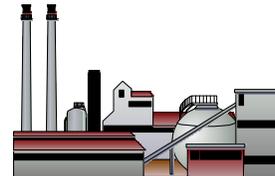
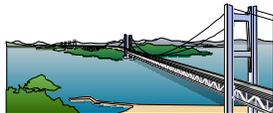
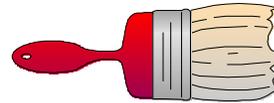


Architectural and Industrial Maintenance Coatings Survey

1998



California Environmental Protection Agency

Air Resources Board

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SUBMITTAL OF FORMS

Please return the completed survey to the following address:

California Air Resources Board
P.O. Box 2815
Sacramento, CA 95812
ATTN: SSD/Criteria Pollutants Branch
Architectural Coatings Survey

ELECTRONIC SUBMITTAL OPTIONS

Electronic submittal options are available. Details can be obtained by contacting the ARB or by visiting our web site at "www.arb.ca.gov/arch/arch.htm."

Additional survey packages can also be downloaded from this site.

QUESTIONS

If you have any questions or other requests please call:

Mike Jaczola	or write	California Air Resources Board
tel 916.327.1515		P.O. Box 2815
or		Sacramento, CA 95812
Jim Behrmann		ATTN: SSD/Criteria Pollutants Branch
tel 916.322.8273		Architectural Coatings Survey
		tel 916.322.6020 fax 916.322.6088

INTRODUCTION

Thank you for participating in this survey of architectural and industrial maintenance coatings!

As general introduction, the survey asks you to complete four forms:

FORM I: Company information

FORM II: Product information

FORM III: Ingredient information for single or grouped products

FORM IV: Ingredient information for single or grouped products

If your company is the *responsible party*, please complete FORM I and the appropriate number of FORMS II, III, and IV.

“Responsible party” means the company, firm or establishment which is listed on the products’ label. If the label lists two companies, firms or establishments, the responsible party is the party which the product was “manufactured for” or “distributed by,” as noted on the label.

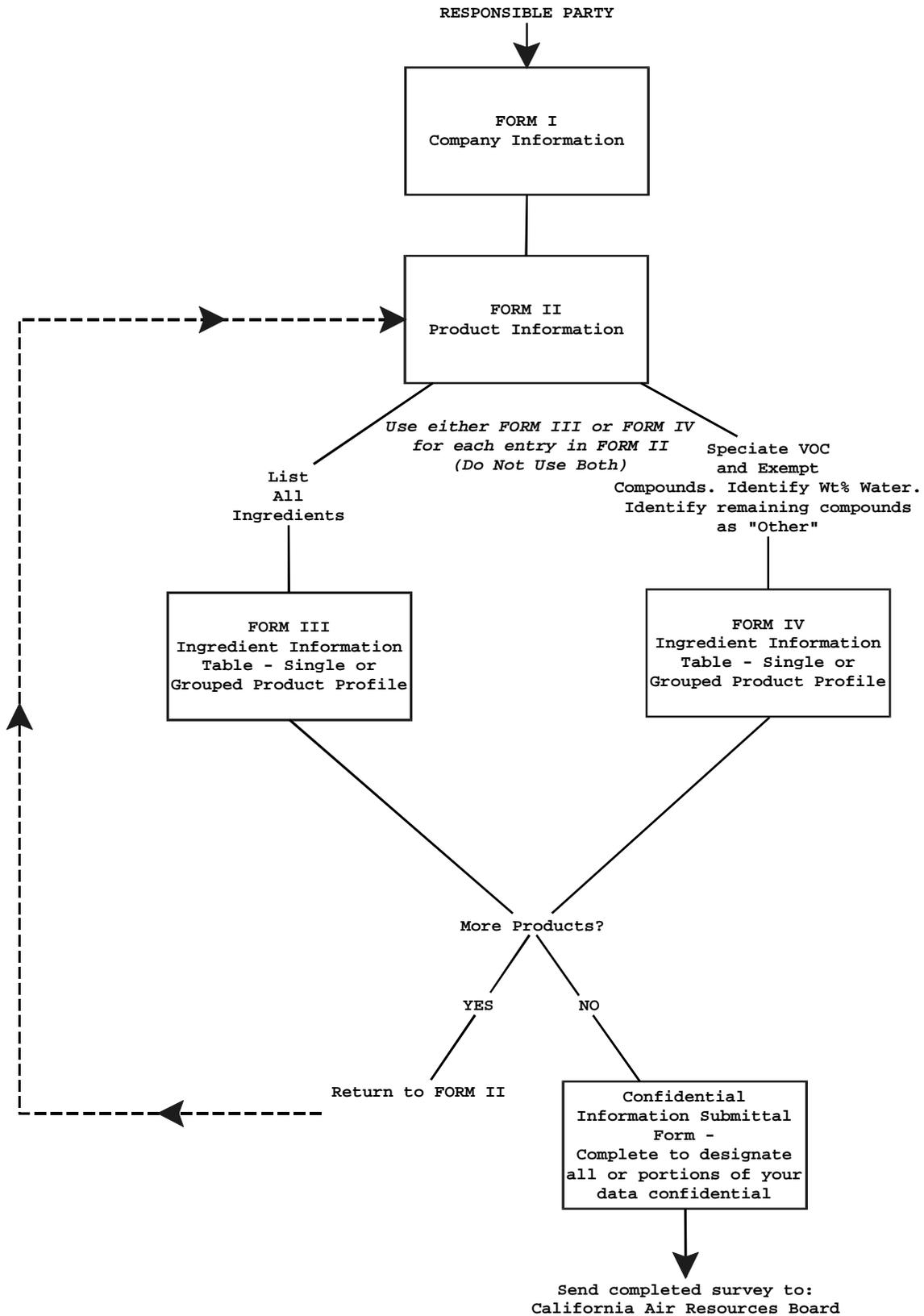
If your company is not the *responsible party* for any architectural and industrial maintenance coating sold in California, please complete and submit only the top portion of FORM I to the Air Resources Board.

