

## **REGULATION III – CONTROL OF AIR CONTAMINANTS**

### **RULE 337 GRAPHIC ARTS**

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**Adopted 04/06/92**  
**Revised 04/03/96**  
**Revised 11/20/96**  
**Revised MM/DD/YY**

**MARICOPA COUNTY**  
**AIR POLLUTION CONTROL REGULATIONS**  
**REGULATION III – CONTROL OF AIR CONTAMINANTS**

**RULE 337**  
**GRAPHIC ARTS**

**SECTION 100 – GENERAL**

**101 PURPOSE:** To limit the emissions of volatile organic compounds (VOCs) to the ambient air from graphic arts operations, ~~and associated coating processes.~~

**102 APPLICABILITY:** This rule applies all VOC containing materials associated with graphic arts operations. This includes, but not limited to the prepress and press operations; and the cleaning materials and processes associated with such operations.

**103 EXEMPTIONS:**

**103.1 Total Categorical Exemptions:** This rule does not apply to the following operations:

- a.** Circuitry printing and other associated printing performed for labeling, logo, or identification purposes on a printed circuit, its substrate, its immediate covering, or its immediate encapsulant by a circuitry printer are exempt from the provisions of this rule.
- b.** Coating applications that are not performed in association with a printing operation are considered coating operations, not graphic arts printing operations, and are exempt from the provisions of this rule.

**103.2 Partial Exemption:** The following operations are exempt from the VOC limitations of this rule but still must comply with the work practices listed in Section 305 and recordkeeping requirements in Section 502.5:

- a.** The total emissions from graphic arts operations, including surface preparation and cleanup solvent, does not exceed 225 pounds (100 kg) of VOC per month before controls. For the purpose of calculating exemption applicability for non-heatset lithographic inks, emissions of volatile organic compounds must be reduced by 95 percent.
- b.** Any digital printing operation.

- c.** The provisions of Sections 302.1, 303.1, 305.1(a) of this rule do not apply to any graphic arts facility which emits less than the threshold amounts of 25 tons (22,680 kg) per calendar year and 4200 pounds (1909 kg) per month of VOC from all graphic arts and related coating operations prior to control. Except as otherwise directed by air pollution permit, any facility that becomes subject to the provisions of Sections 302.1 by exceeding either threshold amount will remain subject to these provisions even if annual emissions later fall below these thresholds.

**SECTION 200 – DEFINITIONS:** For the purpose of this rule, the following definitions shall apply, in addition to those definitions found in Rule 100: General Provisions And Definitions of these rules. In the event of any inconsistency between any of the Maricopa County air pollution control rules, the definitions in this rule take precedence.

- 201** **ADHESIVE** – Materials that are applied for the primary purpose of bonding two surfaces together by surface attachments. Adhesives may be used to facilitate the attachment of two surfaces or substances in varying degrees of permanence.
- 201 202** **ALCOHOL** – A volatile organic compound such as isopropanol, normal-propanol, and ethanol-of alkane structure consisting of fewer than 6 carbon atoms and having a single OH- (hydroxyl) group and no other non-alkane attachments.
- 202 203** **ALCOHOL SUBSTITUTE** – A wetting agent, used to replace some or all of the alcohol in fountain solutions, and usually containing ~~inorganic phosphates and~~ volatile organic compounds such as glycols.
- 203 204** **CIRCUITRY PRINTING** – Any graphic arts operation which either uses ink(s) with specific electrical properties to print an electrical circuit, or prints a circuit pattern that is made into an electrical circuit through further processing.
- 204 205** **CLEANING SOLUTION** – Any liquid, including blanket wash and roller wash, used to remove ink and debris from the operating surfaces of a printing press or from any of the attached parts of a press.
- 205 206** **COATING** – A relatively unbroken layer of material applied onto or impregnated into a substrate. ~~in a relatively unbroken film.~~ A material applied after the application of inks to the substrate that serves to enhance or protect the printed substrate and includes graphic arts varnish, water-based, or radiation cured formulation of resins, solvents, cosolvents and other additives. Equipment capable of both coating and printing is considered a printing operation for this rule. Coating applications that are not performed in association with a printing operation are considered coating operations and are not graphic arts printing operations.
- 207** **DIGITAL PRINTING** – A method of printing that does not use a physical master, stencils or plates but uses an electronic output device to transfer variable data, in the form

of an image, from a computer to a variety of substrates. Digital printing methods include, but are not limited to, inkjet printing, electrophotographic printing, dye sublimation printing, thermal wax printing and solid ink printing.

