

*File:*

*CTR*

CC: W. D. Lawson, F&F, Wilm.  
G. T. Vaala, F&F, Wilm.  
F. D. Chapman, F&F, Wilm.  
J. C. Richards, F&F, Wilm.  
J. A. Klacsmann, F&F, Wilm.  
P. I. Poindexter, F&F, Wilm.  
O. H. Bullitt, Jr., Laboratory  
P. J. Graham, Exp'l Sta.  
G. I. Mulholland, Flint  
G. R. Maher, F&F, Wilm.  
A. B. Naselow, F&F, Wilm.  
L. S. Baker, F&F, Wilm. A&I and  
Trade Sales

File: 3320

Marshall Laboratory  
July 21, 1969

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

RECEIVED

JUL 30 1969

MARSHALL LAB. FILE

MARSHALL DEVELOPMENT LABORATORY SUPPLEMENTARY RELEASE LETTER NO. 2149-A

COMMERCIALIZATION OF CUSTOM COLOR SYSTEM

BASED ON BENNETT'S DECORATOR COLORANTS

RELATED RELEASE LETTERS: R. L. #2149, 2149-B, 2149-C

PROPOSAL AND EXTENT OF RELEASE:

This letter proposes manufacture and national sale by Consumer Paint of Lucite® Custom Color Wall Paint light and deep tint bases. The proposed formulations are based on HG acrylic latex (RC-11008) and utilize colorants manufactured by Bennett's.

This is part of a series of proposals that will update our Custom Color system. Companion proposals on "Lucite" Custom Color Interior Enamel and on 639 Line Alkyd Custom Color Paints will complete the program.

This release is being written at the request of Marketing in advance of completion of laboratory and alignment programs to provide lead time for marketing plans and is subject to satisfactory completion of these programs.

MANAGEMENT DECISION REQUESTED:

Management should consider the following points in making a decision on this proposal:

- 1) The adoption of this proposal will update our Custom Color System both technically and commercially.
- 2) The formulas proposed in this release are designed for use with Bennett's colorants. Adoption of this proposal will obsolete existing white base paints.
- 3) Durability, application properties, manufacturing reproducibility, and stability experience with the proposed formulations is limited.
- 4) The proposed deep base formulation has been difficult to adjust and control for tinting strength because of low  $\text{TiO}_2$  level.
- 5) The proposed formulations represent a major quality change for "Lucite" CC Wall Paint. This change will update the Custom Color Wall Paint to the quality of present 392-401 quality.
- 6) Testing and Control Procedures have been revised to improve testing reproducibility but have not been completely validated.
- 7) The proposed formulations are deficient in that some colorants can be washed from the surface of the tinted paints even after several days drying. However, no apparent change in the paint surface is observed after washing.

TECHNICAL OPINION:

The Laboratory recommends approval.

An adequate background with respect to durability, application properties, and stability is considered essential for any major consumer paint line. In this case, our background is less than that previously considered adequate. However, the background that has been developed on the light base has been acceptable.

The risk associated with the light base is reasonable to assume because the formulation closely resembles current quality "Lucite" Wall Paint. The proposed deep base formulation involves a relatively higher risk since we have little experience with this type of formulation. The poor tinting strength precision identified earlier also increases the risk with respect to color matching ability.

We feel that these products are improvements over the current "Lucite" Custom Color Wall Paints. The Technical Concept is sound and we believe this proposal presents only moderate risk.

PRODUCT DESCRIPTION:

The proposed bases are updated versions of 392-091 and 392-092 Custom Color Wall Paints. The formulations combine the technology of 392-401 "Lucite" Wall Paint with some of the formulating changes incorporated into the 392-601 paint proposed in R. L. No. 2165.

Color and Hiding:

The color and hiding of the proposed formulations matches the color and hiding of standards supplied by Bennett's. These formulations will match the color chips of the Bennett color system when properly tinted.

Stability:

Package stability in terms of viscosity and package conditions is limited to four weeks on proposed formulations and has been satisfactory.

Tinting strength stability has been satisfactory for the proposed light base. Stability of the deep base is also satisfactory.

Competitive Situation:

The proposed "Lucite" CC bases are considered equal to competition in color matching to standard chips.

TABULATION OF COMPOSITION:

The composition of the proposed light base is shown next to the current and proposed shelf qualities in Table I. Table II compares the light base with the deep base.

| <u>Code</u> | <u>Ingredient</u>                        | <u>392-401</u> | <u>392-445</u><br><u>Light Base</u> | <u>392-601</u> | <u>Changes</u> |
|-------------|------------------------------------------|----------------|-------------------------------------|----------------|----------------|
| RC-11008    | Acrylic Latex, 46% Solids                | 1.796          | 3.052                               | 2.080          | (1)            |
| G-1117      | Hydrocarbon Emulsion<br>50% Solids       | 1.113          | -                                   | -              | (1)            |
| W-1012      | Montmorillonite Clay                     | .099           | .097                                | .091           |                |
| W-1014      | Calcined Clay                            | .314           | .301                                | .281           | (2)            |
| W-1011      | Calcined Diatomaceous Silica             | .642           | .614                                | .734           | (2)            |
| W-90        | Calcium Carbonate, Whiting               | .615           | .588                                | .292           | (2)            |
| W-1008      | Aluminum Silicate                        | -              | -                                   | .296           | (2)            |
| W-192       | Fine Extender, Zeolex 80                 | .089           | .117                                | -              | (2)            |
| W-129/W-199 | Titanium Dioxide                         | 2.269          | 1.74                                | -              | (2)            |
|             | TiPure2 R-901/TiPure"R-992               |                |                                     |                |                |
| KW-8714     | Titanium Dioxide, "TiPure"<br>R-931      | -              | -                                   | 2.515          | (2)            |
| G-1111      | Methylcellulose, Thickener,<br>4000 cps. | .028           | .029                                | .011           |                |
| G-21        | Thickener L, Thickener                   | -              | -                                   | .300           |                |
| G-195       | Sodium Polyacrylate                      | .001           | -                                   | -              | (3)            |
| H-632       | Odorless Mineral Spirits                 | .120           | .117                                | -              |                |
| H-658       | Deofamer, Polyglycol P-1200              | .034           | .030                                | .018           | (4)            |
| H-609       | Non-ionic Surfactant, 99%                | .042           | .038                                | .029           | (4)            |
| H-657       | Anionic Dispersant, 25%                  | .061           | .054                                | .117           | (4)            |
| H-454       | Phenylmercury Oleate, 10%                | .030           | .030                                | -              | (5)            |
| G-796       | Phenylmercury Propionate                 | -              | -                                   | .002           | (5)            |
| VM-5648     | 10% Pot. Pentachlorophenol<br>Soln.      | .121           | .121                                | -              | (5)            |
| H-372       | Reodorant                                | .003           | -                                   | -              | (6)            |
| H-514       | Ethylene Glycol                          | .415           | .410                                | .900           |                |
| H-506       | Water                                    | 3.155          | 3.337                               | 3.587          | (7)            |
| G-782       | Defoamer                                 | .020           | .005                                | .020           |                |
| H-284       | Ammonia, 28%                             | .018           | .026                                | .018           |                |
| G-12        | Soya Lecithin                            | .102           | .091                                | .102           |                |
|             | Shading Bases                            | Trace          | Trace                               | Trace          |                |
|             | Gallon Weight                            | 11.087         | 10.80                               | 11.400         |                |
|             | Weight Solids %                          | 50.5           | 46.99                               | 47.6           |                |
|             | Volume Solids %                          | 34.0           | 31.31                               | 29.0           |                |
|             | Pigment Volume %                         | 45.0           | 43.87                               | 55.0           |                |

