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NEWARK PLANT
PIGMENT COLOR RESEARCH REPORT

RT-428-D BLEED IN SOLVENTS

Period Covered June 14 - 21, 1951

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NEWARK PLANT

PIGMENT COLOR RESEARCH REPORT

Final Report

Title: RT-428-D BLEED IN SOLVENTS

Period Covered: June 14 - 21, 1951

Charge: 1101-11-32

SUBMITTED BY: ^{MB Van Nooy}
M. B. VAN NOOY

DATE SUBMITTED: 3/10/52

APPROVED BY: *A. A. Brizzolara*
A. A. BRIZZOLARA 3/27/52

DATE ISSUED: 4/9/52

INTRODUCTION

Although the "Watchung" pigments, when dispersed in vinyl or printing ink, are claimed to show no bleed in water or in the commonly used organic solvents and plasticizers, customers have occasionally reported bleed by their testing methods. Moreover, it has been observed in the laboratory that a slight bleed can be obtained by mixing the pigment directly with the solvent.

The purpose of this study was to determine the nature and extent of this bleed in various solvents, and to determine whether the bleed is due to the method of manufacture or variables in the processing. Specifically, the objectives were as follows:

- (1) Extent of bleed of RT-428-D standard, Lot 91195, in toluene, MEK-TCP, mineral spirits, alcohol, and hot water;
- (2) Comparison of present standard, made by direct strike procedure, with an earlier standard made on the isolated dye process;
- (3) Comparison of bleed of current standard with current production;
- (4) Comparison of bleed of RT-428-D with competitive reds of the "Watchung" type;
- (5) Effect on bleed of the following:
 - (a) omitting para soap (N-484),
 - (b) Petronate substituted for para soap,
 - (c) omitting rosin,
 - (d) omitting strontium from toner,
 - (e) increasing BON excess from current 2% to former 6%,
 - (f) presscake washed until wash water is colorless,
 - (g) recrystallized 2B Acid (N-467) for the diazo;
- (6) Extent of bleed of sodium salt and acid form of 2B Acid $\rightarrow$ BON/(Red 2B);
- (7) Analysis of bleed of RT-428-D.

Samples Tested

- | | |
|-------------------------|--|
| 1. RT-428-D, lot 91195 | Current standard. |
| 2. RT-428-D, lot 47706 | Earlier standard made on isolated dye process. |
| 3. 1390-24A | Laboratory control. |
| 4. 1390-24B | Para soap omitted. |
| 5. 1390-24C | Petronate substituted for para soap. |
| 6. 1390-27A | Laboratory control. |
| 7. 1390-27B | Para soap and rosin omitted. |
| 8. 1390-27C | Rosin omitted. |
| 9. 1390-27D | BON excess increased to 6%. |
| 10. 1390-27E | Presscake washed bleed free. |
| 11. 1390-27F | Made from recrystallized 2B Acid. |
| 12. C-54173 | Rinson Red R-6160 (Harmon). |
| 13. C-52209 | Citation Red #1054 (Kentucky). |
| 14. RT-428-D, Lot 26220 | All Ca toner, Sr omitted. |
| 15. RT-428-D, lot 28067 | "OK Straight" plant lot. |
| 16. RT-428-D, lot 28068 | " " " " |
| 17. RT-428-D, lot 28108 | " " " " |
| 18. Red 2B, Sodium Salt | |
| 19. Red 2B, Acid form | |

All samples were tested in toluene, a 1:1 mixture of methyl ethyl ketone and tricresyl phosphate, mineral spirits, alcohol (23A), and hot water according to TF-7201.

CONCLUSIONS

RT-428-D shows some bleed in every solvent. Material made on the direct strike procedure currently used in the plant shows less bleed than that made from the isolated dye. Current production is running better than standard in bleed, probably indicating there has been some improvement in diazotization and strike procedures, or in the quality of the intermediates, since the standard was prepared. The amount of bleed is small, and cannot be attributed to the use of para soap, rosin or strontium salts in the manufacture of the toner, or to the reduction in the BON excess. Although some of the bleed may be the sodium salt of the dye, most of it appears to be a mixture of decomposed diazo and treating agent.

The bleed is not affected by the use of recrystallized 2B Acid or by washing the presscake more thoroughly. The bleed may be inherent in this type pigment; in any case the competitive samples are no better in bleed than current RT-428-D production.