- 206 208** **EMISSION CONTROL SYSTEM (ECS)** – A system for reducing emissions of organic compounds, consisting of both collection and control devices which are approved in writing by the Control Officer and are designed and operated in accordance with good engineering practice.
- 207 209** **FLEXOGRAPHIC PRINTING** – The application of words, designs or pictures by roll-printing technique in which the image-carrying surface is raised above the surface of the printing roll and the image carrier is made of flexible rubber or other elastomeric material. The image is transferred to the substrate through first applying ink to a smooth roller which in turn transfers the ink onto the raised pattern of the rubber or elastomeric image carrier fastened around a second roller, which then transfers the ink onto the substrate.
- 210** **FOUNTAIN SOLUTION** – The solution applied to the image plate to maintain the hydrophilic properties of the non-image areas and to keep the non-image area free from ink.
- 208 211** **GRAPHIC ARTS** – All digital, screen, gravure, letterpress, flexographic and lithographic printing processes, including related coating and laminating processes.
- 209 212** **GRAPHIC ARTS FACILITY** – All the graphic arts processes and activities which are located on one or more contiguous or adjacent properties and are under the control of the same person (or persons under common control).
- 210 213** **GRAPHIC ARTS MATERIAL** – Any ink, varnish, coating or adhesive, including added thinner or retarder, used in printing or related coating or laminating processes.
- 211 214** **GRAPHIC ARTS VARNISH** – A transparent material, applied by printing press, that is used to adjust gloss or to adjust color, ~~or to protect printed material or printing substrate.~~
- 212 215** **GRAVURE PRINTING** – An intaglio process in which the ink is carried in minute, etched or engraved wells on a roll or cylinder, ~~excess ink being removed from the surface by a doctor blade.~~ Images are transferred onto a substrate through first applying ink to the etched roll or cylinder, wiping the lands between the cells free of ink with a doctor blade, and rolling the cylinder over the substrate so that the surface of the substrate is pressed into the cells transferring the ink onto the substrate.
- 216** **HEATSET** – A lithographic web printing process where heat is used to evaporate ink oils from the printing ink. Heatset dryers (typically hot air) are used to deliver the heat to the printed substrate.

- ~~213~~ 217 **LAMINATION** – A process of fusing two or more layers of material together to form a single sheet by using adhesive.
- ~~214~~ 218 **LETTERPRESS PRINTING** – A method in which the image area is raised relative to the non-image area and the ink is transferred to the paper directly from the image surface.
- ~~215~~ 219 **LITHOGRAPHIC PRINTING** – A planographic method of printing process where the image and non-image areas of the printing plate are chemically differentiated; the image area is oil receptive and the non-image area is water receptive. This method differs from other printing methods, where the image is on a raised or recessed surface.
- 220 **MAINTENANCE CLEANING** – A solvent cleaning operation or activity carried out to keep tool, machinery, equipment (excluding ink, coating, or adhesive application equipment) of general work areas in clean and good operational condition.
- 221 **NON-HEATSET** – A lithographic printing process where the printing inks are set by absorption and/or oxidation of the ink oils. For the purposes of this rule, use of an infrared heater or printing conducted using radiation cured inks is considered non-heatset.
- 222 **NON-POROUS SUBSTRATE** – Any substrate whose surface prevents penetration by water. Clay coated printing paper as defined by the American Paper Institute Classification System, and paperboard coated with clay to prevent water penetration, are considered non-porous substrates.
- 216 **NON-PRECURSOR ORGANIC COMPOUND** – Any of the organic ~~Organic~~ compounds listed in subsection a. of Appendix A, which ~~that~~ have been designated by the EPA as having negligible photochemical reactivity.
- 223 **OFFSET LITHOGRAPHIC PRINTING** – A planographic method of printing in which the image and non-image areas are on the same plane and the ink is offset from a plate to an intermediary surface, typically a rubber blanket, which in turn transfers the image to the substrate. Offset lithographic printing includes the application of overprint coatings.
- 224 **OVERALL CONTROL EFFICIENCY** – The overall control efficiency of an ECS is determined by multiplying the ECS efficiency by the destruction efficiency of the control device expressed as a percentage.
- 225 **POROUS SUBSTRATE** – A substrate whose surface does not prevent penetration by water.
- ~~217~~ 226 **PRINTING** – An operation that imparts color, design, pattern, alphabet or numerals onto a substrate. It differs from coating in that its principal intent is to accomplish such visual/spatial outcome(s) rather than for other purposes commonly accomplished by using coatings.

- ~~218~~ 227 **PRINTING INK** – A fluid or viscous formulation used in printing, impressing or transferring an image onto a substrate.
- 228 **RADIATION CURED INKS AND COATINGS** – A printing ink or graphic arts coating that dries by polymerization reaction by ultraviolet or electron beam radiation.
- ~~219~~ 229 **SCREEN PRINTING** – A process of passing printing ink through a screen (a taut web or fabric) to make an imprint on a substrate. A refined form of stencil has been applied to the screen such that the stencil openings determine the form and dimensions of the imprint.
- 230 **SHEET-FED** – A lithographic printing process in which individual sheets of substrate are fed to the press sequentially.
- 231 **SOLVENT** – Organic compounds that are used as diluents, thinners, dissolvers, viscosity reducers, cleaning agents or for a similar purpose.
- ~~220~~ 232 **UNITS PER PRINTING PRESS** – The number of printing surfaces per printing press.
- ~~221~~ 233 **VAPOR PRESSURE** – The pressure exerted at a uniform temperature by the gas of a substance when the gas is in equilibrium with the liquid (or solid) phase of that substance. ~~Example: At 68°F the vapor pressure of toluene vapor in equilibrium with undiluted liquid toluene is 23 millimeters of mercury.~~
- ~~222~~ 234 **VOC COMPOSITE VAPOR PRESSURE** – The total vapor pressure exerted by VOC at an even temperature. It distinguishes the vapor pressure of VOC from the vapor pressures of other fluids when a liquid contains both VOC and non-VOC fluids. VOC composite vapor pressure is calculated using the following formula:
- ~~223~~ **~~VOLATILE ORGANIC COMPOUND (VOC)~~** – ~~Any organic compound which participates in atmospheric photochemical reactions, except a non-precursor organic compound.~~
- 235 **WEB** – A continuous substrate capable of being rolled at any point during the coating process.
- ~~224~~ **~~WEB-FEED~~** – ~~An automatic system which supplies substrate from a continuous roll or from a continuous extrusion process.~~

