

RULE 1130.1. SCREEN PRINTING OPERATIONS

(a) Applicability

This rule shall be applicable to all screen printing operations and any other operations which use screen printing equipment.

(b) Definitions For the purpose of this rule, the following definitions shall apply:

- (1) ADHESIVE is any substance that is used to bond one surface to another surface by attachment.
- (2) BANNERS are flexible substrates, such as, but not limited to, paper, vinyl, or fabric, which are screen printed to bear a message, picture, or design and which are manufactured to be suspended for purposes of display.
- (3) BUMPER STICKERS are adhesive-backed labels which are screen printed to bear a message, picture, or design, and are manufactured for application to motor vehicle bumpers.
- (4) CERAMIC DECALS are water-slide decals which are used to transfer images onto ceramic materials by firing above 8000F.
- (5) CERAMIC DECAL INK is any ink which is screen printed onto treated paper stock, in the production of ceramic decals.
- (6) CHEMICAL STORAGE AND TRANSFER EQUIPMENT is equipment designed to store or transfer petroleum-based fuels, or acid or alkaline-based materials. Chemical storage and transfer equipment includes, but is not limited to, gasoline pumps, automotive batteries, and above-ground storage tanks.
- (7) CHLORINE INDICATOR is a product which is screen printed with an ink that changes color to indicate chlorine concentrations in the range of 0 - 11 parts per million (ppm).
- (8) COATING is a layer of material applied to a substrate in a substantially unbroken film.
- (9) CONDUCTIVE INKS are screen printing inks which are applied in the production of electronic circuits and which contain more than 1680 grams of metal per liter of ink (14 lb/gal) as applied.

- (10) DECORATIVE PURPOSES are screen printing applications of graphic art designs other than identification purposes.
- (11) EXEMPT COMPOUNDS are any of the following compounds which have been determined to be non-precursors of ozone:
 - (A) Group I
 - trifluoromethane (HFC-23) chlorodifluoromethane (HCFC-22)
 - dichlorotrifluoroethane (HCFC-123)
 - tetrafluoroethane (HFC-134a)
 - dichlorofluoroethane (HCFC-141b)
 - chlorodifluoroethane (HCFC-142b)
 - cyclic, branched, or linear, completely fluorinated alkanes
 - cyclic, branched, or linear, completely fluorinated ethers with no unsaturations
 - cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations
 - sulfur-containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine
 - (B) Group II
 - methylene chloride
 - carbon tetrachloride
 - 1,1,1-trichloroethane (methyl chloroform)
 - trichlorotrifluoroethane (CFC-113)
 - dichlorodifluoromethane (CFC-12)
 - trichlorofluoromethane (CFC-11)
 - dichlorotetrafluoroethane (CFC-114)
 - chloropentafluoroethane (CFC-115)

Use of Group II compounds may be restricted in the future because they are either toxic, potentially toxic, or upper-atmosphere ozone depleters, or cause other environmental impacts. Specifically, the District Board has established a policy to phase out chlorofluorocarbons (CFC) on or before 1997.
- (12) EXTREME PERFORMANCE SCREEN PRINTING MATERIALS are screen printing inks and coatings which qualify under the provisions of section (h).
- (13) FLEET DECALS are decals, excluding bumper stickers, manufactured from non-porous substrates, for application to motor vehicles, boats,

airplanes, helicopters, or mobile equipment, for the purpose of fleet, model, or manufacturer identification.

- (14) GRAMS OF VOC PER LITER OF COATING (OR INK OR ADHESIVE), LESS WATER AND LESS EXEMPT COMPOUNDS, is the weight of VOC that is emitted during use, coating, curing, or drying per combined volume of VOC and coating (or ink or adhesive) solids, and which is calculated by the following equation:

Grams of VOC per Liter of Coating (or Ink or Adhesive), Less

$$\text{Water and Less Exempt Compounds} = \frac{W_s - W_w - W_{es}}{V_m - V_w - V_{es}}$$

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
 VW = volume of water in liters
 V_{es} = volume of exempt compounds in liters

- (15) GRAMS OF VOC PER LITER OF MATERIAL is the weight of VOC per volume of ink which is calculated by the following equation:

$$\text{Grams of VOC per Liter of Material} = \frac{W_s - W_w - W_{es}}{V_m}$$

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

- (16) HAZARD WARNING DECALS are decals, manufactured from nonporous substrates, for application to mechanical equipment or chemical storage and transfer equipment, for the purpose of safety warnings relating to equipment operation or emergency mitigation.
- (17) IDENTIFICATION PURPOSE is a screen printing application for the purpose of specifying products, parts, safety hazards, or for the purpose of graduation.

