PAINT RESEARCH
PROJECT No. ____
(from Index

Inspection Trip
Exposures - Titanium Pigment Corporation
National Lead Company
du Pont Pigment Division
June 26 - 27, 1952

General Statement

On June 26 Mr. E. W. Fasig and the writer inspected the panel exposures of the Titanium Pigment Corporation and the National Lead Company at Sayville, Long Island, New York, and on June 27 the panel tests and some house tests of the du Pont Pigment Division at Newport and Wilmington, Delaware. Due to the terrific heat and high humidity our inspections necessarily were very restricted and only limited notes were made.

Most of the general statements made in our 1951 inspection report still hold and need not be repeated here. Supplementary remarks would include:

1. TPC reported that some antimony oxide would increase the chalk resistance of their so-called "non-chalking" rutile TiO_2 Titanox RANC. We did not see these panels.

2. du Pont stated that alkaline environment favored "rutile yellowing" and thus calcium carbonate must be used in whites with care. They said even anatase Ti-Pure FF can be made to yellow. TPC said Titanox RCHT can show yellowing but less than Titanox RA 10 MO.

3. du Pont is promoting their low zinc oxide - calcium carbonate paints for both whites and tints even more actively than in previous years.

4. Basic Silicate White Lead 45 X seems to be satisfactory as a reactive lead pigment.

5. Lead-zinc free stain-resistant paints continue to receive a lot of attention.

Titanium Pigment Corporation - Sayville, New York

White House Paints

(a) S-W Cooperative Series Exposed June, 1951

This series consists of a group of paints selected by TPC and S-W for cooperative exposure to follow the very informative cooperative series concluded in 1950. The new series were exposed in June, 1951 at Sayville by TPC and in Chicago and Miami by S-W.

Since this series is handled by special reports no details need be given here. All the white paints are in good condition at all locations after one year, except that at Sayville the lead containing whites with 82/18 Titanox A/Titanox RANC and 50/50 Titanox A/Titanox RCHT are slightly grey on the north, with some mildew. The S-W buff and grey tint controls show somewhat more fading than is desirable.

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(b) White House Paints C 088 - 097. Exposed February, 1952.

This series covers comparisons of the 30% rutile titanium calcium pigment Titanox RCHT and the new 50% pigment Titanox C 50. Obviously, the exposures had not progressed far enough in Sayville to make it worth while to discuss details. However, it is worth noting that the Florida set has started to chalk and so far C 50 is chalking less than RCHT.

(c) 1950 Commercial White House Paints. Exposed June, 1950.

This series includes a number of nationally distributed house paints as well as standard type paints such as lead-in-oil, 60/30/10 BCWL/ zinc oxide/extender, 50/50 titanium magnesium/leaded zinc, and 15.8/15.7/ 55.5/17 Titanox A/Titanox AA/leaded zinc/extender. The lead-in-oil has cleaned up fairly well on the south but the north panel is grey. The 60/30/10 paint is fairly clean on the south but is showing spotty clean-up on the north. The other two pattern formulas perform like the commercial multi-pigment paints.

Among the commercial paints S-W 471 Gloss White shows a tendency to crack along the edge of the bevel siding. It was chalking at the same rate as Lowe Brothers' High Standard 528 White on the south but was a trifle whiter and chalking a trifle faster than the 528 White on the north. Devoe's 547 White had an obviously grey cast on the south and was definitely grey on the north. Patterson-Sargent #218 was also definitely grey in cast. It is known that they use Titanox RA, which is too chalk resistant for a white. No special notes were made on National Lead, du Pont, Ward, Sears, or Benjamin Moore.

(d) 1948 Commercial White House Paints. Exposed June, 1948.