## SECTION 300 – STANDARDS

- ~~301~~ **~~GRAPHIC ARTS MATERIALS:~~** ~~VOC emissions from graphic arts materials shall be limited as follows:~~ **MANUFACTURERS AND SUPPLIERS:** A person selling, offering for sale, supplying for use, or manufacturing for sale within Maricopa County any VOC containing material for use in graphic arts operations must provide a material safety data

sheet (MSDS) or product data sheet showing the material name, manufacturer's name, specific mixing instructions and VOC content as applied.

**302 LITHOGRAPHIC AND LETTERPRESS OPERATIONS:** VOC emissions from all lithographic and letterpress operations are limited to the following:

**301.1 302.1 Limits of VOC Content:** ~~No person shall~~ **MATERIALS:** An owner or operator must not apply any inks, varnishes, coatings, or adhesives unless the VOC content as applied is equal to or less than 2.5 pounds per gallon (300 grams per liter), less water and non-precursor organic compound.

**302 302.3 FOUNTAIN SOLUTION VOC LIMITS:** ~~After March 27, 1997, an~~ An owner or operator of an offset a lithographic printing press shall must limit the combined total volume of alcohol; or alcohol substitute, and any other VOC in each fountain solution source to the limits percentages specified in column A of Table 1-337.1 whenever the press is on.; except that a fountain solution source refrigerated below 60°F and having a properly indicating temperature monitor is subject to the limits in column B of Table I.

TABLE 1  
VOC LIMITS BY VOLUME FOR FOUNTAIN SOLUTION \*

Column A	Column B	Column C
	Limit for a Source Refrigerated	
General Limit	Below 60°F	Compliance Date
15 percent	25.5 percent	March 28, 1997
10 percent	17 percent	March 28, 1998
5 percent	8.5 percent	March 28, 1999

\*(Appendix A Table AP-I gives equivalent limits)

<b>TABLE 337-1</b>			
<b>VOC Limits by Weight (As Applied) for Fountain Solutions for Lithographic Printing</b>			
	<u>Percent Alcohol</u>	<u>Percent Alcohol in Fountain Solution Refrigerated at or Below 60°F (15.5°C)</u>	<u>Percent Alcohol Substitute with No Alcohol in Solution</u>
<b>Heatset Web</b>	Current 5.0 %	Current 8.5 %	5%
	Effective: (MM/DD/YYYY) 1.6 %	Effective: (MM/DD/YYYY) 3.0%	
<b>Sheet-Fed</b>	5%	8.5%	5%
<b>Cold-Set Web</b>	None	None	5%

**303 302.4 CLEANING MATERIALS:** ~~Any person who owns or operates~~ An owner or operator of a lithographic printing press or letterpress shall must reduce VOC

emissions from cleaning solutions by following the work practices described in Section 306 and one of the following: using cleaning solutions with a vapor pressure at 20°C compliant with the standards in Table 2. In addition, all VOC-containing materials used for cleaning and cleanup, including rags and towels, shall be stored in closed containers when not in use.

- a. Using cleaning solutions with a VOC composite vapor pressure less than 10 mm Hg at 20°C; or
- b. Using cleaning materials containing less than 70 weight percent VOC; or
- c. Using a combination of both the composite vapor pressure limitation and the weight percent VOC limitation.

**TABLE 2**  
**VOC VAPOR PRESSURE LIMITS FOR CLEANING SOLUTIONS**

<u>Vapor Pressure</u>	<u>Compliance Date</u>
33 mm Hg	March 28, 1997
25 mm Hg	March 28, 1998
10 mm Hg	March 28, 1999

**304 LABELING REQUIREMENT:** ~~No person shall sell, offer for sale, or manufacture for sale within Maricopa County any ink, coating, adhesive, fountain solution or fountain solution concentrate for use in graphic arts operations unless such material includes a designation of VOC content on data sheet(s), expressed in pounds per gallon or grams per liter.~~

**301.2 302.5 Emission Control System (ECS):** ~~for Offset Lithographic Printing: As an alternative to the provisions of subsection 301.1, a person may comply by using an Emission Control System with a control device efficiency which reduces the VOC emissions from the dryer exhaust vent, by at least 90 percent by weight.~~

- a. The limits of Section 302.1 do not apply when emissions of VOC to the atmosphere from the lithographic or letterpress printing operations are controlled by an ECS that meets one of the requirements listed in Table 337-2; and
- b. The dryer pressure shall must be maintained lower than the press room air pressure such that air flows into the dryer at all times when the press is operating.

