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PIGMENTS DEPARTMENT
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NEWARK, NEW JERSEY

NEWARK PLANT
CHEMICAL DIVISION - COLORS

FINAL REPORT

TITLE: RESEARCH PROJECT A-II-C-258
HYDROUS OXIDE PIGMENTS

Period Covered

MAY 1949 - FEBRUARY 1952

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SUBMITTED BY: B. H. PERKINS

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MAJOR EXPERIMENTAL PROJECT NO. 258 -- FINAL REPORT

INTRODUCTION

Work under this project was started in May 1949 and was continued on a part-time basis from that date until its termination in February 1952, with total expenditures amounting to \$17,000. The study was undertaken as an exploratory investigation of various hydrous oxides as pigments and included not only preparation and evaluation of conventional forms of hydrous oxides, but also attempts at preparation of novel forms of value as pigments, as well as study of methods for dispersion of hydrous oxides in coating systems and search for methods of optimum use for such pigments. Since this was intended as an exploratory project, it covered only the work leading to discovery of products of interest. In most cases, the development work on the products of promise was covered by separate projects which were prepared for each of the new pigments considered to warrant additional work. The experimental work mentioned here was carried out by Messrs. Denslow, Jackson, and Morrison, working separately.

This report will close out project No. 258.

ACCOMPLISHMENTS

1. Procedures for the preparation of hydrous nickel oxide and for flushing it into alkyd vehicles were developed and the operability of the processes on a plant scale was demonstrated.

2. Laboratory methods for preparation of hydrous chromic oxide were established and a semi-works procedure for flushing the pigment was worked out. The flushed alkyd dispersion of this pigment was evaluated by means of outdoor exposure and was shown to have outstanding durability, and the value of the pigment as a film fortifier was demonstrated. This work has been continued under Project 277 "Transparent Film Fortifier."

3. The initial preparations and demonstrations of the excellent durability of A-6-D, A-10-D, and F-12-D were carried out under this project. Following demonstration of the outstanding performance of these pigments, their further study was continued under a new project, 272, "Durable Gray pigments".

4. Attempts were made to prepare dry counterparts for "Rough Gold" and "Midas Gold" as part of the investigation of hydrous oxides. (Work was also done on this problem under Project 250). While no dry product was obtained which completely equalled the flushed competitive pigments in all properties, a number of pigments of interest were obtained, of which two are currently under review by the Sales Division. The two most promising ones are: (1) an air oxidized, rapid filtering, soft iron oxide of "golden" hue; and (2) a coprecipitated blend of Auric Brown with manganese pyrophosphate which approaches "Rough Gold" in color. The course of further work on these products will be determined by

the review which is now underway.

5. Various iron oxide "blacks" were prepared and evaluated. While a number of products were interesting, they were abandoned because of the greater attractiveness of products of the A-6-D type.

6. The hydrous oxides of titanium, manganese, aluminum, antimony and zinc were investigated as pigments.

PROGRAM

This project is being terminated. As noted in the preceding section, study of the products of interest resulting from this general exploratory project is being continued under other projects.

PATENT SITUATION

A patent application is being prepared for A-6-D. The possibility of obtaining patent protection for certain of the other products mentioned here is being considered as part of the studies being continued under separate projects. More detailed information will be given in the reports to be issued on these projects. (See also Project No. 250).

REFERENCES

1. Major experimental Project No. 258-Hydrous Iron Oxides
2. " " " No. 272-Durable Gray pigments
3. " " " No. 277-Transparent Fortifiers
for Organic Vehicles
4. KN-50-29 - Hydrous Ferric Oxides AF-8-P, BF-8-P
Flushed Alkyd Dispersions AF-11-F, J. O. Morrison
5. Laboratory studies of A-6-D: Notebooks 1220, 1372, 1389,
1441
6. Laboratory studies of chromium oxides: Notebooks 1376,
1450
7. Semi-works studies of chromium oxides: DSN-52-10.
8. Laboratory studies of air oxidized iron oxides: Note-
book 1376.
9. KN-51-2 - Hydrous nickel oxide - J. O. Morrison