PLAINTIFF'S EXHIBIT
UC-1010

In October, 1967, the Consumers Report carried an article comparing fourteen national brands of latex flat interior paints. Since the publication of the results of this comparison, Union Carbide has contracted an independent testing laboratory to compare formulation I-1212 (RMC $1.26/Gal.) based on UCAR 360 latex to these same fourteen national brands.

The findings of this testing laboratory shows the UCAR 360 paint to be a highly competitive product and well above the average obtained for the national brand paints.

Attached is a copy of the report submitted by the laboratory, and formulation I-1212.

A23011

EVALUATION

of

U. C. C. FORMULA I-1212

versus

FOURTEEN NATIONAL BRANDS

of

INTERIOR LATEX FLAT WALL PAINTS

A23012

Objective

To determine the relative merits of UCC Formula I-1212, based on UCAR Latex 360, vs the top 14 national brands of interior latex flat wall paints.

Procedure

Formula I-1212 was tinted to an off-white to match the color of one of the national brands. It was then compared with this color plus the other two most popular colors, light green and beige, of each of the 14 brands, a total of 42 paints.

Test Data

See Appendix

The data on the national brands is presented in two ways in order to simplify comparison:

1. The average of the 14 brands
2. The range from worst to best among the proprietary brands

Some of the tests are necessarily subjective. These have been scored as follows:

A23013

Test Data (cont'd)

10	=	Excellent	or	No change
9	=	Very good	or	Very slight
8	=	Good	or	Slight
6	=	Satisfactory	or	Moderate
4	=	Fair	or	Considerable
2	=	Poor	or	Severe
0	=	Very poor	or	Extreme

Review of Results

The results can be analyzed most readily by comparing and rating significant differences between I-1212 and the proprietary brands. This has been done in the Summary Table below using the following method of rating:

++	=	Equal to the best brand where differences between the proprietary brands are significant.
+	=	Significantly better than average for the national brands.
Blank	=	Close to average
-	=	Significantly poorer than average
--	=	Equal to the poorest brand

Note that no attempt has been made to weigh any property since neither manufacturers nor consumers agree as to the relative importance of any property or group of properties.

A23014

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Summary Table

I-1212 vs 14 Brands

	Average
Viscosity	
Ease of application	+
Spatter - rolled	-
Sheen	Low
Sheen uniformity	++
Cleanup of spots	--
Leveling	++
Resistance to water spotting	++
Scrub resistance (Erosion)	+
TOTAL +	8
TOTAL -	3
NET (Unweighted)	+5

A23015

Conclusions

1. Formula I-1212 can be considered to be quite competitive and well above average as compared with the top 14 national brands of interior latex flat wall paints. Its relative rating is +5.

2. Formula I-1212 exhibits the following significant differences in properties as compared with the averages for the national brands:

Superior	Inferior
Ease of application	Spatter-rolled
** Sheen uniformity	Cleanup of spots **
** Leveling	
** Resistance to water spotting	
Scrub resistance (Erosion)	

** Outstanding

Note: The cleanup problem is a direct result of the excellent water and scrub resistance of I-1212. It just means that spots should be cleaned up quickly.

A23016

Appendix

Test Data

Interior Latex Flat Paints

		UCC I-1212	14 Brands Average	14 Brands Range
Viscosity	KU	93	93	86-106
Ease of application				
Effort - Brushed	Score	8	7	3-9
" - Rolled	"	10	9	8-10
Spatter - Rolled	Score	4	6.5	3-9
Sheen		1	4.5	1-15
Sheen Uniformity-Brushed				
Primed vs unprimed area	Score	10	9	8-10
1 vs 2 coats	"	10	9.5	9-10
Lapped area	"	10	9.5	9-10
Primed area	"	10	9.5	9-10
Touchup area	"	10	9	8-10
Sheen Uniformity-Rolled				
Primed vs unprimed area	Score	10	9.5	8-10
1 vs 2 coats	"	10	9.5	9-10
Lapped area	"	10	9.5	9-10
Framed area	"	10	9.5	9-10
Touchup area	"	10	9.5	9-10
Dry Hard	mins.	22	20	16-28
Cleanup of Spots	Score	2	5	2-9
Leveling -1 Coat primed				
Brushed	Score	8	7	6-9
Rolled	"	9	7	6-9
Sag	Score	10	10	10
Cratering	Score	9	8.5	6-10
Dry Burnishing	Score	6	6	4-9
Water Spotting	Score	9	6	2-9

