

**REGULATION 8  
ORGANIC COMPOUNDS  
RULE 20  
GRAPHIC ARTS PRINTING AND COATING OPERATIONS**

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**REGULATION 8  
ORGANIC COMPOUNDS  
RULE 20  
GRAPHIC ARTS PRINTING AND COATING OPERATIONS**

(Adopted April 12, 1980)

**8-20-100 GENERAL**

**8-20-101 Description:** The purpose of this Rule is to limit the emission of volatile organic compounds (VOC) from graphic arts operations. Any graphic arts operation that is exempt from the provisions of this Rule shall be subject to the provisions of Rule 4, if not already subject to another rule of Regulation 8.

*(Amended 12/4/85; 10/6/93; 11/19/08)*

**8-20-110 Limited Exemption, Low-Emitting Facility:** Until July 1, 2009, the requirements of this Rule shall not apply to any facility that emits less than 79.4 kilograms (175 pounds) of VOC in any month from graphic arts operations, including surface preparation and cleanup solvent, provided the requirements of Section 8-20-503 are met. Effective July 1, 2009, the requirements of this Rule shall not apply to a facility that emits less than 34.0 kilograms (75 pounds) of VOC in any month from graphic arts operations, provided the graphic arts owner or operator complies at all times with the requirements of Section 8-20-503. For the purpose of calculating exemption applicability, emissions of volatile organic compounds from the use of non-heatset lithographic ink as determined by Section 8-20-601 shall be reduced by 95 percent pursuant to Section 8-20-409.

*(Amended 4/19/89; 10/6/93; 3/3/99; 11/19/08)*

**8-20-111 Limited Exemption, Laboratory and Experimental Operations:** Until July 1, 2009, the requirements of this Rule, except as provided in Section 8-20-503, shall not apply to equipment used exclusively for research, laboratory analysis or determination of the quality and commercial acceptance of a printed product, provided emissions of VOC from such equipment are less than 79.4 kilograms (175 pounds) per month per facility. Effective July 1, 2009, the requirements of this Rule, except as provided in Section 8-20-503, shall not apply to equipment used exclusively for research, laboratory analysis or determination of the quality and commercial acceptance of a printed product, provided the emissions of VOC from such equipment are less than 34.0 kilograms (75 pounds) per month per facility.

*(Amended 4/19/89; 10/6/93; 3/3/99; 11/19/08)*

**8-20-112 Deleted April 19, 1989**

**8-20-113 Deleted April 19, 1989**

**8-20-114 Deleted April 19, 1989**

**8-20-115 Deleted April 19, 1989**

**8-20-116 Exemption, Circuitry Printing:** The requirements of this Rule shall not apply to circuitry printing.

*(Adopted 4/19/89; Amended 3/3/99)*

**8-20-117 Exemption, Heat Shrinkable Tubing and Wire Insulation:** The requirements of this Rule shall not apply to the printing of heat shrinkable tubing or wire insulation.

*(Adopted 10/6/93; Amended 3/3/99; 11/19/08)*

**8-20-118 Limited Exemption, Water Slide Decals:** The requirements of this Rule, except as provided in Section 8-20-503, shall not apply to the screen printing of water slide decals.

*(Adopted October 6, 1993)*

**8-20-119 Exemption, Vapor Degreasers:** The requirements of this Rule shall not apply to the operation of any vapor degreaser that uses solvents to clean press equipment. Such vapor degreasers are subject to the requirements of Regulation 8, Rule 16: Solvent Cleaning Operations.

*(Adopted 3/3/99; Amended 11/19/08)*

**8-20-120 Limited Exemption, Digital Printing:** The requirements of Sections 8-20-302 and 8-20-309 of this Rule shall not apply to digital printing operations, provided applicable records are maintained in accordance with the requirements of Section 8-20-503.

