MAY RESEARCH REPORT

1964

Coatings and Resins Group

CONFIDENTIAL

Trade Sales

retention with V-891 modification.

Series 2-41 & N-2-41, 4 Panels, 17½ Months, Continuing

Resynal V-869 in Japalac (Y-1217-C
Trace better gloss with Resynal V-869 over st'd.

Series 3-141 & N-3-141, 6 Panels, 6 Months, Continuing

Use of W-404 Damar colution in Ripolin (Y-2900-R)
No significant differences.

Series 3-142 & N-3-142, 8 Panels, 6 Months, Continuing

Use of RCR-6223 in Japalac (Y-1217-C exp.)
RCR-6223 showing slightly better gloss retention (5-10 units) than V-869.

Series 3-59, 8 Panels, 6 Months, Continuing

Replacement of YW-77 with Busan 11 or P-7 lead in Y-470
No significant differences.

Total: 8 Series, 84 Panels

Subject: Miscellaneous Exposures at Cleveland
(NT23045AH262)

Contributors: Green, Davis, Southwick

Summary:

1. Two years exposure shows Chemet 118 to be equal to SW's 18M leaded zinc oxide.

2. Two years exposure of Mound City house paint formulas show W-249 to be equal to the previous leaded zinc formulation. Paints tested were LZT644, LZT611, LZT607B, and LZT605.

3. Two years exposures show that the machine grade Dramatone chalks a trace more than the previous Dramatone quality.

4. Shake Kote shows a slight advantage in color retention as compared to Y2750. Tints were made with Dramatone. The untinted Y-2750 was whiter and cleaner than the Shake Kote. Exposures were 2 years.

5. Endurance Y-1871 (our standard quality) using V869 was compared to an experimental Y-1871 using V-891. The lower solids of the V-891 gave a lower gloss and the paint film appeared "lean".

6. Our standard quality Everon non-chalking white house paint using W-33 was compared to the same paint using W-219. The W-219 is a "dehorned" zinc. A treatment has been added to the pigment to reduce its reactivity. After two years in Cleveland no difference can be found between these two pigments.

Subject: Japalac and Polyurethane Florenamel Dramatone Bases
(NT24071GF163)

Contributors: Davis, Bednarik, Southwick

Summary: The Y880, Polyurethane Florenamel Deep Tint Base (75# TiO_2) and Y818, Polyurethane Florenamel White Tint Base (230# TiO_2), have been approved and are being written up. The Y887, Polyurethane Intermediate Tint Base (approx. 112# TiO_2) is near completion. Quality of these materials, a level of 8 oz./gal. of a Dramatone colorant, are being tested against our regular polyurethane Florenamels now in production. Tests are comparable for adhesion over aged, glossy surface, water resistance, stability, dry, high humidity dry, and gloss. Abrasion, weatherometer and exterior exposures are not yet completed.

Y1218, Japalac White Tint Base (220# TiO_2) has also been approved and is being written up. The Y1218 quality is the same as our regular Y1217, Japalac White quality.

Subject: Low Cost Florenamel
(NT23048AD263)

Contributors: Davis Bednarik, Southwick

Summary: We have begun an examination of our standard Florenamel (V-869 - V-357 quality) to lower the cost and market as a Craftsman Florenamel Line. Our work consists of replacing the V-357 with a petroleum resin such as Neville LX-1000 or LX-685 (VM-685) to shorten tht film. A substantial cost reduction can be realized by this replacement. We are in the process of evaluating this new vehicle quality for gloss retention, exterior exposure, water resistance, abrasion testing, dry and adhesion characteristics.

Subject: Formulation of Endurance Tint Bases for the New Universal Color System
(NT24071GF163)

Contributors: Davis Bednarik, Southwick

Summary: Paints have been formulated and formulas issued for two qualities of Endurance Tint Bases. One quality is an oil type similar to the Endurance 1W125 quality with raw linseed oil and bodies linseed oil. This type will be made in plants 4,5,8 and 16. The second type is similar to Y-1891 and Y-1855 using V-869 and 0265 with Attagel 30 as a bodying agent.

