

CC: J. A. Klacsmann, Wilm. F&F
D. L. Herndon, " "
E. T. Breuer, " "
L. S. Baker, " "
A. B. Naselow, " "
Wilmington Approval File
Marshall Lab. Approval File
N. Pappas, Laboratory
C. N. Swinehart, Laboratory
W. H. Beutel, Phila. Plant

File: 3320

Marshall Laboratory
March 3, 1969

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J. O. GRAVES, WILMINGTON F&F

R. N. SANGER, WILMINGTON F&F

**MARSHALL DEVELOPMENT LABORATORY RELEASE LETTER NO. 2149
COMMERCIALIZATION OF CUSTOM COLOR SYSTEM BASED ON BENNETT'S
DECORATOR COLORANTS**

Research favors the proposal to purchase the Bennett system of colorants and sales aids as a solution to the big problem of providing consumers with a better choice of colors in a variety of qualities (water-based emulsions, solvent-based alkyds and various Industrial Maintenance qualities).

In the future, however, it may be advisable to have lead-free colorants and better information on the ingredients in these colorants and on their possible interactions with solvent and water-based paints.

M. J. McDowell

M. J. McDOWELL

MJM/meg

APPROVED

MAR 12 1969

C.M.T.

GED MJM
Pls. reply by 3/5

J. O. GRAVES (23)
DIRECTOR OF PRODUCTION
F. & F., WILMINGTON

C. W. THEOBALD
DIRECTOR OF RESEARCH DIVISION
F. & F., WILMINGTON

R. N. SANGER (4)
TRADE SALES MANAGER
F. & F., WILMINGTON

CC: W. D. Lawson, F&F, Wilm.
G. T. Vaala, " "
H. H. Hodge, " "
J. C. Richards, " "
D. L. Hernson, " "
J. A. Klacsmann, " "
P. I. Poindexter, " "
O. H. Bullitt, Jr., Lab.
P. J. Graham, Exp. Sta.
G. I. Mulholland, Flint
L. S. Baker, F&F, Wilm.

File: 3320

Marshall Laboratory
February 12, 1969

**MARSHALL DEVELOPMENT LABORATORY RELEASE LETTER NO. 2149 ✓
COMMERCIALIZATION OF CUSTOM COLOR SYSTEM BASED ON BENNETT'S
DECORATOR COLORANTS**

PROPOSAL AND EXTENT OF RELEASE:

This letter proposes national sale of a Custom Color System based on colorants and sales aids to be purchased from Bennett's of Salt Lake City, Utah.

This letter also proposes quality changes in Custom Color Lucite® Wall Paint and Flow-Kote® Wall Paint to bring the quality of these products in line with existing shelf goods. In addition to this quality change, all Custom Color white bases will be adjusted for tinting strength and color to match the Bennett system.

This release is written at the request of Consumer Paint Marketing to provide lead time for marketing plans in advance of completion of laboratory and alignment programs. It is recognized that final adoption of this proposal is subject to satisfactory completion of these programs. A supplementary release letter will be issued when these programs are satisfactorily completed.

It is also intended to alert Production Services to a proposal which will involve them to a large extent. To date this proposal has not been called to their attention on a formal basis.

MANAGEMENT DECISION REQUESTED:

To aid management to reach a decision on this proposal, the Development Laboratory considers these points most pertinent:

1. The adoption of this proposal will update our Custom Color System both technically and commercially.
2. The economic aspects presented in this letter reflect the product cost information currently available to the laboratory. A number of intangible benefits are involved which favor the concept, but have not been translated to economic terms.
3. Adoption of this proposal will mean that existing white bases and colorants will become obsolete. Plans for disposition of these obsolete stocks have not been finalized.
4. The Bennett system is based on 12 colorants. Our present system using the Harbil machine has nine colorants. The adoption of this proposal will require modification of the nine cannister machine to a 12 cannister unit. Also, cannisters now filled with our Universal Colorants will either have to be replaced or thoroughly cleaned before filling them with Bennett colorants.
5. Our system and the Bennett system both use lead containing pigments. This will require continuation of the present label warning for custom mixed colors using amounts of lead above the present permissible level established by U.S.A. Standards Institute 266.1.
6. Neither the Bennett colorants nor our present colorants are satisfactory for use with "Lucite" Interior Enamel. Therefore, it is not possible to include "Lucite" Interior Enamel in our Custom Color System as desired by Marketing.
7. Exterior durability properties of paints tinted with Bennett's colorants have not been established. It is not likely that any meaningful exposure information will be available by mid 1969 when this proposal is scheduled for release to the trade.
8. In order to obtain the maximum color matching ability inherent in the Bennett system, it may be necessary to refine our testing and control procedures for the white bases. An assessment of the need for this refinement cannot be made until more information on the color matching and quality reproducibility of the Bennett colorants in our bases is established.