Explanation of Changes: Table I

- (1) Hydrocarbon emulsion dropped in order to upgrade film properties.
- (2) These changes reflect the rebalancing of the pigmentation to achieve a match for color and tint strength to the Bennett Standard.
- (3) Polyacrylate thickener, which causes rapid recovery of the gel structure, not required since this property is no longer desired.
- (4) Surfactants and dispersants rebalanced.
- (5) Fungicides used for can preservation believed adequate. G-769 replacing H-454 on equal mercury level due to its greater safety in handling.
- (6) Reodorant being dropped since it is believed that the odor level of all acrylic system is acceptable without any masking agents.
- (7) Difference in quantities of water in each formulation reflects the volume of solid differences.
- (8) G-782 level lowered to improve color compatability.

TABLE II

| <u>Code</u>                  | <u>Description</u>                     | <u>392-445<br/>Proposed<br/>Light Base</u> | <u>392-446<br/>Proposed<br/>Deep Base</u> | <u>Changes</u> |
|------------------------------|----------------------------------------|--------------------------------------------|-------------------------------------------|----------------|
| RC-11008                     | Acrylic Latex, 46% Solids              | 3.052                                      | 2.869                                     | (1)            |
| W-1012                       | Montmorillonite Clay                   | .097                                       | .095                                      |                |
| W-1014                       | Calcined Clay                          | .301                                       | .351                                      | (2)            |
| W-1011                       | Calcined Diatomaceous Silica           | .641                                       | .701                                      | (2)            |
| W-90                         | Calcium Carbonate, Whiting             | .588                                       | 1.051                                     | (2)            |
| W-192                        | Fine Extender, Zeolox 80               | .117                                       | ---                                       | (2)            |
| W-129                        | Titanium Dioxide                       | 1.74                                       | .587                                      | (3)            |
| H-454                        | Phenylmercury Oleate                   | .030                                       | ---                                       | (3)            |
| G-796                        | Phenylmercury Propionate               | ---                                        | .002                                      | (3)            |
| VM-5648                      | 10% Pot. Pentachlorophenol<br>Soln.    | .121                                       | ---                                       | (3)            |
| G-1111                       | Methylcellulose, Thickener<br>4000 cps | .029                                       | .042                                      | (4)            |
| H-632                        | Odorless Mineral Spirits               | .117                                       | .118                                      |                |
| H-658                        | Defoamer, Polyglycol P-1200            | .030                                       | .034                                      | (5)            |
| H-609                        | Non-ionic Surfactant, 99%              | .038                                       | .042                                      | (5)            |
| H-657                        | Anionic Dispersant, 25%                | .054                                       | .062                                      | (5)            |
| H-514                        | Ethylene Glycol                        | .410                                       | .427                                      |                |
| H-506                        | Water                                  | 3.337                                      | 3.699                                     |                |
| G-782                        | Defoamer                               | .005                                       | .005                                      |                |
| G-12                         | Soya Lecithin                          | .091                                       | .103                                      | (5)            |
| H-284                        | Ammonia, 28%                           | .026                                       | .030                                      |                |
| Shading Bases                |                                        | Trace                                      | Trace                                     |                |
| Gallon Weight                |                                        | 10.80                                      | 10.22                                     |                |
| Weight Solids                |                                        | 46.99%                                     | 42.76%                                    |                |
| Volume Solids                |                                        | 31.31%                                     | 29.78%                                    |                |
| Pigment Volume Concentration |                                        | 43.87                                      | 41.14                                     |                |

Explanation of Changes: Table II

- (1) This change results in lower volume solids.
- (2) Pigmentation is rebalanced to match tint strength of Bennett's standard.
- (3) H-454/VM-5648 used in light base because of effects on dispersion.
- (4) G-1111 increased to maintain viscosity at lower volume solids.
- (5) Surfactant levels rebalanced.

REPRODUCIBILITY:

Reproducibility of the proposed formulations has not been established. One hundred gallons of a light base prototype was successfully completed. Scale up of 100 gallons prototype deep base was unsuccessful because of adjustment problems.

Formulations of the current light base have been made in the laboratory with no difficulty. We do not expect unusual scale up problems with this base.

Formulations of the current deep base have also been made in the laboratory. Tinting strength testing of this formula has not been as precise as previously considered necessary.

CONTINUING LABORATORY WORK:

The laboratory will establish stability of the bases manufactured in scale up batches and will be responsible for development of instrumental shading techniques.

A new Test Method will be written outlining procedures for testing tinting strength of Custom Color bases ( TM-71-S).

Preferred testing and adjusting procedures will be developed in cooperation with Plants Technical.

COST INFORMATION:

The bulk mill costs of the proposed formulations are listed together with the costs of the old system and that of "Lucite" Wall Paint Systems. These costs are unofficial and are provided for guidance only.

|                                                    |                   |
|----------------------------------------------------|-------------------|
| 392-091 "Lucite" CC Light Base ( Present )         | \$1.60 15/16 gal. |
| 392-445 "Lucite" CC Light Base ( Proposed )        | 1.44 15/16 gal.   |
| 392-401 "Lucite" Wall Paint ( Present )            | 1.63 gal.         |
| 392-601 "Lucite" Wall Paint ( Proposed R.L. 2165 ) | 1.72 gal.         |
| 392-092 "Lucite" CC Deep Base ( Present )          | 1.17 7/8 gal.     |
| 392-446 "Lucite" CC Deep Base ( Proposed )         | 1.03 7/8 gal.     |

MANUFACTURING PROBLEMS:

The 392-446 Deep Base has been revised to eliminate adjustment and control problems. However, alignment of this material is not complete and further revision may be necessary. Control limits for tinting strength of the base may be revised.

No material representing the present quality Light Base has been manufactured. We do not expect the present quality to act different than the prototype so no problems are anticipated.

NEW OR UNUSUAL TOXICITY OR OTHER HAZARDS:

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

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 as the current quality. Information for calculation of label analysis will be forwarded to Plants Technical when formulas are scaled up.

Three of 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 Z 66.1 is exceeded.

SIMPLIFICATION:

Approval of this release will favorably affect simplification. G-1117 Hydrocarbon Emulsion has been eliminated in conforming to 392-601 formulating changes. In addition, ingredients used only in 392-091 and 392-092 paints will be obsoleted.