A23017

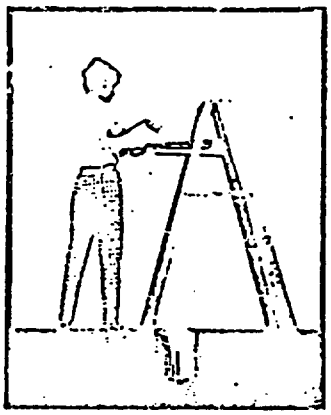
Appendix

Test Data

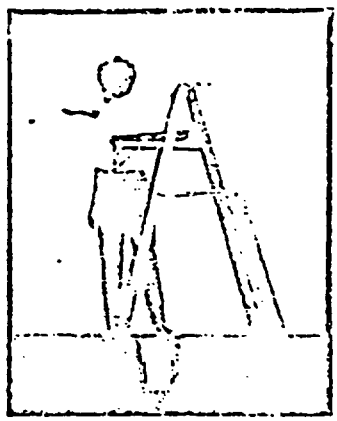
Interior Latex Flat Paints

		UCC I-1212	14 Brands Average	14 Brands Range
Hiding - Rolled				
1 Coat	Score	8	8	6-10
2 Coats	"	10	9.5	9-10
Reflectance - 2 mils		73.6	76.0	70.0-83.5
Opacity - 2 mils	%	97.8	97.3	94.5-99.5
Stain Removal- 1 month				
Pencil	Cycles	27	36	15-65
Crayon	"	56	46	30-65
Grease	"	56	62	20-185
Scrub Resistance				
Erosion	Score	8	6	2-10

A23018



LATEX FLAT INTERIOR PAINTS



YOU CAN NOW GET BETTER RESULTS FROM THE AMATEUR'S FAVORITE INTERIOR PAINT

The last time CU tested latex flat interior paints, in 1964, we bowed deeply in the direction of the paint chemists. We credited them with the technical developments that have made it easy for the do-it-yourself painter to apply the flat, matte finish now so widely used for the walls and ceilings of living rooms, dining rooms and bedrooms.

Now we bow again. These paints have been improved markedly in the past three years: They are more likely to cover in one coat than the 1964 products; their color and sheen are more uniform; and they level better, giving a smoother finish. The significance of those improvements becomes clear when you consider that they are in the very qualities the amateur needs most if he wants results nearly equal to the job you can expect with solvent-thinned alkyd paints.

Latex, of course, has become the amateur's favorite paint for other reasons. Compared to alkyd paint, latex is easy to apply, is virtually odorless, dries very fast and is easily cleaned up with detergent and water rather than turpentine or mineral spirits. Now interior flat paint rivals alkyd in appearance as well. We base that judgment on our tests of 14 nationally distributed brands.

The cover-up job

Presumably, do-it-yourselfers don't tackle a painting job for the love of it or for lack of anything more interesting to do. One of the amateur's first questions, then, is apt to be, "Can I do the job with a single coat?" The answer: You have a much better chance at single-coat coverage now than you did a few years ago, but it still depends on what you're trying to cover. Our tests indicate that one coat of an off-white color in any of the tested brands should hide an old coat of a white or pastel shade.

Only two of our tested off-white paints, *Mary Carter's* and *Sherwin-Williams*, were rated as low as fair-to-good at one-coat covering. Most of the others were very good or excellent (see chart, page 519). We also tried each brand in beige and pale green. As would be expected, the darker shades covered over more readily than the off-white. Our test results thus suggest that the darker shades may well be able to cover a wall previously painted with a dark color in one coat. But you can't always expect to cover a dark wall with a single coat of light paint.