9. This proposal involves reliance on the technical competence, quality uniformity and supply capabilities of the Bennett organization. Procedures will be required to monitor quality. The supply capabilities should be an item considered in the purchase agreement.
10. Industrial Maintenance Sales has a Painter Maintenance Mixed Color Service based upon our present Custom Color System. The feasibility of using the Bennett colorants in this system has not been completely assessed.
11. Our present colorants are now made at the Chicago Plant. Adoption of this proposal means that facilities there now required for colorant production will become excess or possibly obsolete.

TECHNICAL OPINION:

The concept leading to this proposal is based on a number of considerations from both a Technical and Marketing viewpoint. Our overall opinion is that the proposal is technically sound and we favor approval.

From the technical view our Custom Color formulation capabilities are considerably out of date. The present 632 Line Universal Colorants were formulated in 1959 and have not been revised since then. In the interim several companies have emerged as specialists in this field and the purchase of colorants has become a common practice in paint industry. From the Marketing view, Custom Color accounts for approximately 5% of our sales of interior paints. Market studies report the national average to be about 30%.

The average purchase price for the Bennett colorants will be approximately \$2.47 per quart based on movement pattern. This is 21% higher than the present mill cost for the 632 Line on the same basis. Assuming an annual sale of 50,000 quarts of colorant per year (present rate is 20,000 quarts), the resulting cost differential will be about \$22,000 per year. This differential is offset in part by the reduced mill costs for the whites as shown in the "Cost Information" section of this letter.

To develop our own line of colorants of comparable quality would require 2 - 3 man years of technical effort at approximately \$50,000 per man year.

The obsolescence and cannister overhaul problems are unavoidable complications in a program to modify a Custom Color system with its inherent complexities. We see no technical reason why the conversion cannot be made. Marketing will be expected to discuss their plans for handling this situation in their response to this letter.

The laboratory recognizes the desirability to remove lead and other potentially toxic ingredients from our products. However, the inclusion of lead pigments in the present proposal is primarily a matter of economics and to a lesser degree one of technical feasibility. It is not possible to obtain colors in the yellow-orange range using non-lead colors for the same cost as is possible with lead containing pigments. Further, only light colors could be obtained due to the low tinting strength of non-lead pigments. Also they tend to produce highly flocculated and hard to handle dispersions. Our position with respect to product liability will not be worsened by the adoption of this proposal over that which now exists.

While the Bennett colorants are not satisfactory for use in 394 Line "Lucite" Interior Enamel, we are of the opinion that the technical problems encountered can be solved. However, the final formula may have a different property balance than the current 394 Line. No colorant type was found to be even marginally satisfactory in "Lucite" Interior Enamel. However, the performance problem encountered with the Bennett colorants was considered less formidable than the problems encountered with our 632 Line.

We are familiar with the pigment types used in the Bennett colors. This information can be used to predict exterior durability. It is not expected that the durability of the exterior products tinted with the Bennett colorants will be any different from that obtained using our colorants.

The probable need for refined control procedures for the white bases reflects more our lack of technical support for the present system than a new requirement inherent in this proposal. We expect to recommend updated control methods for our white bases to maintain the quality of our Custom Color system independently of this proposal.

We believe the Bennett organization to be technically reliable. They have been successful suppliers of colorants for over 30 years. The Flo Glaze Company in Canada (now part of Du Pont of Canada) has had satisfactory technical contact with Bennett for seven years. The technical presentations made to us by Bennett personnel have been creditable and sound. Their technical service has been prompt. In cases where similar experiments have been conducted by Bennett and ourselves, the methodology, data and conclusions have been consistent.