**302 Operation and Maintenance (O&M) Plan:** The owner or operator of an ECS used to meet the requirements of this rule must comply with the requirements in Section 307.

<b><u>TABLE 337-2</u></b>
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<b><u>ECS Emissions</u></b>	
<b><u>ECS Installation Date</u></b>	<b><u>Control Efficiency</u></b>
<u>ECS installed prior to November 20, 1996</u>	<u>90 percent by weight control efficiency for VOC emissions from the dryer exhaust vent</u>
<u>ECS installed on or after November 20, 1996</u>	<u>95 percent by weight control efficiency for VOC emissions from the dryer exhaust vent</u>
<u>Any installation date</u>	<u>Maintain VOC emissions from the dryer exhaust vent at a concentration at or below 20 ppmv as hexane on a dry basis</u>

**303 ROTOGRAVURE AND FLEXOGRAPHIC OPERATIONS:**

**303.1 Inks, Coatings and Adhesives:** The owner or operator of rotogravure or flexographic press must limit VOC emissions from inks, coatings, adhesives and cleaning materials as listed in Table 337-3.

<b><u>Table 337-3</u></b>		
<b><u>VOC Limits for Materials used in Rotogravure and Flexographic Operations</u></b>		
<b><u>GRAPHIC ARTS MATERIAL</u></b>	<b><u>VOC CONTENT LIMIT</u></b>	<b><u>VOC CONTENT LIMIT</u></b>
	<u>less water and non-precursor organic compounds</u>	<u>less water and non-precursor organic compounds</u>
	<b><u>lbs./gal.</u></b>	<b><u>g./ liter</u></b>
<u>Ink</u>	<u>2.5</u>	<u>300</u>
<u>Flexographic Ink Porous Substrate</u>	<u>2.5</u>	<u>300</u>
<u>Effective (insert date 1 yr after rule is adopted)</u>	<u>1.9</u>	<u>225</u>
<u>Flexographic Ink Non-Porous Substrate</u>	<u>2.5</u>	<u>300</u>
<u>Coating</u>	<u>2.5</u>	<u>300</u>
<u>Adhesive</u>	<u>2.5</u>	<u>300</u>
<u>Effective (insert date 1 yr after rule is adopted)</u>	<u>1.25</u>	<u>150</u>

**303.2 Cleaning Solutions:** An owner or operator of a rotogravure or flexographic press must reduce VOC emissions from cleaning solutions by following the work practices as described in Section 306.

**303.3 Emission Control System (ECS):** The limits of Section 303.1 do not apply to ~~heat-set operations~~ when emissions of VOC to the atmosphere from the rotogravure or flexographic printing operations are controlled by an ECS that meets either:

- a.** One of the requirements listed in Table 337-4; or

- b.** Reduces the VOC emissions from the dryer exhaust vent by at least 90 percent by weight, and an overall capture and control efficiency of at least 65 percent by weight; and
- c.** The dryer pressure is maintained lower than the press room air pressure such that air flows into the dryer at all times when the press is operating.

**303.4 Operation And Maintenance (O&M) Plan:** The owner or operator of an ECS used to meet the requirements of this rule must comply with the requirements in Section 307.

<b>Table 337.4</b>			
<b>ECS Efficiencies for Rotogravure and Flexographic Printing Operations</b>			
<u>Press and ECS Installation Dates</u>	<u>Overall Capture and Control Efficiency</u>	<u>Capture Efficiency</u>	<u>Control Efficiency</u>
<u>Press installed prior to March 14, 1995 and controlled by an add-on ECS installed prior to 04/06/92</u>	<u>65 %</u>	<u>75 %</u>	<u>90 %</u>
<u>Press installed prior to March 14, 1995 and controlled by an add-on ECS installed on or after 04/06/92</u>	<u>70 %</u>	<u>75 %</u>	<u>95 %</u>
<u>Press installed on or after March 14, 1995 and that is controlled by an add-on ECS whose first installation date was prior to 04/06/92</u>	<u>75 %</u>	<u>85 %</u>	<u>90 %</u>
<u>Press installed on or after March 14, 1995 and controlled by an add-on ECS whose first installation date was on or after 04/06/92</u>	<u>80 %</u>	<u>85 %</u>	<u>95 %</u>

**304 SCREEN PRINTING OPERATIONS:**

**304.1** An owner or operator of a screen printing operation must limit the VOC emissions by using screen printing inks, coatings and adhesives that meet the VOC content limits as applied in Table 337-1.

<b>TABLE 337-5</b>	
<b>VOC Content Limits for Screen Printing Inks, Coatings, and Adhesives</b>	
<u>Material</u>	<u>Grams of VOC pounds per gallon (g/l), less water and less exempt compounds</u>
<u>Inks and Coatings</u>	<u>3.3 (400)</u>
<u>Adhesives</u>	<u>1.25 (150)</u>
<u>Special Purpose, Extreme Performance</u>	<u>6.7 (800)</u>

**304.2** **Cleaning Solutions:** An owner or operator of a screen printing press must reduce VOC emissions from cleaning solutions by following the work practices as described in Section 306.