How will this survey information be used? Our existing inventory of air pollution emissions from architectural coatings is based on a survey of 1990 information that was last collected in 1993. Inventory information is necessary for planning and modeling to forecast the effects of new regulatory efforts. Accurate inventory information produces better results, and also assures that businesses are properly credited for successful reductions in emissions. Finally, the ingredient information requested will be used to study whether or not additional flexibility can be built into regulations based on the reactivity of ingredients.

We have tried to make this survey as simple as possible. As noted in the accompanying cover letter, we worked with several air pollution control districts as well as several industry members and the National Paint and Coatings Association on the content of the survey. However, you may very well have questions as you complete the survey. Do not hesitate to call us and we will answer your questions as quickly as possible.

Thank you again, in advance, for your time and participation in this survey.

FLOW DIAGRAM FOR RESPONSIBLE PARTY



INSTRUCTIONS FOR COMPLETING SURVEY FORM I

The following instructions apply to FORM I - Company Information. General company information such as name and address are needed, as well as information regarding the company economics and business type. This information will assist in characterizing the types of businesses that are included in the survey as required by state law.

If your company is the *responsible party* please complete FORM I and the appropriate number of FORMS II, III, and IV.

"Responsible party" means the company, firm or establishment which is listed on the products' label. If the label lists two companies, firms or establishments, the responsible party is the party which the product was "manufactured for" or "distributed by," as noted on the label.

If your company is not the *responsible party* for any architectural and industrial maintenance coating please complete and submit only the top portion of FORM I to the ARB.

Company Name: Please enter the name of the company also known as **responsible party**. This name should also be the company name on FORM II - Product Information.

Division Name: If the respondent to the survey is representing a division of the company, please enter the name of the division.

Address: Enter the mail address of the company or division responsible for completing the survey.

Contact Name: Name of the person to be contacted by the ARB if there are questions about the survey responses.

Title: Business title of the contact person.

Telephone: Telephone number for the contact person.

Fax: Fax number of the contact person.

Responsible Party: Check the appropriate box (Yes or No) to indicate if your company is the responsible party (see definition above) for any architectural and industrial maintenance coatings that were sold in California.

Note: If you are not the responsible party please stop here and submit FORM I to the California Air Resources Board, P.O. Box 2815, Sacramento, CA 95812 ATTN: SSD/Criteria Pollutants Branch - Architectural Coatings Survey.

Type of Business: Check the box(s) that describes the primary type of business conducted by your company or division.

Company Marketing Classification: Check the box that describes your company's primary marketing classification.

Independent Ownership: Check the appropriate answer box (Yes or No) to indicate if the company is independently owned. If the company is not independently owned, enter the name and address of the parent company in the spaces provided.

Standard Industrial Classification (SIC) codes: Enter your company's primary SIC codes (see page 21).

Gross Annual Receipts: Check the box which identifies the gross annual receipts generated by the company or division in California.

Employees: Check the box which identifies the number of employees (including part-time and temporary staff) of the company or division.

Certification: Please have a designated contact person certify the accuracy of the completed Company Information (FORM I), Product Information (FORM II), and the Ingredient Information Tables (FORM III & IV).

INSTRUCTIONS FOR COMPLETING SURVEY FORM II

This form requests specific information on each product or grouping of products. As explained below, products may be grouped under certain conditions. Only complete FORM II Product Information if you are the *responsible party* for a product sold in California during the calendar year 1996.

Entry #: Enter a number (1, 2, ...) for each entry on FORM II. This number will be used to relate products listed in this table to the ingredient information table in Forms III and IV.

Coating Code: Enter the code from the list below which best represents the reported coatings' category (see definitions on pages 12 - 17).

<u>Code</u>	<u>Coating</u>	<u>Code</u>	<u>Coating</u>	<u>Code</u>	<u>Coating</u>
01	Antenna	22	Magnesite cement		Stains:
02	Anti-fouling	23	Mastic texture	41	clear
03	Anti-graffiti	24	Metallic pigmented	42	semitransparent
04	Bituminous	25	Multi-color	43	opaque
05	Bond breakers		Nonflats:	44	low solids
06	Chalkboard	26	High Gloss	45	Swimming Pool
	resurfacers	27	Medium Gloss	46	Swimming Pool
07	Concrete Curing	28	Low Gloss		Repair
	Compounds	29	Nuclear	47	Thermoplastic rubber
08	Dry Fog	30	Pre-treatment Wash		and mastics
09	Extreme high		Primers	48	Traffic
	durability	31	Primers, Sealers and		Varnish:
	Fire retardant:		Undercoaters	49	clear
10	clear		Quick dry:	50	semitransparent
11	opaque	32	Enamels		Waterproofing
12	Flats	33	Primers, Sealers		sealers:
13	Floor		and Undercoaters	51	clear
14	Flow	34	Repair & maintenance	52	opaque
15	Form release		thermoplastic		Wood preservatives:
	compounds	35	Roof	53	below ground
16	Graphic arts (sign)	36	Rust preventative	54	clear
17	Heat reactive	37	Sanding sealers	55	semitransparent
18	High Temperature	38	Sealers	56	opaque
19	Industrial		Shellacs:	57	low solids
	Maintenance	39	clear	58	Other (Identify
	Lacquer:	40	opaque		use/application)
20	clear				
21	opaque				

Number of Coatings Grouped - Enter the number of individual coatings that are grouped as one entry. Color varieties of a coating that remain within one VOC range should be considered as one coating. Enter "1" if you are reporting one coating individually.

In reporting products for the survey, coatings within a coating category can be **reported either individually or as a group**. However, you may group coatings in a category together only if the following conditions are met:

- (1) The coatings belong to the same category (e.g., flats - category code 12). Color varieties of the same coating formulation should be considered one coating;
- (2) The coatings have the same carrier technology (e.g., solvent-borne, water-borne, 100% solids, etc.); and
- (3) The coatings have VOC contents (less water and less exempt compounds) that are within one VOC range.

