

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

NEWARK PLANT
PIGMENT COLOR RESEARCH REPORT

Final Report

HANSA YELLOW 10G LAKE, YL-513-D

Period Covered: October 1, 1949 - October 28, 1949.

Charge: A-I-C-47 (1100 - $\frac{11}{12}$ - 47)

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SUBMITTED BY: *M. Fytelson*
M. Fytelson

APPROVED BY: *A. A. Brizzolara*
A. A. Brizzolara *2/12/50*

DATE SUBMITTED 1/19/50

DATE ISSUED: 2/13/50

INTRODUCTION:

Because of potential sales volume of approximately 40,000 lbs./yr. as a result of Praeger & Company's renewed interest in a Hansa Yellow 100 Lake for paper coating, the Chemical Division has been requested to look into the manufacturing process based on the old YE-513-D procedure and the effect of current quality intermediates on the quality of the end product.

Production on YE-513-D has been totally inactive since January 1942. No standard operating formula was written at that time and no standard from plant manufacture was set up since the code was obsoleted at the completion of the development study.

SUMMARY AND CONCLUSIONS:

It has been possible in the laboratory and semi-works with current quality para-chlor-ortho-nitraniline and aceto-acet-ortho-chlor-anilide to match the obsolete YE-513-D standard in color, strength and light-fastness, current production being on the slightly greener, more intense side.

Standard step-wise operating formulas with notes have been written for (A)YL-617-D and (B)YL-513-D and active plant development awaits receipt of a 4000 lb. order by Sales.

DISCUSSION:

No operating difficulties were encountered in the laboratory or semi-works. Future production has been set up on a dry mix basis, as suggested by the Quality Control Group. Production will schedule and make (A)YL-617-D as a component for (B)YL-513-D. YL-513-D will then consist of (A)YL-617-D and additional extender in approximately a 90/10 ratio. The change in code designation from YE to YL has the full approval of Sales to eliminate possible confusion with Molybdate Orange codes.

Testing has been carried out by brushouts only, according to TF-3005-1 for YL-465-D. No additional work is planned by the Chemical Division at the present time.

APPENDIX:

Step-wise making process	(A)YL-617-D
Processing data sheet	(A)YL-617-D
Formula Notes	(A)YL-617-D

REFERENCES:

Research Notebook 1317 (2-5) inclusive.
DSN-49-35
Minutes SPC Meeting 9-15-49
Letter RHP to JS 9-28-49

(A) YL-513-D

FORMULA NOTES

YL-517-D is a component for the manufacture of YL-513-D (900/ YL-517-D + 100/ sebestine). The "1" process represents the reworking of the YL-513-D (A), K-9451 process and differs as follows:

1. The process has been established on a stepwise basis.
2. Batch size has been increased from 0.75 mol to 1.0 mol, i.e. from 3189# (est) to 4186# (act.).
3. The aceto-ortho-ortho-chloranilide has been increased from 212# to 218#/mol to insure a 2% excess of second component.
4. Diazo clarification has been eliminated with current quality H-375.
5. Breakout evaluation by TF-3005-1 will determine the proper amount of additional sebestine required to match standard strength of YL-513-D.

The following notes are taken from the original work on YL-513-D, K-9451 and constitute results of a laboratory variable study.

1. Diazotization was found to be more complete at 66°F than at 32°F; also more strength was obtained in the toner.
2. Filtration of the diazo gave a slightly lighter and cleaner masstone in the toner but no increase in strength.
3. Elimination of excess nitrous acid with sulfonic acid was apparently without effect.
4. Variation in temperature of coupling from 60°F to 66°F was accompanied by increasing redness of masstone in the toner with practically no change in strength or tint.
5. Decrease in the caustic soda used to dissolve the AAOCl with a corresponding decrease in acetic acid (i.e. lower pH of coupling) resulted in redder masstones with lower strength. Increase in caustic soda and acetic acid had a negligible effect.
6. Higher temperatures of drying than 140°F resulted in lower strength.
7. A comparison of slurry mixing, paste mixing, coupling in the presence of extender showed no significant differences tintorially or in properties as judged by certain breakouts.

CALCULATED COMPOSITION

Organic Toner	365#	9.2%
Extenders	3756#	89.7
Treating Agent	45#	1.1
	<u>4186#</u>	<u>100.0%</u>

COAL YIELD

41.72% "as is"
41.64% anhydrous
0.3% moisture
E.B. 1317-5

Signed M. Fytelson
N. FYTELSON - 11/1/49
Approved J. ANNOUL - 11/1/49
A. A. BRIZOLARA - 11/8/49

TF:CC

DUP050067432

YL-513-D COMPONENT

CODE:

K# (A) YL-617-D

APPROVED BY:

GOAL 3177#

SIZE: 1.0 MOL.