Work is underway to evaluate the Bennett colorants in the IM Paint Maintenance Mixed Color Service system. No problems have been encountered to date.

The statements above are provided to support our recommendation to approval this proposal.

DESCRIPTION OF PRODUCT:

The Bennett's system is composed of 12 colorants based on a glycol modified soya alkyd containing 17% phthalic acid. The colorant identification together with some physical and compositional information is listed in Table I.

TABLE I

<u>Colorant</u>	<u>Prime Pigment Type</u>	<u>Typical Pounds Per Gallon</u>	<u>Typical Visc. KU</u>	<u>Pounds Prime Pigment Per 4 Oz.</u>	<u>% Prime Pigment (Wt.)</u>
AA	Quinacridone Red	8.60	130	.0588	21.1
B	Indian Red Oxide	14.24	95	.2303	50.9
C	Phthalo Blue	9.02	80	.0213	7.3
E*	Black Oxide/ Lampblack	10.50	100	.0505/.0168	19.2
F	Chromium Oxide	15.58	118	.2690	51.0
H	Chrome Yellow Medium	14.45	123	.2120	48.5
J	Yellow Oxide	12.27	120	.1669	43.7
K	Black Oxide Red Oxide Yellow Oxide	12.69	125	.0420 .0333 .0896	40.7
L	Chrome Yellow Molybdate Orange	14.72	115	.0882 .1545	52.9
M	Red Oxide	12.69	100	.1551	38.7
N	Chrome Yellow Light	15.86	115	.3030	58.2
P	Phthalo Green Lake	8.74	110	.0980	28.9

The system utilized a light and deep base for each quality. There is also an optional neutral base for making masstone colors. Marketing does not intend to use the neutral base in our system.

The base whites to be used with the Bennett Colorants will carry same stock identification as now used with the present system as shown in Table II below. New formula codes will be assigned when development work and "scale up" is completed.

TABLE II

<u>Sales Code</u>	<u>Name</u>	<u>Formula</u>
2391-C	"Lucite" Wall Paint - Lt. Base	392-Line
2392-C	" " " - Deep Base	392-Line
191-C	Alkyd Wall Paint - Lt. Base	639-Line
192-C	" " " - Deep Base	639-Line
292-C	Alkyd Semi-Gloss - Lt. Base	639-Line
292-C	" " " - Deep Base	639-Line
392-C	Alkyd Gloss - Lt. Base	639-Line
392-C	Alkyd Gloss - Deep Base	639-Line
491-C	Flow Kote® Wall Paint - Lt. Base	389-Line
492-C	" " " " - Deep Base	389-Line

These Custom Color white bases will be adjusted in tinting strength and color to conform to the Bennett system.

The colorant will also be used with miscellaneous exterior products including: 52-C "Lucite" House Paint - Tinting White, 815-C Trim and Shutter - Tinting White and 42-C Chalk Resistant House Paint.

The Bennett color book is composed of 1056 colors. These colors are made with a maximum of two colorant additions at a maximum level of 12 ounces colorant per gallon. Table III lists the number of colors with respect to the amount of colorant addition.

TABLE III

<u>Bennett Color Group Designation</u>	<u>Additional Level</u>	<u>Number of Colors</u>	<u>Average Colorant Cost per Gallon Paint *</u>
W	0 - 2 oz.	396	\$.0735
X	2 - 6 oz.	317	.3165
Y	6 - 12 oz.	123	.8049
Z	6 - 12 oz.	220	.777

*Based on our purchase price of the colorant.

The 220 colors in Group Z use the deep base paint. All others use the light base paint.

COMPETITIVE SITUATION;

Most major suppliers are marketing a Custom Color system. Custom Color paints account for thirty percent of national interior trade sales. (Information obtained from Market Research Report 7-22). Our own sale of custom color paints lags far behind the national average at five percent of our interior paint sales.

Purchasing of colorants by a major supplier is not a new idea. Currently we believe companies such as Glidden, Montgomery Ward and Pittsburgh Plate Glass purchase colorants. Sears and Sherwin-Williams manufacture their own colorants.

