DRAFT

VOC STUDIES FOR RULES 1113/1129

Prepared for
Air Quality Management District
21685 East Copely Drive
Diamond Bar, California 91765-1129
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914P245C

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1.0
INTRODUCTION

South Coast Air Quality Management District (SCAQMD) has authorized Woodward-Clyde Consultants (Woodward-Clyde) to conduct investigations to determine the volatile organic component (VOC) of coating materials that are currently used by painting contractors in the SCAQMD basin. Another task that was assigned was to conduct a consumer survey on the use of paint products by painting contractors and other consumers in South Coast Air Basin (SCAB).

Woodward-Clyde developed protocols for collecting paint samples and conducting consumer paint survey and obtained approval from SCAQMD to carry-out the investigations utilizing the protocols developed. The results of the paint analyses and consumer survey are summarized in the report.

2.0
PAINT SAMPLE COLLECTION AND ANALYSIS

Woodward-Clyde staff were instructed to use the protocols to conduct paint application practices and collect paint samples for analysis. The paint samples were collected at the sites where paints were applied to various surfaces. Solvent-borne architectural coatings were chosen for the study. The categories were chosen to reflect the reduction in VOC content that would be adopted by December 1993. Target categories included the following coatings:

- Flat
- Non-flat
- Enamel
- Quick dry enamel
- Lacquers
- Clear wood finishes
- Industrial maintenance/high performance
- Quick dry primers
- Stains

Initially Woodward-Clyde staff contacted thirty-six contractors servicing public and private sectors by telephone. The majority of the people responded that they were using water-based paints especially those in the public sector. The list of the people contacted is furnished in Appendix A. Eventually, four independent contractors were identified who were using solvent-based coatings and have consented to allow Woodward-Clyde to collect paint samples at the site of painting operations. The samples were collected from the paint cans just before the paint is applied to the surface. By collecting the sample in this manner, any solvent added to condition the paint prior to the application was accounted for in the analysis. In general, no additional thinners were used to

condition the paints before application. The lids on the paint cans are popped open, the paint was stirred and used as is without further addition of any thinners. Solvents were available on-site. However, they were used for cleaning the brushes. The names of the contractors were not recorded on the survey form at their request. The contractors who supplied the samples are identified in the survey as JE, RB, LN, and HE. The experience of the contractors is summarized in Table 1. The projects where samples are collected are located in Los Angeles, Orange, and Riverside counties. At the same time the samples were being collected, paint application survey forms were completed. The survey was aimed at collecting information on the use of solvent-based coatings. The results from the paint application survey forms are summarized in Table 2. Water-based paints were not emphasized even though three water-based paints were collected during this study. Salient features of the survey include the following:

- All painters acknowledged the availability of complaint coatings and use them in a majority of applications
- Abrasion is the preferred method for surface preparation even though one painter used solvent to prepare the surface
- Paint thinner is used whenever needed but not as a rule
- The durability of paint is worse now compared to what was before
- One of the painters commented that oil-based paints last longer
- Unused paints are stored for further use or disposed off in domestic trash
- Lacquer thinner is used to clean-up brush, roller and spray gun
- Aerosol paints are used for small jobs and touch-up applications
- Brush or roller or combination of both are used in painting.

2.1 PAINT SAMPLE COLLECTION

One paint sample of the paint was collected for each category of the paint wherever possible. The information on the paint such as paint identification, manufacturer, product/brand name, manufacturer date code, listed VOC content, place of purchase,

container size, and method of collection of the sample which usually involved pouring the paint sample into a metal container fitted with screw cap prior to application was recorded on "Coating Sample Data Form." The sample/samples were placed in an ice chest and transported to American Research and Testing Incorporated located at 14934 South Figueroa Street in Gardena. Woodward-Clyde's chain-of-custody record was used to document the transport and transfer of paint samples for analysis. The volatile organic content were determined per ASTM D-2369-81, Procedure B. Density of the sample was determined per ASTM D-1475-60. Water was determined by Karl-Fisher Titration outlined in ASTM D-4017-81. VOC was calculated as described in Section 8.2.4 of ASTM D-3960-81. The results of analysis are summarized in Table 3. The following samples have been found to contain more VOC than what is listed on the label (JE-001-01, JE-001-04, JE-01-08, RB-002-01, RB-002-04, RB-002-07, LN-003-01, and HE-004-07). Otherwise the rest of the samples have VOC content below the quantities listed on the labels and hence can be assumed to be in compliance with regulatory requirements.

Actual records of paint application survey forms, coating sample data forms, chain-of-custody records, and analytical results from the analytical laboratory are collected in Appendixes B, C, D, and E, respectively.

3.0
CONSUMER PAINT SURVEY

A protocol was developed to evaluate the nature of paints that were purchased from commercial stores located in the four county area (Anaheim, Upland, Buena Park, West Covina, and Riverside). The usual practice was to contact the buyers of the paints as they were emerging from the store. The survey was conducted using the pre-approved protocols. Approximately 140 people were contacted. Seventeen refused to answer the questions. The reason for refusal was lack of interest and usually, the buyers were in a hurry. The majority of the consumers bought water-based paints. The ratio of consumers buying water-based paints to solvent-based paints is 2:1. Seventy people who purchased solvent-based paints responded to the survey. The paint categories purchased are summarized in Table 4. The stores usually delivered the paints to the job sites to be used by the painting contractors. The survey represents the opinions of the buyers who bought the paint at each store.

It appears that high gloss semi-gloss enamel and clear finish coatings have been purchased more often than the rest of the paints.

Water-based coatings are used in the majority of the cases. Solvent-based coatings are used for interior, metal, plaster, and wood surfaces.

The majority expressed the opinion that the durability of water-based coatings is worse than solvent-based coatings even though the appearance with both coatings appears to be satisfactory. The majority of the paints are retained for further use. However, they may be eventually disposed of in household trash.

Surface preparation techniques employed by the consumers are summarized in Table 5. It appears that sanding is by far the preferred method of surface preparation. Solvents are also used in the surface preparation to a smaller extent. The paint application techniques are gathered in Table 6. Disposal practices are summarized in Table 7. The preferred practice for disposal appears to store the paint for further use. Eventually, the paint may end up in household trash. The respondents who purchased aerosol spray

cans indicated that the aerosols will be used for small projects such as painting hobby projects. The majority expressed that they prefer to use aerosols for their ease of application and clean-up. Detailed survey forms are collected in Appendix F.

4.0
SUMMARY

From the study, it has become apparent that complaint coatings are available in the South Coast Air Basin for use by contractors as well as general public. A majority of the people surveyed indicated that water-based coatings are generally used in coating applications. The appearance with water-based coatings is acceptable in most cases. However, a majority expressed the opinion that the durability of water-based paints is worse than oil-based paints. Aerosols, in general, are used for small jobs. The unused paint is generally stored for further use. Eventually it is disposed of in domestic trash which may eventually end up in landfills. There is no evidence, at least from the survey conducted, that the paint thinners used in cleaning the brushes etc. are discarded to the sewers and hence not contributing to water pollution.

TABLE 1

EXPERIENCE OF THE CONTRACTORS

Contractor	Years of Experience	Position
JE	17	Supervises 5 painters.
RB	10	Contractor with one helper. Works on mostly household projects and is a small scale commercial contractor.
LN	25	Self-employed with two workers. Handles industrial/ commercial and occasionally household projects.
HE	5	Self-employed. Handles mostly household projects.

TABLE 2

SUMMARY ON PAINT APPLICATION SURVEY

Contractor	JE	RB	LN	HE
Paint Type	Solvent	Solvent	Solvent	Solvent
Structure	Commercial interior	Commercial interior	Commercial interior	Residential interior
Surface	Wood, metal plaster	Metal, plaster	Plaster, metal, wood	Plaster, metal, wood
Surface Preparation	Sand wire brush	Sand	Primer/solvent, sand	Wire brush, sand
Application Method	Brush roller spray	Brush, roller	Brush, roller	Brush, roller
Thinning Agent	None	None for solvent-based water for water-based paint	None	None
Number of Coats	1-3	2-3	1-2	1-2
Clean-up	Mineral spirits, lacquer thinner	Lacquer thinner	Lacquer thinner	Paint thinner
Disposal Method				
a. Paint Cans	Domestic trash	Use up all paint	Domestic trash	Usually use up all paint
b. Left Over Paint	Save for next application	Domestic trash	Save for next job	Customer keeps left Over paint for touch-up
c. Used Solvents	Consolidate into a still recycle, reuse	--	Consolidate used solvent, does not know how to dispose of	
Quality of Paint				
a. Durability	Worse	Worse	Worse	Worse
b. Ease of Application	Worse	Worse	Worse	Same
c. Appearance	Same	Same	Same	Same
d. Ease of Clean-up	Same	Same	Same	Same

TABLE 2 (Continued)

Contractor	JE	RB	LN	HE
Availability of Water-Based Paint	Yes	Yes	Yes	Yes
Use of Water-Based Paints	Yes	Yes	Yes	Yes
Availability of Complaint Coatings	Yes	Yes	Yes	Yes
a. Water-Based/Solvent-Based	Water/solvent	Water/solvent	Water/solvent	Water/solvent
b. Thinning	Water/solvent Use water-based whenever possible	Thinning as needed. Use water-based paint whenever possible		
Have Applications Changed in the Time You Were Painter	No change	No major changes	Some changes in formulation	Not much
Have Thinning Practices Changed	No change	Depends on the paint consistency	No changes. Thinner not needed with new paint except for spray gun applications	No Paint thinner is used for oil-based and water is used for water-based
Have You Used Primers	Yes	Yes	Not always, depends on surface	Depends on application
Have Applications Changed Over Time	Yes, quality of paint and primer are not as good	Use less quantity. Quality has improved.	Application and amounts change depending on the paints	Quick dry primer is good and durable
Do You Use Aerosol Products	Seldom	Occasionally	Seldom	Occasionally, for small scale jobs

TABLE 2 (Continued)

Contractor	JE	RB	LN	HE
What is the Advantage of Aerosol Coatings				
a. Application	Touch-up	Touch-up	Touch-up	Touch-up
b. Advantage	Quicker, easier, no clean-up, no brush	Less mess, easier to apply, no brushes needed.	No mess, no clean-up	Easier to paint hand to reach area, no mess, no clean-up.
Additional Comments	None	Water-based paints do not last as long. Customers do not like them	Over the years I have noticed water-based paint becoming popular. Oil-based paint lasted longer for out-door applications.	None

TABLE 3

SUMMARY ON THE ANALYSIS OF PAINT SAMPLES

Sample Identification	Sample Description	Manufacturer	Listed VOC on the Label grams/liter	VOC Per Analysis grams/liter
JE-001-01	Imperial HySpeed Enamel Flat E-220	Imperial HySpeed	420	535
JE-001-02	Deft Clear Gloss #1 4287	Deft	350	343
JE-001-03	Syn-Lustro, Industrial Maintenance Enamel 10-14	Dunn-Edwards	420	388
JE-001-04	Quick Dry Rancho Alkyd Gloss Enamel QD-60-C	Dunn-Edwards	400	418
JE-001-05	Deft Gloss Clear Wood Finish 2373	Deft	72%	681
JE-001-06	Versa-Prime, Industrial Maintenance High Performance 42-44	Dunn-Edwards	420	412
JE-001-07	Frazee High Performance Coating Part A-562-700 Part B-562-999	Frazee Paint	169	Polymerized
JE-001-08	Stain Seal, Oil Stain EV 108-13	Dunn-Edwards	350	395
RB-002-01	Interior Wall and Ceiling Paint 5FOC	Glidden Paints	250	297
RB-002-02	Satin Sheen II Semi-Gloss Alkyd Enamel E5-3	Dunn-Edwards	250	Sample Not Collected
RB-002-03	Satin Sheen II Semi-Gloss Alkyd Enamel F-28	Dunn-Edwards	250	80
RB-002-04	Imperial Paint High Gloss 7656	Imperial Paint	420	438
RB-002-05	Wood Finish by Min Wax 209	Min Wax Company	NA	666

