307 at 150-155°F into strike vat on the surface in 10-15 minutes.			
	22. Stir 30 minutes.			
	23. Press without agitation.			

CONT'D ON PAGE 2.

CODE: _____ GOU: 1312#

PROCESS: ABP-366-D DATE: 9/19/52

MAKING AREA NOTES

EST. LOSS LBS.

REMARKS

PRESSING AREA INSTRUCTIONS

VAT

DATE

TIME

RELEASED BY

PRESS NO. 91 92

NO. OF CAKES 3 x 70 3 x 70

PRESS WITHout AGITATION

WASH TO 5000 OHMS

MAKE FIRST TEST AFTER 1 HRS.

LOAD ON 5 cars

SPECIAL INSTRUCTIONS Non-bleeding

Must not contaminate with any Blue

SAMPLES

DELIVER TO

PRESSING AREA NOTES

DESCRIBE YOUR YIELD

RECOVERY CONDITIONS

EST. LOSS LBS.

CAKES USED

HOURS WASHED OHMS

DRYER CARS ACTUAL OR PULP CONTAINERS

NOTES ON SPECIAL INSTRUCTIONS

SAMPLED BY

RELEASED BY

DRYING AREA INSTRUCTIONS

TYPE	L.V.	H.V.	HURRICANE
HOURS	45	30	45
TEMP.	140	140	140

Do not dry in brick dryers

LUMP CONTAINER See chart.

SPECIAL INSTRUCTIONS Non-bleeding.

Must not contaminate with any Blue. Cool in dryer to 100°F. Must not send to Grind Shop unless 100°F or below.

SAMPLES

DELIVER TO

DRYING AREA NOTES

LUMP — OK — WET — SALTS — CONTAMINATED WITH

REMARKS

NO. DRYER CARS PULLED

LUMP WEIGHT

EST. LOSS LBS.

SAMPLED BY

RELEASED BY

GRINDING AREA INSTRUCTIONS

GRINDER NO. 7 L.S.P.

SPECIAL INSTRUCTIONS Non-bleeding

Must not contaminate with any Blue

SAMPLES 2 envelopes

DELIVER TO Control Lab.

DO NOT MIX BEFORE SAMPLING

PACKAGING See chart.

GRINDING AREA NOTES

LUMP — OK — WET — SALTS — CONTAMINATED WITH

REMARKS

EST. LOSS LBS.

REMARKS

SAMPLED BY

DATE MIXED

QUALITY REMARKS

LUMP WEIGHT CHECK

DUP050069548

NOTES ON ABP-366-D

The present formula consists simply of an adaptation of the BP-173-D(J) formula with the following modifications:

1. N-739 ("Monastral" Blue BNF Paste ex Newport) is used instead of N-623.

2. Staybelite Rosin is employed in place of K-wood rosin.

3. The preferred precipitating cation for the rosin was found to be Ca^{++} over Ba^{++}, Al^{+++}, Mg^{++} or Zn^{++}.

4. The neutralization step employed in BP-173-D following the strike has been omitted in the present formula.

N-739, when dried, yields a product of most unsatisfactory texture. Laking with rosin, as described in the present formula, greatly improved the texture. Furthermore, this procedure enhances appreciably the dispersibility of the parent pigment in lacquer, whereby it can effectively display its inherent resistance to flocculation.

SIGNED S. F. KUDZIN - 10/17/52

APPROVED: J. H. COOPER 10/17/52

SFK:CC
10/20/52

4-53-CM80710 © DITTOforms ®

(3608)

