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NEWARK PLANT
PIGMENT COLOR RESEARCH REPORT

FINAL REPORT

LABORATORY STUDY AND PLANT DEVELOPMENT OF RL-586-D.
(Alumina Hydrate Lake of RT-525-D, the Mn Salt of
2B Acid → BON)

Period Covered: JANUARY, 1948 to OCTOBER, 1948.

FILE: 222.24

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PIGMENT COLOR RESEARCH REPORT

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(Alumina Hydrate lake of RT-525-D, the Mn Salt of
2B Acid → BOH).

PERIOD: JANUARY, 1948 to OCTOBER, 1948.

CHARGE: A-IC-37, A-IIC-37

SUBMITTED BY: F. S. Klein

DATE SUBMITTED: 11/24/48.

APPROVED BY: *A. A. Brizzolara*
A. A. Brizzolara *8/30/49*

DATE ISSUED: 8/30/49

I. INTRODUCTION:

The development of RL-586-D coincided with the development of RL-582-D (recorded in KN-48-31) and followed the same pattern. RL-586-D is the mineral oil treated, alumina hydrate lake of RT-525-D (a 50/50 alumina hydrate/toner ratio) and was chosen as the most desirable of nine lakes made on RT-525-D. A semi-works batch of RL-586-D was prepared and on the basis of this batch, lot 9576, Sales decided that the lake be developed in the plant and standardized.

II. SUMMARY AND CONCLUSIONS:

The lakes of RT-525-D prepared in the laboratory were: alumina hydrate, Blanc Fixe, alumina hydrate/Elauc Fixe, China Clay, Asbestine, basic lead carbonate, Kalvan, whiting, and manganous hydrate. As stated in the introduction, the alumina hydrate lake was considered the most desirable. Early work involved paste mixing but when paste mixing of RL-586-D was compared with slurry mixing, the differences of the resulting products in vinyl dispersion were negligible. Slurry mixing is preferred to paste mixing in the plant because it eliminates the use of the Abbe' Lenart mixer.

High speed pulverization aids vinyl dispersion. To reduce dusting of this pulverized lake, mineral oil was added because mineral oil had no effect on tinctorial properties of the pigment. In the plant Fractol A was substituted for the Nujol used in earlier work.

Following the semi-works preparation of lot 9576 of RL-586-D, three plant batches, lots 59900, 59926, and 59954, were made. No difficulty was encountered in their development and all were close to lot 9576 in properties.

Lot 59926 was set up as standard and RL-586-D(B) was set up as standard formula.

III. PATENT STATUS: None

IV. DISCUSSION OF RESULTS:

1. Vinyls

In tinctorial properties the dry addition of RL-586-D to vinyl composition equals the pre-dispersed addition of the toner control (comparison on equal toner basis). Vinyls show no signs of migration or crocking.

2. Drying Study

Drying between temperatures of 140°F and 200°F did not affect dispersion of RL-586-D in vinyls but did affect yield because the moisture content was lowered noticeably.

3. Fineness - 1.9 - 2.6% on 325 mesh screen.
4. Oil Absorption - 38.5 lbs. vehicle/100 lbs. pigment.
5. Moisture Content - 12.9% - 14.0%.
6. Solids Content of Presscake - $\pm 38\%$.
7. Specific Gravity - 1.713
8. Combustion - sparks were very pronounced at 320°C.
9. Dusting - lake better than toner control.

V. EXPERIMENTAL DETAILS:

Notebook 1276 - Experiments 18, 44, 53.

*Notebook 1307 - " 8, 9, 10, 11, 13

*Detailed tabulations of results of plant batches.