Three tint bases were formulated. A deep tint base at 75.4# of pure titanium dioxide or 144# of titanium calcium. An intermediate tint base at 111# of pure titanium dioxide or 246# of titanium calcium. And a tinting white at 240# of pure titanium dioxide.

Zinc Oxide in Acrylic - Alkyd Paints

Continued evaluation of zinc oxide as a fungus and chalk mark controlling agent ME4-127-1,(Table II), is being made with variations of surfactants at different levels, to achieve viscosity stability for long term aging. Early tests indicate a trend toward viscosity rise.

Acrylics Modified with V-855 Alkyd for One Coat Spred House Paint

Due to loss of viscosity in Acrylic Alkyd paints mentioned in April's report, formulations ME4-134-2, ME4-134-3, ME4-135-1, 2, and ME4-142-2, have been made with various surfactants to aid in viscosity stability and improved color uniformity over varied suction surfaces. To date, paints made with the addition of Tergitol NPX (Non-ionic surfactant) seem to have the least amount of viscosity drop.

In Bark-Brown ME4-134-1, AC-34 used as control has better sheen uniformity than RCR-0401 and RCR-0400. Evergreen ME4-134-4, and Cape Cod Red ME4-142-3 (Tables II and III) seem to have fairly good color uniformity and color pigment acceptance.

A review of latices from RE-20130-RE-20136, and RE-20167, 168, in previous formulations are under study, along with RE-20454 (ME4-141-1-3) for determining the desired level of ethyl acrylate and Benax 2A1 in order to decrease water sensitivity, dirt pickup and to improve viscosity stability.

Examination of Oil-Water Paints

During May test fence and house exposures of Archer-Daniels-Midland and Cargill in Minneapolis and Spencer Kellogg in Buffalo were examined. For details see letter "Linseed Water Thinned Paint" to Mr. S. T. Bowell dated May 26, 1964.

The exposures of all three companies look very good. Cargill and ADM have active programs going with their vehicles. The activity at Spencer Kellogg seemed very slow.

The results observed on these trips indicate continued studies with Arolin 1652 (ADM) and Cargill 1308. Linaqua (S-K) should be kept under study because of good durability although they have a dry retention problem with their vehicle.

Oil-Water Paints (Table IV)

In paint EE4-126-1 Colloid 667 was substituted for the recommended Colloids 581-B to check for improved

defoaming and antifoam characteristics. It was checked against Cargill's standard and showed a decided advantage in controling foam created by brushing. Colloids 677 is still being checked for its affect on stability and the overall integrity of the paint.

Several latex modifiers were used in place of Acrysol G-110 to see if they would improve tack free time and water sensitivity. Dry times were affected adversely by the addition of any of the four latexes, RCR0401, VM885, VM844, and VM879. The standard Cargill sample gave much faster tack free time. Water sensitivity seems to be much better with the latex modifiers in place of the acrysol at low levels.

TABLE I SHP APRIL 1964

TITANIUM EVALUATION ZOPAQUE R-88-S

		ME4-125-1	ME4-125-2	ME4-125-3	ME4-125-4
W-208	Zopaque R-88	225.0	do	--	--
	Zopaque R-88-S	--	--	225.0	do
W-121	Snowflake	73.0	do	do	do
W-188	Nytal 300	74.5	do	do	do
CH-380	Hg. Fungicide	1.5	do	do	do
CH-473	TKPP	3.0	do	do	do
CH-474	Igepal CTA-639	4.0	do	do	do
CH-450	Daxad 30	7.0	do	do	do
CH-417	Defoamer 357	2.5	do	do	do
195-T-27	QP-4400 (3%)	145.0	do	do	do
V-855	Alkyd	66.4	do	do	do
S-148	Refined Kerosene	12.0	do	do	do
379A-37	Acrylic	343.3	--	343.3	--
RCR-0401	Acrylic	--	330.0	--	330.0
VM-432	Lead Drier	5.0	do	do	do
VM-433	Mn Drier	1.5	do	do	do
CH-444	Balab 746	4.0	do	do	do
S-14	Water	151.8	162.5	151.8	162.5
Solids Volume		37%	do	do	do
PVC		35%	do	do	do
Yield		100 Gals.	do	do	do