*(Adopted November 19, 2008)*

- 8-20-121 Limited Exemption, Cleaning Products:** The requirements of Section 8-20-309 shall not apply to products used to clean ultraviolet lamps and reflectors or electron beam processors; or to the stripping of ultraviolet or electron beam-cured inks, coatings or adhesives. The owner or operator shall maintain records in accordance with the requirements of Section 8-20-503.  
*(Adopted November 19, 2008)*
- 8-20-122 Exemption, Printing Operations Subject to Other Rules:** Operations that apply ink to substrates and are subject to any of the following District Rules, shall be exempt from the requirements of this Rule:  
122.1: Regulation 8, Rule 11: Metal Container, Closure, and Coil Coating  
122.2: Regulation 8, Rule 23: Flat Wood Paneling and Wood Flat Stock  
*(Adopted November 19, 2008)*
- 8-20-123 Limited Exemption, Wallpaper Screen Printing Operations:** Effective July 1, 2009, the requirements of Sections 8-20-307 and 309 shall not apply to hand-operated screen printing on porous (paper) wallpaper, provided the operator can demonstrate that the screen printing operations, including clean-up solvent, emit less than 79.4 kilograms (175 pounds) of VOC in any month, and the operator complies with the requirements of Section 8-20-503.  
*(Adopted November 19, 2008)*
- 8-20-200 DEFINITIONS**
- 8-20-201 Approved Emission Control System:** A system for reducing emissions of VOC to the atmosphere, consisting of a control device and an emissions collection system that achieves the overall efficiency specified in Section 8-20-308 at all times during operation of the equipment.  
*(Amended 4/19/89; 10/6/93; 11/19/08)*
- 8-20-202 Flexographic Printing:** A printing method that uses a raised image carrier on a flexible printing roll to apply words, designs or pictures onto a substrate. The roll is typically made of rubber or other elastomeric materials. The portion of the roll that is not raised is often referred to as the non-image area.  
*(Amended November 19, 2008)*
- 8-20-203 Deleted November 19, 2008**
- 8-20-204 Graphic Arts Operation:** A gravure, publication gravure, flexographic printing, digital printing, screen printing, letterpress, or lithographic printing operation; an associated coating, laminating, or adhesive operation to produce a printed product; and the use of solvents for any surface preparation or cleanup for any of the operations stated above.  
*(Amended 12/4/85; 4/19/89; 10/6/93; 11/19/08)*
- 8-20-205 Gravure Printing:** An intaglio printing method in which the ink is transferred from minute etched wells on a plate to the substrate, which is supported by an impression roller, with excess ink removed by a doctor blade.  
*(Amended November 19, 2008)*
- 8-20-206 Deleted October 6, 1993**
- 8-20-207 Non-Porous Substrate:** Any material whose surface prevents penetration by water. Non-porous substrates include, but are not limited to: foil, polyethylene, polypropylene, terephthalate (mylar), terephthalate glycol (PETG), polyvinyl chloride (PVC), and oriented polystyrene cellophane (OPS), paper or paperboard coated with a non-porous surface, metalized polyester, nylon, other copolymers and blends of polymers. Clay-coated printing paper, as defined by the American Paper Institute Classification System, and paperboard coated with clay to prevent water penetration are non-porous substrates for purposes of this Rule.  
*(Amended November 19, 2008)*
- 8-20-208 Deleted October 6, 1993**
- 8-20-209 Porous Substrate:** A material whose surface does not prevent penetration by water. Porous substrates include, but are not limited to: paper, paperboard, and any paper product, that is coated with porous materials.  
*(Amended November 19, 2008)*