**305** **OTHER TYPES OF GRAPHIC ARTS OPERATIONS NOT ALREADY COVERED BY SECTIONS 302, 303 AND 304:**

**305.1** **Limits of VOC Content:** Any graphics arts facility which has the potential to emit 25 tons per calendar year and 4200 pounds per month of VOC from all graphic arts and related coating operations must:

- a.** Limit the VOC content as applied of any inks, varnishes, coatings, or adhesives to a maximum of 2.5 pounds per gallon (300 grams per liter), less water and non-precursor organic compounds; or
- b.** Install, operate and maintain an ECS according to requirements to maintain an overall capture and control efficiency of at least 65 percent by weight.

**305.2** **Cleaning Solutions:** An owner or operator of a graphic arts printing press must reduce VOC emissions from cleaning solutions by following the work practices as described in Section 306.

**305.3** **Operation And Maintenance (O&M) Plan:** The owner or operator of an ECS used to meet the requirements of this rule must comply with the requirements in Section 307.

**306** **WORK PRACTICE: HANDLING AND DISPOSAL OF VOC CONTAINING MATERIAL:** An owner or operator of any graphic arts printing facility must store, discard, or dispose of VOC or VOC-containing material in a way to prevent the evaporation of VOC to the atmosphere. Work practices limiting VOC emissions include but are not limited to the following:

**306.1** **Labeling of Containers:** All containers that are 1 gallon or larger used for collection of VOC-containing material must be legibly labeled with their contents. The label must be constructed such that the ink is insoluble in solvents so that the label is readable at all times.

**306.2** **Use and Storage:** An owner and/or operator must cover and keep covered each VOC-containing material unless materials are being put in or removed from container. An owner and/or operator must store all VOC-containing material in closed or covered leak-free containers.

**306.3** **Spills:** An owner or operator must implement procedures to minimize spills of any VOC-containing material during handling and transfer to and from containers, enclosed systems, waste receptacles and other equipment.

**306.4 Conveyance of VOC-Containing Materials and VOC-Containing Cleaning Materials:** All VOC-containing materials and VOC-containing cleaning materials must be conveyed from one location to another in labeled, closed containers or pipes.

**306.5 Disposal Of VOC-Containing Material and VOC-Containing Cleaning Materials:** An owner or operator must store all VOC-containing materials intended for disposal including, but not limited to, rags, waste coatings, waste brushes, waste rollers, waste applicators, waste solvents, and their residues, in closed, leakfree containers which are legibly labeled with their contents and which remain covered at all times when not in use.

**307 OPERATION AND MAINTENANCE (O&M) PLAN:** ~~The owners or operators~~ owner or operator of an ~~emission control system~~ ECS used to meet the requirements of this rule ~~shall~~ must provide the Control Officer with an O&M Plan. This plan ~~shall~~ must specify key system operating parameters, such as temperatures, pressures and/or flow rates, necessary to determine compliance with this rule, and describe in detail procedures to maintain the ~~emission control system~~ ECS. ~~The Control Officer's written approval of this plan and the implementation of this plan shall be required for compliance with this section to be achieved.~~ The owner or operator of an ECS must:

**307.1 General Requirements:** Provide and maintain an O&M Plan(s) for any ECS, any other emission processing equipment, and any ECS monitoring devices that are used according to this Rule 337 or according to an air quality permit. The O& M Plan must be readily available on-site at all times to the Control Officer.

**307.2 Approval by Control Officer:** Submit to the Control Officer for approval the O&M Plans of each ECS and each ECS monitoring device that is used according to this Rule 337.

**307.3 Initial Plans:** Fully comply with all O&M Plans submitted for approval, but which have not yet been approved, unless notified otherwise by the Control Officer in writing. Once the initial plan has been approved in writing by the Control Officer, an owner or operator must comply with this approved plan.

**307.4 Revisions to Plan by the Owner or Opertator:** Comply with the revisions to the initial plan if revisions to the initial plan have been approved, in writing, by the Control Officer. If revisions to the plan have not yet been approved, in writing, by the Control Officer, then an owner or operator must comply with the most recent O&M Plan on file at Maricopa County Air Quality Department.

**307.5 Modifications to Plan by the Control Officer:** Comply with the modified plan after receiving written notification by the Control Officer prior to the final approval of the O&M Plans.

**306 EXEMPTIONS:**

**306.1 Exemption From Section 301:** The provisions of Section 301 of this rule shall not apply to any graphic arts facility which emits less than the threshold amounts of 25 tons (22,680 kg) per calendar year and 4200 pounds (1909 kg) per month of VOC from all graphic arts and related coating operations prior to control. Except as otherwise directed by air pollution permit, any facility that becomes subject to the provisions of Section 301 by exceeding either threshold amount will remain subject to these provisions even if annual emissions later fall below these thresholds.