<u>Range g/l</u>	<u>Range g/l</u>	<u>Range g/l</u>
0 - 50	251 - 300	501 - 550
51 - 100	301 - 350	551 - 600
101 - 150	351 - 400	601 - 650
151 - 200	401 - 450	651 - 700
201 - 250	451 - 500	701 and above

Interior/Exterior/Dual: Indicate whether the coating or coatings are designed for "interior" or "exterior" application. Enter "Dual" for dual purpose interior/exterior products.

Carrier Technology: Identify the carrier technology of the coating(s): Solvent-borne (SB), Water-borne (WB), or 100% Solids (S).

Note: Use "Sales Weighted Average" (SWA) for the next four data fields if you have chosen to group coatings. These entries include: % by volume solids, VOC Actual, VOC Regulatory, and VOC Regulatory after recommended thinning. See calculations on pages 18 and 19, and page 22 for sample calculation of SWA for VOC Regulatory.

% by Volume Solids^{SWA}: Enter the solids content of the coating(s) as percent of total coating volume. (See calculations on pages 18 & 19)

Density^{SWA}: Enter the mass per unit volume of the coating (g/l).

VOC Actual^{SWA}: Enter the VOC content of the coating(s), as supplied, in grams of VOC per liter of coating. This is the weight of all volatile materials less the weight of water and less the weight of exempt compounds per the entire volume of the coating. This is NOT the same as VOC Regulatory. (See calculations pages 18 & 19)

VOC Regulatory^{SWA}: Enter the VOC content of the coatings(s), as supplied, in grams of VOC per liter of coating, less water, less exempt compounds, and less any colorant added to the tint bases. This may be determined from the chemical composition data or previously determined by EPA Method 24, 40 CFR Part 60, as amended in Federal Register Vol. 57, No. 133, July 10, 1992, or ASTM D 3960-92. (See calculations on pages 18 & 19) Do not perform additional analysis for purposes of completing this survey.

Recommended Thinning: If manufacturer recommends thinning identify the diluent and ratio (e.g., mix 1 gal of product with ½ pint mineral spirits). Thinning information usually can be found on the coating can, label, or any other accompanying literature from the manufacturer.

VOC Regulatory After Recommended Thinning^{SWA}: Enter the VOC Regulatory after recommended thinning of the coating(s) in grams of VOC per liter of Material. (See calculations on pages 18 & 19) NOTE - Use of water or an exempt solvent without co-solvents for thinning will not affect the VOC Regulatory content of the coating.

1996 California Sales in Gallons: Enter the California sales of the coating, in gallons, for the calendar year 1996. Identify those gallons which are sold in containers one quart or less, and containers larger than one quart.

Estimating California Sales: If California specific sales data are not available, sales may be estimated using national or regional sales figures that are apportioned appropriately. If you use population as a basis for determining sales, please use the U.S. Resident Population estimates provided on page 20 of this survey.

Comments: Enter any information that will help clarify entries made for FORM II.

Page ____ of ____: Enter the current page # out of the total pages submitted for FORM II.

INSTRUCTIONS FOR COMPLETING SURVEY FORM III
Ingredient Information Table
Single or Grouped Product Profile

FORM III requests ingredient information about single or grouped products. Use FORM III if you have elected to provide all product ingredients. In this table provide all ingredients which are part of the products' formulation. Provide this information for each entry in FORM II.

For grouped products, report the ingredients of the sales leader in the group.

Entry # From FORM II: Enter the Entry # from FORM II to which this ingredient list applies.

Ingredient #: Provide a numeric value (sequential) for each ingredient.

Ingredient Name: Enter the chemical name of the ingredient. Chemical names must be distinguished from trade names. For example, the chemical name of SD 40 Alcohol is ethanol. Enter the trade name of the ingredient if the chemical name is unknown.

CAS#: Please enter the Chemical Abstract Service (CAS) number for the ingredient. A listing of CAS numbers is included as Attachment B for your information.

Weight % (of total material): Enter the percent by weight of each ingredient in the final product. If the ingredient is a mixture of known components, list the components separately with their individual weight percentages in the final product. If the components of a mixture cannot be determined, list the ingredient as a single entity.

Reporting Level - List ingredients that individually amount to 1.0% or greater by weight of the final product.

Aggregated Ingredients < 1.0%: Aggregate each of the remaining ingredients that individually account for less than 1.0% of the final product and enter the weight percent.

Total of All Ingredients: The sum of all ingredients in the table must equal 100 percent by weight. If this value does not sum to 100, please check the component percentages.

Comments: Enter any information that will help clarify entries made for FORM III.

Page ____ of ____: If the ingredient list for one entry from FORM II spans multiple pages enter the current page # of the total.

INSTRUCTIONS FOR COMPLETING SURVEY FORM IV
Ingredient Information Table
Single or Grouped Product Profile

FORM IV requests ingredient information about single or grouped products. Use FORM IV if you have elected to identify each Volatile Organic Compound (VOC) and Exempt Compound (Exempt VOC). Any VOCs less than 1.0 percent by weight should be aggregated and entered as a single weight percent value. Any Exempt Compounds less than 1.0 percent by weight should be aggregated and entered as a single weight percent value. Identify the weight percent water. Any remaining ingredients should be included in "All Other" for a total of all ingredients equaling 100 percent by weight of the product. Provide this information for each entry in FORM II.

For grouped products, report the ingredients of the sales leader in the group.

Entry # From FORM II: Enter the Entry # from FORM II to which this ingredient list applies.

Ingredient #: Provide a numeric value (sequential) for each ingredient.

Ingredient Name: Enter the chemical name of the ingredient. Chemical names must be distinguished from trade names. For example, the chemical name of SD 40 Alcohol is ethanol. Enter the trade name of the ingredient if the chemical name is unknown.

CAS#: Please enter the Chemical Abstract Service (CAS) number for the ingredient. A listing of CAS numbers is included as Attachment B.