PATENT INFORMATION:

There are no known patents which conflict with the manufacture and sale of the proposed latex wall paint formulations identified as 392-601, 392-445 and 392-446, the latter two a light base and deep base, respectively, for coloring with Bennett's colorants. Each of the paints are formulated with the non-imitated acrylic latex HG designated RC-11008. The carboxyl equivalent of the HG polymer is within the claimed teaching of the licensed Rohm & Haas U.S.P. 2,795,564 and consequently this HG latex is subject to royalty payment. Substitution of an imitated latex will require definition of the patent status, although no patent conflict is currently recognized in such a substitution.

CONFIDENTIAL INFORMATION:

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

FORMULA CARDS:

Formula cards for the 392-445 and 392-446 paints together with the 548-992 and 548-993 dispersions proposed in this release are attached to the Production and Research copies of this Release.

CONFORMANCE TO AIR POLLUTION CONTROL DIRECTIVE:

These paints conform to APCD.

MARSHALL DEVELOPMENT LABORATORY

*Charles T. Rivenburgh*

CHARLES T. RIVENBURGH

CTR/smw

APPROVAL

*N. Pappas*

APPROVAL

DATE

*July 22, 1969*

DATE

|     |           |                                                           |           |             |                        |       |         |
|-----|-----------|-----------------------------------------------------------|-----------|-------------|------------------------|-------|---------|
| 101 | Code      | 3921                                                      | 445       | NAME        | "LUCITE" CC LIGHT BASE | DATE  | 7/17/69 |
| 202 | QTY       | TRADE SALES                                               | Loc       | TEMP        | WILM TRADE             |       |         |
| 203 | END USE   | INTERMEDIATE                                              | Type      | 2149-A      | WHITE                  |       |         |
| 204 | FORM      | C T RIVENBURGH/CLH                                        | R.L.L.    | 9413-B2     |                        |       |         |
| 205 | REVISOR   | C T RIVENBURGH/CLH                                        | R.D.P.    | PHILA-DL    |                        |       |         |
| 206 | PREV R    | 392-H-8384 T-6-3-69                                       | T.C.DIST. | CWS-WFG     |                        |       |         |
| 207 | R.F.I     | ASSIGN PERM CODE TO 392-H-8384                            |           |             |                        |       |         |
| 208 | S.T.P.    |                                                           | 392-001-P | SEE TESTING |                        |       |         |
| 309 | T         | TINT STR. STD. TM-71-S                                    |           |             |                        |       |         |
| 310 | H         | 392-445 = G W X 42.6 = GMS                                |           |             |                        |       |         |
| 311 | T F       | PILOT COLORANT F = 21.6                                   |           |             |                        |       |         |
| 312 | E O       | USE 2-X001-7 FOR STANDARDIZING COLORIMETER. USE           |           |             |                        |       |         |
| 313 | S R       | STANDARDS SUPPLIED BY LABORATORY. ALL SHADING HITS TO BE  |           |             |                        |       |         |
| 314 | T M       | DETERMINED BY COS                                         |           |             |                        |       |         |
| 420 | Vol. Sol. | 315%                                                      | Pct. Vol. | 4310 %      | Vol. Sol.              | 4715% |         |
| 321 |           | COMPUTER PROGRAMMED //                                    |           |             |                        |       |         |
| 322 |           | NOT TO BE USED FOR OTHER THAN EXPERIMENTAL PURPOSES UNTIL |           |             |                        |       |         |
| 323 |           | RELEASE LETTER IS APPROVED //                             |           |             |                        |       |         |

|     |                                                            |       |      |          |                                   |      |         |
|-----|------------------------------------------------------------|-------|------|----------|-----------------------------------|------|---------|
| 529 | Code                                                       | 3921  | 445  | NAME     | "LUCITE" CC LIGHT BASE            | DATE | 7/17/69 |
| 230 | Pay Mat                                                    |       |      |          | 88-92 KU                          |      |         |
| 231 | Cont                                                       | G-L   |      |          | 1078 ±0                           |      | ±150L   |
| 632 | CAUTION THIS IS A WATER BASE PAINT. ORDER OF ADDITION      |       |      |          |                                   |      |         |
| 633 | MUST BE FOLLOWED. AVOID UNNECESSARY CONTAMINATION. DO NOT  |       |      |          |                                   |      |         |
| 634 | USE LUMPY BASES. AGITATE BASES AND VM-5751 BEFORE USING.   |       |      |          |                                   |      |         |
| 736 | RC                                                         | 11008 |      | 304:53   |                                   |      |         |
| 737 | H                                                          | 506   |      | 53:34    |                                   |      |         |
| 638 |                                                            |       |      |          | ADD WITHOUT FREEFALL OR AGITATION |      |         |
| 639 | MIX 5 MINS.                                                |       |      |          |                                   |      |         |
| 741 | VM                                                         | 5751  |      | 12:07    |                                   |      |         |
| 642 |                                                            |       |      |          | ADD WHILE MIXING. MIX 15 MINS.    |      |         |
| 743 | 548                                                        | 992   |      | 596:63   |                                   |      |         |
| 744 | H                                                          | 506   |      | 67:46    |                                   |      |         |
| 745 | H                                                          | 514   |      | 30:82    |                                   |      |         |
| 746 | H                                                          | 284   | 55   | 0:97     |                                   |      |         |
| 647 |                                                            |       |      |          | ADD WHILE MIXING. MIX 30 MINS.    |      |         |
| 648 | USE H-506 TO WASH DOWN "4" MIXER DO NOT WITHHOLD ANY H-506 |       |      |          |                                   |      |         |
| 649 | *MIX 15 MINS. BEFORE ADDING                                |       |      |          |                                   |      |         |
| 751 | H                                                          | 628   | *    | -TRA:CE- |                                   |      |         |
| 752 | H                                                          | 247   | *    | -TRA:CE- |                                   |      |         |
| 753 | H                                                          | 530   | *    | -TRA:CE- |                                   |      |         |
| 754 | H                                                          | 547   | 5362 | -TRA:CE- |                                   |      |         |
| 755 | H                                                          | 728   | *    | -TRA:CE- |                                   |      |         |