Of the six to eight major colorant suppliers, Color Corporation of America is the only one to supply lead-free colorants. "Cal-Ink" reportedly plans to offer a lead-free system in the fall of 1969. Sears is currently selling a lead-free system.

To our knowledge there are three general types of colorants available which are compatible with both solution and latex type paints. A brief description of each follows:

Glycol vehicle - these colorants use propylene or diethylene glycol as the sole vehicle. They are characterized by good initial compatibility, easy handling; but are relatively poor for uniformity of color development in cross blends; and have very undesirable effects on the rheology of latex paints using synthetic thickeners. Examples of these colorants are "Cal-Ink" and "All Phase".

Water reducible vehicle - these colorants use a water reducible vehicle wherein the dual dispersibility is built into the vehicle composition. Dual compatibility is further aided by the presence of a co-solvent such as a "cellosolve" or glycol. These colorants have good initial compatibility, work well in cross blends, have only slight effect on rheology, do not materially down grade film properties and are compatible with a broad spectrum of solution vehicle types as required by Industrial Maintenance. The Bennett colorants are of this type.

Surfactant Modified - these colorants use a long oil alkyd or limpid oil plus a relatively large physical addition of surfactant to achieve dual compatibility. In latex paints they are very sensitive to interaction with surfactants and thickeners in the paint. In solution paints they down grade film properties. They are relatively hard to handle and tend to cake and settle in color dispersing machines. Our 632 Line and, we believe, those produced by Color Corporation of America are of this type.

The adoption of this proposal will improve our competitive position. The Bennett Colorants represent a more advanced composition than our present 632 Line. The mechanics of their color system in terms of pigment blending procedures is technically sound. The laboratory is not qualified to pass judgement on the quality of the Bennett sales aids, but we do recognize that they offer a wide variety of these items. We understand that our color consultant considers the Bennett color selection better than our own. Also, we know that they have a good "feed back" system to insure a continuous evaluation of the performance of these aids in service.

TABULATION OF COMPOSITION:

The composition of the white base prototypes of "Lucite" Wall Paint and "Flow Kote" Wall Paint are shown next to the parent quality in Tables III and IV. These items currently represent 61% of all Custom Color bases sold. Formulas for the other white bases are under development.

TABLE IV

<u>Code</u>	<u>Description</u>	<u>392-401 "Lucite" Wall Paint</u>	<u>Proposed Light Base</u>	<u>Proposed Deep Base</u>
H-506	Water	320.50	349.43	355.64
W-1012	Montmorillonite Clay	9.91	9.64	9.57
G-1111	Methyl Cellulose	2.83	2.89	3.35
H-658	Polyglycol	3.42	3.04	3.38
H-609	Non-ionic Surfactant	4.24	3.75	4.26
H-657	Anionic Surfactant	6.15	5.42	6.24
G-12	Soya Lecithin	10.24	9.05	10.39
W-90	Calcium Carbonate, Whiting	61.48	58.60	105.62 (1)
W-1011	Calcined Diatomaceous Silica	64.22	61.22	70.49 (1)
W-1014	Calcined Clay	31.43	29.95	35.24 (1)
W-129	Titanium Dioxide	218.61	173.65	59.06 (1)
W-192	Zealex 80	12.30	11.67	--- (1)
H-284	Ammonia	1.84	2.56	2.04
VM-5648	Potassium Pentachlorophenol Sol.	12.09	10.66	10.33
H-454	Phenyl Mercury Oleate	3.00	2.68	3.03
RC-11008	Acrylic Latex	179.61	174.03	287.25 (2)
G-1117	Hydrocarbon Emulsion	111.34	107.84	--- (2)
H-514	Ethylene Glycol	41.49	41.00	42.88
H-632	Odorless Mineral Spirits	12.00	11.67	11.87
H-372	Reodorant	.30	.32	.31
G-782	Defoamer	2.00	1.93	2.05
TOTAL		1109.00	1071.00	1023.00
	PVC	44.95	42.77	41.10
	Vol. Solids	33.97	31.76	29.93
	Wt. Solids	50.48	46.97	42.97

Reasons for Change:

- (1) The pigmentation is adjusted for tinting strength.
- (2) G-1117 cannot be used in the deep base because of its effect on the color of the paint.