- 8-20-210 Publication Gravure:** Gravure printing is a printing method on a substrate that is subsequently formed into books, magazines, catalogues, brochures, directories, newspaper supplements or other types of printed materials.  
*(Amended November 19, 2008)*
- 8-20-211 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. Fountain solution is primarily water and contains at least one of the following materials: etchants such as mineral salts; hydrophilic gums; or VOC additives to reduce the surface tension of the solution.  
*(Adopted 12/4/85; Amended 3/3/99; 11/19/08)*
- 8-20-212 Letterpress Printing:** A printing method in which the image area is raised relative to the non-image area and the ink is transferred to the substrate directly from the image surface.  
*(Adopted 12/4/85; Amended 11/19/08)*
- 8-20-213 Lithographic Printing:** A plane-o-graphic printing method in which the image and non-image areas are on the same plane.  
*(Adopted 12/4/85; Amended 10/6/93; 11/19/08)*
- 8-20-214 Screen Printing:** A printing method in which the ink passes through a web or a fabric upon which a stencil has been applied. The stencil openings determine the form and dimensions of the imprint.  
*(Adopted 12/4/85; Amended 11/19/08)*
- 8-20-215 Makeup Solvent:** A solvent that is added to printing inks to reduce viscosity.  
*(Adopted 4/19/89; Amended 11/19/08)*
- 8-20-216 Volatile Organic Compounds (VOC):** Any organic compound of carbon (excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate) that would be emitted during graphic arts operations.
- 216.1 For the purpose of calculating the VOC content of an ink, coating, or adhesive under this Rule, any water or any of the following non-precursor organic compounds:  
acetone  
methyl acetate  
parachlorobenzotrifluoride (PCBTF)  
cyclic, branched or linear, completely methylated siloxanes (VMS)  
shall not be considered to be part of the ink, coating, or adhesive.
- 216.2 For the purpose of calculating the VOC content of a fountain solution or cleaning product, any water or any of the non-precursor organic compounds listed in subsection 8-20-216.1, shall be considered part of the volume, but shall not be considered part of the VOC content of the fountain solution or cleaning product.  
*(Adopted 4/19/89; Amended 10/6/93; 6/15/94; 12/20/95; 3/3/99; 11/18/08)*
- 8-20-217 Deleted November 19, 2008**
- 8-20-218 Non-Heat Set Ink:** An ink that dries by oxidation or absorption into the substrate without the use of heat from dryers or ovens.  
*(Adopted 4/19/89; Amended 11/19/08)*
- 8-20-219 Extreme Performance Ink/Coating:** For the purposes of this Rule, an ink or coating used in screen printing on a non-porous substrate that is designed to resist or withstand any of the following: more than two years of outdoor exposure; exposure to industrial-grade chemicals, solvents, acids, or detergents; oil products; cosmetics; temperatures exceeding 76°C (170°F); or vacuum forming, embossing or molding.  
*(Adopted 10/6/93; Amended 11/19/08)*
- 8-20-220 Heat Shrinkable Tubing and Wire Insulation:** Thermoplastic tubing including, but not limited to, polyethylene, kynar and mylar tubing that, after printing, is exposed to temperatures exceeding 100°C (212°F) or other environmental extremes, including but not limited to, heat, cold, moisture, fungus, chemical, nuclear, repetitive rubbing, and contact with hot fluids.  
*(Adopted 10/6/93; Amended 3/3/99; 11/19/08)*
- 8-20-221 Metallic Ink:** An ink that contains greater than 50 grams of metal per liter (0.4 lb/gal) of ink.  
*(Adopted October 6, 1993)*