Weight % (of total material): Enter the percent by weight of each ingredient in the final product. If the ingredient is a mixture of known components, list the components separately with their individual weight percentages in the final product. If the components of a mixture cannot be determined, list the ingredient as a single entity.

Reporting Level - List ingredients that individually amount to 1.0% or greater by weight of the final product.

VOCs: Enter the name, CAS #, and percent by weight of each VOC in the final product.

Exempt Compounds (Exempt VOCs): Enter the name, CAS #, and percent by weight of each Exempt VOC in the final product.

Aggregated VOCs < 1.0%: Aggregate each of the remaining VOCs that individually account for less than 1.0% of the final product and enter the weight percent.

Aggregated Exempt Compounds < 1.0%: Aggregate each of the remaining Exempt Compounds that individually account for < 1.0% of the final product and enter the weight percent.

ALL Other (Remaining Ingredients): Enter remaining non-volatile ingredients.

Total of All Ingredients: The sum of all ingredients in the table must equal 100 percent by weight. If this value does not sum to 100, please check the component percentages. This means that the following:

<u>Ingredient Groups</u>	<u>Wt%</u>
Sum of VOCs	#
Sum of Exempt Compounds	#
Aggregated VOCs < 1.0%	#
Aggregated Exempt Compounds < 1.0%	#
Water	#
All Other	#
	<hr/>
Total of All Ingredients	100%

Comments: Enter any information that will help clarify entries made for FORM IV.

Page ____ of ____: If the ingredient list for one entry from FORM II spans multiple pages enter the current page # of the total.

DEFINITIONS

Antenna Coating: means a coating formulated and recommended for application to equipment and associated structural appurtenances that are used to receive or transmit electromagnetic signals.

Anti-fouling Coating: means a coating formulated and recommended for application to submerged stationary structures and their appurtenances to prevent or reduce the attachment of marine or freshwater biological organisms.

Anti-Graffiti Coatings: Industrial maintenance coatings formulated for and applied to exterior surfaces to resist repeated scrubbing and exposure to harsh solvents and cleaners used to remove graffiti.

Appurtenance: means any accessory to a stationary structure, whether installed or detached at the proximate site of installation, including but not limited to: bathroom and kitchen fixtures; cabinets; concrete forms; doors; elevators; fences; hand railings; heating equipment, air conditioning equipment, and other fixed mechanical equipment or stationary tools; lamp posts; partitions; pipes and piping systems; rain gutters and downspouts; stairways, fixed ladders, catwalks, and fire escapes; and window screens.

Architectural Coatings: Coatings applied to stationary structures and their appurtenances, to mobile homes, to pavements, or to curbs.

Bituminous Coating: Coatings formulated and recommended for roofing, pavement sealing, or waterproofing that incorporates bitumens. Bitumens are black or brown materials including, but not limited to, asphalt, tar, pitch, and asphaltite that are soluble in carbon disulfide, consist mainly of hydrocarbons, and are obtained from natural deposits of asphalt or as residues from the distillation of crude petroleum or coal.

Bond Breakers: Coatings applied between layers of concrete to prevent the freshly poured top layer of concrete from bonding to the layer over which it is poured.

Carbonates: Carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate.

Chalkboard Resurfacer: means a coating formulated and recommended for application to chalkboards to restore a suitable surface for writing with chalk.

Clear Coating: means a coating that produces a dry film that allows light to pass through, so that the substrate may be distinctly seen.

Clear Wood Finishes: Clear and semi-transparent coatings, including lacquers and varnishes, applied to wood substrates to provide a transparent or translucent solid film.

Coating: means a protective, decorative, or functional film applied to a surface. Such materials include, but are not limited to, paints, topcoats, varnishes, sealers, stains, washcoats, basecoats, enamels, and temporary protective coatings.

Colorant: Solutions of dyes or suspensions of pigments that are added to coatings during production, in paint stores or on-site to produce the desired colors.

Concrete Curing Compounds: Coatings applied to freshly poured concrete to retard the evaporation of water.

Density: Mass per unit volume.

Dry Fog Coatings: Coatings formulated only for spray application such that over spray droplets dry before subsequent contact with other surfaces.

Exempt Compounds: means any of the following organic compounds (compounds with negligible photochemical reactivity):

methane;	[74-82-8]*
methylene chloride (dichloromethane);	[75-09-2]
1,1,1-trichloroethane (methyl chloroform);	[71-55-6]
trichlorofluoromethane (CFC-11);	[75-69-4]
dichlorodifluoromethane (CFC-12);	[75-43-4]
1,1,2-trichloro-1,2,2-trifluoroethane (CFC-113);	[76-13-1]
1,2-dichloro-1,1,2,2-tetrafluoroethane (CFC-114);	[76-14-2]
chloropentafluoroethane (CFC-115);	[76-15-3]
chlorodifluoromethane (HCFC-22);	[75-45-6]
1,1,1-trifluoro-2,2-dichloroethane (HCFC-123);	[306-83-2]
2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124);	[2837-89-0]
1,1-dichloro-1-fluoroethane (HCFC-141b);	[1717-00-6]
1-chloro-1,1-difluoroethane (HCFC-142b);	[75-68-3]
trifluoromethane (HFC-23);	[75-46-7]
pentafluoroethane (HFC-125);	[354-33-6]
1,1,2,2-tetrafluoroethane (HFC-134);	[359-35-3]
1,1,1,2-tetrafluoroethane (HFC-134a);	[811-97-2]
1,1,1-trifluoroethane (HFC-143a);	[420-46-2]
1,1-difluoroethane (HFC-152a);	[75-37-6]
cyclic, branched, or linear completely methylated siloxanes;	[various]
the following classes of perfluorocarbons:	[various]
(A) cyclic, branched, or linear, completely fluorinated alkanes;	
(B) cyclic, branched, or linear, completely fluorinated ethers with no unsaturations;	
(C) cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and	
(D) sulfur-containing perfluorocarbons with no unsaturations and with the sulfur bonds only to carbon and fluorine; and	

the following low-reactive organic compounds which have been exempted by the U.S. EPA:

acetone;	[67-64-1]
ethane;	[74-84-0]
[perchloroethylene]**; and	[127-18-4]
parachlorobenzotrifluoride (1-chloro-4-trifluoromethyl benzene).	[98-56-6]

* NOTE: Chemical Abstract Service (CAS) identification numbers have been included in brackets [] for convenience.