|     |                                                             |              |     |          |                               |  |  |
|-----|-------------------------------------------------------------|--------------|-----|----------|-------------------------------|--|--|
| 656 |                                                             |              |     |          | ADD WHILE MIXING. *DO NOT USE |  |  |
| 657 | LUMPY BASES.                                                | MIX 30 MINS. |     |          |                               |  |  |
| 759 | H                                                           | 632          |     | 11:64    |                               |  |  |
| 760 | 548                                                         | 871          | X   | -TRA:CE- |                               |  |  |
| 761 | 548                                                         | 890          | Y   | -TRA:CE- |                               |  |  |
| 664 | AFTER EACH SHADING HIT. "X" REFER TO PLANT LAB. FOR         |              |     |          |                               |  |  |
| 665 | ADJUSTMENT PER 250-25. "Y" SEE TM-71-S FOR TINTING STRENGTH |              |     |          |                               |  |  |
| 767 | VM                                                          | 5751         | *   | -TRA:CE- |                               |  |  |
| 770 | G                                                           | 782          |     | 0:54     |                               |  |  |
| 771 | H                                                           | 284          | Y55 | -TRA:CE- |                               |  |  |
| 677 | MIXED SAMPLE. *IF LOW. ADD UP TO 5 LBS/100 GAL. VM-5751 AT  |              |     |          |                               |  |  |
| 678 | RATE OF 1 LB FOR EACH 1.5 KU VISC RISE NEEDED. "X" IF HIGH  |              |     |          |                               |  |  |
| 679 | ADD UP TO 20 LBS H-506/100 GAL. ADD VM-5751 SLOWLY WITH     |              |     |          |                               |  |  |
| 680 | MIXING. DO NOT DUMP. MIX HR. AFTER EACH ADD. "Y" ADJUST PH  |              |     |          |                               |  |  |
| 681 | WITH H-284 IF REQUIRED //                                   |              |     |          |                               |  |  |
| 682 | TOTAL                                                       |              |     | 1078:00  |                               |  |  |
| 681 | CHECK PH BEFORE FILLING. AGITATE DURING FILLING //KEEP      |              |     |          |                               |  |  |
| 682 | FROM FREEZING // FILL QUARTS + GALL. 9357 FULL              |              |     |          |                               |  |  |

N42517.01

DUP030022774

|     |           |                                                           |                       |
|-----|-----------|-----------------------------------------------------------|-----------------------|
| 392 | 446       | "LUCITE" CC DEEP BASE                                     | 78 750                |
| 302 | DATE      | TRADE SALES                                               | LOC                   |
| 303 | END USE   | TYPE                                                      | TEMP                  |
| 304 | FORM      | C.T RIVENBURGH/CLH                                        | N.L.-L 2149A          |
| 305 | REVISION  | C.T RIVENBURGH/CLH                                        | 9. DIST. FP           |
| 306 | REVISED   | 392-H-8386 T-6-3-69-P                                     | T.C. DIST. P          |
| 307 | REF       | PASSING PERM CODE TO 392-H-8386 //                        | APPR. CWS-WFG         |
| 308 | STP       | QUAL. STD 392-001-P                                       | COL. STD. SEE TESTING |
| 309 | I         | TINT STRENGTH STD TM-71-S                                 |                       |
| 310 | R         | 392-446 = G W X 39.8 = GMS.                               |                       |
| 311 | T         | F PILOT COLORANT F = 21.6 GMS.                            |                       |
| 312 | E         | USE 2-X001-7 FOR STANDARDIZING COLORIMETER. USE STANDARDS |                       |
| 313 | S         | SUPPLIED BY LABORATORY. ALL SHADING HITS TO BE DETERMINED |                       |
| 314 | T         | BY CDS //                                                 |                       |
| 315 | I         | A                                                         |                       |
| 316 | G         | T                                                         |                       |
| 317 | I         |                                                           |                       |
| 318 | O         |                                                           |                       |
| 319 | H         |                                                           |                       |
| 420 | Vol. Sol. | 2978%                                                     | Pro. Vol. 4114 %      |
| 321 |           | COMPUTER PROGRAMMED //                                    | Wt. Sol. 4276%        |
| 322 |           | NOT TO BE USED FOR OTHER THAN EXPERIMENTAL PURPOSES UNTIL |                       |
| 323 |           | RELEASE IS APPROVED //                                    |                       |
| 324 |           |                                                           |                       |
| 325 |           |                                                           |                       |
| 326 |           |                                                           |                       |
| 327 |           |                                                           |                       |
| 328 |           |                                                           |                       |
| 329 |           |                                                           |                       |
| 330 |           |                                                           |                       |
| 331 |           |                                                           |                       |
| 332 |           |                                                           |                       |
| 333 |           |                                                           |                       |
| 334 |           |                                                           |                       |
| 335 |           |                                                           |                       |
| 336 |           |                                                           |                       |
| 337 |           |                                                           |                       |
| 338 |           |                                                           |                       |
| 339 |           |                                                           |                       |
| 340 |           |                                                           |                       |
| 341 |           |                                                           |                       |
| 342 |           |                                                           |                       |
| 343 |           |                                                           |                       |
| 344 |           |                                                           |                       |
| 345 |           |                                                           |                       |
| 346 |           |                                                           |                       |
| 347 |           |                                                           |                       |
| 348 |           |                                                           |                       |
| 349 |           |                                                           |                       |
| 350 |           |                                                           |                       |
| 351 |           |                                                           |                       |
| 352 |           |                                                           |                       |
| 353 |           |                                                           |                       |
| 354 |           |                                                           |                       |
| 355 |           |                                                           |                       |
| 356 |           |                                                           |                       |
| 357 |           |                                                           |                       |
| 358 |           |                                                           |                       |
| 359 |           |                                                           |                       |
| 360 |           |                                                           |                       |
| 361 |           |                                                           |                       |
| 362 |           |                                                           |                       |
| 363 |           |                                                           |                       |
| 364 |           |                                                           |                       |
| 365 |           |                                                           |                       |
| 366 |           |                                                           |                       |
| 367 |           |                                                           |                       |
| 368 |           |                                                           |                       |
| 369 |           |                                                           |                       |
| 370 |           |                                                           |                       |
| 371 |           |                                                           |                       |
| 372 |           |                                                           |                       |
| 373 |           |                                                           |                       |
| 374 |           |                                                           |                       |
| 375 |           |                                                           |                       |
| 376 |           |                                                           |                       |
| 377 |           |                                                           |                       |
| 378 |           |                                                           |                       |
| 379 |           |                                                           |                       |
| 380 |           |                                                           |                       |
| 381 |           |                                                           |                       |
| 382 |           |                                                           |                       |
| 383 |           |                                                           |                       |
| 384 |           |                                                           |                       |
| 385 |           |                                                           |                       |
| 386 |           |                                                           |                       |
| 387 |           |                                                           |                       |
| 388 |           |                                                           |                       |
| 389 |           |                                                           |                       |
| 390 |           |                                                           |                       |
| 391 |           |                                                           |                       |
| 392 |           |                                                           |                       |
| 393 |           |                                                           |                       |
| 394 |           |                                                           |                       |
| 395 |           |                                                           |                       |
| 396 |           |                                                           |                       |
| 397 |           |                                                           |                       |
| 398 |           |                                                           |                       |
| 399 |           |                                                           |                       |
| 400 |           |                                                           |                       |
| 401 |           |                                                           |                       |
| 402 |           |                                                           |                       |
| 403 |           |                                                           |                       |
| 404 |           |                                                           |                       |
| 405 |           |                                                           |                       |
| 406 |           |                                                           |                       |
| 407 |           |                                                           |                       |
| 408 |           |                                                           |                       |
| 409 |           |                                                           |                       |
| 410 |           |                                                           |                       |
| 411 |           |                                                           |                       |
| 412 |           |                                                           |                       |
| 413 |           |                                                           |                       |
| 414 |           |                                                           |                       |
| 415 |           |                                                           |                       |
| 416 |           |                                                           |                       |
| 417 |           |                                                           |                       |
| 418 |           |                                                           |                       |
| 419 |           |                                                           |                       |
| 420 |           |                                                           |                       |
| 421 |           |                                                           |                       |
| 422 |           |                                                           |                       |
| 423 |           |                                                           |                       |
| 424 |           |                                                           |                       |
| 425 |           |                                                           |                       |
| 426 |           |                                                           |                       |
| 427 |           |                                                           |                       |
| 428 |           |                                                           |                       |
| 429 |           |                                                           |                       |
| 430 |           |                                                           |                       |
| 431 |           |                                                           |                       |
| 432 |           |                                                           |                       |
| 433 |           |                                                           |                       |
| 434 |           |                                                           |                       |
| 435 |           |                                                           |                       |
| 436 |           |                                                           |                       |
| 437 |           |                                                           |                       |
| 438 |           |                                                           |                       |
| 439 |           |                                                           |                       |
| 440 |           |                                                           |                       |
| 441 |           |                                                           |                       |
| 442 |           |                                                           |                       |
| 443 |           |                                                           |                       |
| 444 |           |                                                           |                       |
| 445 |           |                                                           |                       |
| 446 |           |                                                           |                       |
| 447 |           |                                                           |                       |
| 448 |           |                                                           |                       |
| 449 |           |                                                           |                       |
| 450 |           |                                                           |                       |
| 451 |           |                                                           |                       |
| 452 |           |                                                           |                       |
| 453 |           |                                                           |                       |
| 454 |           |                                                           |                       |
| 455 |           |                                                           |                       |
| 456 |           |                                                           |                       |
| 457 |           |                                                           |                       |
| 458 |           |                                                           |                       |
| 459 |           |                                                           |                       |
| 460 |           |                                                           |                       |
| 461 |           |                                                           |                       |
| 462 |           |                                                           |                       |
| 463 |           |                                                           |                       |
| 464 |           |                                                           |                       |
| 465 |           |                                                           |                       |
| 466 |           |                                                           |                       |
| 467 |           |                                                           |                       |
| 468 |           |                                                           |                       |
| 469 |           |                                                           |                       |
| 470 |           |                                                           |                       |
| 471 |           |                                                           |                       |
| 472 |           |                                                           |                       |
| 473 |           |                                                           |                       |
| 474 |           |                                                           |                       |
| 475 |           |                                                           |                       |
| 476 |           |                                                           |                       |
| 477 |           |                                                           |                       |
| 478 |           |                                                           |                       |
| 479 |           |                                                           |                       |
| 480 |           |                                                           |                       |
| 481 |           |                                                           |                       |
| 482 |           |                                                           |                       |
| 483 |           |                                                           |                       |
| 484 |           |                                                           |                       |
| 485 |           |                                                           |                       |
| 486 |           |                                                           |                       |
| 487 |           |                                                           |                       |
| 488 |           |                                                           |                       |
| 489 |           |                                                           |                       |
| 490 |           |                                                           |                       |
| 491 |           |                                                           |                       |
| 492 |           |                                                           |                       |
| 493 |           |                                                           |                       |
| 494 |           |                                                           |                       |
| 495 |           |                                                           |                       |
| 496 |           |                                                           |                       |
| 497 |           |                                                           |                       |
| 498 |           |                                                           |                       |
| 499 |           |                                                           |                       |
| 500 |           |                                                           |                       |