- 8-20-222 Sign Ink/Coating:** An ink or coating used in screen printing indoor and outdoor signs (excluding structural components) and murals, including lettering enamels, poster colors, copy blockers, and bulletin enamels.  
*(Adopted October 6, 1993)*
- 8-20-223 Solvent:** An organic compound that is used as a diluent, thinner, dissolver, viscosity reducer, cleaning agent or used for a similar purpose.  
*(Adopted 10/6/93; Amended 11/18/08)*
- 8-20-224 Water Slide Decal:** A decal that is screen printed onto treated paper stock and is removable from the stock by the dissolution of an underlying, water-soluble adhesive or a similar carrier.  
*(Adopted 10/6/93; Amended 11/19/08)*
- 8-20-225 Web Splicing Adhesive:** An adhesive that is used to join two continuous rolls of substrate.  
*(Adopted 10/6/93; Amended 11/19/08)*
- 8-20-226 Key System Operating Parameter:** An emission control system operating parameter, such as temperature, flow rate, and pressure, that ensures operation of the abatement equipment within manufacturer specifications and compliance with the standards in Section 8-20-308.  
*(Adopted 6/15/94; Amended 11/19/08)*
- 8-20-227 Circuitry Printing:** Printing on circuit boards, membrane switches and other electronic circuitry.  
*(Adopted 3/3/99; Amended 11/19/08)*
- 8-20-228 Lithographic, Blanket and Roller Washes:** Cleaning products that are used to wash the blankets, the rollers, and the exterior surfaces of the printing press to remove excess printing inks, oils, and paper pieces.  
*(Adopted 3/3/99; Amended 11/19/08)*
- 8-20-229 Lithographic, Other Cleaners:** Cleaning products that are used to clean the other components of the lithographic presses other than blankets, rollers, and exterior surfaces, such as metering rollers and printing plates.  
*(Adopted 3/3/99; Amended 11/19/08)*
- 8-20-230 Deleted November 19, 2008**
- 8-20-231 VOC Composite Partial Pressure:** The sum of the partial pressures of the compounds defined as VOCs.  
*(Adopted 3/3/99; Amended 11/19/08)*
- 8-20-232 Specialty Flexographic and Lithographic Printing:** Flexographic or lithographic printing or coating on polyethylene, polypropylene, polyester and foil substrates for food packaging and health care products and specialty products on nylon substrates.  
*(Adopted 3/3/99; Amended 11/19/08)*
- 8-20-233 Ultraviolet Curing:** A process that uses ultraviolet (UV) or visible light radiation to polymerize photosensitive materials on a substrate. The photosensitive material may be formulated into an ink, coating, adhesive or other product.  
*(Adopted November 19, 2008)*
- 8-20-234 Digital Printing:** A print-on-demand method of printing in which an electronic output device transfers 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.  
*(Adopted November 19, 2008)*
- 8-20-235 Cold Cleaner:** Any equipment that uses liquid solvent as a cleaning agent. A cold cleaner includes, but is not limited to, vats, tubs, spray sinks, spray booths, and batch-loaded dip tanks.  
*(Adopted November 19, 2008)*
- 8-20-236 Vapor Degreaser:** Any equipment that uses condensed hot solvent vapor as a cleaning agent to clean parts.  
*(Adopted November 19, 2008)*
- 8-20-237 Adhesive:** A material that is applied for the primary purpose of bonding two surfaces together by surface attachment. Adhesives may be used to facilitate the attachment of two surfaces or substances in varying degrees of permanence.  
*(Adopted November 19, 2008)*
- 8-20-238 Adhesive Removal Products:** Any product used to clean adhesive application equipment.  
*(Adopted November 19, 2008)*

- 8-20-239 Ink:** A pigmented and/or dyed liquid or paste used especially for printing and other graphic arts operations.  
*(Adopted November 19, 2008)*
- 8-20-240 Coating:** A pigmented or clear continuous film applied to a substrate to perform a protective or decorative function.  
*(Adopted November 19, 2008)*
- 8-20-241 Other Press Parts:** Press parts that do not come into contact with inks, adhesives, or coatings. Other press parts include, but are not limited to, pressure rollers, motors, and belts.  
*(Adopted November 19, 2008)*
- 8-20-242 Radiation Curing:** The use of electronic radiation to polymerize or cure specially-formulated inks, coatings, and adhesives on a substrate. Electron beam and ultraviolet light are radiation curing methods used in the graphic arts operations.  
*(Adopted November 19, 2008)*
- 8-20-243 Overall Efficiency:** The efficiency of an approved emission control system, measured by the collection system's capture efficiency multiplied by the destruction efficiency of the control device expressed as a percentage.  
*(Adopted November 19, 2008)*
- 8-20-244 Electron Beam Curing:** A process that uses electron beam (EB) radiation to polymerize photosensitive materials on a substrate. The photosensitive material may be formulated into an ink, coating, adhesive, or other product.  
*(Adopted November 19, 2008)*
- 8-20-245 Inkjet Printing:** A digital printing process in which a printing device forms images by applying streams of very fine ink droplets through printheads onto a medium. Inkjet printers include, but are not limited to, piezo, thermal, continuous, and bubblejet printing devices.  
*(Adopted November 19, 2008)*

**8-20-300 STANDARDS**

**8-20-301 Deleted November 19, 2008**

**8-20-302 Flexographic, Gravure, Publication Gravure, Letterpress, and Lithographic Requirements:** Except as provided in Section 8-20-308, an owner or operator shall not conduct a flexographic, gravure, letterpress, lithographic, printing or coating operation, unless the owner or operator conducts the operation using products with the following product limits, expressed in grams VOC per liter of product as applied (pounds per gallon), less water and exempt solvent, or percent VOC by volume:

**Product Limits**

grams VOC per liter of product as applied, less water and exempt solvent  
(lbs/gal)

	Current Limit	Effective 7/1/09
	Less than:	Less than:
Ink	300 (2.5)	300 (2.5)
Flexographic Ink Porous Substrate	300 (2.5)	225 (1.9)
Flexographic Ink Non-Porous Substrate	300 (2.5)	300 (2.5)
Coating	300 (2.5)	300 (2.5)
Adhesive	150 (1.25)	150 (1.25)
Web Splicing Adhesive	300 (2.5)	300 (2.5)

**Product Limit**

percent VOC by  
volume  
8

*(Amended 10/6/93; 6/15/94; 3/3/99; 11/19/08)*

**8-20-303 Deleted April 19, 1989**

**8-20-304 Deleted November 19, 2008**

**8-20-305 Deleted April 19, 1989**

**8-20-306 Compliance Statement, VOC Label Requirement:** Manufacturers and suppliers of all inks, coatings, adhesives, and fountain solutions that are sold for use in graphic arts operations within the District other than digital printing shall include a designation



of their products' VOC content less water, as supplied expressed in grams per liter or pounds per gallon on data sheets. Effective July 1, 2009, manufacturers and suppliers of cleaning products that are sold for use in graphic arts operations within the District and of all inks, coatings, and adhesives that are sold for use in digital printing subject to Section 8-20-503.3 within the District shall include a designation of their products' VOC content, less water, as supplied, expressed in grams per liter or pounds per gallon, on data sheets. Effective July 1, 2009, manufacturers and suppliers, including manufacturers and suppliers of digital printing inks and solvents subject to Section 8-20-503.3, shall only distribute within the District inks, coatings, adhesives, fountain solutions, and cleaning products for use in graphic arts operations subject to VOC limits in Section 8-20-302, 307, and 309 in containers with a label that specifies the products' VOC content, expressed in grams per liter or pounds per gallon, and any recommended dilution factor or mix ratio.

*(Adopted 4/19/89; Amended 10/6/93; 11/19/08)*

- 8-20-307 Screen Printing Requirements:** Except as provided in Section 8-20-308, an owner or operator shall not conduct a screen printing operation unless the following product limits, expressed in grams VOC per liter (pounds per gallon) as applied, less water and exempt solvent, are met:

**Product Limit**  
**grams per liter VOC as applied, less water and exempt solvent (lbs/gal)**

	Less than:
Ink	400 (3.3)
Coating	400 (3.3)
Adhesive	150 (1.25)
Extreme Performance Ink/Coating	400 (3.3)
Metallic Ink	400 (3.3)
Sign Ink/Coating	400 (3.3)

*(Adopted 10/6/93; Amended 3/3/99; 11/19/08)*

- 8-20-308 Approved Emission Control System Requirements:** The limits of Section 8-20-302, 307, or 309 shall not apply when emissions of VOC to the atmosphere from the printing, coating or laminating, drying and cleaning operations are controlled by an emission control system that meets the requirements of Regulation 2, Rule 1, and has an overall efficiency of at least 75 percent on a mass basis.

*(Adopted 10/6/93; Amended 3/3/99; 11/19/08)*

- 8-20-309 Cleaning Product Requirements:** Until July 1, 2009, and except as provided in Section 8-20-308, an owner or operator shall not use cleaning products containing VOC's to clean equipment used in graphic arts operations, unless such cleaning products meet the limits set forth below.

**Current Cleaning Product Limit**  
**Until 7/1/09**

	VOC g/l (lb/gal), including water		VOC Composite Partial Pressure mm Hg @ 20°C (68°F)
Lithographic, Blanket and Roller Washes	300 (2.5)	OR	10
Lithographic, Other Cleaners	300 (2.5)	OR	25
Screen Printing, Ink Removal Products	300 (2.5)	OR	10
Gravure Printing	800 (6.7)	OR	25
Ultraviolet Inks, Ink Removal Products	800 (6.7)	AND	33
Flexographic Printing	810 (6.8)	AND	21
Specialty Flexographic Printing	880 (7.4)	AND	25

Effective on the dates indicated, and except as provided in Section 8-20-308, an owner or operator shall not use cleaning products containing VOCs to clean

equipment used in graphic arts operations, including cleaning products used in cold cleaners, unless such cleaning products contain VOC in amounts that are less than the limits set forth below.

