



MEMORANDUM REPORT

SUBJECT

ONE COAT HOUSE PAINTS
RX 476 VS COMPETITIVES

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PAINT RESEARCH DEPARTMENT

CHICAGO, ILLINOIS

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ONE COAT HOUSE PAINTS

Purpose.

The purpose of this work is to evaluate several competitive one coat house paints in comparison with Rx 476 SWP House Paint One Coat White.

Conclusion

Rx 476 SWP One Coat White shows a more uniformly desirable balance of properties than similar paints marketed by Wards, Sears, Glidden, Devoe and du Pont. None of the competitive products equalled Rx 476 in ease of application. Based upon the data obtained in this survey and upon a considerable backlog of exposure testing, Rx 476 is certain to show superior durability. It is well in line with the better competitive products for color, gloss, leveling, hiding power and raw material cost. Some competitiveness feature so-called stain or fume resistant paints with formulations of questionable value. In general, Rx 476 was found to be an outstanding product which deserves greater emphasis in our sales efforts.

Details of Tests

Five nationally distributed one coat house paints were examined in comparison with Rx 476 SWP One Coat White. Paints made by Wards, Sears, Glidden, Devoe and du Pont were included. All paints were purchased from local retail dealers. While the idea of a one coat house paint is not new, their large scale promotion by nationally known manufacturers is quite recent. In some cases they are being

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featured in preference to the standard grade of house paint. This is the case of Wards and Sears and both sources report good volume for their one coat paints. A Devco representative stated that they are now selling approximately equal volumes of their one coat and regular whites. Most suppliers offer one coat house paint in white only. Devco offers two light tints in addition to their white. In every case these paints are recommended for one coat work over repaint surfaces or with a primer on new wood.

All pertinent features of the one coat paints were evaluated and composition estimated on the basis of label analysis. Application properties are listed in the following table. Brushing was rated by an experienced operator during application of the paints to a primed surface. High shear values are given for comparison.

Paint	Application Directions	Brushing	High Shear	Settling
Rx 476	As is	Excellent	2.8	9
Wards	As is	Good	3.5	9
Sears	As is	Fair	4.0	8
Glidden	As is	Good	3.8	8
Devco	Thin as needed	Poor	5.1	5
du Pont	Thin as needed	Good	3.7	7

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Package condition or settling was rated by the conventional method with 10 considered as perfect. The Devco paint showed hard settling and vigorous stirring was required before it was ready for use. All other paints dispersed readily with somewhat more than average stirring required for the du Pont paint. The Devco paint had rather poor color in the package which bleached out fairly well after the film was exposed to light for several days. The Sears paint appeared whitest both in the package and when brushed out. Others showed good average color.

In four cases, label directions state that the paint should be applied at package consistency while Devco and du Pont recommend use of thinner if needed. In the brushout test, all paints were applied as received. Rx 476 was rated excellent for ease of application and is superior to all of the other paints in this respect. Wards, Glidden and du Pont showed good brushing with Sears rated as fair. The Devco paint brushed poorly both full bodied and when thinned. High shear values show excellent correlation with the actual brushout ratings.

Physical properties and details of composition of the one coat paints appear in the two tables which follow.

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Paint	Lb./Gal.	Viscosity		Penetration	Lb.Oil/Gal.
		No. 3 Cup	Stormer		
Rx 476	15.27 lb.	27 sec.	82 KU	14 mm	4.31
Ward	13.13	50	89	6	4.27
Sears	13.75	55	98	14	4.11
Glidden	15.00	40	88	21	5.30
Devoe	14.83	55	99	13	3.86
du Pont	13.36	41	36	22	4.64

Actual weights per gallon listed in the table compare closely with the calculated values. The viscosity of Rx 476 is considered ideal for ease of application and control of spreading. Viscosity of all of the competitive paints is rather high which may be intentional on the part of the manufacturer to limit spreading rate and to obtain better hiding. If package consistency is too high, the painter may add thinner and obtain poor hiding.