** The Air Resources Board exempted Perchloroethylene from the definition of VOC in the Consumer Products regulations in November 1996. Perchloroethylene is under evaluation for other inventory categories.

Exterior Coating: means an architectural coating formulated and recommended for use in conditions exposed to the weather.

Extreme High Durability Coating: means an air dry fluoropolymer-based coating that is formulated and recommended for the protection of architectural subsections and that meets the weathering requirements of American Architectural Manufacturer's Association specification 605.2 Section 7.9.

Fire-Retardant Coatings: Coatings which have a flame spread index of less than 25 when tested in accordance with ASTM Designation E-84-87, " Standard Test Method for Surface Burning Characteristics of Building Material," after application to Douglas Fir according to the manufacturer's recommendations.

Flat Architectural Coatings: Coatings which register a gloss of less than 15 on an 85 degree meter or less than 5 on a 60 degree meter.

Floor Coating: means a coating that is formulated and recommended for application to flooring including, but not limited to, decks, porches, and steps and that has a high degree of abrasion resistance.

Flow coating: means a coating that is used by electric power companies or their subcontractors to maintain the protective coating systems present on utility transformer units.

Form Release Compounds: Coatings applied to a concrete form to prevent the freshly poured concrete from bonding to the form. The form may consist of wood, metal, or some material other than concrete.

Graphic Arts Coatings (Sign Paints): Coatings formulated for and hand-applied by artists using brush or roller techniques to indoor and outdoor signs (excluding structural components) and murals, including lettering enamels, poster colors, copy blockers and bulletin enamels.

Heat Reactive Coating: means a high performance phenolic-based coating requiring a minimum temperature of 191 °C (375 °F) to 204 °C (400 °F) to obtain complete polymerization or cure. These coatings are formulated and recommended for commercial and industrial use to protect substrates from degradation and maintain product purity in which one or more of the following extreme conditions exist:

1. Continuous or repeated immersion exposure to 90 to 98 percent sulfuric acid or oleum;
2. Continuous or repeated immersion exposure to strong organic solvents;
3. Continuous or repeated immersion exposure to petroleum processing at high temperatures and pressures; and
4. Continuous or repeated immersion exposure to food or pharmaceutical products which may or may not require high temperature sterilization.

Importer: A company, group, or individual that brings architectural coatings from a location outside the United States into the United States for sale or distribution within the United States.

High Temperature Coatings: Industrial maintenance coatings formulated for and applied to substrates exposed continuously or intermittently to temperatures above 400 ° F.

Industrial Maintenance Coatings: High performance coatings formulated for and applied to substrates in industrial, commercial, or institutional situations that are exposed to one or more of the following extreme environmental conditions:

- (I) immersion in water, waste water, or chemical solutions (aqueous and non-aqueous solutions), or chronic exposure of interior surfaces to moisture condensation;
- (ii) acute or chronic exposure to corrosive, caustic or acidic agents, or to chemicals, chemical fumes, chemical mixtures, or solutions;
- (iii) repeated exposure to temperatures in excess of 250 ° F;
- (iv) repeated heavy abrasion, including mechanical wear and repeated scrubbing with industrial solvents, cleansers, or scouring agents; or
- (v) exterior exposure of metal structures.

Industrial Maintenance Coatings are not for residential use or use in areas of industrial, commercial, or institutional facilities which do not experience industrial environmental conditions such as office space and meeting rooms.

Interior Coating: means an architectural coating formulated and recommended for use in conditions not exposed to natural weathering.

Label: Any written, printed, or graphic matter affixed to, applied to, attached to, blown into, formed, molded into, embossed on, or appearing upon any architectural coating container for purposes of branding, identifying, or giving information with respect to the product, use of the product, or contents of the container.

Lacquers: Wood finishes formulated with nitrocellulose or synthetic resins to dry by evaporation without chemical reaction, including lacquer sanding sealers.

Low Solids Stains and Wood Preservatives: Stains and wood preservative containing one pound or less of solids per gallon (120 grams per liter) of coating material and for which at least half of the volatile component is water.

Magnesite Cement Coatings: Coatings formulated for and applied to magnesite cement decking to protect the magnesite cement substrate from erosion by water.

Manufacturer: A company, group, or individual that produces, packages, or repackages architectural coatings for sale or distribution in the United States.

Mastic Texture Coatings: Coatings formulated to cover holes and minor cracks and to conceal surface irregularities, and applied in a thickness of at least 10 mils (dry, single coat).

Metallic Pigmented Coatings: Coatings containing at least 0.4 pounds of metallic pigment per gallon of coating as applied.

Multi-Color Coating: Coatings which exhibit more than one color when applied and which are packaged in a single container and applied in a single coat.

Nonflat Architectural Coatings: Coatings which register a gloss of 15 or greater on an 85 degree meter or 5 or greater on a 60 degree meter.

Nonflats - high gloss: Nonflat coatings which register a gloss of 70 or more on a 60 degree meter.

Nonflats - medium gloss: Nonflat coatings which register a gloss of 20 or more but less than 70 on a 60 degree meter.

Nonflats - low gloss: Nonflat coatings which register a gloss greater than 5 or more but less than 20 on a 60 degree meter.

Nuclear Coating: means any protective coating used to seal porous surfaces such as steel (or concrete) that otherwise would be subject to intrusion by radioactive materials. These coatings must be resistant to long-term (service life) cumulative radiation exposure (American Society for Testing and Materials Method D4082), relatively easy to decontaminate (American Society for Testing and Materials Method D4256), and resistant to various chemicals to which the coatings are likely to be exposed (American Society for Testing and Materials Method D3912). General protective requirements are outlined by the Department of Energy (formerly U.S. Atomic Energy Commission Regulatory Guide 1.54).