TABLE II

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		ME4 127-1	ME4 134-1	ME4 134-2	ME4 134-3	ME4 134-4	ME4 135-1	ME4 135-2
W-208	Zopaque R-88	200.0	-	-	-	10.0	225.0	do
W-91	Zopaque SD	30.0	-	-	-	-	-	-
W-33	Zinc oxide	140.0	-	-	-	-	-	-
W-188	Nytal 300	77.2	-	-	-	117.0	74.5	do
W-10	Barytes	-	112.2	do	do	-	-	-
W-121	Snowflake	-	178.3	do	do	115.0	73.0	do
BN-62	Brown oxide	-	53.7	do	do	-	-	-
YW-89	Yellow oxide	-	71.0	do	do	41.6	-	-
R-269	Red oxide	-	24.0	do	do	-	-	-
305B-130	Dispersed Carbon Black	-	7.4	do	do	-	-	-
CH-380	Hg. Fungicide	1.5	do	do	do	do	do	do
CH-473	TKPP	2.0	3.0	do	do	do	do	do
CH-474	Igepal CTA-639	4.0	do	do	do	do	do	do
CH-450	Daxad 30	4.0	7.0	do	do	do	do	do
CH-447	Defoamer 357	-	2.5	do	do	do	do	do
	Tergitol NPX	-	2.0	do	do	do	do	do
	Igepal Co-430	2.0	-	-	-	-	-	-
	Colloid-677	4.0	-	-	-	-	-	-
195T-27	QP-4400 (3%)	150.0	110.0	do	do	145.0	150.0	do
V-855	Alkyd	66.4	do	do	do	do	do	do
S-148	Refined Kerosene	12.0	do	do	do	do	do	do
RCR-0401	Acrylic Latex	330.0	-	330.0	-	-	330.0	-
AC-34	Acrylic Latex	-	330	-	-	-	-	-
RCR-0400	Acrylic Latex	-	-	-	335.0	do	-	335.0
VM-432	Lead Drier	5.0	do	do	do	do	do	do
VM-433	Mn Drier	1.5	do	do	do	do	do	do
S-14	Water	161.2	166.4	166.7	163.8	139.0	155.4	152.5
CH-444	Balab 746	-	4.0	do	do	do	do	do
305-A-90	Thalo Blue	-	-	-	-	12.0	-	-
305-G-78	Thalo Green	-	-	-	-	19.0	-	-

TABLE III

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		ME4 141-1	ME4 141-2	ME4 141-3	ME4 141-4	ME4 142-1	ME4 142-2	ME4 142-3	ME4 146-1
W-208	Zopaque R-88	220.0	do	do	do	230.0	220.0	18.0	230.0
W-91	Zopaque SD	30.0	do	do	do	20.0	30.0	-	20.0
W-121	Snowflake	98.2	do	do	do	-	-	231.8	-
W-188	Nytal 300	102.4	do	do	do	-	101.7	-	-
W-223	Alsilate "W"	-	-	-	-	30.0	do	-	30.0
	Fibrene C-400	-	-	-	-	100.0	-	-	-
YW-89	Yellow oxide	-	-	-	-	-	-	6.5	-
BN-56	Brown oxide	-	-	-	-	-	-	22.0	-
R-269	Red oxide	-	-	-	-	-	-	52.0	-
W-241	Ruby Talc	-	-	-	-	-	-	-	99.3
CH-380	Hg. Fungicide	1.5	do	do	do	do	do	do	do
CH-473	TKPP	3.0	do	do	do	do	do	do	do
CH-450	Daxad 30	7.0	do	do	do	do	do	do	do
	Tergitol NPX	2.0	do	do	do	do	-	-	-
155T-27	QP-4400 (3%)	145.0	do	do	do	do	do	do	do
CH-447	Defoamer 357	2.5	do	do	do	do	do	do	do
V-855	Alkyd	66.4	do	do	do	-	66.4	do	-
S-148	Refined Kerosens	12.0	do	do	do	do	do	do	do
CH-474	Igepal CTA-639	4.0	do	do	do	do	do	do	do
GRV-3140	Urethane Oil	-	-	-	-	65.9	-	-	65.9
	Igepal CO-610	-	-	-	-	-	2.0	do	-
VM-885	W.S. Acrylic	-	-	-	-	-	-	-	75.0
AC-34	Acrylic Latex	333.0	-	-	-	-	-	-	-
RCR-0400	Acrylic Latex	-	335.0	-	-	-	335.0	do	-
RCR-0401	Acrylic Latex	-	-	330.0	-	-	-	-	-
RE20454		-	-	-	340.6	-	-	-	-
Propiofan 660D (from Norway)		-	-	-	-	-	-	-	255.0
VM-879	Styrene Acrylate	-	-	-	-	255.0	-	-	-
VM-432	Lead Drier	5.0	do	do	do	do	do	do	do
VM-433	Mn Drier	1.5	do	do	do	do	do	do	do
CH-444	Balab 746	4.0	do	do	do	do	do	do	do
S-14	Water	135.3	135.0	135.7	135.0	151.2	157.8	157.9	161.0