These paints should all perform satisfactorily as self-primers. If there are only a few small bare or patched areas to prime, you can use your finish paint for this purpose. For a large area such as an unpainted wall, however, you'd be better off buying a specialized primer paint; such paints are generally much less expensive than the paints tested. And for painting bare wood, a specialized primer is recommended, since the water in a latex paint may raise the grain of the wood.

Manufacturers generally specify a maximum area that you can expect to cover with a single gallon, usually about 450 square feet. In practice, we achieved that spreading rate when applying the paints with a roller. But we came closer to 350 or 400 square feet with a brush.

Most do-it-yourself painters do use rollers, of course, at least on walls and ceilings. The paint manufacturers seldom specify the type of roller to use. In CU's recent tests of roller covers (CONSUMER REPORTS, February 1967), we found that short and medium-nap roller covers worked best for smooth, previously painted surfaces. We advise using a synthetic cover, such as Dynel, rather than mohair. With the right roller and good technique, you should come close to achieving the advertised spreading rate.

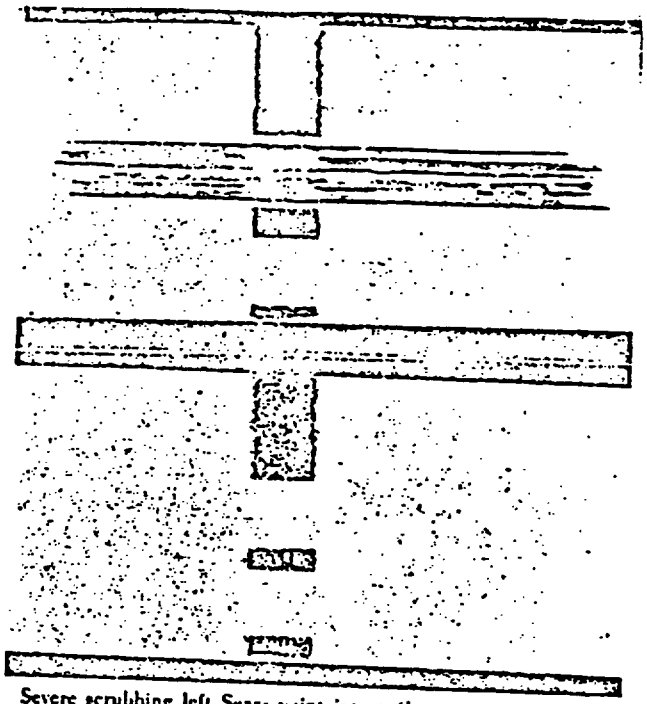
Our paint expert used a medium-nap roller cover and had no trouble applying a smooth coat with any of the paints. All brands rated at least good in leveling. None sagged, and only two (*Fuller Wytron* and *Sears Guaranteed*) showed any noticeable tendency to leave the minute, cup-shaped depressions caused by bubbles in the paint, a defect called "cratering."

In uniformity of color and sheen—a significant factor in the job's overall appearance—the latex paints proved highly satisfactory, most brands earning a rating of very good or excellent.

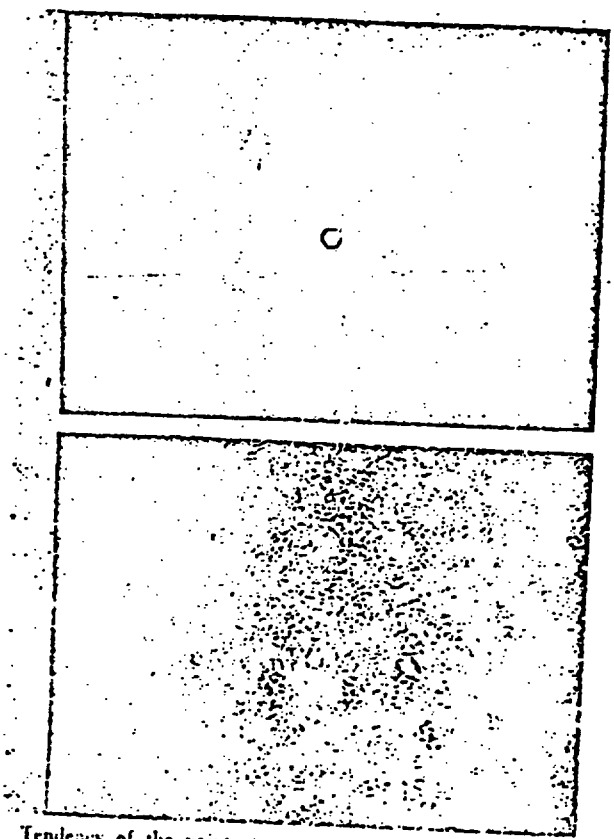
Another significant appearance factor is [illegible]