A series somewhat similar to (c), now 4 years old. As noted in previous reports, SWP is showing a fine checking pattern on the south but is O.K. on the north. Lead-in-oil (5 coats as in case of all but the one coat house paints) is almost down to bare wood on the south, with little paint left even on the north. Pittsburgh's 1-54 White looks very nice on the south, while National Lead's 10 and 110 Whites look good both south and north. Again, Devoe's 547 White looks grey on the north and their One Coat House Paint (over TPC's zincless primer) is checking on the south and looks grey and is mildewed on the north.

In another series put out in June, 1950, one coat over primer, the Devoe pigmentation of 8.5% TiO_2/67.5% titanium calcium/24% zinc oxide looks grey on the north. A related composition of 8.5% TiO_2/61.5% titanium magnesium/30.2% zinc oxide looks better.

(e) 1949 White House Paints. Exposed January, 1949.

The first group in this test carries 20% titanium oxide, 35% leaded zinc, 15% BCWL and 30% magnesium silicate. The second group is similar but the 15% BCWL is eliminated and the leaded zinc increased to 50%. When the TiO_2 is all anatase Titanox A the paints stay white but tend toward fine checking and cracking on the south. If the 20% of TiO_2 is divided equally between A and RANC the durability is improved but chalking is retarded too much and the paint becomes grey and mildews. In general, the removal of BCWL and increased leaded zinc decreases dirt collection.

(f) 1948 White House Paints. Exposed June, 1948.

The original pigmentation of 50% Titanox RCHT/50% leaded zinc collected too much dirt, but clean-up was improved by the use of 5% Titanox A. When the pigmentation was revised to 50% Titanox RCHT/40% leaded zinc/10% magnesium silicate the paint became prone to mildew. And again this tendency was reduced by the use of 5% Titanox A. (In the writer's opinion this still is not enough Titanox A, as proven by our Chicago north exposures.) The general appearance of the paints at 55% PVC with a 25% Z_2 bodied oil vehicle is better than at 29% PVC with 6% Z_2 bodied oil. When the leaded zinc is replaced by lead-free zinc oxide in a fume resisting pigmentation the higher PVC paints are less critical as to behavior when the zinc oxide is reduced and extender increased.

In another 1948 series the Titanox A was increased and RCHT decreased, after which the zinc oxide was reduced successively by lowering the leaded zinc or zinc oxide, and extender was increased, as follows:

(1) 55% Titanox RCHT/10% Titanox A/45% leaded zinc/10% Mg silicate

(2) 55% Titanox RCHT/10% Titanox A/40% leaded zinc/15% Mg silicate

(3) 55% Titanox RCHT/10% Titanox A/30% zinc oxide/25% Mg silicate

(4) 55% Titanox RCHT/10% Titanox A/25% zinc oxide/30% Mg silicate

These paints were all at 55% PVC with 4-1/4 pounds of oil per gallon, with 25% Z_2 bodied linseed. All the paints looked better than the series described in the previous paragraph, due to the higher anatase TiO_2 content. Dirt collection and mildew increased on the north, going from (1) to (4).

(g) Lead Silicate House Paints. Exposed June, 1948.

These paints were described in the 1951 report on page 10. The 15% Titanox A/38.5% leaded zinc/15.7% BCWL/30.8% Mg silicate paint was compared with a similar paint in which all the lead (sulfate and carbonate) was replaced with an equal volume of 45 X basic silicate white lead. The paints were made up at both 29 and 55% PVC. All of the paints are still performing well, with less cracking when basic silicate is used.

Another group involves a pigmentation based on 55% Titanox RCHT/ 5% Titanox A/50% leaded zinc/10% Mg silicate, in which the same variations were made as above, with the same results.

(h) High Hiding House Paints. Exposed June, 1949.

These are high opacity white house paints applied one coat over a 50% Titanox RCHT/40% BCWL/50% Mg silicate primer. The TPC paint is based on 25% RCHT/50% Titanox AMO/15% Mg silicate (they now recommend Titanox A 168 for better color and less erosion). Comparisons are made with Devoe's One Coat House Paint, Glidden's Endurance Imperial White and an unidentified one coat house paint with a pigmentation of 24.5% TiO_2/54% titanium magnesium/ 41.5% zinc oxide. The Devoe paint shows its usual grey cast and susceptibility to checking. The Glidden one coat paint looks O.K. but shows some crazing.