Opaque Coating: A coating producing a dry film that does not allow light to pass through, so that the substrate is concealed from view.

Pre-treatment Wash Primers: Coatings which contain a minimum of 0.5% acid by weight, applied directly to bare metal surfaces to provide necessary surface etching.

Primers: Coatings formulated and applied to substrates to provide a firm bond between the substrate and subsequent coats.

Quick Dry Enamels: Non-flat coatings which comply with the following:

- (I) capable of being applied directly from the container by brush or roller under normal conditions, normal conditions being temperatures between 60 °F and 80°F.
- (ii) when tested in accordance with ASTM D 1640, they shall: set to touch in two hours or less, dry hard in eight hours or less, and be tack free in four hours or less by the mechanical test method.

(iii) shall register a gloss of 70 or more on a 60 degree meter.

Quick Dry Primers, Sealers and Undercoaters: Primers, sealers and undercoaters which are dry to touch in one-half hour and can be re-coated in two hours, when tested in accordance with ASTM D1640.

Responsible Party: The company, firm or establishment which is listed on the products's label. If the label list two companies, firms or establishments, the responsible party is the party which the product was "manufactured for" or "distributed by," as noted on the label.

Repair and maintenance thermoplastic coating: means an industrial maintenance coating that has vinyl or chlorinated rubber as a primary resin and is recommended solely for the repair of existing vinyl or chlorinated rubber coatings without the full removal of the existing coating system.

Roof Coatings: Coatings formulated for application to exterior roofs and for the primary purpose of preventing water penetration, or reflecting heat or ultraviolet radiation.

Rust preventive coating: means a coating formulated and recommended for use in preventing the corrosion of ferrous metal surfaces in residential situations.

Sanding Sealers: Clear wood coatings formulated for and applied to bare wood for sanding and to seal the wood for subsequent application of varnish.

Sealers: A coating formulated for and applied to a substrate to prevent subsequent coatings from being absorbed by the substrate, or to prevent harm to subsequent coatings by materials in the substrate.

Semitransparent Coating: A coating formulated and recommended for application to substrates to impart a desired color without completely concealing the surface or its natural texture or grain pattern.

Shellacs: Clear or pigmented coatings formulated solely with the resinous secretions of the lac beetle (*laccifer lacca*), thinned with alcohol, and forms a film by solvent evaporation without chemical reaction.

SIC (Standard Industrial Classification) Code: A United States Department of Commerce system that organizes all industry types in the United States. Each business establishment is classified according to its primary activity, signified by a four digit SIC code.

Specific Gravity: The ratio of the mass of a solid or liquid to the mass of an equal volume of distilled water at 4 °C (39 °F).

Stain: Clear and semitransparent solution or suspension of coloring matter (dyes or pigments or both) in a vehicle, designed to color a surface (usually wood) by penetration without hiding it or leaving a continuous film.

SWA: Sales Weighted Average (see calculations pages 18 & 19)

Swimming Pool Coatings: Coatings formulated and used to coat the interior of swimming pools and compatible with swimming pool water chemistry.

Swimming Pool Repair Coatings: Chlorinated rubber based coatings used for the repair and maintenance of swimming pools over existing chlorinated rubber based coatings.

Thermoplastic Rubber Coating and Mastic: A coating or mastic formulated and recommended for application to roofing or other structural surfaces and that incorporates no less than 40 percent by weight of thermoplastic rubbers in the total resin solids and may also contain other ingredients including, but not limited to, fillers, pigments, and modifying resins.

Tint Base: means a coating to which colorant is added to produce a desired color.

Traffic Coatings: Coatings formulated for and applied to public streets, highways and other surfaces including, but not limited to, curbs, berms, driveways, and parking lots.

Undercoaters: Coatings formulated and applied to substrates to provide a smooth surface for subsequent coats.

Varnishes: Clear wood finishes formulated with various resins to dry by chemical reaction on exposure to air.

Volatile Organic Compound (VOC): Any compound of carbon, excluding carbonates (carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate), and exempt compounds.

VOC Actual: Weight of all volatile materials less the weight of water and less the weight of exempt compounds per the entire volume of the coating. This is NOT the same as VOC Regulatory. See calculations pages 18 & 19.

VOC Regulatory: Enter the VOC content of the coatings(s), as supplied, in grams of VOC per liter of coating, less water, less exempt compounds, and less any colorant added to the tint bases. This may be determined from the chemical composition data or previously determined by EPA Method 24, 40 CFR Part 60, as amended in Federal Register Vol. 57, No. 133, July 10, 1992, or ASTM D 3960-92. See calculations pages 18 & 19.

Waterproofing Sealers: Coatings formulated and applied for the sole purpose of protecting porous substrates by preventing the penetration of water and which do not alter the appearance or texture of the substrate.

Wood Preservatives: Coatings which are formulated to protect wood from decay and insect attack.

CALCULATIONS

VOC Content Calculations

The following equations can be used to calculate entries contained in Form II of this survey.

$$VOC_{Actual} = \frac{W_{vm} - W_w - W_e}{V_c} \qquad VOC_{Regulatory} = \frac{W_{vm} - W_w - W_e}{V_c - V_w - V_e}$$

$$VOC_{Regulatory (Low Solids)} = \frac{W_{vm} - W_w - W_e}{V_c} \quad \text{Use for low solid stains and wood preservatives}$$

Where:

W_{vm}	=	Total weight of volatile materials (VOC+water+exempt compounds) in the coating, in grams
W_w	=	Weight of water in the coating, in grams
W_e	=	Weight of exempt compounds in the coating, in grams
V_c	=	Total volume of the coating, in liters
V_w	=	Volume of water in the coating, in liters
V_e	=	Volume of exempt compounds in the coating, in liters

VOC Regulatory After Recommended Thinning

The following equation can be used to calculate VOC after the coatings are thinned with VOC containing solvents.

$$VOC_{After Recommended Thinning} = \frac{Volume_{Coating} \times VOC_{Regulatory} + Volume_{Thinner} \times VOC_{Thinner}}{Volume_{Coating} + Volume_{Thinner}}$$

Percent Volume of Solids

The following are two equations that can be used to calculate the percent volume of solids. The choice of equation depends on the type of information that is known about the coating.