TABLE V

<u>Code</u>	<u>Description</u>	<u>389-431 "Flow Kote" Wall Paint</u>	<u>Proposed Light Base</u>	<u>Proposed Deep Base</u>	
W-165	Diatamaceous Silica	40.51	--	--	(1)
G-1111	Methyl Cellulose	17.23	6.59	7.41	
H-506	Water	481.57	486.97	491.41	
H-658	Polyglycol	2.77	2.56	2.85	
H-657	Anionic Surfactant	4.29	3.90	4.39	
G-796	Phenyl Mercury Propionate	.26	.28	.25	
W-1011	Calcined Diatomaceous Silica	33.05	49.14	96.65	(2)
H-514	Ethylene Glycol	24.51	22.36	25.09	(2)
VM-5648	Potassium Pentachlorophenol Sol.	12.00	11.06	12.31	
G-12	Soya Lecithin	10.49	9.57	10.77	
W-1002	Aluminum Silicate	67.35	144.74	72.21	(2)
W-129	Titanium Dioxide	131.02	151.47	36.20	(2)
W-1004	Calcium Carbonate	111.03	98.22	119.61	(2)
H-284	Ammonia	.92	.93	.93	
RC-11008	Acrylic Latex	163.05	146.30	164.93	
G-747	Defoamer/G-782 Defoamer	2.95	1.91	1.99	(3)
	TOTAL	1093.00	1139.00	1047.00	
	PVC	59.62	65.02	57.00	
	Vol. Solids	27.06	27.97	25.90	
	Wt. Solids	44.21	41.95	40.75	

- (1) W-165 cannot be used in the Custom Color system because of its adverse effect on color.
- (2) The pigmentation is adjusted for tinting strength.
- (3) G-782 is the preferred defoamer.

REPRODUCIBILITY:

The Bennett's colorants are controlled to plus or minus two percent for tinting strength. They are also shaded in the same manner as regular paints in order to achieve reproducible hue. Our evaluation of batch to batch variation of the Bennett colorants indicates their controls are very good.

Reproducibility of the white base paints has not been established. One hundred gallons of a "Lucite" Light Base prototype and 150 gallons of a "Flow Kote" Light Base prototype have been scaled up. The finished formulas will differ only slightly from the prototypes with respect to composition and manufacturing procedure except for those changes that may be required to achieve adequate tinting strength uniformity.

Formulas for the latex deep bases have been made in the laboratory with no difficulty. We do not expect any unusual problems in scale up of laboratory batches.

CONTINUING LABORATORY WORK:

- Formulas for the white base paints are being adjusted for color and tinting strength and reproducibility is being established.
- New testing and control procedure are being evaluated. Current procedures have been shown to be inadequate.
- A "Lucite" Interior Enamel base is under development.
- The laboratory will assist Marketing in establishing procedure for overhaul or modification of Harbil machines currently in use to conform to the new system.
- Possible methods for use of obsolete white bases are being investigated.

COST INFORMATION:

The costs of the Bennett's colorants are listed in Table VI. The costs for Du Pont colorants are listed in Table VII. The costs are on a per quart basis. The relative volume sales of the colorants are also listed in the tables and in both cases the average cost based on relative movement is shown.

TABLE VI

<u>Bennett Color</u>	<u>Cost per Quart</u> <u>F.O.B. Salt Lake City</u>	<u>% Volume Sales</u>
AA Quinacridone Red	7.43	3.4
B Red Iron Oxide	1.63	3.3
C Phthalo Blue	2.11	6.0
E Black Oxide/Lampblack	2.41	11.6
F Chromium Oxide	2.97	10.5
H Chrome Yellow Medium	2.51	15.5
J Yellow Oxide	1.60	18.4
K Black/Red/Yellow Oxide	1.66	11.5
L Chrome Yellow/Molybdate Orange	2.92	5.9
M Red Oxide	1.54	3.2
N Chrome Yellow Light	2.97	5.0
P Phthalo Green	3.53	5.7