(i) Lead and Zinc-free Paints.

These paints were described on pages 11 and 12 of the 1951 report. The pigmentation consists of 5 pounds of TiO_2 per gallon, half Titanox RA 10 and half A 168, at 60% TiO_2/40% Mg silicate at 35% PVC. At 1-1/2 years and 2 years the paints look good self-primed on new wood, being especially clean on the north and whiter than conventional white house paints, but with some evidence of small slit cracks on the south. In the paints with 75% alkyd, 25% Chlorowax binder, Chlorowax 40 shows less chalk than Chlorowax 70. In general, Chlorowax seems to develop chalk easily but does not advance to erosion. TiO_2 plus extender in linseed oil chalks quickly and advances to bad erosion - this is retarded if part of the oil is replaced with Chlorowax. These non-reactive pigment paints must be protected with fungicides, and offer a great problem when used to repaint conventional zinc containing house paints.

(j) Lead Free White House Paints. Exposed June, 1950.

These paints are based on a pigmentation of 20% Titanox A 168/ 55% zinc oxide/22.5% Mg silicate/22.5% calcium carbonate. The binders and PVC's were varied as follows:

Oil			PVC
94%	Refined Linseed	- 6% Z_2 Linseed	29%
75%	"	- 25% "	33
50%	"	- 50% " - 20% Mg Oil	35
75%	"	- 25% Z_2 Driscy	33
45%	"	- 30% Refined Soya - 25% Z_2 Linseed	33
45%	"	- 30% Driscy - 25% Z_2 Linseed	33
45%	"	- 30% " - 25% Z_2 Driscy	33
75%	Driscy	- 25% Z_2 Driscy	33

At the present time (two years' exposure) all these paints are in good condition and quite similar, even on the north.

(k) Tint Base House Paints. Exposed June, 1949

These are 29% PVC tint bases with pigment 12% Titanox RANC/50% zinc oxide/58% extender in the first group and 12% Titanox RANC/50% leaded zinc/58% extender. The extenders were successively magnesium silicate, calcium carbonate, domestic terra alba and barytes. The leaded zinc paints show slightly more chalk face than the lead-free group. With zinc oxide magnesium silicate shows slightly more fading and mildews, barytes shows fair tint retention and terra alba is outstanding in tint retention. Practically all such color differences disappear when leaded zinc is used. The same general conclusions hold at 55% PVC.

National Lead Company - Sayville, New York

Only a brief review was made of the National Lead and S-W cooperative series of exposures evaluating 45 X Basic Silicate White Lead in house paints. These have been described in previous reports and cover three methods of substituting basic silicate and 12/88 leaded zinc for 35/65 leaded zinc in whites, and buff and grey tints:

A. Zinc oxide replacement by equal poundage, lead by equal volume.

B. Maintain 55/65 lead/zinc ratio, replace on total volume.

C. As B but replace on equal weight, adjust volume with extender.

As further variations, the zinc oxide level was reduced from the regular 52% to 25 and 20%, and in one special variation Azo ZZZ-53 was substituted for leaded zinc.

A special report with photographs is available for loan to those interested. In general all the paints are performing well after 4 years of exposure, and there are very few radical differences.

Basic lead silico-chromate M 50

A sample of this pigment has been submitted to us on a semi-confidential basis for evaluation as a rust-inhibitive pigment. It is a chromated 45 X silicate pigment, made according to our understanding from 45 X, chromic oxide and potassium chromate. The pigment is yellow, with very low opacity or tinting strength.

A series of metal primers put out in 1939 showed a chromated red lead to be superior to red lead in an alkyd metal primer. A basic chromated red lead was even better. Panels put out in 1949 showed chromated lead silicate to be still better, especially when not topcoated.

