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Trade Sales
 W-28 "TiPure" R-100
 W-54 "TiCal" R-25
 Release Letter #1266

Philadelphia Laboratory
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MEMORANDUM REPORT NO. M-314

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EVALUATION OF "Z" PIGMENTS
 IN TRADE SALES PRODUCTS

REFERENCE MADE
 NOT FOR CIRCULATION

INTRODUCTION:

1. This report covers the results obtained with "Z" type pigments as replacement for W-28 and W-54 in various Trade Sales Products.
2. The following lots of pigments were tested:-
 - (a) DS-20717 (W-28) Lot No. C-3203 KW-3779 (100% Z type)
 - (b) DS-20748 (W-54) " " C-2870 KW-3776 (25% Z type)
3. These pigments were tested in both laboratory and full scale plant production and were evaluated in the following types of products:

Du Pont Alkyd Primer Sealer	689-784
" " T. & C. Flat	621-702
C. C. Semi-Gloss	69-861
Interior Semi-Gloss	670-760
" Gloss	633-762
Ovalite Undercoater	479-767
"Duco" Undercoater	66-079
"Dulux" Mill White Gloss	58-488
" Hi Hiding Mill White	58-5884
C. C. Dado Enamel #8 Med. Green	58-23708

SUMMARY:

Based on the evidence thus far accumulated from this evaluation, it appears that the "Z" type W-28 pigment is quite comparable to control W-28 and can be used in the above products, except the two "Dulux" Mill Whites 58-488 and 58-5884. In these mill whites the "Z" pigment substitutions show poorer gloss retention after one month and it is felt that longer testing would be advisable before making a final decision.

The use of "Z" type W-54 "TiCal" in T. & C. Flat 612-702 has given definitely lower hiding for some undetermined reason. This problem is receiving further study.

N35413

DETAILS:

(a) Initial Properties

The above experiments were cut to standard viscosity and based on the laboratory experiments the "Z" type pigment substitutions were quite comparable to controls in wt./gal., total solids and general physical properties including brushing, drying, flow, color, gloss sagging and build.

(b) Hiding

This evaluation has definitely shown the the 25% "Z" type "TiCal" to be inferior in hiding to control (W-54) when used as the sole hiding pigment in such formulas as T. & C. Flat.

When used in small quantities in combination with 100% "Z" type (W-28) in Mill White formulas the difference is negligible or when used in such products as C. C. Dado Enamels #8 Med. Green the poorer hiding also disappears because of the very dark color.

In the case of 100% "Z" (W-28) type substitution the hiding was comparable to control in all products.

(c) Package and Drying Stability

Two months shelf and one month elevated temperature (120°F.) storage of the laboratory experiments has shown the "Z" type pigments to equal and in some cases even better the performance of current controls in this respect.

However, we noticed that the plant batch of C. C. Dado Enamel #8 Med. Green showed tendency toward hard settling in five weeks shelf storage, but it is our understanding that similar difficulty has been encountered with current W-54 production of this product which the plant is attempting to overcome.

(d) Color and Gloss Retention

One month A.S.T.M. Gloss readings have also shown the "Z" pigments to be comparable to current controls in gloss retention except in the case of the "Dulux" Mill Whites which show the substitutions to be inferior. Exposure Series No. 11393 has been prepared to evaluate for color and gloss retention in YD and YL exposure to substantiate these initial indications.

(e) Results of Full Scale Production Batches

Full scale plant batches (1200 gals.) were made of each of the above products and no difficulty was encountered during manufacture. These batches are identified as follows:

<u>Exp. Request No.</u>	<u>Code</u>	<u>Batch #</u>	<u>Product</u>
1656	P-58-R-70223	772320	"Dulux" Hi Hiding Mill White Gloss
1657	P-58-R-70221	772319	"Dulux" Mill White Gloss
1658	P-58-R-70219	772330	C. C. Dado Enamel #8 Med. Green
1660	P-621-R-70215	776928	du Pont T & C Flat White
1661	P-69-R-70213	776927	C. C. Semi-Gloss White
1662	P-66-R-70211	772321	"Duco" Undercoater
1663	P-479-R-70209	776914	Ovalite Undercoater
1664	P-670-R-70207	776913	Interior Semi-Gloss White
1665	P-633-R-70205	776929	Interior Gloss White
1666	P-689-R-70203	764083	Alkyd Primer Sealer

These batches met the usual control tests and have been released for regular stock. A check of these batches versus the laboratory experiments has shown them to compare quite favorable in initial properties to the laboratory experiments.

Four quarts from each batch have been set aside for future evaluations.

(f) Tabulated data of this evaluation is recorded in Book No. 5189.

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B. *[Signature]*

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