TABLE 3 (Continued)

Sample Identification	Sample Description	Manufacturer	Listed VOC on the Label grams/liter	VOC Per Analysis grams/liter
RB-002-06	Syn-Lustro, Industrial Maintenance Enamel 631-1	Dunn-Edwards	420	397
RB-002-07	Quick Dry Primer W-5206	Dunn-Edwards	350	358
RB-002-08	Wiping Oil Stain EV 108	Dunn-Edwards	350	Sample Not Collected
LN-003-01	Decovel Velvet Flat Wall Finish W-401-60	Dunn-Edwards	250	Water-Based
LN-003-02	Satin Sheen II Semi-Gloss Alkyd Enamel E-5-1	Dunn-Edwards	250	251
LN-003-03	Rancho II House-Trim Alkyd Gloss Alkyd Enamel E-5-1	Dunn-Edwards	250	248
LN-003-04	Quick Dry Enamel	Dunn-Edwards	Not Listed	374
LN-003-05	Semi-Gloss Clear Wood Finish	Deft Alliance	Not Listed	670
LN-003-06	Syn-Lustro, Industrial Maintenance Enamel L-18-2	Dunn-Edwards	420	378
LN-003-07	Quick Dry Primer W-520	Dunn-Edwards	350	363
LN-003-08	Stain Seal-Wiping Oil Stain L-3-2	Dunn-Edwards	350	329
HE-004-01	Acrylic Vinyl Sinwall Interior Flat Paint 1700	Sinclair Paint Company	Not Listed	Water-Based
HE-004-02	SG 25-N42	Sinclair Paint Company	250	253
HE-004-03	Synthetic (Body and Trim Finish 275)	Old Quaker Paint Company	Not Listed	358
HE-004-04	Quick Dry Enamel	Sinclair Paint Company	Not Listed	366
HE-004-05	Min Wax Wood Finish	Min Wax Company	Not Listed	702

TABLE 3 (Continued)

Sample Identification	Sample Description	Manufacturer	Listed VOC on the Label grams/liter	VOC Per Analysis grams/liter
HE-004-06	High Performance Sintec Interior Gloss	Sinclair Paint Company	420	369
HE-004-07	High Solid KILZ Primer	Master Chem Industries	348	354
HE-004-08	Flecto Varathan Liquid Plastic, Clear Satin	Flecto	Not Listed	495

TABLE 4

CONSUMER PAINT SURVEY
BREAKDOWN OF PAINT CATEGORIES PURCHASED

Category	Number of People Purchasing This Category	% of Total Responders
Low Sheen	1	1.4
Latex (Water-Based)	4	5.7
Stain	7	9.8
Industrial Maintenance Enamel	4	5.7
Clear Finish	9	15.3
High Gloss Enamel	7	10.0
Semi-Gloss	15	21.4
Flat Finish	14	20.0
Texture Coating	2	2.8
Semi-Transparent	1	1.4
Aerosol	5	7.1

TABLE 5

SURFACE PREPARATION TECHNIQUES EMPLOYED
BY CONSUMERS SURVEYED

Category	Number of Consumers Responding	%
Sand	32	45.7
Wash	13	18.6
Wash/Sand	11	15.7
Wash/Prime Solvent	3	4.3
Prime Solvent	5	7.1
Sand/Solvent	5	7.1

TABLE 6

PAINT APPLICATION TECHNIQUES

Category	Number of Consumers Responding	%
Brush	31	44.3
Roller/Brush	17	24.3
Spray	2	2.9
Roller Spray	4	5.7
Roller	7	10.0
Aerosol	6	8.6
Other	2	3.9

TABLE 7

DISPOSAL OF PAINTS

Category	Number Responding	%
Store for Further Use	44	62.9
Disposal in Household Trash	24	34.3
Dispose at Household Hazardous Waste Center	1	1.4

APPENDIX A

LIST OF PAINT CONTRACTORS SURVEYED

APPENDIX A
LIST OF PAINT CONTRACTORS SURVEYED

Organization	Contact Person	Telephone No.
U.S. Marine Corps El Toro, CA	Sam Lam Captain Temple	(714) 726-3701 (714) 726-3705
U.S. Marine Corps El Toro, CA	Larry Carter	(714) 726-3818
L.A. County Public Works Alhambra, CA	Jay Brakensiek	(818) 458-5961
U.S. Postal Service-LA Division	Joan Harris	(213) 586-1806
West Hazmat Drilling Corporation Anaheim, CA	Joe Spedale	(714) 939-6850
U.C. Irvine	John Chew	(714) 856-5073
GATX Terminals Corp. Carson, CA	Bruce Hamlin	(310) 830-5666
Capistrano Limited School District San Juan, Capistrano	Ken Hasker	(714) 489-7000
Chuck Lavington Laguna Beach, CA	Chuck Lavington	
Hello Painting Company	Answer Phone	(714) 636-2573
Insta Painting Company	No Answer	(714) 544-1500
Imperial Construction Company	No Answer	(714) 961-1332
Tex-on Company	No Answer	(714) 551-2747
Irvine/Viejo Painting Company	Tom No Answer	(714) 472-9119
IVY	No Answer	(714) 539-9273
Chung's Painting	No Answer	(714) 539-3518

Organization	Contact Person	Telephone No.
Olympus Painting Company	Answering Machine	(909) 386-1763
Richard Balkwell	No Answer	(714) 495-1661
Thomas Painting	No Answer	(714) 661-1919
Lawrence Painting Company	Exterior/Interior	(714) 740-1509
Accent Painting Company	Exterior/Interior	(714) 826-3162
Advanced Painting Company	Exterior Only	(714) 367-0600
The Architectural Painters	Residential Exterior/Interior	(714) 588-1210
Art Revely Corporation	Residential	(714) 642-0603
B&M Interiors	Residential Exterior/Interior	(714) 964-6037
Lawrence B. Bonas Company	Industrial/Commercial Exterior/Interior	(714) 953-2010
Brooker Associates Inc.	Commercial and Residential	(714) 993-2841
Cal-Pac	Commercial, Residential, and Industrial	(714) 559-5777
Concept Painting	Commercial and Residential Exterior/Interior	(714) 835-8152
Lee's Painting Company	Residential Exterior/Interior	(714) 638-0300
United Maintenance & Painting Company	Residential Exterior/Interior	(714) 530-0441
Irvine/Viejo Painting Company	Commercial and Residential Exterior/Interior	(714) 339-1541

APPENDIX B

PAINT APPLICATION SURVEY

PAINT APPLICATION SURVEY FORM

Sample Collector
Interviewer: MAUREEN CARREON Date: JANUARY 16, 1993 Samplecode:
INDUSTRIAL HYGIENIST Site CONTRACTOR (JE-001) #1

~~CONTRACTOR INFORMATION~~

Contractor: _____ License #: _____ Phone#: _____

Address: _____ City: _____ ZIP Code: _____

Representative: _____ Title: _____ Yrs Experience: _____

JOB SITE INFORMATION

The following questions are keyed to Table 1. For each question, read the question and fill in the appropriate portions of Table 1. If the Site Representative expresses uncertainty or is confused by the question, read the possible choices from those listed under CODES below Table 1 and ask the Site Representative to select from those choices.

✓1. What types of paints are being applied? Are they water- or solvent-based?

✓2. What types of structures are being painted? Interior or exterior surfaces, or both?

✓3. What types of surfaces are being painted with which coating types?

✓4. How will you prepare surface for each type of coating? ***[follow-on questions for washing or chemical stripping]*** Are solvents used? What are they? What would you estimate the application rate to be in gallons/100 square feet (sf) of surface? ***[follow-on questions for use of primers]*** How many coats of primer will you use?

✓5. What application methods are being used for each target coating type?

✓6. Are target coatings thinned prior to use? Estimate percentage thinning.

✓7. How many coats of paint will be applied?

✓8. How will equipment be cleaned up for each type of coating? Estimate amount of water or solvent, in quarts and gallons, for cleanup of each coating type.

✓9. How do you dispose of:

Paint Cans? USE UP CONTENT, let DRY AND DISPOSE OF EMPTY PAINT CANS IN DOMESTIC TRASH

Left-OverPaint? SAVE FOR NEXT APPLICATION, OBSERVE EXPIRATION

Used Solvents? CONSOLIDATE INTO A STILL, RECYCLE AND REUSE

EACH COAT

(JE001)

TABLE 1

	COATING	SURVEY QUESTION NUMBER								
		1	2	3	4	5	6	7	8	
1	Flats									
2	Non-flats	S	C|I	W	A	B	-	1	S-1 pt	S = MINERAL SPIR
3	Enamels	S	C|I	M	B|A	B	-	2	S-1 pt	S = LACQUER THINNER
4	Quick-Dry Enamels	S	C|E	M	B	B	-	3	S-1 pt	S = LACQUER T
5	Lacquers, Clear Wood Finishes	S	C|I	W	-	B	-	1	S-1 pt	S = LACQUER THIN
6	Industrial Maintenance / High Performance	S	C|I	M	A	B	-	2	S-1 pt.	S = LACQUER THINNE
7	Quick-Dry Primers *	W	C|I	W|M|P	A	B|R|S	W 25%	3	W-1 S-0.25	S = LACQUER THINNER GAL
8	Stains	S	C|I	W	A	02	-	1	S-1 pt	S = LACQUER THINNER
9	Other (specify)									

CODES:

1 (Paint Type): W = water-based, S = solvent-based

2 (Structure Type): R = residential, C = commercial, I = industrial, O2 = other (specify in NOTES below); I = interior, E = exterior, B = both

3 (Surface Type): W = wood, M = metal, P = plaster, C = cement, L = plastic, O1 = Other (specify in NOTES)

4 (Surface Preparation): W = wash, S = scrape, B = wire brush, C = chemical stripping, A = sanding, PW = primer (water-based), PS = primer (solvent-based), O3 = other (specify in NOTES, below); leave blank for "none". For C or solvent W, indicate in numerals (gallons/100 sf) following type (e.g., C-1) and indicate chemical composition of solvent under NOTES below. For PW or PS, indicate number of coats in numerals following type (e.g., PS-2).

5 (Application Method): A = aerosol, B = brush, D = disposable brush or roller, R = roller, S = spray apparatus, O2 = other (specify in NOTES)

6 (Thinning Practices): M = mineral spirits, P = paint thinner, W = water, A = alcohol, O3 = other (specify in NOTES); indicate estimated percentage thinning (e.g., M-20%); leave blank for "none"; indicate brand name(s) in Notes and obtain MSDS sheet for each thinner if possible

7 (Number of coats): indicate number of coats for each coating type with numeral (e.g., 1, 2)

8 (Cleanup Method): W = water, S = solvent, N = newspapers, R = cloth rags, T = paper towels, D = dispose of equipment (no reuse), O4 = other (specify in NOTES). For W and S, indicate amount, in gallons, in numerals following type (e.g., W-5); for solvents, note brand(s) of thinner in Notes and obtain MSDS sheet if possible

NOTES (continue on back of page if needed):

7-8: Water is used first to wash off excess primer. Lacquer thinner is then used to clean-up the brush, Roller and spray gun.

* PART A (4 Part) Resin 562-700 and one part of hardner Comp. B 562-999. Mix A & B and STIR. The mixture must then be covered allow to stand for 15-20 minutes. STIR again before use.