We will proceed with our own evaluation. Incidentally, National Lead does not recommend 45 X for metal primers. It is fair for salt water immersion.

On June 27 we inspected the panel exposures and a few house tests conducted by the du Pont Pigment Division at Newport and Wilmington, Delaware. As stated previously, the extreme heat made any detailed inspection impossible. Some valuable information was obtained regarding their special mildew fence, their farm lay-out and the design and cost of erecting their new building, which will be useful in planning our new Chicago exposure farm.

(a) White House Paints

It will be recalled from the 1951 report that we were interested in certain comparisons of various titanium pigments in so-called "high lead," "low lead," and "no lead" formulations. Details of the formulations were given in the 1951 report. It should be kept in mind that the "high lead" formula actually carried 38% of lead pigment, and the so-called "low lead" formula (Ti-Sil) 17-1/2% lead.

Some of the earlier observations still hold. Ti-Cal at the same TiO_2 content is still cleaner than the paint with straight Y-CR. Dirt collection is aggravated as the lead content is reduced or eliminated. The high oil paints show generally poorer appearance and greater differences than the low oil paints (3.75 pounds of oil per gallon).

(b) High TiO_2 House Paints

This group included several series of exposures of varying age. Fundamentally they consisted of paints in which the TiO_2 content was increased progressively from 1.8 to 2.25 pounds of TiO_2 per gallon, and straight Ti-Pure FF compared with 50/50 blends of FF with Y-CR, R-110 and Ti-Cal R-25. There also were blends of 80/20 FF and R-610.

The general conclusions which may be drawn from these series is that straight FF shows the best self-cleansing, and that dirt collection on slower chalking TiO_2 types is reduced when intermixed with FF. Self-cleansing is improved as the TiO_2 content is increased. 80/20 FF/R-610 is approximately equal to a 50/50 blend of FF/Y-CR in resistance to chalking and washing. R-610 is recommended for intermix with FF to control chalking where washing has caused customer complaint. No evidence is available as to dangers of yellowing. (We have our own exposures covering chalking and washing.)

(c) Two Coat Systems - Durability

A top coat with the typical Ti-Sil pigmentation of 15% Ti-Pure FF/ 50% leaded zinc/35% Mg silicate was exposed as two and three coat work self-primed and over four commercial primers. Special primers included 12-1/2/45/ 42.5 and 22.5/43.5/34.2 Ti-Pure R-610 leaded zinc/Mg silicate pigmentations and Federal Specification primer TT-P-25 where R-610 was used as the TiO_2 content.

The conclusions after 4 and 5 years' exposure were about as expected. Three coats, of course, were better than two coats and self-priming not as good as using properly formulated special primers. A high hiding (2 pounds per gallon) R-610 primer looks very good with a full film when topcoated, but naturally its hiding power might tempt the painter to spread it too far. The S-W 450 Undercoater is performing well. du Pont concludes that leaded zinc in the primer aids in retarding erosion and mildew but makes the system vulnerable to blistering.

(d) Low Zinc Oxide - Calcium Carbonate Paints

du Pont is placing a lot of emphasis on this phase of their formulation and exposure work. They feel that in the presence of alkalinity introduced when calcium carbonate is used as the extender the zinc oxide content can be reduced sharply below conventional levels. Typical pigmentations under observation may be grouped as follows:

Pigmentation		White Lbs. per Gal. TiO_2	ZnO	Oil	PVC %
15/50/35	Ti-Pure FF/leaded zinc/Mg silicate	1.27	2.76	4.25	31.6
12.4/41.3/46.3	" / " /$CaCO_3$	1.27	2.76	5.76	41.2
20.1/11/68.9	" / " / "	1.82	0.65	5.66	45.1
17.5/41.2/41.3	" / " / "	1.80	2.76	5.79	40.5
25.1/10.7/64.2	" / " / "	2.35	0.65	5.62	43.7
16.9/33.4/49.7	" /Acicular ZnO/ "	1.40	2.76	4.05	35.5
20.7/5.7/73.6	" / " / "	1.83	0.50	5.65	45.4
21.6/31/47.4	" / " / "	1.92	2.76	5.93	37.8
25.8/5.5/68.7	" / " / "	2.35	0.50	5.62	43.9