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Severe scrubbing left Sears paint intact (bottom panel), while moderate scrubbing removed Devoe paint (top panel). However, lighter scrubbing (lower streak of top panel) did no harm



Tendency of the paints to spatter was evaluated by using a black shield attached to the handle of the roller. Upper photo, Sherwin-Williams Super Kem-Tone; lower, BPS Vina Bond

sheen—the less sheen the better in flat paint. The Ratings note a few brands with relatively high sheen. But when we say one of these paints has "relatively high sheen," we don't mean it's really glossy; it's just a little less flat than the other brands. The *Wards Guaranteed* was judged highest in sheen of those tested, and you may want to take that into consideration in choosing your paint.

Any flat paint will grow shiny if it's worn by repeated cleanings. So it makes little sense to use a flat latex in kitchens or in a child's playroom, where stains may have to be removed frequently. In those rooms, a high-gloss or semi-gloss enamel will stand up better.

Soiled latex paint can be cleaned, of course, and the sooner it is, the easier it will be to remove the soil. We would advise using the gentlest method that does the trick. Try a mild soap or detergent and a soft cloth first. If that doesn't work, you may have to escalate to a gentle scouring powder, although that will burnish the paint somewhat more than the milder treatment.

Since paint needs time to cure, we waited a month after applying the tested paints before we dirtied them with pencil, crayon and grease stains and tried to clean them. But if you soil a wall soon after painting it, you might as well clean the stain as soon as you can. You may take off some paint with the stain; but if you wait too long, the stain may not come off at all. Our judgments of "cleanability" in the table are based both on the ease with which we could clean stains and on the degree of paint erosion in the process.

Just as repeated cleaning tends to make paint shiny, so does repeated dry rubbing. A small dining room, for instance, is likely to show shiny places on the walls where chairs rub against them. For a room like that, you would want a paint that resists "dry burnishing" better than others. We judged the *Sherwin-Williams Super Kem-Tone* very good in that respect.

Another quality that affects the overall appearance of a paint over a period of time is its resistance to water spotting. Generally, water tends to discolor latex flat paints—another reason to choose some other paint for the kitchen, where water splashes are inevitable. As for raindrops on a window-sill in the living room, there are three things you can do: Choose a brand judged highly resistant to water spotting (*Wards* or *Dutch Boy*); try to wipe up water drops before they dry; or switch to a semi-gloss paint on the sills.

There was a time when latex flat paints tended to fade or yellow after lengthy exposure to normal indoor light. That problem seemed to have been largely solved the last time we tested these paints, and all of those in the current tests withstood three months of exposure to normal indoor light quite well.

How messy to use

You can take it for granted that *any* job of painting just has to be messy to some extent, no matter how expert the painter and how good the paint. But no one likes to feel a splash of paint run down his arm while he's playing

A2302C

Union Carbide trial exhibit UC-1010: Union Carbide Cover Note and Independent Lab Evaluation of UCAR 360 Lat… Published by AsbestosClaims.Law
ACL Doc 16204 · Page 10 of 13 asbestosclaims.law/library/16204/10

PERFORMANCE CHARACTERISTICS OF LATEX INTERIOR PAINTS

Columns arranged in order of decreasing importance to overall quality (left to right).