|     |           |                                                             |       |      |                       |      |        |
|-----|-----------|-------------------------------------------------------------|-------|------|-----------------------|------|--------|
| 524 | CODE      | 392                                                         | 446   | NAME | "LUCITE" CC DEEP BASE | DATE | 78 759 |
| 230 | REV. DATE |                                                             |       |      |                       |      |        |
| 231 | CONT      | G-L                                                         |       |      |                       |      |        |
| 532 | M         | CAUTION THIS IS A WATER BASE PAINT. ORDER OF ADDITION MUST  |       |      |                       |      |        |
| 533 | I         | BE FOLLOWED. AVOID UNNECESSARY CONTAMINATION. DO NOT USE    |       |      |                       |      |        |
| 534 | G         | LUMPY BASES. AGITATE BASES + VM-5751 BEFORE USING.          |       |      |                       |      |        |
| 736 | R         | RC                                                          | 11008 | 286  | 87                    |      |        |
| 737 | H         |                                                             | 506   | 64   | 92                    |      |        |
| 538 | D         |                                                             |       |      |                       |      |        |
| 539 | E         | MIX 5 MINS.                                                 |       |      |                       |      |        |
| 741 | U         | VM                                                          | 5751  | 19   | 73                    |      |        |
| 542 | T         |                                                             |       |      |                       |      |        |
| 743 | S         | 548                                                         | 993   | 543  | 86                    |      |        |
| 744 | C         | H                                                           | 506   | 67   | 07                    |      |        |
| 745 | D         | H                                                           | 514   | 26   | 17                    |      |        |
| 746 | O         | H                                                           | 284   | 55   | 102                   |      |        |
| 547 | I         |                                                             |       |      |                       |      |        |
| 548 | U         | USE H-506 TO WASH DOWN "40" MIXER DO NOT WITHHOLD ANY H-506 |       |      |                       |      |        |
| 549 | R         | MIX 15 MINS. BEFORE ADDING                                  |       |      |                       |      |        |
| 751 | S         | H                                                           | 628   |      |                       |      |        |
| 752 | I         | H                                                           | 247   |      |                       |      |        |
| 753 | A         | H                                                           | 530   |      |                       |      |        |
| 754 | N         | H                                                           | 5362  |      |                       |      |        |
| 755 | D         | H                                                           | 720   |      |                       |      |        |