VI. REFERENCES: DSN-48-29

U.S. Pat. 2,225,665

RL-586-D

(B)

1660#

315, 323

1.5 Mol.

AAB: 8-4-49

HA: 9-1-49

CWO: 9-2-49

Cost Group - 37

206

1055 106

(3054)

Std. Hours

NON-BLEEDING

ES: 11-21-49

VAT	BON RED LAKE	STRIKE	NET WT.	NET. LBS
PREP 1	1. Obtain and hold at scale for use in diazo vat in step 5		467	
D.V. 2	2. Run 24" (803G.) water into diazo vat			
	3. Weigh in drum and pour in M %		7	64
	4. Turn on agitator and steam.			
	5. Weigh and shovel in in 5-10 minutes obtained in step 1.		467	329
	From # Net Lot		467	
	From # Net Lot		467	
	From # Net Lot		467	
	From # Net Lot		467	
	From # Net Lot		467	
	6. Heat to 95 - 100°F.			
	7. Stir 10 minutes to dissolve.			
	8. Test and record: B.Y. must be +.			
	9. If N-467 does not completely dissolve, raise temperature in 5° steps to a maximum of 120°F.			
	10. Stir 5 minutes.			
	11. Take 1 quart sample for analysis.			
	12. Stop agitator.			
	13. Check and record: " Normal 29" (983 G.).			
	14. Check and record: °F.			
	15. Deliver sample to laboratory.			
MISC. 3	16. Weigh, dissolve in 40 gallons water in drum and hold at diazo vat for step 44		107	5 107
	17. Obtain and hold at scale for use in Vat 313 in step 22		61	82
	18. Weigh and hold at Vat 313 for step 25. Assume + 106%		61	6 65
313 4	19. Run 20" (300 G.) water into Vat 313.			
	20. Weigh in drum and pour in M %		7	148
	21. Turn on agitator and steam.			
	22. Weigh and add in 3 - 10 minutes obtained in step 17.		300	82 300
	23. Heat to 130-140°F.			
	24. Stir 5 minutes.			
	25. Dump in N-6 weighed in step 18.			
	26. Stir 10 minutes or longer to dissolve.			
S.V. 5	27. Install chart in temperature recorder on strike vat.			
	28. Run 9" (864 G.) water into strike vat.			
	29. Turn on agitator and steam.			
	30. Weigh and dump in		432	336 432
	31. Heat to 140-160°F.			
	32. Stir to dissolve.			
MISC. 6	33. Weigh and hold at diazo vat for step 36			
	From # Net Lot		584	3.6

-(Cont'd. on page 2).

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VAT	PAGE: 2 CODE: RL-586-D LBS: 1660#	INSTRUCTIONS	USE LBS.	N-CODE	ACCT. LBS.
	34. Weigh in drums and hold at diazo vat for step 46	M T %		28	133
	Report to Group Supervisor for Calculations Report to Group Supervisor for Calculations Based on Analytical Results.				
	"= Gal.X #/Gal.= # N-467.				
D.V. 7	35. If necessary, adjust diazo vat based on analytical results by adding from # Net Lot OR Removing Gallons.	%		467	
	36. Dump in N-584 weighed in step 33.				
	37. Stir 10 minutes or longer to dissolve.				
206 8	38. Install chart in temperature recorder on Vat 206.				
	39. When step 26 stirring completed, run Vat 313 into Vat 206.				
	40. Weigh, slurry with 20 gallons hot water in drum, and pour in		54	39	54
	41. Adjust to 13" (923 G.) at 68-72°F.			57	+900
	42. Stir 10 minutes or longer.				
D.V. 9	43. When step 37 stirring completed, adjust diazo vat to 144" (1501 G.) at 32-36°F.			57	+4050
	44. Pour in N-5 prepared in step 16.				
	45. Stir 3-5 minutes.				
	46. Pour in as quickly as possible N-28 weighed in step 34.				
	47. Stir 2 minutes at 32-36°F.				
	48. Test and record: KI test , Must be +KI test.				
	49. Check and record: ".				
206 10	50. When step 42 stirring completed, couple diazo vat into vat 206 at 68-72°F. under the surface through the distributor in 30-36 minutes: Maintain Vat 206 at 68-72°F. during coupling.	Record: Time started Record: Total Minutes			
	51. Check and record accuracy of recorder: Thermometer °F Recorder °F.				
	52. Stir 15 minutes.				
S.V. 11	53. Heat strike vat to boil.				
	54. Check and record accuracy of recorder: Low: Thermometer °F Recorder °F. High: Thermometer °F Recorder °F.				
	55. When step 52 stirring completed, strike Vat 206 into strike vat at boil on the surface in 28-32 minutes: Maintain strike vat at brisk boil during strike.	Record: Time started Record: Total minutes			
	56. Stir 20 minutes at brisk boil.				
	57. Flood to 78" (7488 G.)				
	(Continued on Page 3)				

CODE: RI-586-D

GOAL: 1660#

PROCESS: (B)

DATE: HA: 9-1-49

MAKING AREA NOTES

ES: 11-30-49

Est. Loss
Remarks

Lbs.