MF: 10-8-49

DIAZO VAT: 301, 303, 315, 321

AAB: 10-8-49

COUPLING VAT: 105

CWO: 10-25-49

STRIKE VAT:

HA: 10-26-49

STD. HRS. 5.0

BLEEDING

CW: 11-8-49

VAT	NAME: YELLOW LAKE	INSTRUCTIONS	USE LBS.	N-CODE	ACCT. LBS.
PREP 1	1. OBTAIN AND HOLD AT SCALE FOR USE IN STEP 4			375	
D.V. 2	2. RUN " (190G.) WATER INTO DIAZO VAT				
	3. WEIGH IN DRUM AND DUMP IN				
	M T %			28	96
	4. WEIGH AND ADD IN 5-10 MINUTES		173	375	173
	OBTAINED IN STEP 1	# LOT			
		# LOT			
		# LOT			
	5. ADJUST TO " (360G.) AT 66-70°F			57	+ 450
Misc. 3	6. WEIGH, DISSOLVE IN 45 GALLONS WATER IN DRUM, AND HOLD AT DIAZO VAT FOR STEP 7		70	5	70
D.V. 4	7. SYPHON IN N-5 PREPARED IN STEP 6 IN 28-32 MINUTES.				
	8. STIR 45-60 MINUTES MAINTAINING + KI TEST.				
	RECORD: TIME STARTED				
	RECORD: KI TEST				
Misc. 5	9. OBTAIN AND HOLD AT SCALE FOR USE IN STEP 15			476	
321 6	10. WEIGH IN DRUM AND POUR INTO VAT 321				
	M %			30	144
	11. ADJUST TO 10" (180G.).				
313 7	12. RUN 6" (90G.) WATER INTO VAT 313.				
	13. WEIGH IN DRUM AND POUR IN M %			7	96
	14. ADJUST TO 40" (600G.) AT 73-77°F.				
	15. WEIGH AND ADD IN 4-6 MINUTES		218	476	218
	OBTAINED IN STEP 9	#, LOT			
		#, LOT			
		#, LOT			
	16. STIR 15-20 MINUTES TO COMPLETE SOLUTION.				
C.V. 8	17. INSTALL CHART IN TEMPERATURE RECORDER ON COUPLING VAT.				
	18. WHEN STEP 16 STIRRING COMPLETED, RUN VAT 313 AT ONCE INTO COUPLING VAT THROUGH SCREEN.				
	19. ADJUST TO 13" (1200G.) AT 66-70°F				+ 450
	20. RUN VAT 321 INTO COUPLING VAT IN 4-6 MINUTES.				
	21. STIR 5 MINUTES.				
D.V. 9	22. WHEN STEP 8 STIRRING COMPLETED, STOP AGITATOR IN DIAZO VAT.				
	23. CHECK AND RECORD: "				
	24. SETTLE 15 MINUTES.				
C.V. 10	25. ADJUST COUPLING VAT TO 66-70°F			57	+ 450
	26. CHECK AND RECORD ACCURACY OF RECORDER.				
	27. TEST AND RECORD: PH NORMAL 6.0-6.5.				
	28. ADJUST TO PH 6.0-6.5 WITH N-7 OR N-30, IF NECESSARY.				

CONTINUED ON PAGE 2.

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YL-513-D COMPONENT

CODE: _____

GOAL: 4177#

PROCESS: (A) YL-617-D

DATE: HA: 10-5-49

MAKING AREA NOTES CW: 11-8-49

EST. LOSS LBS.

REMARKS

PRESSING AREA INSTRUCTIONS

VAT

DATE

TIME

RELEASED BY

PRESS NO. 23

NO. OF CAKES 46

PRESS WITH AGITATION

WASH TO CHLORIDE FREE OHMS

MAKE FIRST TEST AFTER 2 HRS.

LOAD ON 5 CARS.

SPECIAL INSTRUCTIONS BLEEDING.

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

SAMPLES

DELIVER TO

SAMPLED BY

RELEASED BY

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 BLEEDING.

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. 10 H.S.P.

SPECIAL INSTRUCTIONS BLEEDING

GRIND WITH 48# N-479

HOLD GRIND IN 34 BLDG. FOR MIX.

SAMPLES 2 ENVELOPES & ONE 8 OZ. BOTTLE

GRINDING AREA NOTES

LUMP — OK — WET — SALTS — CONTAMINATED WITH

REMARKS

EST. LOSS LBS.

REMARKS

DELIVER TO CONTROL LABORATORY.

DO NOT MIX BEFORE SAMPLING

PACKAGING SEE CHART

SAMPLED BY

DATE MIXED

QUALITY REMARKS

DUP050067435