DISCUSSION OF RESULTS

1. RT-428-D standard, lot 91195, shows considerable bleed in toluol, MEK-TOP, alcohol, and hot water, but only slight bleed in mineral spirits.
2. The current standard, lot 91195, made by the direct strike procedure, shows less bleed in all the solvents than the older standard, lot 47706, made from isolated dye.
3. Lots selected from current production show less bleed than standard in toluol, MEK-TOP, and mineral spirits, but are equal to somewhat better than standard in alcohol and hot water.
4. The competitive samples show less bleed than lot 91195, but are no better than current production in that respect.
5. The cause of the bleed is not due to any of the following:
 - a) omitting para soap,
 - b) substituting Petronate for para soap,
 - c) omitting rosin,
 - d) omitting SX,
 - e) current use of 2% BON excess,
 - f) normal washing procedure, in which the presscake is washed until the washwater is chloride free, but not necessarily colorless,
 - g) use of 2B Acid as received from Orohem, without further purification.
6. Although RT-428-D may contain some unmetallized soda salt of the dye (or free acid depending on the final pH), the bleed of RT-428-D cannot be entirely attributed to this. Both the soda salt and the acid form of the dye show less bleed than RT-428-D in toluene and mineral spirits. It would be expected that both forms would show considerable solubility in alcohol and hot water.

7. Lot 91195 was extracted with hot toluene, the extract concentrated and analyzed. The amount of the toluene bleed was of the order of 1% and had the following composition:

5% β naphthol
7% mixture of BON and Red 2B acid
88% tarry, resinous residue believed to be a mixture
of decomposed diazo, diazo amine, and treating agent.

REFERENCES

N.B. 1390, Expts. 24, 27

N.B. 1379, Expt. 38

TF-7201

TABULATION OF RESULTS

	Toluene	MEK-Top	Mineral Spirits	Alcohol	Hot Water
1. RT-428-D, Lot 91195	considerable orange bleed	considerable orange bleed	s. orange bleed	strong orange bleed	strong orange bleed
2. RT-428-D, Lot 47706	v. strong orange bleed	v. strong orange bleed	yellow bleed	v. strong red bleed	strong red bleed
3. 1390-24A	-	tr. yellowish bleed	no bleed	yellow bleed	vs. yellowish bleed
4. 1390-24B	slight pink bleed	" "	" "	" "	vs. pink bleed
5. 1390-24C	" "	pink bleed	s. pink bleed	s. yell. to yell.	vs. pink bleed
6. 1390-27A	no bleed	vs. yellowish bleed	no bleed	yellow bleed	orange bleed
7. 1390-27B	" "	vs. pinkish bleed	" "	vs. pinkish bleed	s. pink bleed
8. 1390-27C	" "	trace pinkish bleed	" "	vs. yellow bleed	orange bleed
9. 1390-27D	" "	tr. yellowish bleed	" "	yellow bleed	s. yell. bleed
10. 1390-27E	" "	pink bleed	" "	yellow bleed	s. pink bleed
11. 1390-27F	trace pink bleed	vs. yellowish bleed	trace pink bleed	yellow bleed	yell.-orange blea
12. C-54173	orange bleed	vs. yellow bleed	trace pink bleed	pink bleed	strong orange "
13. C-52209	vs. pink bleed	red colloidal disp., resisted centrifuging	trace pink bleed	v. strong red bleed	strong red-orange bleed
14. RT-428-D Lot 26220	pink bleed	orange bleed, some- what less than std.	vs. pink bleed	strong yellow-orange bleed	strong orange bleed
15. RT-428-D Lot 28067	pink bleed, more than 26220 but less than std.	pink bleed, somewhat less than std.	no bleed	yellow bleed	yellow bleed
16. RT-428-D Lot 28068	s. pink bleed	pink bleed, somewhat less than std.	" "	yellow to v. yellow bleed	yellow bleed
17. RT-428-D Lot 28108	or. bleed, more bleed than 26220, but less than std.	orange bleed, like std.	vs. yell. bleed	strong yellow-orange bleed	yellow bleed
18. Red 2B Na salt	no bleed	orange bleed, colloidal in part	no bleed	yellow bleed	v. strong red - orange bleed
19. Red 2B Acid form	vs. pink bleed	-	no bleed	strong clear red bleed	v. strong dark red bleed