The TiO_2 content was adjusted to hold hiding constant as the zinc oxide or leaded zinc was reduced, and all substitutions were at equal binder requirements. Series 11027 were exposed south and north vertical on August 30, 1950 and Series 11054 on August 29, 1951.

Pigmentation		White Lbs. ZnO/Gal.	PVC %
15/50/35	Ti-Pure FF/leaded zinc/Mg silicate	2.76	51.6
18.8/12.7/68.5	" / " / "	0.56	51.7
11.5/38.5/50	" / " / $CaCO_3$	2.76	44.8
13.1/8.8/78.1	" / " / "	0.56	47.4

These paints were exposed in Series 8627 south and north vertical on March 11, 1949. Hiding power was not controlled, formulas are at equal free binder.

Pigmentation		Gray or Buff Lbs. ZnO/Gal.	PVC %
12.5/45/42.5	Ti-Pure R-610/leaded zinc/Mg silicate	2.54	55.5
15.7/12.5/71.8	" / " / "	0.56	52.2
11.2/26.4/62.4	" /Acicular ZnO/ $CaCO_3$	2.54	42.9
11.4/5.9/82.7	" / " / "	0.56	47.4

du Pont believes that calcium carbonate extenders may permit a marked reduction in the zinc oxide or leaded zinc content of white or tinted house paints. We recommend caution in adopting such pigmentations but some trials would be in order. One of the big problems would be to locate adequate supplies of satisfactory calcium carbonate and to be sure of uniform quality. du Pont has had the most experience with York Whiting from R. E. Carroll, Inc. Evidently they prefer dry ground whiting over wet ground and avoid precipitated types. Georgia Marble's No. 10 White and Thompson-Weinman's No. 1 White are satisfactory so far but test experience is more limited.

In general, the low zinc oxide or leaded zinc-calcium carbonate paints are performing well both in whites and tints. Whereas the low zinc oxide-magnesium silicate paints show very bad mildew in both whites and tints and poor tint retention, similar paints made with calcium carbonate show good performance and good control of tint and mildew. Actually in gray tints performance is good all the way from 2.6 to 0 pounds of zinc oxide per gallon, while in the buffs there is some increase in mildew below 1-1/2 pounds per gallon. Still lower ZnO contents may be entirely practical provided an auxiliary fungicide such as phenyl mercury oleate is added.

Broeker has suggested the following formulation for a second grade white and possibly even as an all purpose white, since the TiO_2 is 2/3 Ti-Pure FF and 1/3 R-610. A similar all R-610 may prove to be a first class tint base. We are checking.

	Pounds/100 Gal.	Gallons
Ti-Pure FF	100	5.08
Ti-Pure R-610	50	1.45
Acicular ZnO ZZZ-55	150	5.20
York Whiting	650	28.78
Soya lecithin	5	0.58
Alkali Refined linseed	268	54.78
X bodied linseed	89	11.20
24% Pb naphthenate	8.9	0.95
6% Mn naphthenate	1.2	0.15
Mineral spirits	105	15.87
	1425.1	100

This formula should be watched very carefully for rutile yellowing as the calcium carbonate may accentuate this tendency.

(e) Mildew inhibitors

du Pont is very high on phenyl mercury oleate as a mildew inhibitor. They believe that it is much more effective than Ad-It or our (2255) cresyl mercury naphthenate and since it costs less a notable saving can be made. We are now testing a 10% solution of the oleate which we obtained from the du Pont Organic Chemicals Department. Other fungicides showing promise in their tests are phenyl mercury salicylate and cuprous oxide.