- (18) **LARGE FORMAT BANNERS** are banners, 80 inches in length or longer, which are screen printed through the use of a screen which is 80 inches in length or longer.
- (19) **MARQUEE LETTERING** is rigid plastic substrate, composed of clear, polycarbonate' or acrylic, screen printed to bear letters, symbols, or numbers, and manufactured for display in outdoor sign facia.
- (20) **MECHANICAL EQUIPMENT** is electrical, or fuel-powered, mechanically driven equipment.
- (21) **METALLIC INK** is ink containing at least 50 grams of metal per liter of ink (0.4 lb/gal) as applied.
- (22) **OEM EQUIPMENT DECALS** are decals manufactured from nonporous substrates, for application to mechanical equipment, according to original equipment manufacturer's (OEM) specifications, for the purpose of equipment or instrumentation identification.
- (23) **POLISHED RIGID PVC** is thin, clear, polished, rigid polyvinyl chloride, no greater than 15 millimeters in thickness.
- (24) **PRINTING** is any operation that imparts color, design alphabet, or numerals on a substrate.
- (25) **PRINTING INK** is any fluid or viscous composition used in printing, impressing, or transferring an image onto a substrate.
- (26) **REFLECTIVE SHEETING** is substrate material used in the manufacturing of safety signs or labels, including, but not limited to, traffic, street, and construction signs and safety personnel identification, and which provides reflectance of light under varying light intensities in order to enhance the conspicuous nature of the screen printed product.
- (27) **SCREEN PRINTING** is a printing process in which printing ink, coating, or adhesive material is passed through a taut web or fabric to which a refined form of stencil has been applied. The stencil openings determine the form and dimensions of the imprint.
- (28) **SCREEN PRINTING EQUIPMENT** is printing application equipment, flash-off area, ovens or dryers, conveyors, or other equipment operating as part of the screen printing process.
- (29) **SCREEN PRINTING MATERIALS** are any inks, coatings, or adhesives, including added thinners, or retarders, used in screen printing processes.

- (30) **SCREEN PRINTING PROCESSES** are processes which include screen printing and any subsequent drying, curing, or conveying of the screen-printed substrate.
- (31) **STAINED GLASS OVERLAY** is untreated polyester film, screen printed with polyester-based screen printed ink, to simulate the appearance of stained glass and which is used in the production of simulated stained glass.
- (32) **VOLATILE ORGANIC COMPOUND (VOC)** is any chemical compound that contains the element carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, carbonates and metallic carbides, ammonium carbonate and exempt compounds.
- (33) **WATER SLIDE DECALS** are decals which are screen printed onto treated paper stock, and are removable from the stock by the dissolution of an underlying, water-soluble adhesive or a similar carrier.
- (34) **WATER SLIDE DECAL ADHESIVE** is any adhesive which is screen printed onto treated paper stock, in the production of water slide decals.
- (35) **WINDOW DECALS** are decals manufactured for application to windows which are screen printed to display a message, picture, or design.

(c) **Requirements**

(1) **VOC Content of Screen Printing Materials**

A person shall not apply to any substrate any screen printing material, excluding extreme performance screen printing materials, which contains, as applied, a total amount of VOC in excess of the limits specified below, according to the following schedule:

- (A) For screen printing coatings and inks used in the production of the following products:

<u>PRODUCT</u>	VOC LIMIT					
	Grams per Liter of Coating (or Ink), Less Water and Less Exempt Compounds					
	<u>On and After July 1, 1992</u>		<u>On and After July 1, 1993</u>		<u>On and After January 1, 1995</u>	
	<u>g/l</u>	<u>lbs/gal</u>	<u>g/L</u>	<u>lbs/gal</u>	<u>g/L</u>	<u>lbs/gal</u>
Banners	400	3.3			400	3.3
Large Format Banners	800	6.7	400	3.3	400	3.3
Bumper Stickers	400	3.3			400	3.3
Marquee Lettering	600	5.0			400	3.3
Chlorine Indicator	500	4.2			500	4.2
Fleet Decals	800	6.7			400	3.3
Hazard Warning Decals	720	6.0			400	3.3
OEM Equipment Decals	800	6.7			400	3.3
Stained Glass Overlay	800	6.7			800	6.7
Water Slide Decals:						
Opaque Inks	400	3.3			400	3.3
Clear Inks	800	6.7			800	6.7
Ceramic Decal Inks	800	6.7			800	6.7
Window Decals	400	3.3			400	3.3

- (B) For screen printing coatings and inks not regulated by subparagraph (c)(1)(A) and which are applied to the following specified substrates:

<u>SUBSTRATE</u>	VOC LIMIT			
	Grams per Liter of Coating (or Ink), Less Water and Less Exempt Compounds			
	<u>On and After July 1, 1992</u>		<u>On and After January 1, 1995</u>	
	<u>g/l</u>	<u>lbs/gal</u>	<u>g/L</u>	<u>lbs/gal</u>
Ceramic	800	6.7	800	6.7
Fiberglass	600	5.0	600	5.0
Glass:				
For Decorative Purposes	400	3.3	400	3.3
For Identification Purposes	800	6.7	600	5.0
Metal:				
For Decorative Purposes	400	3.3	400	3.3
For Identification Purposes	800	6.7	600	5.0
Polished Rigid PVC	800	6.7	400	3.3

- Reflective Sheeting 800 6.7 400 3.3
- (C) For screen printing materials not regulated by the provisions in subparagraph (c)(1)(A) or (c)(1)(B), which have the following material classifications:

<u>SCREEN PRINTING MATERIAL</u>	VOC LIMIT			
	Grams per Liter of Coating (or Ink or Adhesive), Less Water and Less Exempt Compounds			
	On and After July 1, 1992		On and After January 1, 1995	
	<u>g/l</u>	<u>lbs/gal</u>	<u>g/l</u>	<u>lbs/gal</u>
Printing Ink	400	3.3	400	3.3
Conductive Ink	720	6.0	720	6.0
Coating	400	3.3	400	3.3
Adhesive	400	3.3	400	3.3
Water-Slide Decal Adhesive	800	6.7	800	6.7

- (2) VOC Content of Metallic Screen Printing Inks
- Notwithstanding the provisions of paragraph (c)(1), a person shall not apply any screen printing ink, determined to be classified as a metallic ink in accordance with paragraph (g)(2), in excess of the limits specified below.

	VOC LIMIT	
	Grams of VOC per Liter of Metallic Screen Printing Ink, Less Water and Less Exempt Compounds	
	<u>g/l</u>	<u>lbs/gal</u>
On and After July 1, 1992	600	5.0
On and After January 1, 1995	400	3.3

- (3) VOC Content of Extreme Performance Screen Printing Materials A person shall not apply any screen printing material determined, pursuant to section (h), to be classified as an extreme performance screen printing material in excess of the limits specified below:

	VOC LIMIT	
	Grams of VOC per Liter of Extreme Performance Screen Printing Material, Less Water and Less Exempt Compounds	
	<u>g/l</u>	<u>lbs/gal</u>
On and After July 1, 1992	800	6.7

On and After January 1, 1995

400

3.3

(4) Approved Emission Control System

An owner/operator may comply with the provisions of subparagraph (c)(1)(A), (c)(1)(B), (c)(1)(C), paragraph (c)(2), or (c)(3) by using an approved emission control system for reducing emissions of volatile organic compounds, consisting of collection and control devices which are approved, in writing, by the Executive Officer. The VOC emissions resulting from the use of inks, adhesives, and coatings shall be reduced by an equivalent or greater level to that achieved by the provisions of subparagraph (c)(1)(A), (c)(1)(B), (c)(1)(C), paragraph (c)(2), or (c)(3).

(d) Recordkeeping

Records shall be maintained pursuant to Rule 109.

(e) Prohibition of Specification and Sale

On and after July 1, 1992, a person shall not solicit from, sell to, or require any other person to use in the District any VOC-containing material subject to the provisions of this rule which, when thinned or reduced according to the manufacturer's recommendation for application, does not meet the -limits and the requirements of this rule. The prohibition against soliciting, selling, or requiring of VOC-containing materials shall not apply with respect to solicitations from, sales to, or requirements of persons operating pursuant to an approved emission control system, as provided for under paragraph (c)(4).

This section shall not apply to screen printing materials sold in this District for shipment outside of this District or for shipment to other manufacturers for repackaging.

(f) Labeling

Labels of screen printing materials shall comply with the provisions of Rule 443 and 443.1.

(g) Methods of Analysis

For the purpose of this rule, the following test methods shall be used. Other test methods determined to be equivalent after review by the staffs of the District, the Air Resources Board, and the United States Environmental Protection Agency, and approved in writing by the District Executive Officer may also be used.

- (1) VOC Content of Adhesives, Coatings, and Inks The VOC content of coatings shall be determined by:
 - (A) EPA Reference Method 24, (CFR Title 40, Part 60, Appendix A). The exempt solvent content shall be determined by SCAQMD Method 19 and Method 22 (SCAQMD "Laboratory Method of Analysis for Enforcement Samples" manual); or
 - (B) SCAQMD Methods 16, 17, 19, 22 and 24 (SCAQMD "Laboratory Method of Analysis for Enforcement Samples" manual).
- (2) Metal Content in Inks
The metal content of metallic and conductive inks shall be determined by the spectrographic method contained in Section III, Method 26 of the SCAQMD "Laboratory Method of Analysis for Enforcement Samples" manual.
- (3) Determination of Efficiency of Emission Control Systems
The efficiency of the collection device of the emission control system as specified in paragraph (c)(4) shall be determined by the EPA method cited in 55 Federal Register (FR) 26865, June 29, 1990. The efficiency of the control device as specified in paragraph (c)(4) shall be determined by EPA Method 25.

(h) Qualification for Classification as an Extreme Performance Screen Printing Material

A product is determined to require the use of an extreme performance screen printing material if it is non-porous and exposed to any of the following:

- (1) Petroleum-based fuels, or hydraulic fluids containing phosphate esters, or acid or alkaline solutions; or
- (2) Other similar environmental conditions, as determined by the Executive Officer.

An ink or coating may be classified as an extreme performance screen printing material provided that the applicator requests and receives written approval of such classification from the Executive Officer prior to the application of such ink or coating, and shows that the intended use of each object would require the use of an extreme performance screen printing material. Screen printing materials regulated under the provisions of subparagraph (c)(1)(A) or (c)(1)(B) shall not qualify for classification as extreme performance screen printing materials.