**Future Cleaning Product Limits**

Equipment	Effective 7/1/09	Effective 7/1/10	Effective 7/1/11
<b>For Press Equipment, except Other Press Parts:</b>	VOC g/l (lb/gal) including water	VOC g/l (lb/gal) including water	VOC g/l (lb/gal) including water
Flexographic Press	500 (4.2)	25 (0.21)	
Specialty Flexographic or Lithographic Press	500 (4.2)		100 (0.83)
Gravure Printing Press (Packaging)	450 (3.7)	25 (0.21)	
Gravure Printing Press (Publication)	450 (3.7)	100 (0.83)	
Letterpress Press	500 (4.2)	100 (0.83)	
Lithographic Press, by Manual Washing	500 (4.2)	100 (0.83)	
Lithographic Press, by Automatic Washing	650 (5.4)	100 (0.83)	
Screen Printing Press	500 (4.2)		100 (0.83)
Adhesive Application Equipment	500 (4.2)	25 (0.21)	
Ultraviolet Ink Removal, Any Press Type	650 (5.4)	100 (0.83))	
<b>Other Press Parts</b>	450 (3.7)	25 (0.21)	

*(Adopted 3/3/99; Amended 11/19/08)*

**8-20-320 Solvent Evaporative Loss Minimization:** The requirements of this Section shall apply to the use of solvent for surface preparation and cleanup and to the use, mixing, storage, and disposal of ink, coating or adhesive:

- 320.1 An owner or operator shall not use open containers for the storage or disposal of cloth or paper impregnated with organic compounds that are used for surface preparation, cleanup or ink, coating or adhesive removal.
- 320.2 An owner or operator shall not store in open containers spent or fresh organic compounds used for surface preparation, cleanup or removal of inks, coatings, or adhesives.
- 320.3 An owner or operator shall not leave containers of ink, coating, adhesive or fountain solution open when not in use.

*(Adopted 4/19/89; Amended and Renumbered 10/6/93; Amended 11/19/08)*

**8-20-400 ADMINISTRATIVE REQUIREMENTS**

**8-20-401 Deleted April 19, 1989**

**8-20-402 Deleted April 19, 1989**

**8-20-403 Deleted April 19, 1989**

**8-20-404 Deleted April 19, 1989**

**8-20-405 Deleted April 19, 1989**

**8-20-406 Deleted November 19, 2008**

**8-20-407 Deleted November 19, 2008**

**8-20-408 Registration for Small Facilities:** No later than July 1, 2009, any owner or operator conducting a graphic arts operation that emits a minimum of 75 pounds but less than 400 pounds of VOC per month shall register the operation in accordance with Regulation 1, Section 410. Any owner or operator registering a graphic arts operation shall pay the fees required, as set forth in Regulation 3.

*(Adopted November 19, 2008)*

**8-20-409 Calculation for Determining VOC Emissions for Graphic Arts Operations:**

409.1 Total VOC emissions in pounds per month shall be determined as follows:

$$E = E_1 + E_2 + E_3$$

409.2 VOC Emissions from Ink Usage (where throughput is in pounds):

$$E_1 = \sum_{i=1}^n Q_i (\% \text{ VOCwt}_i / 100) (1 - R_i)$$

Where:

$E_1$  = Sum of VOC emissions from ink usage in pounds

$Q$  = Throughput, pounds (minus waste disposal)

$\text{VOCwt}$  = Weight percent of VOC per pound of ink, as applied

$R$  = Ink retention factor (0.2 for heat-set lithographic printing, 0.95 for non-heat set lithographic printing, and 0 for all other printing operations)

$n$  = Number of different inks used.