Average cost per quart based on movement \$2.47

<u>Du Pont Color</u>	<u>Mill Cost per Quart</u>	<u>% Volume Sales</u>
#11 BON Red	2.00	7.1
12 Molybdate Orange	2.81	1.7
13 Chrome Yellow/Molybdate Orange	2.81	9.3
14 Chrome Yellow Light	2.81	10.9
15 Chrome Yellow/Phthalo Green	2.83	7.0
16 Phthalo Green	3.10	8.2
17 Phthalo Blue	1.92	9.3
21 Red Iron Oxide	1.40	7.2
22 Yellow Oxide	1.41	19.1
23 Yellow Oxide/Phthalo Blue	1.54	2.3
24 Yellow Oxide/Phthalo Blue	1.72	1.7
25 Phthalo Blue/BON Red/Lampblack	1.82	1.0
26 Red Oxide	1.69	1.0
27 Lampblack	1.21	14.2

Average cost per quart based on movement
(for 14 colorants used in present tube system
or with Color Master Machine)

\$2.04

Movement cost per quart corrected for nine
color system (used with Harbil machine)

\$2.05

Mill cost information on our existing white bases and prototypes of the
corresponding bases adjusted for the Bennett system is provided in Table VIII below .

TABLE VIII

<u>Sales Code</u>	<u>Mill Cost</u>	<u>Prototype Mill Cost</u>	<u>Sales and Transfers Gallons (1)</u>	<u>% Interior C.C. Sales</u>
191 Flat	2.73	-	10,180	
192 "	2.30	-	3,070	
			<u>13,250</u>	6.2
291 Semi-Gloss	2.67	-	40,411	
292 "	2.28	-	18,545	
			<u>58,956</u>	27.5
391 Gloss	3.10	-	6,529	
392 "	2.29	-	5,222	
			<u>11,751</u>	5.5
491 "Flow Kote"	2.04	*1.64	27,424	
492 "	1.69	*1.33	7,631	
			<u>35,055</u>	16.4
2391 "Lucite"	2.34	*1.97	73,869	
2392 "	1.96	*1.54	21,283	
			<u>95,152</u>	44.4
TOTAL			214,164	
632 Line Colorants	2.04 qt.	2.47 qt.	22,365 qt.	

*Cost difference includes savings from tinting strength and quality change.

(1) For 12 months ending 6/30/68.

In order to provide further costs comparisons between the two systems four cases are shown below combining both colorant cost and white base cost. For the white bases, it is assumed that the average movement gallon mill cost of the adjusted white bases will be 8¢ less than that of the present bases.

In Table VIII the cost saving for the 491, 492, 2391 and 2392 bases is considerably more than the 8¢ average. However, in these cases, the difference includes the quality change which is also part of this proposal and could be made independently of the color purchases proposal.

Case I - An average color in "Lucite" Wall Paint mix using our present system with quality change included and a colorant addition of 3.3 oz. gallon.

Case II - As above, except white base is adjusted for tinting strength and Bennett colorants used to match strength of 3.3 oz. Du Pont colorant.

Case III - Cost averages based on comparison of 10 colors in the Bennett system versus the best matches available in our system. This comparison is intended to show the cost difference in a case where the customer has the option of buying a particular color mix in our present system and in the proposed system. A present Du Pont system; III-A proposed Bennett system.

Case IV - A hypothetical case based on information supplied by Bennetts. They claim that the average amount of colorant sold per gallon of white base is 2.2 oz. (or 17¢ worth) per gallon. In this case the adjusted white bases is used.

Case I		Case II	Case III		Case IV
			A	B	
Base Cost	2.05	1.97	2.05	1.97	1.97
Colorant Cost	<u>21</u>	<u>32</u>	<u>19</u>	<u>36</u>	<u>17</u>
*Total Cost	2.26	2.29	2.24	2.33	2.14

*This total cost is referred to as "product cost".

In our opinion, the most significant comparison is Case I versus Case II. In this comparison the product cost penalty is 3¢ per gallon of mixed color. Assuming an annual sales of 535,000 gallons per year (2.5 times the present rate) the product cost penalty per year will be \$16,000 per year. On the present volume basis, the penalty will be \$6,300 per year.

In this same comparison, it should be noted that the cost penalty on a colorant basis alone is 11¢ per gallon. This comparison is significant because it illustrates the result of exercising the option of lowering the tinting strength of our white bases but maintaining the same color selection. On the basis of this option the cost penalty would be \$59,000 per year at 2.5 times the present volume or \$22,000 per year at the present volume.