**306.2 Total Exemption:**

- a. Circuitry printing is exempt from this rule. This exemption includes other associated printing performed for labeling, logo, or identification purposes on a printed circuit, its substrate, its immediate covering, or its immediate encapsulant by a circuitry printer.
- b. Any printing operation in which no printing press has over two units, and the combined impression area of all presses together does not exceed 500 square inches (3226 cm<sup>2</sup>) is exempt from this rule.

**SECTION 400 – ADMINISTRATIVE REQUIREMENTS**

**401** ~~EFFECTIVE DATE:~~ This rule is effective May 3, 1996. **COMPLIANCE SCHEDULE:** An owner or operator who chooses to, or is required to comply with the new emission limits by installing or increasing the efficiency of an ECS under Section 301 of this rule must meet the following milestones:

**401.1** Submit a compliance plan, by (3 months after rule adoption) or within three (3) months of becoming subject to the rule, to the Control Officer for approval which describes the method(s) used to achieve full compliance with the rule. This plan must specify dates for completing increments of progress, such as the contractual arrival date of new control equipment. The Control Officer may require an owner or operator submitting the compliance plan to also submit subsequent reports on progress in achieving compliance; and

**401.2** Attain full compliance with all of the standards in this rule by (12 months after rule adoption) or within twelve (12) months of becoming subject to the rule.

**SECTION 500 – MONITORING AND RECORDS**

**501 PROVIDING AND MAINTAINING MONITORING DEVICES:** ~~Any person operating~~ An owner or operator of an ECS pursuant to this rule must install, maintain, and calibrate monitoring devices described in an O&M Plan. The monitoring devices must measure temperatures, pressures, rates of flow, or other operating conditions necessary to determine if air pollution control equipment is functioning properly.

**501.1 ECS Monitoring Device(s):** Each ECS that is operated in compliance with this rule must be equipped with monitoring device(s) capable of demonstrating that the ECS is operating in a manner that assures compliance with this rule. The monitoring device(s) must be installed, calibrated, maintained, and operated according to their manufacturers' instructions and the O&M Plan.

**502 MONITORING FOUNTAIN SOLUTION CONTAINING ALCOHOL:** The owner or operator of any printing press shall monitor the alcohol concentration of each fountain solution source containing any alcohol with a refractometer, a hydrometer or a conductivity meter. The instrument shall have a visual readout (analog or digital) with an accuracy of either 2 percent of the meter's full scale, or 0.5 percent absolute (such as for meter readings given in percent.)

**502.1 Weekly Entry of Monitoring Data If Any Alcohol Is Used:**

- a. A weekly entry shall be made of the results of an instrument reading, required by Section 502, for each fountain solution source containing any alcohol; and
- b. Weekly, for each fountain solution source, record the names and the most current mixing ratio of all alcohol, alcohol substitutes, and water used in making fountain solution in that source.

**502.2 Monthly Entries for Presses Which Never Use Any Alcohol:** Monthly, record the names of all alcohol substitutes and the mixing ratio of all alcohol substitutes to water, for each fountain solution source on a press which never uses alcohol.

**501.2 Refrigerated Fountain Solution System:** Each refrigerated fountain solution unit must be equipped with monitoring device(s) capable of demonstrating that the refrigeration unit is operating in a manner that assures compliance with this rule. The monitoring device(s) must be installed, calibrated, maintained, and operated according to their manufacturers' instructions and the O&M Plan.

**503 502 RECORDKEEPING AND REPORTING:** Any ~~owner, operator or person~~ subject to this rule ~~shall~~ must comply with the ~~following recordkeeping and reporting requirements of this section.~~ Records can consist of but are not limited to purchase orders, invoices, receipts, usage records, MSDS, and hazardous wastes manifests. Any records required by this rule ~~shall~~ must be retained for five (5) years, ~~and be made available to the Control Officer upon request.~~ Records may be kept either electronic or paper format.

**503.1 502.1 Current Materials List:** ~~Maintain~~ The owner or operator of a graphic arts facility must maintain ~~Maintain~~ a current list of inks, coatings, adhesives, fountain-solution alcohol(s) and alcohol substitutes, thinners, cleaners, and any other VOC-containing materials used at the facility that includes at a minimum; state the

~~VOC content of each in pounds per gallon or grams per liter. In addition, for each blanket wash and other cleaning solution, list the VOC vapor pressure at 20°C (68°F).~~

- a.** Material Name: Record the name/code/manufacturer and the appropriate material type category of inks, coatings, adhesives, fountain-solution alcohol(s) and alcohol substitutes, thinners, cleaning solutions, and any other VOC-containing materials used in the graphic arts processes; and
- b.** VOC Content: The VOC content of each material listed as pounds of VOC per gallon or grams of VOC per liter; and
- c.** Product Data Sheet: Specific mixing instructions and the VOC content as applied.
- d.** Vapor Pressure: For each cleaning solution, list the VOC composite vapor pressure (VP) at 20°C (68°F) by providing at least:
  - i.** A current manufacturer's technical data sheet listing vapor pressure; or
  - ii.** A current manufacturer's safety data sheet (MSDS) listing vapor pressure; or
  - iii.** Actual vapor pressure test results.