8-5: USE CLOTH-WIPE APPLICATION,

0001557

EACH COATING ... CONTRACTOR JE-001

TABLE 1

	COATING	SURVEY QUESTION NUMBER							
		1	2	3	4	5	6	7	8
001-01 (1)	Flats	S	C	M	A	B	-	2	LACQUER THINNER / 1 PINT
2	Non-flats								
3	Enamels								
4	Quick-Dry Enamels								
5	Lacquers, Clear Wood Finishes								
6	Industrial Maintenance / High Performance								
	Quick-Dry Primers								
7	Stains								
	Other (specify)								

CODES:

1 (Paint Type): W = water-based, S = solvent-based

2 (Structure Type): R = residential, C = commercial, I = industrial, O2 = other (specify in NOTES below); I = interior, E = exterior, B = both

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4 (Surface Preparation): W = wash, S = scrape, B = wire brush, C = chemical stripping, A = sanding, PW = primer (water-based), PS = primer (solvent-based), O3 = other (specify in NOTES, below); leave blank for "none". For C or solvent W, indicate in numerals (gallons/100 sf) following type (e.g., C-1) and indicate chemical composition of solvent under NOTES below. For PW or PS, indicate number of coats in numerals following type (e.g., PS-2).

5 (Application Method): A = aerosol, B = brush, D = disposable brush or roller, R = roller, S = spray apparatus, O2 = other (specify in NOTES)

6 (Thinning Practices): M = mineral spirits, P = paint thinner, W = water, A = alcohol, O3 = other (specify in NOTES); indicate estimated percentage thinning (e.g., M-20%); leave blank for "none"; indicate brand name(s) in Notes and obtain MSDS sheet for each thinner if possible

7 (Number of coats): indicate number of coats for each coating type with numeral (e.g., 1, 2)

8 (Cleanup Method): W = water, S = solvent, N = newspapers, R = cloth rags, T = paper towels, D = dispose of equipment (no reuse), O4 = other (specify in NOTES). For W and S, indicate amount, in gallons, in numerals following type (e.g., W-5); for solvents, note brand(s) of thinner in Notes and obtain MSDS sheet if possible

NOTES (continue on back of page if needed):

PE

The above sample was taken on 01-24-93. from Contractor #1 with sample ID (JE-001-01).

0001558

(JE 001)

PAINTING PRACTICES K+.

10. How would you rate the quality of paint products available now as compared to those available when you became a professional painter? *[B: better, W: worse, S: same, D: don't know]*: Durability W Ease of Application W Appearance S Ease of Cleanup S
(MORE WORK DURING APPLICATION

11. Are water-based primers available? (Y/N) Are they typically used? (Y/N)

12. Are compliant products available in each category, and are they water- or solvent based? Which require more thinning? *[indicate responses in Table 2]*

TABLE 2

TOPIC	COATING TYPE (see key)								
	F	N-F	E	QDE	L	IM	QDP	S	O
Available? (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	-
Water or Solvent	Y	Y	Y	Y	Y	Y	Y	S	-
More Thinning* (W/S)	W	W	W	W	W	W	W	W|S	-

F: flat; N_F: Non-Flat; E: Enamel; QDE: Quick-Dry Enamel; L: Lacquers, Clear Wood Finishes; IM: Industrial Maintenance / High Performance; QDP: Quick-Dry Primers; S: Stains; O: Other (specify:_____)

* USE WATER WHEN + WHERE EVER POSSIBLE SOLVENT ONLY IF NOT OTHER ALTERNATIVE

13. Have applications practices changed in the time you've been a painter? How? Why?

'NO CHANGE.'

14. Have thinning practices changed in the time you've been a painter? How? Why?

'NO CHANGE'

15. Have you always used primers? How have the applications/amounts changed over time?

"YES, THE QUALITY OF PAINT AND PRIMER ARE NOT AS GOOD."

AEROSOLS

13. Do you use aerosol products **often, occasionally, seldom, or never** *[circle one]*?

14. Describe applications for which you typically use aerosol products. For each application, what advantage does the aerosol provide? *[fill out table below]*

(JE-001)

TABLE 3

APPLICATION	ADVANTAGE CONFERRED BY AEROSOL
Touch-up on Ceiling	Quicker & Easier
Spots touch-up	little clean-up
	No Brushes needed

15. Do you have any additional comments or observations?

None

SAMPLE DESCRIPTION

Attach one **COATING SAMPLE DATA FORM** for each sample taken. Remember to write the **SITE NUMBER** on the Coating Sample Data Form. Determine **SAMPLE NUMBER** as described in the Paint Application Survey Protocol and enter sample numbers below for each sample taken: WNC - Paint

* JE-001-02 JE-001-03 JE-001-04 JE-001-05
JE-001-06 JE-001-07 JE-001-08

* JE-001-01

CONTRACTOR ID — SAMPLE # BY CAT.

0001560

PAINT APPLICATION SURVEY FORM

Sample Collector
Interviewer: MAUREEN CARREON Date: JANUARY 24, 93 Samplecode: Site: RB-002

~~CONTRACTOR INFORMATION~~

Contractor: _____ License #: _____ Phone#: _____

Address: _____ City: _____ ZIP Code: _____

Representative: _____ Title: _____ Yrs Experience: _____

JOB SITE INFORMATION

The following questions are keyed to Table 1. For each question, read the question and fill in the appropriate portions of Table 1. If the Site Representative expresses uncertainty or is confused by the question, read the possible choices from those listed under CODES below Table 1 and ask the Site Representative to select from those choices.

✓1. What types of paints are being applied? Are they water- or solvent-based?

✓2. What types of structures are being painted? Interior or exterior surfaces, or both?

✓3. What types of surfaces are being painted with which coating types?

✓4. How will you prepare surface for each type of coating? ***[follow-on questions for washing or chemical stripping]*** Are solvents used? What are they? What would you estimate the application rate to be in gallons/100 square feet (sf) of surface? ***[follow-on questions for use of primers]*** How many coats of primer will you use?

✓5. What application methods are being used for each target coating type?

✓6. Are target coatings thinned prior to use? Estimate percentage thinning.

✓7. How many coats of paint will be applied?

✓8. How will equipment be cleaned up for each type of coating? Estimate amount of water or solvent, in quarts and gallons, for cleanup of each coating type.

✓9. How do you dispose of:

Paint Cans? USE UP ENTIRE CONTENT, let Dry, Domestic Trash

Left-OverPaint? Usually none.

Used Solvents? Seldom, Water if it is water base, Paint thinner if oil base.

0001561

EACH coating

TABLE 1

	COATING	SURVEY QUESTION NUMBER							
		1	2	3	4	5	6	7	8
002-01 (1)	Flats	S	C/I	P	A	B/R	W	3	W
2	Non-flats								
002-03 (3)	Enamels	S	C/E	P	A	B	-	2	LACQUER THINNER 1 pint
4	Quick-Dry Enamels								
5	Lacquers, Clear Wood Finishes								
002-04 (6)	Industrial Maintenance / High Performance	S	C/E	M	A	B/R	-	1/2	LACQUER THINNER 1 pint.
7	Quick-Dry Primers								
8	Stains								
	Other (specify)								

CODES:

1 (Paint Type): W = water-based, S = solvent-based

2 (Structure Type): R = residential, C = commercial, I = industrial, O2 = other (specify in NOTES below); I = interior, E = exterior, B = both

3 (Surface Type): W = wood, M = metal, P = plaster, C = cement, L = plastic, O1 = Other (specify in NOTES)

4 (Surface Preparation): W = wash, S = scrape, B = wire brush, C = chemical stripping, A = sanding, PW = primer (water-based), PS = primer (solvent-based), O3 = other (specify in NOTES, below); leave blank for "none". For C or solvent W, indicate in numerals (gallons/100 sf) following type (e.g., C-1) and indicate chemical composition of solvent under NOTES below. For PW or PS, indicate number of coats in numerals following type (e.g., PS-2).

5 (Application Method): A = aerosol, B = brush, D = disposable brush or roller, R = roller, S = spray apparatus, O2 = other (specify in NOTES)

6 (Thinning Practices): M = mineral spirits, P = paint thinner, W = water, A = alcohol, O3 = other (specify in NOTES); indicate estimated percentage thinning (e.g., M-20%); leave blank for "none"; indicate brand name(s) in Notes and obtain MSDS sheet for each thinner if possible

7 (Number of coats): indicate number of coats for each coating type with numeral (e.g., 1, 2)

8 (Cleanup Method): W = water, S = solvent, N = newspapers, R = cloth rags, T = paper towels, D = dispose of equipment (no reuse), O4 = other (specify in NOTES). For W and S, indicate amount, in gallons, in numerals following type (e.g., W-5); for solvents, note brand(s) of thinner in Notes and obtain MSDS sheet if possible

NOTES (continue on back of page if needed):

PAINTING PRACTICES

10. How would you rate the quality of paint products available now as compared to those available when you became a professional painter? *[B: better, W: worse, S: same, D: don't know]*: Durability W Ease of Application W Appearance S Ease of Cleanup S
MORE DIFFICULT TO APPLY

11. Are water-based primers available? (Y/N) Are they typically used? (Y/N)

12. Are compliant products available in each category, and are they water- or solvent based? Which require more thinning? *[indicate responses in Table 2]*

TABLE 2

TOPIC	COATING TYPE (see key)								
	F	N-F	E	QDE	L	IM	QDP	S	O
Available? (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	-
Water or Solvent	W/S	W/S	W/S	W/S	*/S	S	W/S	S	
More Thinning (W/S)	W/S	W/S	W/S	W/S	S	S	W/S	S	

F: flat; N_F: Non-Flat; E: Enamel; QDE: Quick-Dry Enamel; L: Lacquers, Clear Wood Finishes; IM: Industrial Maintenance / High Performance; QDP: Quick-Dry Primers; S: Stains; O: Other (specify:_____) Thinning when needed. Use water base paints whenever possible.

13. Have applications practices changed in the time you've been a painter? How? Why?

No major changes

14. Have thinning practices changed in the time you've been a painter? How? Why?
Depends on the paint consistency and the surface. Make the paints work the best way possible

15. Have you always used primers? How have the applications/amounts changed over time?
Yes / same / use less / Quality had improved

AEROSOLS

13. Do you use aerosol products **often**, occasionally, **seldom**, or **never** *[circle one]*?

14. Describe applications for which you typically use aerosol products. For each application, what advantage does the aerosol provide? *[fill out table below]*

Touch-up only

0001563

TABLE 3

APPLICATION	ADVANTAGE CONFERRED BY AEROSOL
STENCIL	less Mess
Touch - Up	Easier to apply
Small piping	No Brushes need
	no clean-up

15. Do you have any additional comments or observations?

Water base paints do not last as long
Customers do not like it as much.
doesn't last.

SAMPLE DESCRIPTION

Attach one **COATING SAMPLE DATA FORM** for each sample taken. Remember to write the **SITE NUMBER** on the Coating Sample Data Form. Determine **SAMPLE NUMBER** as described in the Paint Application Survey Protocol and enter sample numbers below for each sample taken:

_____ _____ _____ _____

_____ _____ _____ _____

LN-003

PAINT APPLICATION SURVEY FORM

Sample Collector
Interviewer: MAUREEN CARREÓN Date: JANUARY 30, 1993 Sample code: Site: CONTRACTOR #3 (LN-003)

~~CONTRACTOR INFORMATION~~

Contractor: _____ License #: _____ Phone#: _____

Address: _____ City: _____ ZIP Code: _____

Representative: _____ Title: _____ Yrs Experience: _____

JOB SITE INFORMATION

The following questions are keyed to Table 1. For each question, read the question and fill in the appropriate portions of Table 1. If the Site Representative expresses uncertainty or is confused by the question, read the possible choices from those listed under CODES below Table 1 and ask the Site Representative to select from those choices.

✓1. What types of paints are being applied? Are they water- or solvent-based?

✓2. What types of structures are being painted? Interior or exterior surfaces, or both?

✓3. What types of surfaces are being painted with which coating types?

✓4. How will you prepare surface for each type of coating? ***[follow-on questions for washing or chemical stripping]*** Are solvents used? What are they? What would you estimate the application rate to be in gallons/100 square feet (sf) of surface? ***[follow-on questions for use of primers]*** How many coats of primer will you use?

✓5. What application methods are being used for each target coating type?

