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NEWARK PLANT
PIGMENT COLOR RESEARCH REPORT

Final Report

Title: Improved Texture Molybdate Orange

Period Covered: 7-6-48 to 5-5-49

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DATE SUBMITTED: 6-15-49

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INTRODUCTION:

Work to improve the texture of Molybdate Orange has been done periodically for the past ten years. YE-503-D, a Molybdate Orange treated with Turkey Red Oil for texture improvement, was standardized in May 1940 but was soon found to be unsatisfactory because of its reactivity in printing ink vehicles. Work was done in 1941 to overcome this difficulty and it was found that a combination of 2% Petronate and 1% Turkey Red Oil gave a satisfactory improvement in texture (about 2+ wedge grit units better than standard at 6 loose passes) and satisfactory livering. Plant development was discontinued before its completion because production capacity could not be interfered with at the time. The problem was taken up again in 1944 and a mix of three plant batches, lot 44373, was set up as K-2398. No regular production was carried out because of wartime restrictions.

The original objective of the present study was to develop a Molybdate Orange having the tinctorial properties of YE-421-D but with improved texture and reduced reactivity in lithographic varnishes. When it was found that the cost of the reactivity improvement would be considerable, the objective was modified to include solely the texture improvement.

CONCLUSIONS:

A Molybdate Orange having improved texture compared to YE-421-D, SD-48416, and reduced reactivity in lithographic varnishes can be produced by slurry treating YE-421-D first with a 2% Petronate - 1% Turkey Red Oil mixture and then with 2% of tetra sodium pyrophosphate (Chemical 56 - percentages based on dry weight of pigment). YE-421-D, lot 89349, the proposed standard mix of this material, was rejected on the basis of the cost penalty involved in the double treatment and processing difficulties. YE-421-D, lot 89686, a mix of plant production employing the Petronate-Turkey Red Oil treatment above, has been accepted as a new improved texture standard for YE-421-D.

SUMMARY:

In July 1948 it was decided to standardize an improved texture YE-421-D using the 2% Petronate - 1% Turkey Red Oil treatment, which had previously been found successful. It was also decided to try to reduce the reactivity of YE-421-D in lithographic varnishes since a complaint on this property had been received from the E. J. Kelly Division of the Sun Chemical Corporation. This customer found YE-421-D to be reactive in a #1 regular lithographic varnish. Laboratory investigation showed that reactivity in the customer's vehicle could be markedly reduced by the use of a 2% tetra sodium pyrophosphate (Chemical 56) slurry treatment. By treating YE-421-D slurry with the texture agents and then with 2% Chemical 56, improvements were made in both texture and reactivity. Plant trial of this lead gave a product with similar improvements, but considerable difficulty was experienced in the filtering and washing steps.

Moreover, the thixotropic nature of the prescaks led to yield losses. This difficulty was directly traceable to the use of Chemical 56. Efforts to eliminate the thixotropic behavior were unsuccessful. In spite of this operating problem it was decided to proceed with a standardisation run. A mix, lot 89349, was prepared and evaluated against standard YE-421-D, SD-48416. The process was abandoned, however, because of the added cost of the treating agents and the reduced yield. A decision was made to standardize using the texture agents alone. Three plant batches were made and a mixture, lot 89686, of the products compares as follows with YE-421-D, SD-48416:

Varnish Drier Rubout

	<u>MT</u>	<u>STR.</u>	<u>Tint</u>	<u>MT L/ Fastness</u>
YE-421 YE-421 89686 vs SD-48416	vs. dk. vs. dull	vvs.str. (97=100)	vs.yellow	=

Alkyd Enamel

	<u>MT</u>
YE-421 YE-421 89686 vs. SD-48416	vs.dk., vs.red

Ink Mill Test

	<u>Loose Passes</u>			<u>Consistency</u>		
	<u>1</u>	<u>4</u>	<u>6</u>	<u>Body</u>	<u>Length</u>	<u>Flow</u>
YE-421-D, SD-48416	13-	14-	14			27
YE-421-D, 89686	14-	15+	16-	vs.hvy.	ok	31

Vinyl

	<u>1% Color</u>	<u>0.1% Color</u>	<u>Tint</u>
YE-421 YE-421 89686 vs. SD-48416	intense	s.strong	=

Linoleum

	<u>MT</u>	<u>STR.</u>	<u>Tint</u>
YE-421 YE-421 89686 vs. SD-48416	s.intense	=	=

In all other properties tested the two products were very similar. No reason is known for the intensity of lot 89686 in vinyl and linoleum but it may be associated with a better dispersion aided by the texture agents.

Lot 89686 was approved by Sales as a new standard for YE-421-D. After a performance run in the plant the process was accepted by the Production Division.

FUTURE PROGRAM:

No additional work on this problem is planned.

PATENT STATUS:

It is believed that nothing of a patentable nature was uncovered in the work summarized in this report.

REFERENCES:

NB-800
NB-844
NB-1300
DSN-43-4
DSN-45-26
DSN-49
KN-42-289
KN-45-84