Penetration was determined by the filter paper penetration test. Values for the Glidden and du Pont paints are excessive and would indicate the use of vehicles having rather poor holdout. Rx 476 shows average penetration which yields good holdout and uniformity over a variety of surfaces. Low penetration of the Ward paint is due to the Chlorowax 70-alkyd-bodied oil vehicle.

Pounds of oil or oil plus resin solids per gallon are listed. Rx 476 and three of the competitors are normal in this respect. The Glidden paint is high while Devoe is below the amount considered as desirable for a paint of this type.

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The second table lists further points of interest for evaluation of the one coat paints.

Paint	FVC	Lead Pigment	Hiding Units	Raw Material Cost Per Gal.	Retail Price Per Quart
Rx 476	33.5%	Yes	23,570	\$2.07	\$2.45
Wards	33.4	Yes	24,280	1.79	1.65
Sears	33.3	No	25,422	1.90	1.72
Glidden	26.4	Yes	24,365	2.23	2.26
Devco	39.0	No	32,620	1.88	2.50
du Pont	30.4	No	25,215	1.98	2.27

Rx 476 has a pigment volume content of 33.5% which experience has demonstrated as being ideal for a paint of this type. Three of the competitors are within this range with Glidden considerably below and Devco above the preferred value. Rx 476, Wards and Glidden contain lead pigments while Sears, Devco and du Pont are lead free.

Rx 476 and four of the competitors are well within the same range for hiding power as based on pigment composition. Hiding values for the competitive paints may vary somewhat from values listed in the table since they are estimated as closely as possible from the label analysis. The Devco paint shows a high value for hiding due to the large amount of titanium-calcium pigment which it contains. The result is an unbalanced formulation which behaves poorly on exposure tests.

Rx 476 is somewhat higher in raw material cost than the competitors with the exception of Glidden which is unusually high. The cost of Rx 476 is not high in view of the outstanding durability of this product. Current retail prices per quart are listed.

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Some of the one coat house paints are formulated along the lines of the so-called fumeproof and stain resistant paints. Mildew resistance is claimed in some cases. The paints included in this survey are listed below, together with any specific claims made for resistance to fumes or mildew.

Rx 476 SWP One Coat White

No claims made for being resistant to fumes or mildew.
Contains lead pigments.

Wardwhite One Coat House Paint

No claims made on label but catalog copy states, "Truly stain resistant. Not only self cleaning but does not collect dirt under siding edges or below eaves. Resists copper screen stains. Wardwhite is believed as mildew resistant as it is now possible to make a paint." Contains lead pigment.

Sears Snowwhite One Coat House Paint

Label states, "Will not discolor from industrial fumes, smog or gases. Contains recommended amount of anti-mildew agent for positive prevention of attack by mildew organisms."

Glidden Endurance Imperial House Paint

No claims made for being resistant to fumes or mildew.
Contains lead pigment.

Devco Wonder-1-Coat House Paint

Label states, "Mildew and Fume Resistant White. This product is highly resistant to mildew and discoloration by fumes." A caution is given which states, "May fail to give complete protection under severe conditions."

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du Pont One Coat House Paint

No claims made for being resistant to fumes or mildew.
Does not contain lead pigment.

Three of the above paints make strong claims for stain, fume or mildew resistance. Wardwhite should have fair stain resistance but is subject to discoloration by sulfide fumes. Their strong claim for mildew resistance is not justified since the paint contains no zinc oxide and very little fungicide. This formula is similar to one proposed by a pigment supplier and there is sound reason to question its durability. Sears Snowwhite will not discolor from sulfide fumes. Fungicide content is too low for adequate mildew protection. The Devoe paint is fume resistant and carries enough fungicide to give fair mildew resistance. It contains tetrachlorophenol which tends to impart poor durability.