✓6. Are target coatings thinned prior to use? Estimate percentage thinning.

✓7. How many coats of paint will be applied?

✓8. How will equipment be cleaned up for each type of coating? Estimate amount of water or solvent, in quarts and gallons, for cleanup of each coating type.

✓9. How do you dispose of:

Paint Cans? LET EMPTY CAN & PAIL TO DRY UP AND DISPOSE OF IT IN DOMESTIC TRASH.

Left-OverPaint? SAVE MOST OF THE PAINT FOR THE NEXT JOB

Used Solvents? CONSOLIDATE ALL USED SOLVENT - UNKNOWN TO HOW TO DISPOSE OF THE USED SOLVENT.

→ # of ... EACH coating

TABLE 1

	COATING	SURVEY QUESTION NUMBER							
		1	2	3	4	5	6	7	8
1	Flats (Primer)	S	C/I	P	PS-2	B/R	–	2	S (Paint Thinner 1 Pint)
2	Non-flats (Base Paint with Paint)	S	C/I	P	A-2	B/R	–	2	S (Paint Thinner 1 Pint)
3	Enamels (Oil / Water)	S	C/I	M	A-2	B/R	–	2	S (Paint Thinner 1 Pint)
4	Quick-Dry Enamels (Oil)								
5	Lacquers, Clear Wood Finishes (Oil)	S	C/I	W	A-1	B/R	–	1	S LACQUER THINNER 6 OZ
6	Industrial Maintenance / High Performance	S	C/E	M	A-2	B	–	2	S LACQUER THINNER 6 OZ
7	Quick-Dry Primers	S	C/I	P	A-1	B/R	–	1	S Paint thinner 6 OZ
8	Stains	S	C/I	W	A-2	R	–	2	S LACQUER THINNER 6 OZ
	Other (specify)	–							

CODES:

1 (Paint Type): W = water-based, S = solvent-based

2 (Structure Type): R = residential, C = commercial, I = industrial, O2 = other (specify in NOTES below); I = interior, E = exterior, B = both

3 (Surface Type): W = wood, M = metal, P = plaster, C = cement, L = plastic, O1 = Other (specify in NOTES)

4 (Surface Preparation): W = wash, S = scrape, B = wire brush, C = chemical stripping, A = sanding, PW = primer (water-based), PS = primer (solvent-based), O3 = other (specify in NOTES, below); leave blank for "none". For C or solvent W, indicate in numerals (gallons/100 sf) following type (e.g., C-1) and indicate chemical composition of solvent under NOTES below. For PW or PS, indicate number of coats in numerals following type (e.g., PS-2).

5 (Application Method): A = aerosol, B = brush, D = disposable brush or roller, R = roller, S = spray apparatus, O2 = other (specify in NOTES)

6 (Thinning Practices): M = mineral spirits, P = paint thinner, W = water, A = alcohol, O3 = other (specify in NOTES); indicate estimated percentage thinning (e.g., M-20%); leave blank for "none"; indicate brand name(s) in Notes and obtain MSDS sheet for each thinner if possible

7 (Number of coats): indicate number of coats for each coating type with numeral (e.g., 1, 2)

8 (Cleanup Method): W = water, S = solvent, N = newspapers, R = cloth rags, T = paper towels, D = dispose of equipment (no reuse), O4 = other (specify in NOTES). For W and S, indicate amount, in gallons, in numerals following type (e.g., W-5); for solvents, note brand(s) of thinner in Notes and obtain MSDS sheet if possible

NOTES (continue on back of page if needed):

0001566

PAINTING PRACTICES

10. How would you rate the quality of paint products available now as compared to those available when you became a professional painter? *[B: better, W: worse, S: same, D: don't know]*: Durability W Ease of Application W Appearance S Ease of Cleanup S
DEPENDS ON THE SURFACE

11. Are water-based primers available? (Y/N) Are they typically used? (Y/N)

12. Are compliant products available in each category, and are they water- or solvent based? Which require more thinning? *[indicate responses in Table 2]*

TABLE 2

TOPIC	COATING TYPE (see key)								
	F	N-F	E	QDE	L	IM	QDP	S	O
Available? (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	–
Water or Solvent	Y	Y	Y	Y	Y	Y	Y	Y	–
More Thinning (W/S)	W/S	W/S	W/S	W/S	W/S	W/S	W/S	W/S	–

F: flat; N_F: Non-Flat; E: Enamel; QDE: Quick-Dry Enamel; L: Lacquers, Clear Wood Finishes; IM: Industrial Maintenance / High Performance; QDP: Quick-Dry Primers; S: Stains; O: Other (specify:_____)

13. Have applications practices changed in the time you've been a painter? How? Why?
FORMULATION CHANGES, AVAILABILITY, TYPE OF COATINGS AND VENDORS. OTHERWISE, NO NOTICABLE CHANGES

14. Have thinning practices changed in the time you've been a painter? How? Why?
NO CHANGE. THINNING USUALLY NO needed with new paint. EXCEPT WITH SPRAY GUNS APPLICATION.

15. Have you always used primers? How have the applications/amounts changed over time?
NO, NOT ALWAYS, DEPENDS on the SURFACE.
APPLICATIONS AND AMOUNTS CHANGED DEPENDING ON THE PAINTS.

AEROSOLS

13. Do you use aerosol products **often, occasionally, seldom, or never** *[circle one]*?

14. Describe applications for which you typically use aerosol products. For each application, what advantage does the aerosol provide? *[fill out table below]*
SMALL TOUCH-UP JOBS

TABLE 3

APPLICATION	ADVANTAGE CONFERRED BY AEROSOL
HARD TO REACH CORNER	TOUCH-UP. SMALL PAINTED AREA needed
EDGES	SAVE TIME, NO MESS
	NO CLEAN-UP

15. Do you have any additional comments or observations?

OVER THE YEARS, I noticed the useage of water-based paint become more popular. I found oil-based paint lasted longer and its best for outdoor application.

SAMPLE DESCRIPTION

Attach one **COATING SAMPLE DATA FORM** for each sample taken. Remember to write the **SITE NUMBER** on the Coating Sample Data Form. Determine **SAMPLE NUMBER** as described in the Paint Application Survey Protocol and enter sample numbers below for each sample taken:

LN-003-01 LN-003-02 LN-003-03 LN-003-04
LN-003-05 LN-003-06 LN-003-07 LN-003-08

PAINT APPLICATION SURVEY FORM

Sample Collector
Interviewer: MAUREEN CARREÓN Date: 02-07-93 Samplecode: Site: HE-004

~~CONTRACTOR INFORMATION~~

Contractor: _____ License #: _____ Phone#: _____

Address: _____ City: _____ ZIP Code: _____

Representative: _____ Title: _____ Yrs Experience: _____

JOB SITE INFORMATION

The following questions are keyed to Table 1. For each question, read the question and fill in the appropriate portions of Table 1. If the Site Representative expresses uncertainty or is confused by the question, read the possible choices from those listed under CODES below Table 1 and ask the Site Representative to select from those choices.

✓1. What types of paints are being applied? Are they water- or solvent-based?

✓2. What types of structures are being painted? Interior or exterior surfaces, or both?

✓3. What types of surfaces are being painted with which coating types?

✓4. How will you prepare surface for each type of coating? ***[follow-on questions for washing or chemical stripping]*** Are solvents used? What are they? What would you estimate the application rate to be in gallons/100 square feet (sf) of surface? ***[follow-on questions for use of primers]*** How many coats of primer will you use?

✓5. What application methods are being used for each target coating type?

✓6. Are target coatings thinned prior to use? Estimate percentage thinning.

✓7. How many coats of paint will be applied?

✓8. How will equipment be cleaned up for each type of coating? Estimate amount of water or solvent, in quarts and gallons, for cleanup of each coating type.

✓9. How do you dispose of:

Paint Cans? Usually use it all up, Customer usually keep the rest for touch-up! I don't usually keep the paint.

Left-OverPaint? None

Used Solvents? Paint thinner if needed, use some for clean-up

0001569

EACH coating

HE-004

TABLE 1

	COATING	SURVEY QUESTION NUMBER							
		1	2	3	4	5	6	7	8
1	Flats	S	R/I	P	W	B/R	-	2	S
2	Non-flats	S	R/I	P	A	B/R	-	2	S
3	Enamels	S	R/I	M	A	B	-	2	S
4	Quick-Dry Enamels								
5	Lacquers, Clear Wood Finishes	S	R/I	W	A	B	-	1	S
6	Industrial Maintenance / High Performance	S	R/I	M	A	B	-	2	S
7	Quick-Dry Primers	S	R/I	M	A	B/R	-	2	S
8	Stains	S	R/I	W	A	02	-	1	S
	Other (specify)								

1 PAINT THINNER 6 OZ
2 Paint Thinner 6 OZ
3 Paint Thinner 6 OZ +
5 Paint Thinner 6 OZ
6 Paint Thinner 6 OZ
7 Paint Thinner 1 pint
8 Paint Thinner 6 OZ

CODES:

1 (Paint Type): W = water-based, S = solvent-based

2 (Structure Type): R = residential, C = commercial, I = industrial, O2 = other (specify in NOTES below); I = interior, E = exterior, B = both

3 (Surface Type): W = wood, M = metal, P = plaster, C = cement, L = plastic, O1 = Other (specify in NOTES)

4 (Surface Preparation): W = wash, S = scrape, B = wire brush, C = chemical stripping, A = sanding, PW = primer (water-based), PS = primer (solvent-based), O3 = other (specify in NOTES, below); leave blank for "none". For C or solvent W, indicate in numerals (gallons/100 sf) following type (e.g., C-1) and indicate chemical composition of solvent under NOTES below. For PW or PS, indicate number of coats in numerals following type (e.g., PS-2).

5 (Application Method): A = aerosol, B = brush, D = disposable brush or roller, R = roller, S = spray apparatus, O2 = other (specify in NOTES)

6 (Thinning Practices): M = mineral spirits, P = paint thinner, W = water, A = alcohol, O3 = other (specify in NOTES); indicate estimated percentage thinning (e.g., M-20%); leave blank for "none"; indicate brand name(s) in Notes and obtain MSDS sheet for each thinner if possible

7 (Number of coats): indicate number of coats for each coating type with numeral (e.g., 1, 2)

8 (Cleanup Method): W = water, S = solvent, N = newspapers, R = cloth rags, T = paper towels, D = dispose of equipment (no reuse), O4 = other (specify in NOTES). For W and S, indicate amount, in gallons, in numerals following type (e.g., W-5); for solvents, note brand(s) of thinner in Notes and obtain MSDS sheet if possible

NOTES (continue on back of page if needed):

0001570

PAINTING PRACTICES

10. How would you rate the quality of paint products available now as compared to those available when you became a professional painter? *[B: better, W: worse, S: same, D: don't know]*: Durability W Ease of Application S Appearance S Ease of Cleanup S

11. Are water-based primers available? (Y)N) Are they typically used? (Y)N) Depends on the customer's request.

12. Are compliant products available in each category, and are they water- or solvent based? Which require more thinning? *[indicate responses in Table 2]*

TABLE 2

TOPIC	COATING TYPE (see key)								
	F	N-F	E	QDE	L	IM	QDP	S	O
Available? (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	–
Water or Solvent	W/S	W/S	W/S	W/S	W/S	W/S	W/S	W/S	–
More Thinning (W/S)	W/S	W/S	W/S	W/S	W/S	W/S	W/S	W/S	–

F: flat; N_F: Non-Flat; E: Enamel; QDE: Quick-Dry Enamel; L: Lacquers, Clear Wood Finishes; IM: Industrial Maintenance / High Performance; QDP: Quick-Dry Primers; S: Stains; O: Other (specify:_____)

13. Have applications practices changed in the time you've been a painter? How? Why?
not too much. Oil based paint are still available, prices are a lot higher.

14. Have thinning practices changed in the time you've been a painter? How? Why?
No, paint thinner is still being used to thin oil-based and water for water-based paint.