PRESSING AREA INSTRUCTIONS

Vat
Date
Time

Released by

Press No. 21

No. of Cakes 2 x 44

Press with Aritation

Wash to Sulphate Free XXXX

Make First Test After Hrs.

Load On 6 Cars.

Special Instructions NON-BLEEDING.

Samples

Deliver To

DRYING AREA INSTRUCTIONS

Type L.V. H.V. Hurricane

Hours 44 28 44

Temp. 140°F 140°F 140°F

Lump Container See Chart.

Special Instructions NON-BLEEDING.

Samples

Deliver To

GRINDING AREA INSTRUCTIONS

Grinder No. 1 HSP.

Special Instructions NON-BLEEDING.

Samples 2 Envelopes

Deliver To Control Laboratory.

Do Not Mix Before Sampling

Packaging See Chart.

PRESSING AREA NOTES

Describe Your Yield
Recovery Conditions

Est. Loss

Lbs.

Cakes Used

Hours Washed

Oms

Dryer Cars Noted

On Pulp Containers

Notes on Special Instructions

Samples By

Released By

DRYING AREA NOTES

Lump - OK - Met - Salts - Contaminated With
Remarks

No. Dryer Cars Filled

Lump Weight

Est. Loss

Lbs.

Sampled By

Released By

GRINDING AREA NOTES

Lump - OK - Met - Salts - Contaminated With
Remarks

Est. Loss

Lbs.

Remarks

Sampled By

Date Mixed

Quality Remarks

Lump Moisture Check

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STANDARD FORMULA NOTES

RL-586-D(B)

I. INTRODUCTION:

RL-586-D is a mineral oil treated, alumina hydrate lake of RT-525-D. To improve the dispersion of RL-586-D in vinyls, a group of lakes was prepared by paste mixing RT-525-D plant presscake and various extenders. Alumina hydrate gave the most promising results (a 50% lake being as good as a 75% lake) so a semi-works batch of the 50% lake using plant toner slurry was prepared. This material was treated with 5% mineral oil emulsion to decrease dusting of the lake.

On the basis of the one semi-works batch, lot 9576, Sales decided that the lake be developed in the plant and standardized.

II. NOTES:

1. The "B" process replaces the previous formula, ARL-586-D, and differs as follows:- the toner is flooded to 73 inches (7488G) instead of 88 inches (8280G) in stirrer vat to permit better agitation of hydrate-toner slurry; the volume for slurring the alumina hydrate is increased from 82 inches (836G) to 30 inches (510G) in Vat 321 and the volume for the emulsion is decreased from 72 to 40 gallons.

2. Notes on RT-525-D hold for the first 57 steps as the tinctorial properties of RL-586-D vary directly as the masstone and extension of the toner control.

3. The mineral oil emulsion does not affect the tinctorial properties of RL-586-D; neither does it eliminate dusting but it does decrease dusting.

4. Drying at temperatures higher than 140°F up to 200°F did not affect vinyl dispersion but did affect yield because the higher the drying temperature, the lower the water content and consequently, the lower the yield.

5. The moisture content on the first three plant batches varied from 12.9% to 14.0%.

6. The fineness on the first three plant batches varied from 1.9% to 2.6% pigment remaining on a 325 mesh screen.

7. The presscake was firm and was about 38% solids.

III. TESTING:

1. Rubout - same as for RT-525-D.

2. Dry fineness by TF-31-7.

IV. CALCULATED COMPOSITION & GOAL YIELD:

Calculated Composition

Mn toner of 2N Acid -> BON	46.2%	800 lbs.
Alumina Hydrate	47.0	780
Mineral Oil	4.8	80
	100.0%	1660 lbs.

Goal Yield

1660 lbs. "as is"
1460 lbs. anhydrous
moisture - 12.5%
Reference 1307-13

Signed: P. S. Klein 9-22-48

Approved: A. A. Brizzolara 9-22-48