KEY: E-Excellent, VG-Very Good, G-Good, F-Fair, P-Poor

	Color and sheen uniformity	Cleanability	Leveling	Hiding power of off-white (1-coat rolled)	Resistance to dry burnishing	Ease of clean-up	Resistance to spattering
ACCEPTABLE—Very Good							
GLIDDEN HOMOGENIZED SPRED SATIN	E	G	VG	VG	F-to-G	F-to-G	G
ACCEPTABLE—Good							
DUTCH BOY NALPLEX	VG	G	G	VG	F-to-G	VG	F-to-G
BPS VINA-BOND	VG	F-to-G	G	E	F-to-G	F-to-G	F
FULLER MYTRON	VG	G	G	E	F	F	F-to-G
LUMINALL SATIN	E	F-to-G	VG	VG	F-to-G	F	F-to-G
MARY CARTER'S ROL-HIDE	VG	G	G	F-to-G	G	F-to-G	G
MOORE'S REGAL WALL SATIN	E	F-to-G	VG	G	G	F	F-to-G
O'BRIEN LIQUID VELVET	VG	G	VG	E	F-to-G	P	F-to-G
PITTSBURGH WALLHIDE ONE COAT	VG	F-to-G	G	E	F-to-G	F-to-G	F
SEARS GUARANTEED Cat. No. 8500	G	G	G	E	F-to-G	P	F-to-G
SHERWIN-WILLIAMS SUPER KEM-TONE	VG	F-to-G	VG	F-to-G	VG	VG	VG
WARDS GUARANTEED ONE-COAT DRIPLESS Cat. No. 75-4400	VG	G	G	E	F	P	F-to-G
ACCEPTABLE—Fair-to-Good							
DEVOE POLYMERIZED WONDER-TONES	VG	P	VG	VG	G	G	G
DU PONT FLOW KOTE	E	P	VG	G	F-to-G	G	G

Michelangelo on his ceiling, or to discover that he is painting his furniture along with the background. The tested paints did differ in their tendency to drip and spatter, and in the ease with which you could mop up the accidents later.

Of our tested products, five were decidedly thixotropic—a five-dollar word indicating "thick when unstirred, much thinner when brushed or rolled out." This property minimizes drip and lets you load somewhat more paint on a brush or roller. Most of the others were thixotropic to a smaller degree, except the *Devoe* brand, which was judged most likely to drip. If you stir thixotropic paints a good deal, as you may if they need mixing, they become thin and drippy temporarily. So give them 15 to 30 minutes to return to their no-drip state before using them.

Our consultant reports that latex paints have increased in their tendency to spatter when used with a roller. However, you can minimize spattering by proper technique and by choosing a roller cover with good no-spatter qualities (we rated roller covers for this quality as well as others in the February 1967 REPORTS).

Cleaning up the accidental drippings is largely a matter of promptness. Water and a detergent are all you need while the paint is still wet. But as the paint dries, it undergoes a change that can make it a real cleaning problem. We found *Dutch Boy Nalplex* and *Super Kem-Tone* relatively easy to clean up an hour and one half after we had spattered them. On the other hand, *O'Brien Liquid Velvet, Wards Guaranteed* and *Sears Guaranteed* were rather difficult to clean up after only half an hour after they had been applied.

Keep in mind that none of the paints spattered so little or cleaned so easily that you can dispense with a drop cloth over furniture. Newspapers are a poor substitute; they have a fiendish knack for sliding off the sofa just as you drop a gob of paint.

Brushes and rollers can wait a good deal longer for cleaning than can spatters or drips on furniture or on the floor. But you'll have an easier job, and prolong the life of your tools, if you make a practice of cleaning them right after you've finished using them.

You may also be concerned with drying time. The latex flats have always been fast drying and have not changed in this regard. They'll dry hard in about half an hour, although you should wait longer before putting on a second coat—about two hours, in general. Here, as elsewhere, you should follow the label directions.

Since all the tested paints were rated high in many qualities, you may want to decide which characteristics are of greatest importance for the particular job you intend to do. Resistance to dry burnishing, as an example, may be of overriding importance to you, or it may matter hardly at all. Cleanability may be of greater or lesser moment, and so on.