409.3 VOC Emissions from Ink, Coating, and Adhesive Usage (where throughput is in gallons, Method A):

$$E_2 = \sum_{i=1}^n Q_i (\% \text{ VOCvol}_i / 100) (D_i) (1 - R_i)$$

Where:

$E_2$  = Sum of VOC emissions in pounds

$Q$  = Throughput, gallons (minus waste disposal)

$\text{VOCvol}$  = Actual volume percent of VOC per gallon of ink, coating or adhesive, as applied

$D$  = Density of the solvent portion of the coating (assume 7 lb/gallon for non-halogenated materials or 11 lb/gallon for halogenated materials)

$R$  = Ink retention factor (0.2 for heat-set lithographic printing, 0.95 for non-heat set lithographic printing, and 0 for all other printing operations, coating and adhesive)

$n$  = Number of different inks, coatings, and adhesives used.

VOC Emissions from Ink, Coating, and Adhesive Usage (where throughput is in gallons, Method B):

$$E_3 = \sum_{i=1}^n Q_i (\text{VOClbs}_i) (1 - R_i)$$

Where:

$E_3$  = Sum of VOC emissions in pounds

$Q$  = Throughput, gallons (minus waste disposal)

$\text{VOClbs}$  = Actual pounds of VOC per gallon in ink, coating or adhesive, as applied

$R$  = Ink retention factor (0.2 for heat-set lithographic printing, 0.95 for non-heat set lithographic printing, and 0 for all other printing operations, coating and adhesive)

$n$  = Number of different inks, coatings, and adhesives used.

409.4 VOC Emissions from Fountain Solution and Cleaning Materials

$$E_3 = \sum_{i=1}^n Q_i (\text{VOClbs}_i)$$

Where:

$E_3$  = Sum of VOC emissions in pounds

$Q$  = Throughput, gallons (minus waste disposal)

$\text{VOClbs}$  = Actual pounds of VOC per gallon in fountain solution or cleaning material, as applied

$n$  = Number of different fountain solutions and cleaning materials used.

*(Adopted November 19, 2008)*

**8-20-500 MONITORING AND RECORDS**

**8-20-501 Deleted April 19, 1989**

**8-20-502 Deleted April 19, 1989**

**8-20-503 Recordkeeping Requirements:** An owner or operator subject to the recordkeeping requirements of 503.1, 503.2 or 503.3 shall retain and have the following records available for inspection by the APCO for the previous 36-month period:

- 503.1 An owner or operator claiming an exemption pursuant to Sections 8-20-110 or 111 shall demonstrate applicability by calculating VOC emissions and keep records of the basis of the calculations such as receipts, purchase orders, invoices, material safety data sheets, hazardous waste manifests, and usage records sufficient to verify the facility's emissions.
- 503.2 An owner or operator claiming an exemption pursuant to Sections 8-20-118, 121 or 123 or subject to the requirements of Sections 8-20-302, 307, or 309 shall:
  - 2.1 Identify the name of the VOC-containing liquid stored in squirt bottles used on press equipment.
  - 2.2 Maintain a list of all inks, coatings, adhesives, fountain solutions, makeup solvents, and cleaning products currently in use to document the VOC content of each.
  - 2.3 Record on a monthly basis the type and amount of each ink, coating, adhesive, fountain solution, makeup solvent, surface preparation solvent, and cleaning product used during that month.
  - 2.4 Total the amount used of each of the following categories on a monthly basis: ink, coating, adhesive, fountain solution, makeup solvent, surface preparation solvent, and cleaning product, including cleaning product used in cold cleaners.
- 503.3 An owner or operator claiming an exemption pursuant to Section 8-20-120 and operating one of the following types of commercial digital printing equipment: i) any inkjet or liquid electrophotographic that uses solvent-based ink including UV or EB inks; or ii) water-based inkjet that has the capacity to operate at print speeds of at least 10,000 ft<sup>2</sup> per hour shall:
  - 3.1 Maintain a list of all inks, coatings, adhesives, makeup solvents, and cleaning products currently in use to document the VOC content of each.
  - 3.2 Record and add up on a monthly basis the type and amount of each ink, coating, adhesive, makeup solvent, surface preparation solvent, and cleaning product used during that month.

This requirement shall not apply to digital printing equipment in home offices.  
*(Adopted 4/19/89; Amended 10/6/93; 6/15/94; 3/3/99; 11/19/08)*

**8-20-504 Deleted October 6, 1993**

**8-20-505 Emission Control System Monitoring:** Any owner or operator who uses an emission control system which is subject to the provisions of Section 8-20-308 shall install a readily visible temperature gauge which monitors the operating temperature of the emission control system at all times during operation.