The inhibitors were tested in amounts of 1/2, 2 and 5% by weight based on the total paint, using a 10/10/10/70 Ti-Pure FF/Ti-Pure R-610/leaded zinc/Mg silicate low oil paint. The control is showing bad mildew after 1-1/2 years' exposure. Shirlan is fair but off-color, Copper-8 is fair at 2 and 5% but color is poor, Cunilate #40 is ineffective, phenyl mercury salicylate is effective even at 1/2% (used in concentrated solution). Even 5% of Ad-It is not as effective as 1/2% of phenyl mercury oleate.

There were some sets of panels which were not examined due to the heat. However, it was thought that the conclusions drawn by du Pont might be of interest. It should be emphasized that we had no opportunity to confirm these conclusions.

(f) Special Oils

Ardol and Drisoy show excellent performance as house paint vehicles in exposures approaching six years. There are limited indications that calcium carbonate may be a preferred extender for soybean paints.

(g) Stain resistant paints

One group of stain resistant paints were formulated with 52/48, 40/60 and 55/65 Ti-Pure FF/Mg silicate, at a PVC of 50% in various vehicles, and exposed in October, 1950 and March, 1951. The exposures were made with and without phenyl mercury oleate at 0.2% by weight of the total paint as a mildew inhibitor. du Pont's conclusions are that considering the relatively short exposure time Aroplaz 1271 offers most promise for lead-zinc free paints of high total solids (approximately 72.5% by volume) with good brushing properties. Considering application characteristics, mildew inhibition, color and stain resistance, they recommend Asbestine 5 I as the most promising extender.

(h) Blister Resistance

Considerable detail on du Pont's blister resistance tests and their blister test house is available in the report supplied us at the time of our visit. We did not inspect the test house on this call. Observations made last year appear on pages 7 and 8 of the 1951 report.

du Pont's present observations are as follows:

1. Paint compositions vary widely in blister resistance with special lead-zinc pigment free alkyd stain resistant type paints showing exceptionally good performance as tested on new wood.

2. Zinc oxide, used in this work as leaded zinc oxide, is detrimental to the adhesion characteristics of certain films as tested under adverse moisture conditions. In this connection, however, a further evaluation of the vehicle effect is needed.

3. Alkyd stain resistant type house paints can be made which will show more permeability than regular house paint when used self-primed on new wood.

4. Zinc oxide, used in this work as leaded zinc oxide, or white lead in a primer serves to decrease the permeability of certain alkyd type top coats.

5. The application of an alkyd stain resistant type paint over a primer or first coat which carries leaded zinc oxide results in a marked decrease in permeability which may lead to severe peeling.

6. High permeability results are in the direction of superior blister resistance.

7. It remains to be demonstrated that alkyd stain resistant type paints can be made which will retain permeability and show no greater tendency toward peeling than regular house paints when used for repaint purposes under adverse moisture conditions. Further, the actual field performance of such stain and blister resistant paints is yet to be established.

Blister Ratings:

No.	Paint	Avg. % Effective Blister Resistance
A	Regular House Paint - self-primed	52
B	Paint A over Fed. Spec. TT-P-25 (Rev.) Zincless Type Primer P-1	72
C	Paint A over a "Ti-Pure" R-610/55% ZnO/Mg Sil. type primer at 55% P.V., P-2	65
D	Same as C with primer at 40% P.V., P-3	71
E	Alkyd Stain Resistant Paint I - self-primed	99
F	" " " " II - "	100

Adhesion:

No.	
E	Alkyd Stain - Resistant Paint I
E/P-1	" - " Over Primer P-1 - Zincless
E/P-2	" - " " P-2 - with 55% ZnO
F	" - " II

Nos.	E	E/P-1	E/P-2	F
Avg. % effective blister resistance	99	86	62	100
Wet adhesion - "Scotch" tape	100	96	47	100
- Spatula	8	4.1	2.6	8

Notes:

Spatula rating - resistance to separation of film from wood.