Rx 476 contains lead pigments, hence is subject to discoloration by sulfide fumes. Rx 436 should be used where such conditions exist. Lead pigments serve a very useful function in Rx 476. They provide a balanced formulation with maximum adhesion, control of erosion and contribute toward ease of brushing. Zinc oxide in Rx 476 in the form of co-fumed leaded zinc forms zinc soaps which contribute several desirable properties including mildew resistance and detergent removal of dirt. It is true that zinc pigments contribute toward staining but until we learn of a really effective and economical fungicide it will be difficult to formulate without zinc oxide. Many producers of stain and fume resistant paints have experienced serious mildew trouble. Our so-called "Intermix White" is

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... is "fume resistant and stain-resistant" in the commonly accepted sense.

Rx 476 has been subjected to actual house tests since 1940. It was designed to do a one coat job over repaint surfaces in good condition. Heavy films of paint are avoided in this manner. Cost is considerably lower and service life is somewhat less than for a two coat system. Based upon the data obtained in this survey and upon a considerable backlog of exposure testing, it is concluded that Rx 476 is superior to the competitive one coat house paints. Remarkable ease of application should appeal to both the professional and do-it-yourself painter. A carefully balanced formulation with uniformly desirable properties contributes toward a top quality product in contrast with some paints which emphasize a single feature only.

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Label analyses and composition of the one coat house paints are listed below.

Rx 476 SWP One Coat White

<u>Label Analysis</u>		<u>Composition, OJ 34T</u>		
Pigment 63.6%	Vehicle 36.4%	<u>Pounds</u>	<u>Gallons</u>	<u>Materials</u>
<u>Pigment</u>				
Ozlo Co-fumed Leadcd Zinc	37%	175	7.37	6232
Basic Lead Sulfate	7%	75	3.50	62 C 2
Zinc Oxide	30%	175	5.40	6600
Titanium Dioxide	24%	60	1.70	6630
Magnesium Silicate	26%	360	7.50	68 C 6
Basic Carbonate White	13%	130	2.30	6805
Lead	100%	53	7.00	(27 A 19)
<u>Vehicle</u>		33	4.00	(3870)
Varnish*	9%	48	6.00	(25 C 14)
Raw Linseed Oil	57%	316	40.75	(1521)
High Polymer Oil**	15%	23	3.00	(902)
Mineral Spirits and Driers	19%	5	.75	(948)
	100%	83	12.73	(151)
		1536	102.00	
*Non-volatile - Linseed Soya Alkyd		60%		
Volatile - Mineral Spirits		40%		
**Non-volatile - Linseed		100%		

Wardwhite One Coat House Paint 75-41

<u>Label Analysis</u>		<u>Approximate Composition</u>		
Pigment 52%	Vehicle 48%	<u>Pounds</u>	<u>Gallons</u>	<u>Materials</u>
<u>Pigment</u>				
Titanium Dioxide	22%	151.0	4.65	6603
Titanium Calcium Pigment	60%	414.0	15.26	6685
Basic Silicate White	18%	125.0	3.75	6801
Lead (48% PbO)	100%	166.0	21.37	(1521)
		162.0	19.43	(3870)
<u>Vehicle</u>		115.0	8.40	287
Linseed Oil	26.00%	1.6	.20	(8 A 12)
Linseed Alkyd Resin	23.00%	9.3	.94	(903)
Chlorinated Paraffin	18.00%	6.6	.81	(943)
Di(Phenyl Mercury)	.25%	176.0	27.14	(145)
Dodecenyl Succinate		1326.5	102.00	
Drier and Mineral Spirits	32.75%			
	100.00%			
<u>Active Ingredient:</u>				
Di(Phenyl Mercury)	.1%			
Dodecenyl Succinate				
Inert Ingredients	99.9			
	100.0%			

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Sears Snowwhite One Coat House Paint No. 190