All mill costs are unofficial and provided for guidance only. The cases presented are intended to represent the several patterns that may emerge once the system is in operation. A final analysis can be made only after actual selling patterns are established.

MANUFACTURING PROBLEMS:

- 1) New test and control procedures for tinting strength and color may be necessary to maintain the quality of the Custom Color system.
- 2) To date no material representing the white paint bases has been manufactured. Six bases representing three line qualities are in final stages of development. We do not expect these bases to act differently than their parent qualities.
- 3) There is no alternate source of supply for the Bennett's Colorants. However, Du Pont of Canada is licensed to produce Bennett's Colorants.

NEW OR UNUSUAL TOXICITY HAZARDS:

There are no known unusual toxicity hazards involved in this proposal. All materials have been classified with respect to handling hazards.

Three of the Bennett's Colorants contain lead pigments. Paints using these pigments will require a warning label as required by local ordinance or when the permissible level as defined by U.S.A. Standards Institute 266.1 is exceeded.

LABEL INFORMATION:

Label analysis will be required for all of the proposed white base paints. The mercury present in these paints is below the .06% level that requires a hazardous warning label. Label directions and cautions should be the same for the parent qualittes. Special "stick on" labels will be required in areas where the levels of lead pigments are restricted. Information for calculation of label analyses will be forwarded to Plants Technical when formulas are scaled up.

SIMPLIFICATION:

Approval of this release will favorably affect simplification. All of the 632 Line Universal Colorants will become obsolete as well as the current quality Custom Color bases. The obsoleted codes are shown in Table IX below.

There will be ten new mill base formulas and ten new finished product formulas.

TABLE IX

CUSTOM COLOR BLENDING BASES

CODE

2391C "Lucite" - Light	392-091
2392C "Lucite" - Deep	392-092
191C Flat - Light	639-806
192C Flat - Deep	639-807
291C Semi-Gloss - Light	639-779
292C Semi-Gloss - Deep	639-780
391C Gloss - Light	639-775
392C Gloss - Deep	639-776
491C "Flow Kote" - Light	389-134
492C "Flow Kote" - Deep	389-132

TABLE IX (CONTINUED)

<u>OBSOLETE</u>	
<u>UNIVERSAL TINTING COLORS</u>	<u>CODE</u>
16C Phthalo Medium Green	632-778
12C Orange Vermillion	-774
13C Chrome Orange	-775
14C Chrome Yellow Light	-776
15C Bright Chartreuse	-777
17C Phthalo Blue	-779
11C Bright Red Violet	-773
23C Olive Green	-783
24C Dark Green	-784
25C Dark Blue	-785
21C Venetian Red Oxide	-788
22C Raw Sienna	-782
26C Indian Red	-786
27C Lampblack	-787

PATENT INFORMATION:

There are no currently known patents which would interfere with the sale of Custom Color paint formulated with colorants purchased from Bennett, these colorants being based on pigments dispersed in a glycol modified soya alkyd resin vehicle. We are not aware whether these commercially available colorants are covered by unexpired patents. These colorants are being supplied to other prominent paint manufacturers for use in the same manner as Du Pont intends to use the colorants and based on current knowledge of the colorants, no patent complications are believed to be involved. Any purchase contract with Bennett should in the conventional manner provided for hold harmless with regard to patent infringement.

The Du Pont 632 Line colorants to be superseded by the Bennett colorants are formulated according to the teachings of 6 S. P. 2,996,397 (Secker FFD-1123) assigned to Du Pont.

CONFIDENTIAL INFORMATION:

The information contained in this letter should be considered "For Du Pont Use Only".

FORMULA CARDS:

Formulas for the white base paints have not been completed. These formulas will not differ significantly from the parent qualities.

CONFORMANCE TO AIR POLLUTION CONTROL DIRECTIVE:

All white base paints and colorants in this proposal conform to APCD.

MARSHALL DEVELOPMENT LABORATORY

Charles T. Rivenburgh

CHARLES T. RIVENBURGH

CTR:hfm

APPROVED

N. B. Pappas

DATE

Feb. 20, 1969

APPROVED

DATE