As for prices, the only brand that strayed far from $7 per gallon is *Mary Carter's*, which, at $5.29 for one gallon, $8.98 for two gallons, looks like a good buy.

A few helpful tips

Given a paint with good hiding power, one-coat coverage may still depend on proper painting technique. Here's a once-over-lightly on painting a wall or ceiling with roller

A23021

and brush. Brush the corners and trim first, using a good nylon brush if you intend to use the brush again. Then load the roller fully and apply the paint with only moderate speed and pressure (too much of either can result in too much spatter and too thin a coat). In painting a wall, deposit the first roller load in a "W" or "V" pattern, then roll horizontally to distribute the paint evenly. Finish with light vertical strokes in the "with" direction of the nap, and repeat if stipple marks still show. Roll the next load from the dry to the wet area to minimize lap marks on the wall.

Plan to cover about eight to ten square feet per load with a medium-nap cover, about half that with a short nap. If you're painting ceilings and walls, do the ceiling first. Paint it in strips about two feet across the width (narrow dimension) of the room.

RATINGS OF LATEX FLAT INTERIOR PAINTS

Listed by groups in order of estimated overall quality, and within groups, alphabetically, except as noted. Ratings are based on tests and evaluations of three popular colors: off-white, beige and green. Test results for each brand should apply to most of that brand's other colors and custom tints, except possibly for some darker decorator shades. Unless otherwise noted, prices are manufacturers' suggested retail for 1 gal. and will vary regionally.

Each brand was judged easy to apply with a roller or brush and sufficiently fast-drying so that a room could be used less than an hour after painting. All were judged satisfactory in resistance to sagging, as a self-primer and for touch-up use; and all faded little on the wall and could be stored in the can without deterioration for at least 3 months. Ratings include comments to consider in selecting or rejecting a brand; for a more detailed summation of brand differences in the principal characteristics, consult the table on page 519.

ACCEPTABLE—Very Good

GLIDDEN HOMOGENIZED SPEED SATIN (The Glidden Co., Cleveland), $6.95. No-drip type; relatively high sheen.

ACCEPTABLE—Good

DUTCH BOY HAIRFLEX LATEX FLAT WALL FINISH (National Lead Co., NYC), $6.95. No-drip type. Provided more latitude than most brands when clean-up of spatters and tools was delayed. Resisted water-spotting better than most other brands.

¶ The following brands were judged approximately equal in overall quality, but slightly lower in overall quality than the preceding brand.

EPS VINA-BOND VINYL LATEX FLAT WALL FINISH (Patterson-Sargent, North Brunswick, N.J.), $5.99. Judged one of the most suitable brands where superior hiding power is required, but tended to spatter more than most brands.

FULLER ESTERON FLAT WALL FINISH (W.P. Fuller Paint Co., Fullerton, Cal.), $7.49. Moderate sheen. Judged one of the most suitable brands where superior hiding power is required and where soiling is a problem. Resisted dry burnishing less than other brands. Tended to form craters more than other brands.

LUMINALL SATIN INTERIOR LATEX FLAT (Luminall Paints, Inc., Newark, N.J.), $7.11.

MARY CARTER'S SOLUNIDE ACRYLIC LATEX FLAT INTERIOR (Mary Carter Paint Co., Tampa, Fla.), $5.29 ($8.98 for 2 gal.). No-drip type. Judged one of the most suitable brands where soiling is a problem. Off-white color relatively poor in hiding power when applied with a roller.

MOORE'S REGAL WALL SATIN LATEX INTERIOR FLAT (Benjamin Moore & Co., NYC), $6.86. Stain removal judged relatively difficult, but resisted erosion from scrubbing well.

O'BRIEN LIQUID VELVET LATEX WALL PAINT (The O'Brien Corp., South Bend, Ind.), $6.77. Judged one of the most suitable brands where superior hiding power is required. Provided less latitude than most brands when clean-up of spatters and tools was delayed.