15. Have you always used primers? How have the applications/amounts changed over time?
Depends on the application. Quick Dry Primer is good and durable, it's becoming more expensive.

AEROSOLS

13. Do you use aerosol products often, occasionally, seldom, or never *[circle one]*?

14. Describe applications for which you typically use aerosol products. For each application, what advantage does the aerosol provide? *[fill out table below]*
Small scale projects. Household small jobs.

TABLE 3

APPLICATION	ADVANTAGE CONFERRED BY AEROSOL
Household items	sprition
touch-up	hard to reach areas

15. Do you have any additional comments or observations?

No mess and clean-up is easier use newspaper or cardboard to catch the drips.

SAMPLE DESCRIPTION

Attach one **COATING SAMPLE DATA FORM** for each sample taken. Remember to write the **SITE NUMBER** on the Coating Sample Data Form. Determine **SAMPLE NUMBER** as described in the Paint Application Survey Protocol and enter sample numbers below for each sample taken:

HE-004-01 HE-004-02 HE-004-03 HE-004-04
HE-004-05 HE-004-06 HE-004-07 HE-004-08

APPENDIX C

COATING SAMPLE DATA

COATING SAMPLE DATA FORM

(Complete one form for each Sample Taken)

Sample Description Sample Number JE-001-01

Solvent borne: ✓ Water borne: _____ Exempt borne: _____

Date: 01-24-93 Time Taken: 10:25 Am

Manufacturer: Imperial Hyspeed Paint ID#: E220

Product / Brand Name and Description: Imperial Hyspeed Marine Enamel Flat

Manufacturer Date Code: 113674 Listed VOC Content: 420 g/l

Where was the Coating Purchased?: Imperial Paint Manufacturer

Labeling Requirements met?: (Yes) No Container Size: 1 Gal

Sampling Method: Paint was poured into 1 pint metal Container with min headspace

Type of Preservation: Ice chest

Temperature: 40-60 °F

Analysis Required†: Sample delivered to ART1

†This does not constitute authorization to proceed with analysis.

Relinquished By:		Received by		Date
Signature		Signature		/ /
Printed Name		Printed Name		Time
Company		Company		
Reason				

Relinquished By:		Received by		Date
Signature		Signature		/ /
Printed Name		Printed Name		Time
Company		Company		
Reason				

Relinquished By:		Received by		Date
Signature		Signature		/ /
Printed Name		Printed Name		Time
Company		Company		
Reason				

0001574

PAINT SAMPLE

Date: 01-24-93 Sample No.: JE-001-01

Person Collecting Sample: MAUREEN CARREON, INDUSTRIAL HYGIENIST

Project Name: ANALYSIS VOC Project No.: WWC - VOC

Target Coatings:

[ ] Lacquer
[ ] Quick Dry Primer
[ ] Quick Dry Enamels
[ ] High Performance Coatings
[ ] Non-Flat Coatings
[ ] Other Flat

Container Size and Level of Contents: 1 GAL, Near full

Location of Painting:

[ ] Interior
[X] Exterior

Surface Being Painted: Metal Trim

Method Used to Apply Paint: Brushes

VOC: Contains less than 420 VOC

Data Obtained from Paint Container: Non-Photochemically Reactive.
Imperial Paints - 150-152 E. ORANGETHORPE
ANAHEIM, CA 92801

COATING SAMPLE DATA FORM

(Complete one form for each Sample Taken)

Sample Description Sample Number JE-001-02

Solvent borne: ✓ Water borne: _____ Exempt borne: _____

Date: 01-17-93 Time Taken: 11:25 Hrs

Manufacturer: DEFT Paint ID#: 4287 CLEAR GLOSS #1

Product / Brand Name and Description: DEFT, CLEAR GLOSS #1, INTERIOR/EXTERIOR

Manufacturer Date Code: N/A Listed VOC Content: MAX 350 g/l

Where was the Coating Purchased?: DEFT, IRVINE, CA 92714

Labeling Requirements met?: (Yes) / No Container Size: 1 GAL

Sampling Method: SAMPLE TAKEN WHEN BATCH WAS MADE ACCORDING TO PROTOCOL

Type of Preservation: CLOSED AND TAPED ONE PINT METAL CONTAINER

Temperature: 40-60°F CLOSED TOP ICE CHEST WITH BLUE ICE

Analysis Required†: DELIVERED TO GARDENA LAB

†This does not constitute authorization to proceed with analysis.

Relinquished By:		Received by		Date
Signature		Signature		/ /
Printed Name		Printed Name		Time
Company		Company		
Reason				

Relinquished By:		Received by		Date
Signature		Signature		/ /
Printed Name		Printed Name		Time
Company		Company		
Reason				

Relinquished By:		Received by		Date
Signature		Signature		/ /
Printed Name		Printed Name		Time
Company		Company		
Reason				

0001576

PAINT SAMPLE

Date: 1-17-93 Sample No.: JE-001-02

Person Collecting Sample: MAUREEN CARREON, INDUSTRIAL HYGIENIST

Project Name: VOC ANALYSIS Project No.: _____

Target Coatings:

- [ ] Lacquer
- [ ] Quick Dry Primer
- [ ] Quick Dry Enamels
- [ ] High Performance Coatings
- [ ] Non-Flat Coatings
- [X] Other NON FLATS - CLEAR GLOSS #1

Container Size and Level of Contents: SAMPLE 1 PINT METAL CONTAINER LABELED "JE-001-02", FILLED FULL WITH MIN. HEADSPACE. PAINT CONTAINER: 1 GALLON, 2/3 FULL

Location of Painting:

- [✓] Interior
- [ ] Exterior

Surface Being Painted: WOOD

Method Used to Apply Paint: BRUSHES

VOC: MAX. 350 g/l

Data Obtained from Paint Container: DEFTHANE - CLEAR LIQUID PLASTIC FINISH FORMULATED FROM THE FINEST POLYURETHANE RESINS AVAILABLE. DEFTHANE MEETS CLEAN AIR REGULATION

COATING SAMPLE DATA FORM

(Complete one form for each Sample Taken)

Sample Description Sample Number HE-004-07

Solvent borne: ✓ Water borne: _____ Exempt borne: _____

Date: 02-07-93 Time Taken: 4:00 PM

Manufacturer: MASTERCHEM INDUSTRIES Paint ID#: white -RECOAT

Product / Brand Name and Description: High Solid KILZ PRIMER

Manufacturer Date Code: 4-28-92 Listed VOC Content: 348 g/l. MAX VOC

Where was the Coating Purchased?: MASTERCHEM INDUSTRIES INC.* 2.9 lb/GAL

Labeling Requirements met?: (Yes) / No Container Size: 1 GAL

Sampling Method: SAMPLE WAS POURED INTO 1 Pint metal Sampling container Prior to Application.

Type of Preservation: ICE CHEST

Temperature: 40-60°F

Analysis Required†: SAMPLE WAS DELIVERED TO ART I

†This does not constitute authorization to proceed with analysis.

* P.O. BOX 368, BARNHART, MO. 63012

Relinquished By:	Received by	Date
Signature	Signature	/ /
Printed Name	Printed Name	Time
Company	Company	
Reason		

Relinquished By:	Received by	Date
Signature	Signature	/ /
Printed Name	Printed Name	Time
Company	Company	
Reason		

Relinquished By:	Received by	Date
Signature	Signature	/ /
Printed Name	Printed Name	Time
Company	Company	
Reason		

0001634

PAINT SAMPLE

Date: 02-07-93 Sample No.: HE-004-07

Person Collecting Sample: MAUREEN CARREON, INDUSTRIAL HYGIENIST

Project Name: VOC ANALYSIS Project No.: WMC-VOC

Target Coatings:

- [ ] Lacquer
- [✓] Quick Dry Primer
- [ ] Quick Dry Enamels
- [ ] High Performance Coatings
- [ ] Non-Flat Coatings
- [ ] Other _____

Container Size and Level of Contents: 1 GAL - FULL

Location of Painting:

- [✓] Interior
- [ ] Exterior

Surface Being Painted: METAL SURFACE

Method Used to Apply Paint: BRUSHES | ROLLER

VOC: 348 g/l or 2.9 lb/GAL MAX VOC

Data Obtained from Paint Container: RETURN CONTAINER AND UNUSED PRODUCT TO APPROVED RECYCLING CENTER FOR DISPOSAL.

0001635

H:\RM\PaintSam.aut 11/9/92

COATING SAMPLE DATA FORM

(Complete one form for each Sample Taken)

Sample Description Sample Number HE-004-08

Solvent borne: ✓ Water borne: _____ Exempt borne: _____

Date: 02-07-93 Time Taken: 3:40 pm

Manufacturer: FLECTO Paint ID#: 91

Product / Brand Name and Description: FLECTO VARATHANE, LIQUID PLASTIC, CLEAR SA

Manufacturer Date Code: 235-4T4 Listed VOC Content: NOT AVAILABLE

Where was the Coating Purchased?: FLECTO INTERNATIONAL LTD, OAKLAND, CA 94604

Labeling Requirements met?: (Yes) / No Container Size: 1 Quart

Sampling Method: Sample was poured into 1 pint metal Sampling Container

Type of Preservation: Ice Chest

Temperature: 40-60F

Analysis Required†: SAMPLE WAS DELIVERED TO ARTI

†This does not constitute authorization to proceed with analysis.

Relinquished By:		Received by		Date
Signature		Signature		/ /
Printed Name		Printed Name		Time
Company		Company		
Reason				

Relinquished By:		Received by		Date
Signature		Signature		/ /
Printed Name		Printed Name		Time
Company		Company		
Reason				

Relinquished By:		Received by		Date
Signature		Signature		/ /
Printed Name		Printed Name		Time
Company		Company		
Reason				

0001636

PAINT SAMPLE

Date: 02-07-93 Sample No.: HE-004-08

Person Collecting Sample: MAUREEN CARREON, INDUSTRIAL HYGIENIST

Project Name: VOC ANALYSIS Project No.: WWC-VOC

Target Coatings:

- [ ] Lacquer
- [ ] Quick Dry Primer
- [ ] Quick Dry Enamels
- [ ] High Performance Coatings
- [ ] Non-Flat Coatings
- [✓] Other STAINS

Container Size and Level of Contents: 1 QUART

Location of Painting:

- [✓] Interior
- [ ] Exterior

Surface Being Painted: WOOD STAIN ON WOOD

Method Used to Apply Paint: WIPING CLOTH

VOC: NOT AVAILABLE

Data Obtained from Paint Container: COMBUSTIBLE

0001637

APPENDIX D

CHAIN-OF-CUSTODY RECORD

Woodward-Clyde Consultants

SHIPMENT NO.: 4

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

DATE 02/08/93

PROJECT NAME: WWC - Paint Sampling

PROJECT NO.: WWC - VOC Analysis

Sample Number	Location	Type of Sample: Material	Type of Sample: Method	Type of Container	Type of Preservation: Temp	Type of Preservation: Chemical	Analysis Required*
RB-002-04	CH	Quick Dry Enamels		1 Pt Metal	40-60F	None	PER DR IIV
RB-002-05	CH	WOOD FINISH					RAO OF
RB-002-07	CH	Quick Dry Primer					WWC's
~~RB-002-08~~	~~CH~~	~~WOOD STAINS~~					REQUEST
LN-003-04	LA	Quick Dry Enamels					
HE 004-01	RC	FLATS					
HE 004-02	RC	Semi-Gloss					
HE 004-03	RC	Enamels					
HE 004-05	RC	WOOD FINISH					
HE 004-06	RC	Ind. Main/Highway					
HE 004-07	RC	Quick Dry Primer					
HE 004-08	RC	WOOD STAIN					
HE-004-04	RC	Quick Dry Enamels					

Total Number of Samples Shipped:

Sampler's Signature:

Relinquished By: MAUREEN CARREON Signature Printed Name MAUREEN CARREON Company WWC - VOC Reason VOC Analysis	Received By: Signature Printed Name J. BELMONT Company CALTEST	Date 2/8/93 Time
Relinquished By: Signature Printed Name Company Reason	Received By: Signature Printed Name Company	Date / / Time
Relinquished By: Signature Printed Name Company Reason	Received By: Signature Printed Name Company	Date / / Time
Relinquished By: Signature Printed Name Company Reason	Received By: Signature Printed Name Company	Date / / Time

Special Shipment / Handling / Storage Requirements:

0001639

* Note — This does not constitute authorization to proceed with analysis

1st Drop off

Woodward-Clyde Consultants

SHIPMENT NO.: 001

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

DATE 01/18/93

PROJECT NAME: WWC - Paint Sampling

PROJECT NO.: JE-001

Sample Number	Location	Type of Sample		Type of Container	Type of Preservation		Analysis Required*
		Material	Method		Temp	Chemical	
JE-001-02	Fullerton	Non-Flats	Pour	One Part Paint	40-60	°F None	PER WWC
JE-001-03		Enamels	Pour	Container			Dr. Liv Rad's
JE-001-04		Quick Dry Enamels					Request.
JE-001-05		Clear Wood					
JE-001-06		Ind. Main. High Perf.					
JE-001-07		Quick Dry Primer					
JE-001-08		Stains					

Total Number of Samples Shipped: 7 | Sampler's Signature:

Relinquished By:	Received By:	Date / /
Signature	Signature	
Printed Name	Printed Name	Time
Company	Company	
Reason		
Relinquished By:	**Received By:**	**Date / /**
Signature	Signature	
Printed Name	Printed Name	Time
Company	Company	
Reason		
Relinquished By:	**Received By:**	**Date / /**
Signature	Signature	
Printed Name	Printed Name	Time
Company	Company	
Reason		
Relinquished By:	**Received By:**	**Date / /**
Signature	Signature	
Printed Name	Printed Name	Time
Company	Company	
Reason		

Special Shipment / Handling / Storage Requirements:

0001640

* Note — This does not constitute authorization to proceed with analysis

2nd Drop off

Woodward-Clyde Consultants

SHIPMENT NO.: 2

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

DATE 01/24/93

PROJECT NAME: WWC PAINT - VOC

PROJECT NO.:

Sample Number	Location	Type of Sample		Type of Container	Type of Preservation		Analysis Required*
		Material	Method		Temp	Chemical	
JE-001-01	CSU	TMP Hyspeed FLAT		1 pt. metal	40-60F	None	
RB-002-06	CH	SYN-LUSTRE INT. MAIN		1 pt metal	40-60F	None	
RB-002-03	CH	Semi Gloss ENAMEL		1 pt metal	40-60F	None	
RB-002-01	CH	INTERIOR FLAT WALL	PAINT	1 pt metal	40-60F	None	

Total Number of Samples Shipped: 4 | Sampler's Signature: [signature] INDUSTRIAL HYGIENIST

Relinquished By: Signature [signature] Printed Name [illegible] CARTON Company WWC / DR. RAD Reason TO LAB.	Received By: Signature [signature] Printed Name B BELMONT Company AMERICAN ASH & TESTING	Date 1/26/93 Time 4:15
Relinquished By: Signature Printed Name Company Reason	Received By: Signature Printed Name Company	Date / / Time
Relinquished By: Signature Printed Name Company Reason	Received By: Signature Printed Name Company	Date / / Time
Relinquished By: Signature Printed Name Company Reason	Received By: Signature Printed Name Company	Date / / Time

Special Shipment / Handling / Storage Requirements:
MIN. HEADSPACE, KEEP UPRIGHT, STORED IN ICE CHEST, MAINTAINED 40-60°F.

0001641

* Note — This does not constitute authorization to proceed with analysis

Woodward-Clyde Consultants

SHIPMENT NO.: 3

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

DATE 01/31/93

PROJECT NAME: VOC ANALYSIS

PROJECT NO.: WWC - VOC

Sample Number	Location	Type of Sample		Type of Container	Type of Preservation		Analysis Required*
		Material	Method		Temp	Chemical	
RB-002-004	CH	Semi Gloss	Alkyd Enamel	1 PINT METAL	40-60F	None	UPON DR.
LN-003-01	LA	FLAT WALL	FINISH				UV RAD of
LN-003-02	LA	semi GLOSS	ALKYD Enamel				WWC's
LN-003-03	LA	RANCHO II	GLOSS				REQUEST
LN-003-05	LA	CLEAR WOOD	FINISH				
LN-003-06	LA	IND. MAIN	ENAMEL				
LN-003-07	LA	QUICK DRY	Primer				
LN-003-08	LA	STAINSEAL	OIL STAIN				

Total Number of Samples Shipped: 8 | Sampler's Signature: [signature] INDUSTRIAL HYGIENIST

Relinquished By: WARREN CARLSON Signature [signature] Printed Name WARREN CARLSON Company WWC Reason VOC Studies	Received By: Barbara Belmont Signature [signature] Printed Name B BELMONT Company AMERICAN DESIGN TESTING	Date 2/1/93 Time
Relinquished By: Signature Printed Name Company Reason	Received By: Signature Printed Name Company	Date / / Time
Relinquished By: Signature Printed Name	Received By: Signature Printed Name Company	Date / / Time
R CONTRACTOR #3	Received By: Signature Printed Name Company	Date / / Time

S ge Requirements:

0001642

* Note — This does not constitute authorization to proceed with analysis

APPENDIX E

PAINT ANALYSIS RECORD

American Research and Testing Incorporated
14934 South Figueroa Street • Gardena, California 90248 • (310) 538-9709
Fax (310) 538-9965

CLIENT: Woodward-Clyde Consultants
2020 E. First St. Ste. 400
Santa Ana CA 92705

NUMBER
93009
February 1, 1993

SUBJECT: VOC of Coatings

REFERENCE:

Tests and charges were authorized by Dr. U.V. Rao.

SAMPLE DESCRIPTION:

The Client submitted and identified the following coating samples:

a) JE-001-02, non-flat, amber
b) JE-001-03, enamel, yellow
c) JE-001-04, quick dry enamel, olive brown
d) JE-001-05, clear wood, transparent
e) JE-001-06, ind. main./high perf., white
f) JE-001-07, quick dry primer, white*
g) JE-001-08, stains, amber

REQUEST:

Determine VOC of each sample.

METHOD:

Volatile content was determined per ASTM D-2369-81, procedure B.

Density was determined per ASTM D-1475-60.

Water was determined by Karl Fisher titration, outlined in ASTM D-4017-81. The titration medium was modified to ensure solubility of the coating polymer during testing.

Volatile Organic Content (VOC) was calculated as described in section 8.2.4 of ASTM D-3960-81.

B. Belmont
B. Belmont
Senior Chemist

SIGNED FOR THE COMPANY
by Rita R Boggs, Ph.D.
Rita R. Boggs, Ph.D.
President

0001644

American Research and Testing Incorporated
14934 South Figueroa Street • Gardena, California 90248 • (310) 538-9709
Fax (310) 538-9965

RESULTS:

Sample	Total Non-Volatiles (weight%)	Density (g/ml)	Water (weight %)	VOC (g/L)
a) JE-001-02, non-flat, amber	62.413	0.914	0.083	343
b) JE-001-03, enamel, yellow	60.774	0.991	0.099	388
c) JE-001-04, quick dry enamel, olive brown	61.259	1.096	1.112	418
d) JE-001-05, clear wood, transparent	23.234	0.888	0.415	681
e) JE-001-06, ind. main./high perf., white	70.848	1.430	0.553	412
f) JE-001-07, quick dry primer, white*	*polymerized; unable to test			
g) JE-001-08, stains, amber	56.112	0.903	0.174	395

American Research and Testing Incorporated
14934 South Figueroa Street • Gardena, California 90248 • (310) 538-9709
Fax (310) 538-9965

CLIENT: Woodward-Clyde Consultants
2020 E. First St. Ste. 400
Santa Ana CA 92705

NUMBER
93015
February 4, 1993

SUBJECT: VOC of Coatings

REFERENCE:

Tests and charges were authorized by Dr. U.V. Rao.

SAMPLE DESCRIPTION:

The Client submitted and identified the following coating samples:

1) JE-001-01, Imp. Hyspeed Flat, black
2) RB-002-06, Syn-Lustro Ind. Main., white
3) RB-002-01, Semi Gloss Enamel, off white
4) RB-002-03, Interior Flat Wall Paint, beige

REQUEST:

Determine VOC of each sample.

METHOD:

Volatile content was determined per ASTM D-2369-81, procedure B. Density was determined per ASTM D-1475-60. Water was determined by Karl Fisher titration, outlined in ASTM D-4017-81. The titration medium was modified to ensure solubility of the coating polymer during testing. Volatile Organic Content (VOC) was calculated as described in section 8.2.4 of ASTM D-3960-81.

RESULTS:

Sample	Total Non-Volatiles (weight%)	Density (g/ml)	Water (weight %)	VOC (g/L)
1) JE-001-01, Imp. Hyspeed Flat, black	53.986	1.169	0.592	535
2) RB-002-06, Syn-Lustro Ind. Main., white	65.320	1.148	0.143	397
3) RB-002-01, Semi Gloss Enamel, off white	78.975	1.432	0.397	297
4) RB-002-03, Interior Flat Wall Paint, beige	37.210	1.269	61.406	(80)

B. Belmont
Senior Chemist

SIGNED FOR THE COMPANY
by Rita R. Boggs, Ph.D.
Rita R. Boggs, Ph.D.
President

0001646

American Research and Testing Incorporated
14934 South Figueroa Street • Gardena, California 90248 • (310) 538-9709
Fax (310) 538-9965

CLIENT: Woodward-Clyde Consultants
2020 E. First St. Ste. 400
Santa Ana CA 92705

NUMBER
93018
February 11, 1993

SUBJECT: VOC of Coatings

REFERENCE:

Tests and charges were authorized by Dr. U.V. Rao.

SAMPLE DESCRIPTION:

The Client submitted and identified the following coating samples:

a) RB-002-004, semi-gloss alkyd enamel, white
b) LN-003-01, flat wall finish, white
c) LN-003-02, semi-gloss alkyd enamel, white
d) LN-003-03, Rancho II gloss, beige
e) LN-002-05, clear wood finish, translucent white
f) LN-003-06, Ind. Main. enamel, white
g) LN-003-07, quick dry primer, white
h) LN-003-08, Stainseal oil stain,brown

REQUEST:

Determine VOC of each sample.

METHOD:

Volatile content was determined per ASTM D-2369-81, procedure B.

Density was determined per ASTM D-1475-60.

Water was determined by Karl Fisher titration, outlined in ASTM D-4017-81. The titration medium was modified to ensure solubility of the coating polymer during testing.

Volatile Organic Content (VOC) was calculated as described in section 8.2.4 of ASTM D-3960-81.

B. Belmont
B. Belmont
Senior Chemist

SIGNED FOR THE COMPANY
by Rita R Boggs, PhD
Rita R. Boggs, Ph.D.
President

0001647

American Research and Testing Incorporated
14934 South Figueroa Street • Gardena, California 90248 • (310) 538-9709
Fax (310) 538-9965

RESULTS:

Sample	Total Non-Volatiles (weight%)	Density (g/ml)	Water (weight %)	VOC (g/L)
a) RB-002-004, semi-gloss alkyd enamel, white	<-----water based product*----->			
b) LN-003-01, flat wall finish, white	<-----water based product*----->			
c) LN-003-02, semi-gloss alkyd enamel, white	83.969	1.569	0.055	251
d) LN-003-03, Rancho II gloss, beige	80.363	1.269	0.159	248
e) LN-002-05, clear wood finish, translucent white	25.516	0.901	0.537	670
f) LN-003-06, Ind. Main. enamel, white	67.223	1.160	0.249	378
g) LN-003-07, quick dry primer, white	75.077	1.458	0.131	363
h) LN-003-08, Stainseal oil stain,brown	70.367	1.114	0.130	329

*Testing was terminated on the water based products as directed by the Client.