U.S. Pat. 2,173,699
2,556,727
2,526,345

CODE: ____ K# BBP-366-D
GOAL: 1490# SIZE:
DIAZO VAT:
COUPLING VAT:
STRIKE VAT: 209, 211

APPROVED BY:
SFK - 11/6/52
JHC - 11/6/52

VAT	NAME: "RAMAPO" BLUE BNF/CG-21 INSTRUCTIONS	USE LBS.	N-CODE	ACCT. LBS.
PREP. 1.	1. Chop to 1/2" diameter or less, weigh and hold at vat 313 for step 8. Staybelite Rosin	312	528	312
	2. Weigh and hold at vat 307 for step 17.	120	20	120
S.V. 2.	3. Pump or run into strike vat thru 20 mesh screen. (1000#, 100%)		739	1000
	____ # Lot			
	____ # Lot ____			
	4. Adjust to 35" (1312 G.)			
313 3.	5. Run 21" (815 G.) water into vat 313			
	6. Weigh in drum and pour in M ____ %	____	7	42
	7. Turn on agitation and steam			
	8. Dump in N-528 prepared in step 1.			
	9. Heat to boil in 20-30 mins.			
	10. Boil 10 minutes			
	11. Test and record: CY ____, must be vvs +			
	12. If necessary, adjust to vvs + CY with N-7 Record: CY ____			
	13. Stir an additional 10-20 mins. to dissolve.			
S.V. 4.	14. Run vat 313 into strike vat thru 20 mesh screen.			
307 5.	15. Run 14" (126 G.) water into vat 307			
	16. Turn on agitator			
	17. Dump in N-20 weighed in step 2			
	18. Adjust to 18" (230 G.).			
	19. Stir until dissolved.			
S.V. 6.	20. Strike vat 307 at room temp. into strike vat on the surface in 10-15 mins.			
	21. Bring to boil in 20-30 mins.			
	22. Stir 30 minutes at boil.			
	23. Dump in	178	65	178
	24. Stir an additional 15 minutes.			
	25. Press with agitation.			

CONT'D ON PAGE 2.

CODE: _____ GOAL: 1490#

PROCESS: BBP-366-D DATE: 11/4/52

MAKING AREA NOTES

EST. LOSS LBS.

REMARKS

PRESSING AREA INSTRUCTIONS

VAT

DATE

TIME

RELEASED BY

PRESS NO. 91 92

NO. OF CAKES 3 x 70 3 x 70

PRESS WITH AGITATION

WASH TO 5000 OHMS

MAKE FIRST TEST AFTER 1 HRS.

LOAD ON 5 cars

SPECIAL INSTRUCTIONS Non-bleeding
Must not contaminate with any Blue

SAMPLES

DELIVER TO

PRESSING AREA NOTES

DESCRIBE YOUR YIELD

RECOVERY CONDITIONS

EST. LOSS LBS.

CAKES USED

HOURS WASHED OHMS

DRYER CARS ACTUAL OR PULP CONTAINERS

NOTES ON SPECIAL INSTRUCTIONS

SAMPLED BY

RELEASED BY

DRYING AREA INSTRUCTIONS

TYPE	L.V.	H.V.	HURRICANE
HOURS	45	30	45
TEMP.	140	140	140

Do not dry in brick dryers.

LUMP CONTAINER See chart

SPECIAL INSTRUCTIONS Non-bleeding
Must not contaminate with any Blue
Cool in dryer to 100°F. Must not be
sent to Grind Shop unless 100°F or
below.

SAMPLES

DELIVER TO

DRYING AREA NOTES

LUMP — OK — WET — SALTS — CONTAMINATED WITH

REMARKS

NO. DRYER CARS PULLED

LUMP WEIGHT

EST. LOSS LBS.

SAMPLED BY

RELEASED BY

GRINDING AREA INSTRUCTIONS

GRINDER NO. 7 L.S.P.

SPECIAL INSTRUCTIONS Non-bleeding
Must not contaminate with any Blue

SAMPLES 2 Envelopes

DELIVER TO Control Lab.

DO NOT MIX BEFORE SAMPLING

PACKAGING See chart.

GRINDING AREA NOTES

LUMP — OK — WET — SALTS — CONTAMINATED WITH

REMARKS

EST. LOSS LBS.

REMARKS

SAMPLED BY

DATE MIXED

QUALITY REMARKS

LUMP WEIGHT CHECK

NOTES ON BBP-366-D

The present formula differs from the "A" formula in two respects:

(1) The "B" process incorporates quantities of Blanc Fixe required to yield a final product calculated to be of the following composition:

Toner	- 67%
CaRx	- 21%
Blanc Fixe	- 12.0%

(2) The strike is carried out at room temperature in the present formula and is followed by a period of boil, as opposed to the "A" formula wherein both the strike and the development were conducted at the boil. This change results in a further improvement in texture.

SIGNED: S. F. KUDZIN - 11/4/52

APPROVED: J. H. COOPER - 11/6/52

SFK:CC