- (1) If the weight and density of all of the solid (nonvolatile) materials are known, then the following equation may be used:

$$\% \text{ by Volume of Solids} = \frac{Weight \text{ of Solids}}{Density \text{ of Solids} \times Volume \text{ of Coating Material}} \times 100$$

(2) If instead, only the volatile components of a coating (VOC, water and exempt compound) are known, the percent volume of solids may be estimated by the following equation.

$$\% \text{ by Volume Solids} = \left(1 - \frac{W_w}{D_w \times V_c} - \frac{W_{voc}}{D_{voc} \times V_c} - \frac{W_e}{D_e \times V_c} \right) \times 100$$

Where:

- W_w = Weight of water in the coating, in grams
- W_{voc} = Weight of VOC in the coating, in grams
- W_e = Weight of exempt compounds in the coating, in grams
- D_w = Density of water, in grams per liter
- D_{voc} = Density of VOC, in grams per liter
- D_e = Density of exempt compounds, in grams per liter
- V_c = Total volume of the coating, in liters

Sales Weighted Average Calculation

The Sales Weighted Average (SWA) is an average value for grouped coatings, calculated by weighting the individual values by their sales. For grouped coatings in this survey, the SWA should be used to report the following entries on FORM II (Product Information): % by Volume Solids, Density, VOC Actual, VOC Regulatory, and VOC Regulatory after recommended thinning. Coatings can be grouped only if they are within the same coatings category, the same VOC range, and if they are based on the same carrier technology. The following equation can be used to calculate Sales Weighted Average.

$$SWA = \frac{(Value_1 \times Sales_1 + Value_2 \times Sales_2 + \dots + Value_n \times Sales_n)}{Sales_1 + Sales_2 + \dots + Sales_n}$$

Where:

- $Value_{(1,2,...,n)}$ = Coating characteristic values (e.g. % by Volume of Solids, Density, VOC Actual, VOC Regulatory, VOC Regulatory after thinning) for products 1,2,...,n
- $Sales_{(1,2,...,n)}$ = Sales for products 1,2,...,n

Conversion Factors

VOC Regulatory (weight per volume):
 one pound VOC per gallon (US) = 119.82 grams VOC per liter

- Units of Volume:
- 1 fl oz = 0.029574 liters
- 1 liquid pint = 0.47318 liters
- 1 liquid quart = 2 liquid pints = 0.94635 liters
- 1 gallon = 4 liquid quarts = 3.7854 liters

Units of Mass:

Unit	ounce(oz)	pound(lb)	gram(g)	kilogram(kg)
1 oz =	1	0.0625	28.3495	0.02834
1 lb =	16	1	453.592	0.45359

UNITED STATES RESIDENT POPULATION
July 1, 1995

United States Total = 262,755,000

<u>STATE</u>	<u>THOUSANDS</u>	<u>RANK</u>	<u>STATE</u>	<u>THOUSANDS</u>	<u>RANK</u>
Alabama	4,253	22	Montana	870	44
Alaska	604	48	Nebraska	1,637	37
Arizona	4,218	23	Nevada	1,530	38
Arkansas	2,484	33	New Hampshire	1,148	42
California	31,589	1	New Jersey	7,945	9
Colorado	3,747	25	New Mexico	1,685	36
Connecticut	3,275	28	New York	18,136	3
Delaware	717	46	North Carolina	7,195	11
District of Columbia	554	(X)	North Dakota	641	47
Florida	14,166	4	Ohio	11,115	17
Georgia	7,201	10	Oklahoma	3,278	27
Hawaii	1,187	40	Oregon	3,141	29
Idaho	1,163	41	Pennsylvania	12,072	5
Illinois	11,830	6	Rhode Island	990	43
Indiana	5,803	14	South Carolina	3,673	26
Iowa	2,842	30	South Dakota	729	45
Kansas	2,565	32	Tennessee	5,256	17
Kentucky	3,860	24	Texas	18,724	2
Louisiana	4,342	21	Utah	1,951	34
Maine	1,241	39	Vermont	585	49
Maryland	5,042	19	Virginia	6,618	12
Massachusetts	6,074	13	Washington	5,431	15
Michigan	9,549	8	West Virginia	1,828	35
Minnesota	4,610	20	Wisconsin	5,123	18
Mississippi	2,697	31	Wyoming	480	50
Missouri	5,324	16			

X = Not Applicable

Source: U.S. Bureau of the Census (Table 27, 1996 Statistical Abstract of the United States)

SIC CODES

The SIC codes below represent only portions of Manufacturing, Wholesale Trade and Retail Trade. The list is by no means all inclusive, but represents a useful reference if your company SIC code is not known. A full listing is available from the ARB upon request. Complete listings and detailed descriptions are also available via the internet.