**503.2 502.2 Usage Records of Graphic Arts Materials and Cleaning Solutions:** ~~In compliance with the schedule in subsections 503.2 a. and 503.2.b. below, The owner or operator must update records showing the type and amount consumed of each graphic-arts ink, varnish, coating, adhesive, fountain solution, blanket wash, and all other cleaning solutions according to the following schedule:~~

- a.** ~~Daily Records for 25-Ton Sources: Daily, an operator of a graphic arts facility shall update usage records of materials specified in subsection 503.2 if, facility-wide, such facility emits 25 tons or more of VOC emissions per calendar year or 4200 pounds or more of VOC emissions per month from all graphic arts and related coating operations prior to any control. However, the operator may maintain *monthly* records of materials complying with subsection 301.1 VOC limits or Section 303 vapor pressure limits, if each material served by a control device is identified as such.~~
- b.** ~~Monthly Usage Records: Monthly records of materials' usage shall be maintained pursuant to subsection 503.2 by any facility except for the ( $\geq$ 25 TPY) facilities subject to subsection 503.2 a.~~

- a.** Daily Recordkeeping: Daily material usage records are required for the following:
- i.** Facilities that emit 25 tons or more of VOC per calendar year; or
  - ii.** Facilities that emit 4200 pounds or more per month of VOC from all graphic arts and related coating operations prior to controls using non compliant materials; or
  - iii.** All facilities using heatset web presses; or
  - iv.** The owner or operator may maintain *monthly* records of materials complying with subsection 300 VOC or vapor pressure limits, if each material served by a control device is identified as such.
- b.** Monthly: Monthly material usage records are required for the following:
- i.** All facilities using non-heatset type presses.
  - ii.** Facilities that emit 25 tons or more of VOC per calendar year prior to controls and are compliant with subsections 301; 302; and 303 of this rule.
  - iii.** Facilities that emit less than 25 tons per calendar year, prior to controls, of materials non compliant with either subsections 301; 302; 303 of this rule.

**502.3 Fountain Solutions:**

- a.** Alcohol Containing Fountain Solutions:
- i.** Weekly: An owner or operator must record the percentage of alcohol for each different batch of fountain solution containing alcohol; and
  - ii.** Maintain a weekly record of the names and the most current mixing ratio of all alcohol, alcohol-substitutes, and water used in making each fountain solution for that source.
- b.** Non-Alcohol Fountain Solutions:
- i.** Monthly: An owner or operator must record the mixing ratio of all alcohol-substitutes to water, for each fountain solution source on a press which never uses alcohol; and
  - ii.** Maintain a current list of the names of all alcohol-substitutes.

**503.3 ~~ECS Operation and Maintenance:~~** ~~Maintain a continuous record of the times an Emission Control Device is used to comply with this rule. Maintain daily records of the O&M Plan's key system operating parameters. Maintain records of all maintenance performed according to the O&M Plan.~~

**502.4** ECS Recording Requirements: The owner or operator of the facility must document the installation, maintenance, and calibration of ECS monitoring devices described in an O&M Plan in the following manner:

- a.** Initial installation: Make a permanent record of the date of installation of the ECS.
- b.** Daily: Make a permanent record of the operating parameters of the key systems as required by the O&M Plan. If the ECS was not operational at any time during the day, record this fact in the permanent record; and
- c.** Within 24 hours of a completed scheduled routine maintenance, make a permanent record of the maintenance actions taken for each day or period in which the O&M Plan requires that maintenance be done; and
- d.** Enter an explanation for scheduled maintenance that is not performed during the period designated for it in the O&M Plan.

**502.5** Facilities Claiming an Exemption: The owner or operator claiming an exemption under subsection 103.3 or 104.1 of this rule must document the quantity of VOC materials used and keep sufficient records of the basis of such calculations to justify the exemption status.

**504 503** **COMPLIANCE DETERMINATION – TEST METHODS:** An exceedance of the limits established in this rule determined by any of the applicable test methods constitutes a violation of this rule. The EPA test methods as they exist in the Code of Federal Regulations (CFR) as listed below, are adopted and incorporated by reference in Appendix G of the Maricopa County Air Pollution Control Regulations.

**504.1 503.1** **Sample Analysis:**

- a.** VOC content of graphic arts materials regulated by ~~Section 301,~~ or Sections 302, 303, 304 or 305 ~~shall~~ must be determined using the applicable EPA Reference Method 24, ~~or 24A,~~ or Title 40, CFR, Part 60, Appendix A.
- b.** Calculation of the VOC content of fountain solutions ~~shall~~ must place the entire volume of the sample in the denominator, e.g., including water, alcohol, non-precursors, and all other solutes, such that the entire volume of the sample is included in the calculations.