PITTSBURGH WALLHIDE LATEX ONE-COAT FLAT (Pittsburgh Plate Glass Co., Pittsburgh), $7.47. Judged one of the most suitable brands where superior hiding power is required, but tended to spatter more than most brands.

SEARS GUARANTEED LATEX FLAT WALL PAINT Cat. No. 8309 (Sears, Roebuck), $6.49 plus shipping. No-drip type; gave relatively high sheen. Judged one of the most suitable brands where superior hiding power was required, but slightly inferior to the other brands in overall appearance; tended to form craters more than most brands. Provided less latitude than most brands when clean-up of spatters and tools was delayed.

SHERWIN-WILLIAMS SUPER KEM-TONE (The Sherwin-Williams Co., Cleveland), $7.19. Tended to spatter less than any other brand. Provided more latitude than most brands when clean-up of spatters and tools was delayed. Resisted dry burnishing better than any other brand. Off-white color relatively poor in hiding power when applied with a roller. Resisted water-spotting less than all other brands.

WARD'S GUARANTEED ONE-COAT DRIPLESS INTERIOR LATEX FLAT WALL AND TRIM FINISH Cat. No. 75-4400 (Montgomery Ward), $6.39 plus shipping. No-drip type; relatively high sheen. Judged one of the most suitable brands where superior hiding power is required and where soiling is a problem. Resisted water-spotting better than most brands. Provided less latitude than most brands when clean-up of spatters and tools was delayed. Resisted dry burnishing less than most brands.

ACCEPTABLE—Fair-to-Good

¶ The following brands were judged less resistant to erosion from scrubbing than those above.

DEVOE POLYMERIZED WONDER-TONES VINYL INTERIOR (Celanese Coatings Co., Louisville, Ky.), $7.29. Judged more likely to drip than any other brand.

DU PONT FLOW KOTE LATEX WALL PAINT (E.I. du Pont de Nemours & Co., Inc., Wilmington, Del.). No list price. Approximately $6 to $7

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UNION CARBIDE

COATINGS CHEMICALS

UCAR® LATEX 360

FORMULATION SUGGESTIONS

FROM TECHNICAL SERVICE

I-1212

INTERIOR FLAT WALL PAINT

Ingredients	Pounds	Gallons
Water	400.0	47.9
CELLOSIZE® QP-15,000	5.0	0.4
Tamol 731	6.0	0.7
TERGITOL® NPX	3.0	0.3
Ethylene Glycol	15.0	1.6
Butoxyethoxy Propanol	12.0	1.5
Colloids 581-B	4.0	0.5
Phenyl Mercuric Acetate	0.5	---
Titanium Dioxide, Rutile (1)	250.0	7.1
Camelcarb	125.0	5.5
Calcined Clay (2)	75.0	3.5
Nytal 300	50.0	2.1
UCAR® 360 (55® N.V.)	260.0	28.9
	1205.5	100.0

(1) Ti-Pure 901; Titanox RA-46; or equivalent
(2) Iceberg; Glomax HE; Al-Sil-Ate W

Manufacturing Procedure

Charge the water, pigment dispersants, preservative, ethylene glycol, butoxyethoxy propanol, surfactant, and 1/2 of the defoamer along with CELLOSIZE QP-15,000 to a mixing tank and mix at low speeds for several minutes. Add the pigments in the order listed and grind 20 minutes at high speed. At low speed, add UCAR 360 and the remainder of the defoamer to the pigment grind. Agitation should be continuous and each ingredient dispersed before the next is added.

A23023

Paint Properties

PVC	= 55%	Viscosity	= 90 - 95 K.U.
Total Solids	= 54%	Weight/Gallon	= 12 Pounds

se formulas are for release only to coatings formulators. Tests in Union Carbide Chemicals laboratories indicate that they offer desirable performance characteristics. However, because of the variations possible in the nature and quality of some of the ingredients used in these formulas and in the conditions under which they are produced, Union Carbide Corporation, Chemicals Division is unable to guarantee like or optimum values for all coating properties and performance data. Data suggestions contained in this publication are not to be construed as recommendations to use any product or process in violation of existing patents covering any material, process or the use.

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