<u>Label Analysis</u>		<u>Approximate Composition</u>		
Pigment 59.2%	Vehicle 40.8%	<u>Pounds</u>	<u>Gallons</u>	<u>Materials</u>
<u>Pigment</u>				
Titanium Dioxide	35.3%	70.0	2.16	6603
Zinc Oxide	29.4	223.0	6.37	6620
Silicates	35.3	243.0	5.21	6721
	<u>100.0%</u>	<u>293.0</u>	<u>12.30</u>	<u>6232</u>
<u>Vehicle</u>		<u>174.0</u>	<u>21.72</u>	<u>(2537)</u>
Processed Linseed Oil	30.4%	237.0	30.42	(1521)
Raw Linseed Oil	41.4%	.7	.10	(8 C 19)
Drier	2.5	10.0	1.00	(903)
Phenyl Mercury Oleate	.1	7.0	.85	(943)
Mineral Spirits	25.6	143.0	21.87	(145)
	<u>100.0%</u>	<u>1400.7</u>	<u>102.00</u>	
Active Ingredient, Phenyl Mercury Oleate .05%				
Inert Ingredient 99.95%				
	<u>100.00%</u>			

Glidden Endurance Imperial House Paint
1867 Outside White

<u>Label Analysis</u>		<u>Approximate Composition</u>		
Pigment 60.7%	Vehicle 39.3%	<u>Pounds</u>	<u>Gallons</u>	<u>Material</u>
<u>Pigment</u>				
35% Leaded Zinc Oxide	46.0%	433	8.92	6840
Titanium Oxide	25.0	62	1.91	6603
Barium Sulfate	20.8	174	4.98	6620
Magnesium Silicate	8.2	195	5.28	6372
	<u>100.0%</u>	<u>78</u>	<u>3.26</u>	<u>6232</u>
<u>Vehicle</u>		<u>155</u>	<u>19.40</u>	<u>(2537)</u>
Linseed Oil	71.5%	201	36.15	(1521)
Linseed Alkyd	17.0	115	13.84	(3870)
Mineral Spirits	5.5	11	1.10	(903)
Liquid Drier	6.0	3	.95	(943)
	<u>100.0%</u>	<u>40</u>	<u>6.21</u>	<u>(145)</u>
		<u>1552</u>	<u>102.00</u>	

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Devco Wonder-1-Coat House Paint
Mildew & Fume Resistant White 301-04

Label Analysis		Approximate Composition		
Active Ingredients	1.1%	Pounds	Gallons	Materials
Tetrachlorophenol	1.0%	650	24.00	6685
Phenyl Mercury Acetate	.1	72	2.22	6600
Inert Ingredients	98.9%	242	5.16	6721
Titanium Calcium	43.4%	180	22.50	(2537)
Titanium Dioxide	4.8	206	26.50	(1521)
Zinc Oxide	16.1	15	1.94	(425)
Processed Linseed Oil	25.7	15	2.05	1034
Pine Oil	1.0	2	.15	Bufen 30
Petroleum Thinner	7.4	10	1.06	(903)
Driers (Metallic)	.5	8	.92	(943)
	100.0%	100	15.00	(145)
Pigment 64.3%	Vehicle 35.7%	1500	102.00	
<u>Pigment</u>				
Titanium Calcium	67.5%			
Titanium Dioxide	7.4			
Zinc Oxide	25.1			
	100.0%			
<u>Vehicle</u>				
Processed Linseed Oil	72.0%			
Pine Oil	2.8			
Petroleum Thinner	20.7			
Driers (Metallic)	1.4			
Tetrachlorophenol	2.8			
Phenyl Mercury Acetate	.3			
	100.0%			

du Pont One Coat House Paint
No. 41 Outside White

Label Analysis		Approximate Composition		
Pigment 59%	Vehicle 41%	Pounds	Gallons	Materials
<u>Pigment</u>				
Titanium Oxide	34%	71	2.19	6600
Zinc Oxide	33	212	6.07	6630
Magnesium Silicates	33	276	5.90	6721
	100%	276	11.65	6232
<u>Vehicle</u>				
Linseed Oil	80%	270	34.85	(1521)
Drier	5	194	24.25	(2537)
Mineral Spirits	15	10	1.00	(903)
	100%	7	.86	(943)
		.99	15.23	(145)
		1415	102.00	

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