**504.2 503.2 Test Method For Determining Minimum VOC Content Of A Fountain Solution Via Density And Specific Gravity:** ~~The test method procedure, which employs an ASTM rated hydrometer, is found in this rule's Appendix A, subsection b. ASTM is the American Society for Testing and Materials~~ VOC content must be determined in accordance with EPA Method 24 or the use of a hydrometer, refractometer, or conductivity meter. Any hydrometer used for the purposes of this section must be rated (ASTM E100-05), Hydrometers used must be accurate within 2 percent of full scale and conform to ASTM requirements (ASTM E100-05). Each thermometer, must be accurate to  $\pm 0.5^{\circ}\text{F}$  and conforming to ASTM requirements (ASTM E1-07).

**504.3 503.3 Emission Testing:** Control efficiency of an emissions control device ~~shall~~ must be determined according to EPA Reference Method ~~25, 25A, or 25B, Title 40, CFR Part 60, Appendix A. Capture efficiency of an Emissions Control System ECS shall~~ must be determined according to "Guidelines for Determining Capture Efficiency" January 9, 1995, Candace Sorrell, Source Characterization Group A, Office of Air Quality Planning and Standards, US EPA. EPA-Alternative Control Techniques Document: Offset Lithographic Printing, EPA 453/R-94-054, June 1994. This document is incorporated by reference and is available at 2406 South 24 Street, Suite E 214, Phoenix, Arizona, or call (602) 506-6700 Maricopa County Air Quality Department, 1001 N. Central Avenue, Phoenix, AZ 85004 or by calling (602) 506-0169 for information.

**504.4 503.4 Vapor Pressure:** The total partial vapor pressure of all VOC in a cleaning solution ~~shall~~ must be determined by ~~ASTM D2879-92~~ ASTM D2879-97 or by calculations using certified data from a laboratory or manufacturer revealing the exact formulation.

## **APPENDIX A TO RULE 337**

### **a. Definition.**

**NON-PRECURSOR ORGANIC COMPOUND**—Any of the following organic compounds which have been designated by the EPA as having negligible photochemical reactivity: acetone; methane; ethane; methylene

chloride (dichloromethane); 1,1,1-trichloroethane; trichlorofluoromethane (CFC-11); dichlorodifluoromethane (CFC-12); chlorodifluoromethane (CFC-22); 1,1,2-trichloro-1,2,2-trifluoroethane (CFC-113); 1,2-dichlorotetrafluoroethane (CFC-114); chloropentafluoroethane (CFC-115); trifluoromethane (HFC-23); 2,2-dichloro-1,1,1-trifluoroethane (HCFC-123); 2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124); 1,1-dichloro-1-fluoroethane (HCFC-141b); 1-chloro-1,1-difluoroethane (HCFC-142b); pentafluoroethane (HFC-125); 1,1,2,2-tetrafluoroethane (HFC-134); 1,1,1,2-tetrafluoroethane (HFC-134a); 1,1,1-trifluoroethane (HFC-143a); 1,1-difluoroethane (HFC-152a); parachlorobenzotrifluoride

(PCBTF); perchloroethylene (tetrachloroethylene); 3,3-dichloro-1,1,1,2,2-pentafluoropropane (HCFC-225ca); 1,3-dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb); 1,1,1,2,3,4,4,5,5,5-decafluoropentane (HFC-43-10mee); cyclic, branched, or linear completely methylated siloxanes; all completely fluorinated, completely saturated: alkanes, ethers and tertiary amines; sulfur-containing perfluorocarbons with no unsaturations, no hydrogen, and with sulfur bonds only to carbon and fluorine.

**b. Test Method for Determining the Density and Specific Gravity of a Fountain Solution:**

- (1) **Procedure:** Gently invert or shake a covered container of fluid to be tested several times to assure adequate mixing. No foam should be present where hydrometers are inserted. Readings should be taken as quickly as is practicable to avoid unnecessary evaporation of VOC content. Conduct 6 successive readings with 2 different hydrometers, 3 readings apiece. Each hydrometer shall be accurate within 2 percent of full scale and conform to ASTM requirements. A thermometer, accurate to  $\pm 0.5^{\circ}\text{F}$  and conforming to ASTM requirements, shall be used and the temperature of the fountain solution being tested shall be noted. The thermometer may be an integral part of a combined form hydrometer. The density of water at that temperature shall be obtained from a standard table such as is found in the CRC reference.
- (2) **Findings:** The quotient of the density of the fluid divided by the density of water shall be determined for each of the 6 pairs of numbers. If none of the 6 results equals or exceeds (is larger than) the applicable specific gravity limit in Table AP-1, then the percent of VOC in the tested fountain solution exceeds the limit. In other words, it is not a violation of the limit unless each of the total of six results is below the limit.

**c. Equivalent Expressions of VOC Limit:**

Table AP-1\*

VOC LIMIT (by volume)	Limit: Maximum pounds of VOC per gallon of fountain solution	Limit: Metric equivalent	Specific Gravity of IPA & water at VOC volume limit
15%	1.1 lb/gal	130 g/liter	0.9800
10%	0.75 lb/gal	90 g/liter	0.9860
5%	0.43 lb/gal	52 g/liter	0.9920
25.5%	1.75 lb/gal	210 g/liter	0.9690
17%	1.16 lb/gal	140 g/liter	0.9790

8.5%	0.58 lb/gal	70 g/liter	0.9890
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\*(This table references Table 1, Section 302)