*(Adopted 4/19/89; Amended 9/20/89; 10/6/93; 11/19/08)*

**8-20-506 Emission Control System, Recordkeeping Requirements:** Any owner or operator subject to Section 8-20-308 shall:

- 506.1 Maintain a current list of inks, coatings, adhesives, fountain solutions and makeup solvent in use which states the VOC content of each.
- 506.2 Record on a daily basis the type and amount of all ink, coating, adhesive, fountain solution and makeup, surface preparation and cleanup solvent used.
- 506.3 Record key system operating parameters, as defined in Section 8-20-226, on a daily basis.
- 506.4 Retain and have such records available for inspection by the APCO for the previous 36-month period.

*(Adopted 10/6/93; Amended 6/15/94; 11/19/08)*

**8-20-507 Deleted November 19, 2008**

## 8-20-600 MANUAL OF PROCEDURES

**8-20-601 Analysis of Samples:** Samples of products specified in Sections 8-20-302 and 307 shall be analyzed as prescribed in the BAAQMD Manual of Procedures, Volume III, Methods 21 or 22, or EPA Methods 24 and 24A to determine VOC content. Samples of fountain solutions and cleaning products as specified in Sections 8-20-302 and 309 shall be analyzed as prescribed in the Manual of Procedures, Volume III, Method 31.

*(Amended 10/6/93; Amended 3/3/99; 11/19/08)*

**8-20-602 Determination of Emissions, Operations with a Control Device:** Emissions of volatile organic compounds from source operations controlled by an emission control system shall be determined as follows:

602.1 Capture efficiency shall be determined as specified in 40 CFR 51, Appendix M, Test Methods 204 – 204F, as applicable.

602.2 Control device destruction efficiency shall be determined as specified in the Manual of Procedures, Volume IV, ST-7 or EPA Method 25 or 25A.

602.3 For the determination of control device destruction efficiency, any non-precursor organic compound specified in Section 8-20-216 shall be included as a volatile organic compound.

602.4 The overall efficiency of an emission control system, expressed as a percentage, shall be calculated according to the following equation:

$$OE = [CE \times DE]/100$$

Where:

OE = Overall efficiency

CE = Capture efficiency

DE = Control device destruction efficiency

602.5 A source shall be in violation if the VOC emissions exceed the standards of this rule as measured by any of the reference test methods.

*(Amended 4/19/89; 9/20/89; 10/6/93; 6/15/94; 11/19/08)*

**8-20-603 Deleted October 6, 1993**

**8-20-604 Determination of VOC Composite Partial Pressure:** Emissions of VOC Composite Partial Pressure shall be measured as prescribed by BAAQMD Manual of Procedures, Volume III, Method 46.

*(Adopted March 3, 1999)*

**8-20-605: Determination of Emissions, Lithographic Printing Presses:** For the purpose of determining exemptions pursuant to Section 8-20-110 or 111, the following substrate retention factors will be applied: 20% retention of the VOC content of heatset inks, and 95% retention of the VOC content of non-heatset inks.

*(Adopted November 19, 2008)*

**8-20-606: Grams of VOC per liter for fountain solutions and cleaning products:** Calculate the VOC content by using the following equation:

$$VOC = \frac{W_s - W_w - W_{es}}{V_m}$$

Where:

$W_s$  = Weight of volatile compounds in grams.

$W_w$  = Weight of water in grams.

$W_{es}$  = Weight of exempt compounds in grams.

$V_m$  = Volume of material in liters.

*(Adopted November 19, 2008)*

**8-20-607: Grams of VOC per liter for coatings, inks, or adhesives:** Calculate the VOC content by using the following equation:

$$VOC = \frac{W_s - W_w - W_{es}}{V_m - V_w - V_{es}}$$

Where:

$W_s$  = Weight of volatile compounds in grams.

$W_w$  = Weight of water in grams.

$W_{es}$  = Weight of exempt compounds in grams.

$V_m$  = Volume of material in liters.  
 $V_w$  = Volume of water in liters.  
 $V_{es}$  = Volume of exempt compounds in liters.

*(Adopted November 19, 2008)*