|     |    |                                                     |     |    |  |  |  |
|-----|----|-----------------------------------------------------|-----|----|--|--|--|
| 556 |    |                                                     |     |    |  |  |  |
| 557 |    | LUMPY BASES. MIX 30 MINS.                           |     |    |  |  |  |
| 759 | H  | 632                                                 | 11  | 86 |  |  |  |
| 760 |    | 548                                                 | 971 |    |  |  |  |
| 761 |    | 548                                                 | 890 |    |  |  |  |
| 564 |    |                                                     |     |    |  |  |  |
| 565 |    | AFTER EACH SHADING HIT. "X" REFER TO PLANT LAB. FOR |     |    |  |  |  |
| 566 |    | STRENGTH ADJUSTMENT.                                |     |    |  |  |  |
| 768 | VM | 5751                                                |     |    |  |  |  |
| 769 |    | 548                                                 |     |    |  |  |  |
| 770 | G  | 782                                                 |     |    |  |  |  |
| 771 | H  | 284                                                 |     |    |  |  |  |
| 572 |    |                                                     |     |    |  |  |  |
| 573 |    |                                                     |     |    |  |  |  |
| 574 |    |                                                     |     |    |  |  |  |
| 575 |    |                                                     |     |    |  |  |  |
| 576 |    |                                                     |     |    |  |  |  |
| 577 |    |                                                     |     |    |  |  |  |
| 578 |    |                                                     |     |    |  |  |  |
| 579 |    |                                                     |     |    |  |  |  |
| 580 |    |                                                     |     |    |  |  |  |
| 581 |    |                                                     |     |    |  |  |  |
| 582 |    |                                                     |     |    |  |  |  |
| 583 |    |                                                     |     |    |  |  |  |
| 584 |    |                                                     |     |    |  |  |  |
| 585 |    |                                                     |     |    |  |  |  |
| 586 |    |                                                     |     |    |  |  |  |
| 587 |    |                                                     |     |    |  |  |  |
| 588 |    |                                                     |     |    |  |  |  |
| 589 |    |                                                     |     |    |  |  |  |
| 590 |    |                                                     |     |    |  |  |  |
| 591 |    |                                                     |     |    |  |  |  |
| 592 |    |                                                     |     |    |  |  |  |
| 593 |    |                                                     |     |    |  |  |  |
| 594 |    |                                                     |     |    |  |  |  |
| 595 |    |                                                     |     |    |  |  |  |
| 596 |    |                                                     |     |    |  |  |  |
| 597 |    |                                                     |     |    |  |  |  |
| 598 |    |                                                     |     |    |  |  |  |
| 599 |    |                                                     |     |    |  |  |  |
| 600 |    |                                                     |     |    |  |  |  |
| 601 |    |                                                     |     |    |  |  |  |
| 602 |    |                                                     |     |    |  |  |  |
| 603 |    |                                                     |     |    |  |  |  |
| 604 |    |                                                     |     |    |  |  |  |
| 605 |    |                                                     |     |    |  |  |  |
| 606 |    |                                                     |     |    |  |  |  |
| 607 |    |                                                     |     |    |  |  |  |
| 608 |    |                                                     |     |    |  |  |  |
| 609 |    |                                                     |     |    |  |  |  |
| 610 |    |                                                     |     |    |  |  |  |
| 611 |    |                                                     |     |    |  |  |  |
| 612 |    |                                                     |     |    |  |  |  |
| 613 |    |                                                     |     |    |  |  |  |
| 614 |    |                                                     |     |    |  |  |  |
| 615 |    |                                                     |     |    |  |  |  |
| 616 |    |                                                     |     |    |  |  |  |
| 617 |    |                                                     |     |    |  |  |  |
| 618 |    |                                                     |     |    |  |  |  |
| 619 |    |                                                     |     |    |  |  |  |
| 620 |    |                                                     |     |    |  |  |  |
| 621 |    |                                                     |     |    |  |  |  |
| 622 |    |                                                     |     |    |  |  |  |
| 623 |    |                                                     |     |    |  |  |  |
| 624 |    |                                                     |     |    |  |  |  |
| 625 |    |                                                     |     |    |  |  |  |
| 626 |    |                                                     |     |    |  |  |  |
| 627 |    |                                                     |     |    |  |  |  |
| 628 |    |                                                     |     |    |  |  |  |
| 629 |    |                                                     |     |    |  |  |  |
| 630 |    |                                                     |     |    |  |  |  |
| 631 |    |                                                     |     |    |  |  |  |
| 632 |    |                                                     |     |    |  |  |  |
| 633 |    |                                                     |     |    |  |  |  |
| 634 |    |                                                     |     |    |  |  |  |
| 635 |    |                                                     |     |    |  |  |  |
| 636 |    |                                                     |     |    |  |  |  |
| 637 |    |                                                     |     |    |  |  |  |
| 638 |    |                                                     |     |    |  |  |  |
| 639 |    |                                                     |     |    |  |  |  |
| 640 |    |                                                     |     |    |  |  |  |
| 641 |    |                                                     |     |    |  |  |  |
| 642 |    |                                                     |     |    |  |  |  |
| 643 |    |                                                     |     |    |  |  |  |
| 644 |    |                                                     |     |    |  |  |  |
| 645 |    |                                                     |     |    |  |  |  |
| 646 |    |                                                     |     |    |  |  |  |
| 647 |    |                                                     |     |    |  |  |  |
| 648 |    |                                                     |     |    |  |  |  |
| 649 |    |                                                     |     |    |  |  |  |
| 650 |    |                                                     |     |    |  |  |  |
| 651 |    |                                                     |     |    |  |  |  |
| 652 |    |                                                     |     |    |  |  |  |
| 653 |    |                                                     |     |    |  |  |  |
| 654 |    |                                                     |     |    |  |  |  |
| 655 |    |                                                     |     |    |  |  |  |
| 656 |    |                                                     |     |    |  |  |  |
| 657 |    |                                                     |     |    |  |  |  |
| 658 |    |                                                     |     |    |  |  |  |
| 659 |    |                                                     |     |    |  |  |  |
| 660 |    |                                                     |     |    |  |  |  |
| 661 |    |                                                     |     |    |  |  |  |
| 662 |    |                                                     |     |    |  |  |  |
| 663 |    |                                                     |     |    |  |  |  |
| 664 |    |                                                     |     |    |  |  |  |
| 665 |    |                                                     |     |    |  |  |  |
| 666 |    |                                                     |     |    |  |  |  |
| 667 |    |                                                     |     |    |  |  |  |
| 668 |    |                                                     |     |    |  |  |  |
| 669 |    |                                                     |     |    |  |  |  |
| 670 |    |                                                     |     |    |  |  |  |
| 671 |    |                                                     |     |    |  |  |  |
| 672 |    |                                                     |     |    |  |  |  |
| 673 |    |                                                     |     |    |  |  |  |
| 674 |    |                                                     |     |    |  |  |  |
| 675 |    |                                                     |     |    |  |  |  |
| 676 |    |                                                     |     |    |  |  |  |
| 677 |    |                                                     |     |    |  |  |  |
| 678 |    |                                                     |     |    |  |  |  |
| 679 |    |                                                     |     |    |  |  |  |
| 680 |    |                                                     |     |    |  |  |  |
| 681 |    |                                                     |     |    |  |  |  |
| 682 |    |                                                     |     |    |  |  |  |
| 683 |    |                                                     |     |    |  |  |  |
| 684 |    |                                                     |     |    |  |  |  |
| 685 |    |                                                     |     |    |  |  |  |
| 686 |    |                                                     |     |    |  |  |  |
| 687 |    |                                                     |     |    |  |  |  |
| 688 |    |                                                     |     |    |  |  |  |