8 - Good 6 - Fair 4 - Poor 2 - Very Poor

Dry panels all showed good adhesion.

Average wet adhesion rating based on 20 readings for the "Scotch" tape and 10 readings with the spatula.

Permeability:

No.	Paint
A	Regular house paint
E	Alkyd Stain Resistant Paint I
F	" " " " II

No.	Avg. Specific Permeability A	E	F
Self-primed	.86	.87	1.07
Over TT-P-25A, P-4 Zincless	.89	.62	.76
" " Replacing lead with 55% ZnO, P-5	.75	.58	.66

Note: Average of 5 readings.

Method of test - Federation Standard 9-47
Official Digest No. 271, 479
(August, 1947).

Composition:

Alkyd Stain Resistant Paint I

52/48 -"Ti-Pure" TF/Mg Silicate in Glyptal 2475 at 50% P.V.

Alkyd Stain Resistant Paint II

34.8/65.2 - "Ti-Pure"/Mg Silicate in Aroplax 1271 at 50% P.V.

(i) Asbestos Shingle Paints

du Pont found that a Pliolite S-5 paint formulated with 20% Ti-Pure R-610 or R-110, 60% barytes, 10% Mg silicate, 10% mica in Pliolite S-5 plasticized with Chlorowax was the only composition tested which showed good performance on glazed asbestos shingles. The Pliolite paint and the Stain Resistant Aroplaz 1271 paint are considered desirable for cement veneer shingles or surfaces relatively high in alkalinity. Standard house paints showed good performance on gray or regular asbestos shingles (we do not know whether these were first weathered). Exposures of latex and vinyl emulsion type paints are in progress.

We only had time to examine two du Pont test houses, with the following special comments worth noting:

(j) Dumne house. This is an upper bracket house and garage in a rural setting. Prior to 1951 the owner complained of washing of du Pont #40 White over the field stone lower walls within a year. The test paint was applied in April, 1951 and consisted of a straight Ti-Pure R-610 white, with 1.7 pounds R-610, 4.42 pounds of leaded zinc and 2.9 pounds Nytal 300 per gallon. Earlier this year the surface was showing some mildew. While the mildew has now disappeared it would have been safer to have added a fungicide.

The house presents a very good appearance. However, it can scarcely be assumed that a straight R-610 TiO_2 paint would solve our washing problems, as the very clean, rural location makes dirt collection no problem at all.

(k) du Pont house. This house has been used for tests for several years and appears in previous reports. The most recent test was applied in November, 1950. The primers are based on Ti-Pure R-610 and include a zinc-containing topcoat tint base type of formula (45% leaded zinc) and a revision of TT-P-25, which is zincless. The so-called "test paint" is conventional, with half FF and half Y-CR TiO_2. The specials include two conventional lead-free (fume-resisting) pigmentations with FF TiO_2, with Asc ZZZ-55 zinc oxide in one instance and New Jersey's XX-505 in the other. Another special has a pigmentation of 11.2% FF/11.2% Y-CR/52.7% leaded zinc/24.9% Nytal 300, in which the Nytal was simply stirred in and 0.5% Rheotal was added. There is also a low zinc-calcium carbonate paint such as was described under du Pont (d). The pigmentation consists of 12.4% FF/12.4% Y-CR/10.7% leaded zinc/64.5% calcium carbonate at 45.4% PVC. This calculates out to two-thirds of a pound of zinc oxide per gallon.

All of the paints are in generally good condition. The low zinc oxide - calcium carbonate paint seems cleaner than the Nytal paint, and the regular leaded zinc paint a trifle cleaner than the XX-505 paint.

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As usual, every one did their utmost to make our trip informative and as pleasant as it was possible, considering the weather.

M. VAN LOO

Director of Paint Research

MVL:AR