TABLE IV

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		EE4 126-1	EE4 134-1	EE4 134-2	EE4 134-3	EE4 -34-4
W-271	Rutile TiO_2	250.0	do	do	do	do
Titanox AMO	Anatase TiO_2	50.0	do	do	do	do
W-188	Nytal 300	50.0	do	do	do	do
W-35	Zinc Oxide	125.0	do	do	do	do
Cargill 1308	Linseed Oil Emul.	367,0	do	do	do	do
VM-879	Styrene Acrylic	-	-	-	-	6.1
VM-844	P.V.A. Copolymer	-	-	-	6.2	-
VM-885	Water Solution Acrylic	-	-	12.5	-	-
RCR-0401	Acrylic	-	6.8	do	-	-
M-484	Surfynol TG	2.0	do	do	do	do
KTPP		7.2	do	do	do	do
CH-322	Tamol 731	13.6	do	do	do	do
CH-181	Ethylene Glycol	12.0	do	do	do	do
CH-280 (25%)	Triton X-100	18.0	do	do	do	do
VM-659	Phenyl Mercuric Seccanate	2.0	do	do	do	do
Colloids 677	Defoamer	4.0	-	-	-	-
Colloids 581-B	Defoamer	-	4	do	do	do
Natrosol 25011R (25%)	Thickener	30.0	do	do	do	do
Acrysol G-110	Thickener	15.0	--	-	-	-
Advacar 6% Cobalt Drier		2.2	do	do	do	do
Advacar 6% Manganese Drier		2.2	do	do	do	do
Advacar 24% Lead Drier		9.0	do	do	do	do
S-14	Water	255.0	do	do	do	do

GLD006735

Subject: Spred Glide-On

Contributors: J. Sainsbury, K. Smaltz

Summary: Spred Glide-On has been completely reformulated. Formulas have been issued to Atlanta for initial production runs. Viscosity data from oven and roll testing of these new formulas show good stability. Prototype formulas, now 1 to 2 years old, indicate the possibility of producing satisfactory stability in Spred Glide-On without any additional stabilizer in the paint, other than the 2.0 lbs of T.K.P.P. used in the grind.

The use of RCR-0106B Latex in Glide-On continues to be a problem. Recent changes in the latex have not helped to curb excessive drop in viscosity of the paint. Further work is underway to try to solve this problem.

Discussion: Spred Glide-On - Reformulation

The entire Spred Glide-On line has been reformulated. Initial production batches are being made by Atlanta. Oven and roll tests of these new formulations indicate good stability with the exception of the intermediate and deep tint bases, which show a relatively large Ku drop in the oven.

Oven test - Paint sample in ½ pt. can stores in oven at 120°F.

Roll test - Paint sample in ½ pt. can 2/3 full rolled on mill rollers.