American Research and Testing Incorporated
14934 South Figueroa Street • Gardena, California 90248 • (310) 538-9709
Fax (310) 538-9965

CLIENT: Woodward-Clyde Consultants
2020 E. First St. Ste. 400
Santa Ana CA 92705

NUMBER
93025
February 24, 1993

SUBJECT: VOC of Coatings

REFERENCE:

Tests and charges were authorized by Dr. U.V. Rao.

SAMPLE DESCRIPTION:

The Client submitted and identified the following coating samples:

a) RB-002-04, quick dry enamel; orange
b) RB-002-05, wood finish, dark amber transparent
c) RB-002-07, quick dry primer, white
d) LN-003-04, quick dry enamel, off-white
e) HE-004-01, flat, white
f) HE-004-02, semi-gloss, white
g) HE-004-03, enamel, beige
h) HE-004-05, wood finish, brown
i) HE-004-06, ind. main./high perf., off-white
j) HE-004-07, quick dry primer, white
k) HE-004-08, wood stain, light amber transparent
l) HE-004-04, quick dry enamel, off-white

REQUEST:

Determine VOC of each sample.

METHOD:

Volatile content was determined per ASTM D-2369-81, procedure B.

Density was determined per ASTM D-1475-60.

Water was determined by Karl Fischer titration, outlined in ASTM D-4017-81. The titration medium was modified to ensure solubility of the coating polymer during testing.

Volatile Organic Content (VOC) was calculated as described in section 8.2.4 of ASTM D-3960-81.

B. Belmont
B. Belmont
Senior Chemist

SIGNED FOR THE COMPANY
by Rita R Boggs, PhD
Rita R. Boggs, Ph.D.
President

0001649

American Research and Testing Incorporated
14934 South Figueroa Street • Gardena, California 90248 • (310) 538-9709
Fax (310) 538-9965

RESULTS:

Sample	Total Non-Volatiles (weight%)	Density (g/ml)	Water (weight %)	VOC (g/L)
a) RB-002-04, quick dry enamel, orange	54.152	0.957	0.052	438
b) RB-002-05, wood finish, dark amber transparent	18.017	0.813	0.027	666
c) RB-002-07, quick dry primer, white	75.123	1.445	0.191	358
d) LN-003-04, quick dry enamel, off-white	68.453	1.193	0.260	374
e) HE-004-01, flat, white	<-----water based product*----->			
f) HE-004-02, semi-gloss, white	84.235	1.613	0.143	253
g) HE-004-03, enamel, beige	69.282	1.169	0.184	358
h) HE-004-05, wood finish, brown	14.630	0.822	0.044	702
i) HE-004-06, ind. main./high perf., off-white	66.529	1.106	0.230	369
j) HE-004-07, quick dry primer, white	76.050	1.479	0.046	354
k) HE-004-08, wood stain, light amber transparent	44.871	0.901	0.304	495
l) HE-004-04, quick dry enamel, off-white	69.393	1.201	0.208	366

*Testing was not conducted on the water based product.

APPENDIX F

CONSUMER SURVEY

WOODWARD-CLYDE CONSULTANTS

CUSTOMER PAINT SURVEY RESULTS

SURVEY QUESTIONS NUMBER

1	2	3	4	5	6	7	8
1 - WOOD STAIN	S	W/I	A	04	-	2	S - LAC TNR	S
2 - IND MAIN ENAMEL	S	C/E	W	K B	-	2	S - PNT TNR	S
3 - IND MAIN ENAMEL	S	M/E	A	B	-	1/2	S - PNT TNR	D1
4 - CLEAR WOOD FINISH	S	W/I	A	B	-	2	S - LAC TNR	D2
5 - HIGH GLOSS ENAMEL	S	W/E	A	B	-	2	S - PNT TNR	D1
6 - SEMI GLOSS ENAMEL	S	M/E	W/A	B	-	1/2	S - PNT TNR	S
7 - SEMI GLOSS ENAMEL	S	M/W/E	W/A	B	-	2	S - LAC TNR	S
8 - CUSTOMER REFUSUAL	-	-	-	-	-	-	-	-
9 - AEROSOL	S	W/I	A	A	-	2	07 - NO MESS	S
10 - CLEAR FINISH	S	W/E	W/A	B	-	2	S - PNT TNR	S
11 - SEMI GLOSS ENAMEL	S	P/I	A	R/B	-	2/3	S - PNT TNR	D1
12 - SEMI GLOSS FINISH	S	W/M/I	A	B	-	2	S - PNT TNR	D1
13 - SEMI TRANSP FINSH	S	W/E	A	R/B	-	2	S - PNT TNR	D1
14 - FLAT FINISH	S	C/E	W	B	-	1/2	S - LAC TNR	S
15 - TEXTURE COAT FINISH	S	P/I	W	S	-	1/2	S - PNT TNR	S
16 - SEMI GLOSS FINISH	S	W/E	A/P/S	R	-	2	S - LAC TNR	S

Post-it™ brand fax transmittal memo 7671 | # of pages ▸ 5

To Dr. UV RAO	From MAUREEN CARLSON
Co. WWC	Co. LORAL AEROSPACE
Dept. AIR Quality	Phone # 714) 720-5877
Fax # 714) 667-9147	Fax # 714) 720-6693

0001652

WOODWARD-CLYDE CONSULTANTS

CUSTOMER PAINT SURVEY RESULTS

SURVEY QUESTIONS NUMBER

1	2	3	4	5	6	7	8
17 - ENAMEL FINISH	S	M/I	P/S	R/B	-	2	S - PNT TNR	S
18 - WOOD STAIN/FINISH	S	W/I	A	B/04	-	1/2	S - PNT TNR	S
19 - SEMI GLOSS LATEX	W	P/I	A	R/B	-	2	W	S
20 - LATEX WALL PAINT	W	P/I	A	R/B	-	2	W	S
21 - OIL BASE ENAMEL	S	P/I	W	B	-	2	S - PNT TNR	S
[illegible] - EXTERIOR LATEX	W	P/E	W	R/B	-	2	W	S
[illegible] - OIL BASE ENAMEL	S	W/E	A	B	-	2	S - LAC TNR	S
24 - WALL LATEX PAINT	W	P/I	W	R/B	2	2/3	W	D1
25 - OAK WOOD STAIN	S	W/I	A	B	-	1/2	S - PNT TNR	S
26 - FLAT FINISH	S	P/I	P/S	R/S	-	2	S - LAC TNR	S
27 - FLAT ENAMEL FINISH	S	P/I	A	R/B	-	2	S - LAC TNR	S
28 - AEROSOL SPRAY CANS	S	W/M	A	-	1/2	D	-	D1
29 - CLEAN FINISH	S	W/I	A	B	-	1/2	S - LAC TNR	S
30 - LOW SHEEN FINISH	S	W/I	W	S	P	2	S - PNT TNR	D1
31 - FLAT FINISH	S	P/I	W	R/B	-	2	S - PNT TNR	D1
32 - STAIN/CLEAR FINISH	S	W/I	A	B	-	1	S - LAC TNR	S

WOODWARD-CLYDE CONSULTANTS

CUSTOMER PAINT SURVEY RESULTS

SURVEY QUESTIONS NUMBER

1	2	3	4	5	6	7	8
33 - FLAT FINISH	S	C/E	S	R	-	2	S - LAC TNR	S
34 - FLAT ENAMEL FINISH	S	W/E	W	R/B	-	2	S - PNT TNR	D1
35 - SEMI TRANS FINISH	S	W/E	A	B	-	2	S - LAC TNR	D1/S
36 - SEMI GLOSS FINISH	S	W/I	W/A	R	-	2	S - LAC TNR	S
37 - FLAT ENAMEL FINISH	S	W/E	A	B	-	1/2	S - PNT TNR	D1
38 - CLEAR FINISH	S	W/I	W/A	B	-	2	S - PNT TNR	S
39 - FLAT FINISH	S	P/E	W	R/B	-	1/2	S - LAC TNR	S
40 - HIGH PERF/QUICK DRY	S	02/E	W	R	-	1	S - PNT TNR	S
41 - CLEAR FINISH	S	W/I	W/A	B	-	1	S - PNT TNR	S
42 - AEROSOL SPRAY CANS	S	W/M/I	-	A	-	2	-	D1
43 - FLAT ENAMEL FINISH	S	P/I	A/P/S	R/S	-	2	S - PNT TNR	S
44 - FLAT ENAMEL	S	P/I	A	R/B	-	2	S - PNT TNR	S
45 - WOOD STAIN/FINISH	S	W/E	A	B	-	2	S - LAC TNR	D1
46 - SEMI GLOSS ENAMEL	S	P/I	W/P/S	B	-	1/2	S - LAC TNR	S
47 - AEROSOL SPRAY CANS	S	W/I	A	A	-	2	-	D1
48 - SEMI GLOSS ENAMEL	S	W/E	W/A	B	-	2	S - PNT TNR	D1

WOODWARD-CLYDE CONSULTANTS

CUSTOMER PAINT SURVEY RESULTS

SURVEY QUESTIONS NUMBER

1	2	3	4	5	6	7	8
49 - SEMI GLOSS ENAMEL	S	P/E	W	R	-	2	S - PNT TNR	S
50 - SEMI GLOSS ENAMEL	S	P/I	A	R/B	-	2	S - LAC TNR	S
51 - FLAT FINISH	S	P/I	A	R/B	-	2	S - PNT TNR	D1
52 - STAIN FINISH	S	W/I	W/A	B	-	1/2	S - LAC TNR	S
53 - CLEAR FINISH	S	W/I	A	B	-	2	S - LAC TNR	D1
54 - SEMI GLOSS ENAMEL	S	M/E	A/P/S	R	-	2	S - LAC TNR	S
55 - GLOSS ENAMEL	S	M/E	A	B	-	2	S - PNT TNR	D1
56 - TEXTURE COAT FINISH	S	P/I	P/S	R/S	-	1	S - PNT TNR	S
57 - FLAT FINISH	S	P/I	W	R	-	2	S - PNT TNR	D1
58 - SEMI GLOSS ENAMEL	S	W/E	A	B	-	2	S - LAC TNR	S
59 - FLAT FINISH	S	M/E	A/P/S	R/S	-	2	S - LAC TNR	S
60 - SEMI GLOSS FINISH	S	P/I	A	R/B	-	2	S - LAC TNR	D1
61 - CLEAR/STAIN FINISH	S	W/E	W/A	B	-	1/2	S - PNT TNR	S
62 - AEROSOL SPRAY CANS	S	W/M	-	A	-	1	-	D1
63 - FLAT ENAMEL	S	W/I	A	B	-	2	S - PNT TNR	D1
64 - SEMI GLOSS/QUICK DRY	S	W/I	A	B	-	1	S - LAC TNR	S

0001655

WOODWARD-CLYDE CONSULTANTS

CUSTOMER PAINT SURVEY RESULTS

SURVEY QUESTIONS NUMBER

	1	2	3	4	5	6	7	8
65 - HIGH GLOSS ENAMEL	S	W/I	A	R/B	-	2	S - LAC TNR	S
66 - CLEAR WOOD FINISH	S	W/I	S	B	-	2	S - PNT TNR	S
67 - IND MAIN ENAMEL	S	M/E	S/A	B	-	1/2	S - LAC TNR	S
68 - AEROSOL SPRAY CANS	S	W	A	A	-	2	-	S
69 - HIGH GLOSS ENAMEL	S	W/I	W/A	R/B	-	1/2	S - LAC TNR	D1
0 - WOOD STAIN	S	W/I	W/A	04.*	-	1/2	S - PNT TNR	S

* wipe cloth

CODES:

1 (Paint Type): W = water-based, S = solvent-based

2 (Surface Type): W = wood, M = metal, P = plaster, C = cement, L = plastic, O2 = other (specify in NOTES); I = interior, E = exterior

3 (Surface Preparation): W = wash, S = scrape, C = chemical stripping, A = sanding, PW = prime (water), PS = prime (solvent), O3 = other (specify in NOTES); leave blank for "none"

4 (Application Method): A = aerosol, B = brush, D = disposable brush or roller, R = roller, S = spray apparatus, O4 = other (specify in NOTES)

5 (Thinning Practices): M = mineral spirits, P = paint thinner, W = water, A = alcohol, O5 = other (specify in NOTES); leave blank for "none"

6 (Number of coats): indicate number of coats with numeral (e.g., 1, 2)

7 (Cleanup Method): W = water, S = solvent, N = newspapers, R = cloth rags, T = paper towels, D = dispose (no reuse), O7 = other (specify in NOTES)

8 (Coating Disposal): S = Store in original container, D1 = dispose in household trash, D2 = dispose at household hazardous waste collection center, R = rinse remaining paint from container, O8 = other (specify in NOTES)

CONSUMER PAINT SURVEY FORM

Store Name: Imperial Paint Phone #: _____

Address: 150 E. ORANGETHORPE ZIP Code: 92620

City: ANAHEIM Date: 2-6-93

Interviewer: MAUREEN CARREON

Have you purchased any paints or other coatings today? (Y/N)
(proceed with interview only if customer has purchased paints or coatings)

Will you participate in a confidential interview on paint products? The interview will take only 2 to 5 minutes (Y/N). [IF ANSWER IS NO] Why do you decline? _____

For Questions 1 - 6, read the question, then fill in appropriate portions of Table 1 on the basis of the customer's response. If the customer expresses uncertainty or is confused by the question, read the possible choices from those listed under CODES below Table 1 and ask the customer to select from those choices. You may assist the customer in examining coating and thinner containers to ascertain their composition.

1. What types of paints/coatings did you purchase? Wood stain - oak
2. To what surfaces will each coating be applied? Oak coffee table - Refinishing
3. How will you prepare the surface prior to applying the coating? Sand and smooth
4. How will you apply each type of coating? apply with cotton cloth and wipe Dry
5. Will any of the coatings be thinned prior to use? If so, with what type of thinner? No
6. How many coats do you plan to apply? Depends on how dark you want it
7. How will you clean up each type of coating? I do it twice. LACQUER THINNER
8. How will you dispose of unused coatings? SAVE it to do the end table
9. What would you do if aerosol products were not available? *To be asked only of customers purchasing aerosol products* N/A

At this point, the interviewer will explain that there are a few more questions that he/she would like to ask the customer, and this second portion of the interview will take about 5 minutes. If the customer does not wish to continue the interview, thank them for their participation and conclude the interview.

2

CONSUMER PAINT SURVEY FORM

Store Name: Imperial Paint Phone #: _____

Address: 150 E. ORANGETHORE ZIP Code: 92620

City: ANAHEIM Date: 2-6-93

Interviewer: MAUREEN CARREON

Have you purchased any paints or other coatings today? (Y)N)
(proceed with interview only if customer has purchased paints or coatings)

Will you participate in a confidential interview on paint products? The interview will take only 2 to 5 minutes (Y)N). [IF ANSWER IS NO] Why do you decline? _____

For Questions 1 - 6, read the question, then fill in appropriate portions of Table 1 on the basis of the customer's response. If the customer expresses uncertainty or is confused by the question, read the possible choices from those listed under CODES below Table 1 and ask the customer to select from those choices. You may assist the customer in examining coating and thinner containers to ascertain their composition.

1. What types of paints/coatings did you purchase? INDUSTRIAL Main| High Performance AND aerosol cans
2. To what surfaces will each coating be applied? sidewalk curb
3. How will you prepare the surface prior to applying the coating? wash it off and let Dry
4. How will you apply each type of coating? Roller and aerosol Can
5. Will any of the coatings be thinned prior to use? If so, with what type of thinner? No
6. How many coats do you plan to apply? 2 base paint, aerosol can to do the
7. How will you clean up each type of coating? paint thinner/ stencils
8. How will you dispose of unused coatings? save for next job
9. What would you do if aerosol products were not available? *To be asked only of customers purchasing aerosol products* use paint and paint brush

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At this point, the interviewer will explain that there are a few more questions that he/she would like to ask the customer, and this second portion of the interview will take about 5 minutes. If the customer does not wish to continue the interview, thank them for their participation and conclude the interview.

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10. Do you use aerosol paint products:
    frequently? ____
    occasionally? ✓
    seldom? ____
    never? ____

11. For what types of projects do you use aerosol products? STENCILING REFINishing

12. What are the advantages of using aerosol products for these types of projects? EASY TO APPY, No Clean-Up

13. Do you think the quality of available paints has changed over time? (Y/N)
    If so, in what ways? The quality of paint is not as good as it used to be. We are using water-based paint a lot more

14. What suggestions do you have for reducing the amounts of paints and thinners needed to complete typical household painting projects? Use oil based paint to start out. Wall surfaces can be washed off may not need to be repainted as much.

15. Why did you purchase a (solvent/water)-based rather than a (water/solvent)-based product? it lasted longer, easier to clean up the surfaces with damaging the surface.

CONSUMER PAINT SURVEY FORM

Store Name: Imperial Paint Phone #: _____

Address: 1500 E. ORANGETHORPE ZIP Code: 92620

City: ANAHEIM Date: 2-6-93

Interviewer: MAUREEN CARREÓN

Have you purchased any paints or other coatings today? (Y/N)
(proceed with interview only if customer has purchased paints or coatings)

Will you participate in a confidential interview on paint products? The interview will take only 2 to 5 minutes (Y/N). [IF ANSWER IS NO] Why do you decline? _____

For Questions 1 - 6, read the question, then fill in appropriate portions of Table 1 on the basis of the customer's response. If the customer expresses uncertainty or is confused by the question, read the possible choices from those listed under CODES below Table 1 and ask the customer to select from those choices. You may assist the customer in examining coating and thinner containers to ascertain their composition.

1. What types of paints/coatings did you purchase? INDUSTRIAL MAINTENANCE / HIGH Performance ENAMELS
2. To what surfaces will each coating be applied? METAL FENCE
3. How will you prepare the surface prior to applying the coating? SANDING - MAKE SURE THERE IS NO RUST.
4. How will you apply each type of coating? Brush it onto the fence
5. Will any of the coatings be thinned prior to use? If so, with what type of thinner? No, usually they are ready to do. need to shake and stir it.
6. How many coats do you plan to apply? one or two
7. How will you clean up each type of coating? Paint thinner
8. How will you dispose of unused coatings? use it up. I may not have enough.

9. What would you do if aerosol products were not available? *To be asked only of customers purchasing aerosol products* N/A

At this point, the interviewer will explain that there are a few more questions that he/she would like to ask the customer, and this second portion of the interview will take about 5 minutes. If the customer does not wish to continue the interview, thank them for their participation and conclude the interview.

4

CONSUMER PAINT SURVEY FORM

Store Name: Imperial Paint Phone #: _____

Address: 1500 E. Orangethorpe ZIP Code: 92620

City: Anaheim Date: 2-6-93

Interviewer: Maureen Carreón

Have you purchased any paints or other coatings today? (Y/N)
(proceed with interview only if customer has purchased paints or coatings)

Will you participate in a confidential interview on paint products? The interview will take only 2 to 5 minutes (Y/N). [IF ANSWER IS NO] Why do you decline? _____

For Questions 1 - 6, read the question, then fill in appropriate portions of Table 1 on the basis of the customer's response. If the customer expresses uncertainty or is confused by the question, read the possible choices from those listed under CODES below Table 1 and ask the customer to select from those choices. You may assist the customer in examining coating and thinner containers to ascertain their composition.

1. What types of paints/coatings did you purchase? water based paint CLEAR wood finish
2. To what surfaces will each coating be applied? Refinishing wood table
3. How will you prepare the surface prior to applying the coating? Sanding paint; high Gloss
4. How will you apply each type of coating? 2 coats of Paint, one coat of clear finish
5. Will any of the coatings be thinned prior to use? If so, with what type of thinner?
6. How many coats do you plan to apply? Paint brushes most likely not
7. How will you clean up each type of coating? water for the paint. LACQUER for clear finish
8. How will you dispose of unused coatings? Household Hazwaste Disposal

9. What would you do if aerosol products were not available? *To be asked only of customers purchasing aerosol products* N/A

At this point, the interviewer will explain that there are a few more questions that he/she would like to ask the customer, and this second portion of the interview will take about 5 minutes. If the customer does not wish to continue the interview, thank them for their participation and conclude the interview.

CONSUMER PAINT SURVEY FORM

Store Name: Imperial Paint Phone #: _____

Address: 1500 E ORANGETHROPE ZIP Code: 92620

City: ANAHEIM Date: 2-6-93

Interviewer: MAUREEN CARREÓN

Have you purchased any paints or other coatings today? (Y)N)
(proceed with interview only if customer has purchased paints or coatings)

Will you participate in a confidential interview on paint products? The interview will take only 2 to 5 minutes(Y)N). [IF ANSWER IS NO] Why do you decline? _____

For Questions 1 - 6, read the question, then fill in appropriate portions of Table 1 on the basis of the customer's response. If the customer expresses uncertainty or is confused by the question, read the possible choices from those listed under CODES below Table 1 and ask the customer to select from those choices. You may assist the customer in examining coating and thinner containers to ascertain their composition.

1. What types of paints/coatings did you purchase? High Gloss enamels
2. To what surfaces will each coating be applied? Wooden fence
3. How will you prepare the surface prior to applying the coating? sand off the paint that
4. How will you apply each type of coating? Brush it on is peeling off
5. Will any of the coatings be thinned prior to use? If so, with what type of thinner? No
6. How many coats do you plan to apply? Two coats
7. How will you clean up each type of coating? paint thinner
8. How will you dispose of unused coatings? use it up or save it for touch-up

9. What would you do if aerosol products were not available? *To be asked only of customers purchasing aerosol products* N/A

At this point, the interviewer will explain that there are a few more questions that he/she would like to ask the customer, and this second portion of the interview will take about 5 minutes. If the customer does not wish to continue the interview, thank them for their participation and conclude the interview.

6

CONSUMER PAINT SURVEY FORM

Store Name: Sinclair Paint Phone #: _____

Address: 1260 W. 7th St. ZIP Code: _____

City: Upland, CA 91786 Date: 2-12-93

Interviewer: MAUREEN CARREON

Have you purchased any paints or other coatings today? (Y/N)
(proceed with interview only if customer has purchased paints or coatings)

Will you participate in a confidential interview on paint products? The interview will take only 2 to 5 minutes (Y/N). [IF ANSWER IS NO] Why do you decline? _____

For Questions 1 - 6, read the question, then fill in appropriate portions of Table 1 on the basis of the customer's response. If the customer expresses uncertainty or is confused by the question, read the possible choices from those listed under CODES below Table 1 and ask the customer to select from those choices. You may assist the customer in examining coating and thinner containers to ascertain their composition.

1. What types of paints/coatings did you purchase? Enamels Semi - Gloss
2. To what surfaces will each coating be applied? Iron Fence
3. How will you prepare the surface prior to applying the coating? Scrap ; SAND
4. How will you apply each type of coating? Brushes
5. Will any of the coatings be thinned prior to use? If so, with what type of thinner? no
6. How many coats do you plan to apply? 1 - 2
7. How will you clean up each type of coating? Paint thinner
8. How will you dispose of unused coatings? next application
9. What would you do if aerosol products were not available? *To be asked only of customers purchasing aerosol products* _____

At this point, the interviewer will explain that there are a few more questions that he/she would like to ask the customer, and this second portion of the interview will take about 5 minutes. If the customer does not wish to continue the interview, thank them for their participation and conclude the interview.