CHEMICALS AND ALLIED PRODUCTS

2810 -- Industrial Inorganic Chemicals
2812 -- Alkalies and chlorine
2813 -- Industrial gases
2816 -- Inorganic pigments
2819 -- Industrial inorganic chemicals, not elsewhere classified
2820 -- Plastics Materials and Synthetic Resins, Synthetic Rubber, Cellulosic, etc.
2821 -- Plastics materials and resins
2822 -- Synthetic rubber
2823 -- Cellulosic manmade fibers
2824 -- Organic fibers, noncellulosic
2843 -- Surface active agents
2850 -- Paints, Varnishes, Lacquers, Enamels, and Allied Products
2851 -- Paints and allied products
2860 -- Industrial Organic Chemicals
2861 -- Gum and wood chemicals
2865 -- Cyclic crudes and intermediates
2869 -- Industrial organic chemicals, not elsewhere classified
2890 -- Miscellaneous Chemical Products
2891 -- Adhesives and sealants
2895 -- Carbon black
2899 -- Chemical preparations, not elsewhere classified

WHOLESALE TRADE

5085 -- Industrial Supplies
5160 -- Chemicals and Allied Products
5169 -- Chemicals & allied products, not elsewhere classified
5198 -- Paint products wholesale

RETAIL

5211 -- Lumber & bldg mtl's retail
5231 -- Paint, glass, and wallpaper stores
5251 -- Hardware stores

Example Data sheet

The example data below corresponds to the completed survey forms on the pages that follow. This example is provided only to help you understand how the survey form should be completed. **You do not have to provide your data in the format shown below for the survey.**

Product Example #1

FORM II - Product Information Sheet

Page Number 1 of 1

Entry #: 1	Density: 1,438 g/l
Coating Code/Type: 27/Interior nonflat - medium gloss	VOC Actual (g/l): 1 = 80, 2 = 100, 3 = 120, SWA = 104
# of grouped coatings: 3 products grouped	VOC Regulatory: 1 = 120, 2 = 160, 3 = 180
Interior/Exterior/Dual: Interior	SWA = 160 (see sample calculation below)
Carrier Technology: Water-borne	Recommended Thinning: None/Not Applicable (N/A)
% by volume solids: product 1 = 40, 2 = 38, 3 = 48	Diluent: None/Not Applicable
Sales Weighted Average (SWA) = 43	VOC Regulatory after recommended thinning: N/A

Sales Information (containers > than 1 quart): 1 = 50,000, 2 = 80,000, 3 = 100,000, Total = 230,000 gallons.

Sample calculation:

$$VOC\ Regulatory^{SWA} = \frac{(Value_1 \times Sales_1 + Value_2 \times Sales_2 + \dots + Value_n \times Sales_n)}{Sales_1 + Sales_2 + \dots + Sales_n}$$

$$VOC\ Regulatory^{SWA} = \frac{(120g/l \times 50,000gal + 160g/l \times 80,000gal + 180g/l \times 100,000gal)}{50,000gal + 80,000gal + 100,000gal} = 160$$

FORM III - Ingredient Information Table

XYZ Company lists all ingredients.

Product Example #2

FORM II - Product Information Sheet

Page Number 1 of 1

Entry #: 2

Coating Code/Type: 19/Industrial maintenance

of grouped coatings: individual product

Interior/Exterior/Dual: Exterior

Carrier Technology: Solvent-borne

% by volume solids: 67

Density: 1,200 g/l

VOC Actual (g/l): 290 g/l

VOC Regulatory: 338 g/l

Recommended Thinning: 1 gallon product with 1/10
gallon mineral spirits

Diluent: Mineral Spirits (820 g/l VOC)

VOC Regulatory after recommended thinning: 381 g/l

Sales Information: 7,000 one quart containers (1,750 gallons) and 30,000 one gallon containers.

FORM IV - Ingredient Information Table

XYZ speciates VOC and exempt compounds. Identifies Wt% water. Remaining Wt% is identified under all other.

FORM I

Company Information

Company / Division Name: XYZ Company	
Address: 1111 South Windham Road, Lansing, MI, 22222	
Contact Person: John Doe	Title: Manager, Product Compliance
Telephone: (999) 999-9999	Fax: (999) 999-9998
RESPONSIBLE PARTY (✓ check appropriate box) <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	If you answered "NO" to Responsible Party please stop here and submit FORM I to CARB.

TYPE OF BUSINESS (✓ check all that apply)

- Manufacturer
- Importer
- Retailer
- Private label contract packager
- Custom contract packager

COMPANY MARKETING CLASSIFICATION

- International
- National
- California Statewide
- California Regional - If so, which parts:

INDEPENDENT OWNERSHIP

Is your company independently owned?

- YES NO

If No, please provide parent company information below.

Parent Company Name:

--

Parent Company Address:

SIC CODES (Enter primary SIC codes)

5231		
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COMPANY - GROSS ANNUAL RECEIPTS

- Less than \$500,000
- Between \$500,000 and \$1 million
- Between \$1 million and \$2 million
- Between \$2 million and \$5 million
- Between \$5 million and \$10 million
- Between \$10 million and \$100 million
- More than \$100 million
- More than \$1 billion

EMPLOYEES

- Less than 10
- Between 10 and 100
- Between 100 and 250
- Between 250 and 500
- More than 500

CERTIFICATION

I hereby certify that, to the best of my knowledge and belief, all information entered on the Company Information Form, and Product Information Form is complete and accurate.

Name: John Doe	Title: Manager, Product Compliance
Signature: X	Date Signed: April 30, 1998

<i>FOR ARB USE ONLY</i>	Company Code:	Total # of Pages Submitted:
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FORM IV

Ingredient Information Table - Single or Grouped Product Profile

Entry # from FORM II: 2	Speciate Volatile Organic Compounds (VOCs) and Exempt Compounds. Identify the Wt% of water. Identify the remaining Wt% of other compounds as "other".			
Ingredient #	Ingredient Name (Trade name if ingredient name is unknown) <i>Begin by speciating VOCs first, then speciate Exempt Compounds</i>	CAS #	Wt. %*	
	VOCs			
1	VOC #1	XXXX-XX-X	XX	
2	VOC #2	XXXX-XX-X	XX	
3	VOC #3	XXXX-XX-X	XX	
	EXEMPT COMPOUNDS (Exempt VOCs)			
4	Exempt Compound #1	XXXX-XX-X	XX	
	Aggregated VOCs <1.0%	Various	XX	
	Aggregated Exempt Compounds < 1.0%	Various	XX	
COMMENTS		WATER	XX	
		ALL OTHER	XX	
		TOTAL OF ALL INGREDIENTS (Must Equal 100%)		100

* Wt% is the weight % of the ingredient in the total weight of the product. List ingredients that amount to 1.0% or greater by weight of the product.