|     |           |                                                                  |     |            |                  |           |         |
|-----|-----------|------------------------------------------------------------------|-----|------------|------------------|-----------|---------|
| 100 | Code      | 548                                                              | 992 | Name       | WHITE DISPERSION | Date      | 7/1/69  |
| 200 | Dist.     | INTERMEDIATE                                                     |     | Loc.       |                  | Rel. S.O. |         |
| 200 | End Use   | INTERMEDIATE                                                     |     | Type       | TEMP             | Color     | WHITE   |
| 200 | Form      | C-T RIVENBURGH/CLH                                               |     | R.L.-1     | 2149A            | H.S.P.    | 9411-19 |
| 200 | Reviser   | C-T RIVENBURGH/CLH                                               |     | B.D.S.     | FP               | Plant     | PHILA   |
| 200 | Prod. S.  | 548-H-8375 T-2-13-69                                             |     | T.G. Dist. | P                | Appl.     | CWS-WFL |
| 307 | R.F.I.    | ASSIGN PERM CODE TO 548-H-8375                                   |     |            |                  |           |         |
| 309 | STP       |                                                                  |     |            |                  |           |         |
| 310 |           | FINENESS TM-52-G NO.2 GAUGE 3.5 MILS MAX. REDUCE 20% WITH WATER. |     |            |                  |           |         |
| 420 | Vol. Sol. | 3608%                                                            |     | Prod. Vol. | 8653%            | Wt. Sol.  | 6121%   |
| 321 |           | GALS. PIGMENT 2-28                                               |     |            |                  |           |         |
| 322 |           | GALS. BINDER 0.36                                                |     |            |                  |           |         |
| 323 |           | COMPUTER PROGRAMMED                                              |     |            |                  |           |         |
| 324 |           | NOT TO BE USED FOR OTHER THAN EXPERIMENTAL PURPOSES UNTIL        |     |            |                  |           |         |
| 325 |           | RELEASE LETTER IS USED //                                        |     |            |                  |           |         |
| 18  |           |                                                                  |     |            |                  |           |         |

|     |           |                                                                                   |        |          |                  |                                 |                              |
|-----|-----------|-----------------------------------------------------------------------------------|--------|----------|------------------|---------------------------------|------------------------------|
| 529 | Code      | 548                                                                               | 992    | Name     | WHITE DISPERSION | Date                            | 7/1/69                       |
| 230 | Pat. Sht. |                                                                                   |        | Vol.     |                  | Prod.                           | 3-5 MIL MAX                  |
| 231 | Cont.     |                                                                                   |        | Cal. Wt. | 1368±0           | Exc. Sht.                       | 41501                        |
| 632 | IN        | INTERMEDIATE                                                                      | BY EC  | ALT. 1   | ALT. 2           |                                 |                              |
| 633 | GU        | "48 PROCESS" CAUTION-THIS IS FOR WATER PAINT. ORDER OF ADDITION MUST BE FOLLOWED. |        |          |                  |                                 |                              |
| 735 | RE        | H                                                                                 | 506    | 4        | 30:00            | ADD/USE H-506 WITH A TEMP. OF   |                              |
| 636 | AC        | 75-90                                                                             | DEG F. |          |                  |                                 |                              |
| 637 | DT        | W                                                                                 | 1012   | 4        | 1:62             | SIFT W-1012 SLOWLY OVER 20 MIN. |                              |
| 739 | EU        | PERIOD INTO H-506 WHILE MIXING. DO NOT DUMP. MIX 30 MINS.                         |        |          |                  |                                 |                              |
| 640 | HR        | "X" WEIGH ACCURATELY. DISCONNECT DUST COLLECTOR WHEN LOADING                      |        |          |                  |                                 |                              |
| 642 | TI        | S                                                                                 | G      | 1111     | 4                | 0:16                            | SIFT DO NOT DUMP INTO BATCH. |
| 744 | AN        | MIX 15 MINS. // *WEIGH ACCURATELY. DISCONNECT DUST COLLECTOR                      |        |          |                  |                                 |                              |
| 645 | AD        | WHEN ADDING.                                                                      |        |          |                  |                                 |                              |
| 646 | DI        | H                                                                                 | 656    | 4        | 0:51             | ADD / MIX 15 MINS.              |                              |
| 748 | NE        | H                                                                                 | 506    | 4        | 2:00             | STOP MIXER RINSE DOWN WALLS OF  |                              |
| 650 | TC        | MIXER WITH H-506. *USE H-506 WITH A TEMP. OF 75-90 DEG F.                         |        |          |                  |                                 |                              |
| 751 | ST        |                                                                                   |        |          |                  |                                 |                              |
| 652 | FI        |                                                                                   |        |          |                  |                                 |                              |
| 653 | AO        |                                                                                   |        |          |                  |                                 |                              |
| 755 | DS        | H                                                                                 | 609    | 4        | 0:63             |                                 |                              |

|     |    |       |    |        |  |  |                                                            |
|-----|----|-------|----|--------|--|--|------------------------------------------------------------|
| 758 | H  | 657   | S2 | 0:91   |  |  |                                                            |
| 757 | C  | 12    |    | 0:76   |  |  |                                                            |
| 658 |    |       |    |        |  |  | START MIXING. MIX 10 MINS.                                 |
| 759 | W  | 90    |    | 9:84   |  |  |                                                            |
| 760 | W  | 1011  | S1 | 10:28  |  |  |                                                            |
| 761 | W  | 1014  | S1 | 5:03   |  |  |                                                            |
| 762 |    |       |    |        |  |  | ADD SLOWLY AND IN ORDER. MIX                               |
| 763 |    |       |    |        |  |  |                                                            |
| 764 |    |       |    |        |  |  |                                                            |
| 765 |    |       |    |        |  |  |                                                            |
| 766 | H  | 506   |    | 3:87   |  |  |                                                            |
| 767 | VM | 5648  | S3 | 1:79   |  |  |                                                            |
| 768 | H  | 454   | S6 | 0:45   |  |  |                                                            |
| 769 |    |       |    |        |  |  | ADD/MIX 30 MINS. *MIX VM-5648                              |
| 770 |    |       |    |        |  |  | WELL BEFORE USING. RINSE TANK WITH LETDOWN WATER. IF BATCH |
| 771 |    |       |    |        |  |  | IS TO SET FOR 12 HRS. OR LONGER BLANKET WITH WATER.        |
| 772 |    |       |    |        |  |  |                                                            |
| 773 | H  | 284   | S5 | 0:27   |  |  |                                                            |
| 774 |    |       |    |        |  |  | ADD. MIX 5 MINS.                                           |
| 775 |    |       |    |        |  |  |                                                            |
| 776 |    |       |    |        |  |  |                                                            |
| 777 |    |       |    |        |  |  |                                                            |
| 778 |    |       |    |        |  |  |                                                            |
| 779 |    |       |    |        |  |  |                                                            |
| 780 |    |       |    |        |  |  |                                                            |
| 781 |    |       |    |        |  |  |                                                            |
| 782 |    | TOTAL |    | 100:00 |  |  |                                                            |

|     |          |                                                           |     |         |                  |         |        |       |
|-----|----------|-----------------------------------------------------------|-----|---------|------------------|---------|--------|-------|
| 201 | CODE     | 548                                                       | 993 | NAME    | WHITE DISPERSION | DATE    | 7/7/69 |       |
| 202 | QTY      | INTERMEDIATE                                              |     |         | LOC              |         |        |       |
| 203 | END USE  | INTERMEDIATE                                              |     |         | TYPE             | TEMP    |        |       |
| 204 | FORM     | C-T RIVENBURGH/CLH                                        |     |         | R.L.L.           | 2149A   |        |       |
| 205 | REVISION | C-T RIVENBURGH/CLH                                        |     |         | R.D.             | FP      |        |       |
| 206 | PREV. B  | 548-H-8335 T-6-3-69                                       |     |         | T.C. DRY         | P       |        |       |
| 207 | R.P.T.   | ASSIGN PERM CODE TO 548-H-8335                            |     |         | APPR.            | CHS-WFG |        |       |
| 208 | S.T.P.   |                                                           |     |         | QUAL STD.        |         |        |       |
| 209 | I        | FINENESS TM-52-G NO. 2 GAUGE 3.5 MIL MAX. //              |     |         |                  |         |        |       |
| 210 | N        | REDUCE 20% WITH WATER                                     |     |         |                  |         |        |       |
| 211 | T        |                                                           |     |         |                  |         |        |       |
| 212 | E        |                                                           |     |         |                  |         |        |       |
| 213 | S        |                                                           |     |         |                  |         |        |       |
| 214 | R        |                                                           |     |         |                  |         |        |       |
| 215 | T        |                                                           |     |         |                  |         |        |       |
| 216 | I        |                                                           |     |         |                  |         |        |       |
| 217 | A        |                                                           |     |         |                  |         |        |       |
| 218 | T        |                                                           |     |         |                  |         |        |       |
| 219 | I        |                                                           |     |         |                  |         |        |       |
| 220 | O        |                                                           |     |         |                  |         |        |       |
| 221 | N        |                                                           |     |         |                  |         |        |       |
| 222 | H        |                                                           |     |         |                  |         |        |       |
| 223 | E        |                                                           |     |         |                  |         |        |       |
| 224 | R        |                                                           |     |         |                  |         |        |       |
| 225 | O.       |                                                           |     |         |                  |         |        |       |
| 226 | 18       |                                                           |     |         |                  |         |        |       |
| 420 | Vol Sol  | 330%                                                      |     | Pro Vol | 8432%            |         | Wt Sol | 3561% |
| 321 |          | GALS. PIGMENT 2-25                                        |     |         |                  |         |        |       |
| 322 |          | GALS BINDER .419                                          |     |         |                  |         |        |       |
| 323 |          | NOT TO BE USED FOR OTHER THAN EXPERIMENTAL PURPOSES UNTIL |     |         |                  |         |        |       |
| 324 |          | RELEASE LETTER IS APPROVED //                             |     |         |                  |         |        |       |
| 325 |          | COMPUTER PROGRAMMED //                                    |     |         |                  |         |        |       |

|     |           |                                                              |      |      |                  |                  |        |
|-----|-----------|--------------------------------------------------------------|------|------|------------------|------------------|--------|
| 529 | CODE      | 548                                                          | 993  | NAME | WHITE DISPERSION | DATE             | 7/7/69 |
| 230 | PREP FILE |                                                              |      |      | TYPE             | 2 GA 3.5 MIL MAX |        |
| 231 | CONT      |                                                              |      |      | QTY              | 1239±0           |        |
| 632 | I         | "48 PROCESS" CAUTION: THIS IS FOR WATER PAINT. ORDER OF      |      |      |                  |                  |        |
| 633 | N         | ADDITION MUST BE FOLLOWED                                    |      |      |                  |                  |        |
| 735 | C         | H                                                            | 506  |      | 37:30            |                  |        |
| 636 | R         | ADD/USE H-506 WITH A TEMP. OF                                |      |      |                  |                  |        |
| 637 | E         | 75-90 DEG F                                                  |      |      |                  |                  |        |
| 739 | I         | W                                                            | 1012 |      | 1:75             |                  |        |
| 640 | C         | SIFT W-1012 SLOWLY OVER 20 MINS.                             |      |      |                  |                  |        |
| 641 | R         | PERIOD INTO H-506 WHILE MIXING. DO NOT DUMP. MIX 30 MINS.    |      |      |                  |                  |        |
| 642 | T         | "X" WEIGH ACCURATELY. DISCONNECT DUST COLLECTOR WHEN LOADING |      |      |                  |                  |        |
| 744 | S         | G                                                            | 1111 |      | 0:18             |                  |        |
| 645 | N         | SIFT. DO NOT DUMP INTO BATCH                                 |      |      |                  |                  |        |
| 646 | G         | MIX 15 MINS. // WEIGH ACCURATELY. DISCONNECT DUST COLLECTOR  |      |      |                  |                  |        |
| 647 | O         | WHEN ADDING                                                  |      |      |                  |                  |        |
| 749 | U         | H                                                            | 658  |      | 0:62             |                  |        |
| 650 | R         | ADD. MIX 15 MINS.                                            |      |      |                  |                  |        |
| 751 | T         | H                                                            | 506  |      | 3:28             |                  |        |
| 652 | I         | STOP MIXER RINSE DOWN WALLS OF                               |      |      |                  |                  |        |
| 653 | A         | MIXER WITH H-506. USE H-506 WITH A TEMP. OF 75-90 DEG F      |      |      |                  |                  |        |
| 755 | D         | H                                                            | 609  |      | 0:78             |                  |        |

|     |                                                     |      |    |        |  |  |  |
|-----|-----------------------------------------------------|------|----|--------|--|--|--|
| 756 | H                                                   | 657  | S2 | 1:14   |  |  |  |
| 757 | G                                                   | 12   |    | 0:95   |  |  |  |
| 658 | START MIXING. MIX 10 MINS.                          |      |    |        |  |  |  |
| 759 | W                                                   | 90   |    | 19:32  |  |  |  |
| 760 | W                                                   | 1011 | S1 | 12:89  |  |  |  |
| 761 | W                                                   | 1014 | S1 | 0:45   |  |  |  |
|     | ADD SLOWLY AND IN ORDER. MIX 15                     |      |    |        |  |  |  |
| 763 | G                                                   | 12   |    | 0:95   |  |  |  |
| 764 | W                                                   | 129  |    | 10:80  |  |  |  |
| 767 | G                                                   | 796  | S6 | 0:04   |  |  |  |
| 668 | ADD IN ORDER. MIX 30 MINS. // CHECK                 |      |    |        |  |  |  |
| 669 | FINENESS.                                           |      |    |        |  |  |  |
|     | W                                                   | 284  | S5 | 0:37   |  |  |  |
|     | W                                                   | 508  |    | 2:18   |  |  |  |
|     | ADD MIX 15 MINS. // RINSE TANK WITH                 |      |    |        |  |  |  |
|     | 15 DOWN LATER. IF BATCH IS TO SET FOR 12 HRS. RINSE |      |    |        |  |  |  |
|     | BLANKET WITH WATER                                  |      |    |        |  |  |  |
|     | TOTAL                                               |      |    | 100:00 |  |  |  |