

1 **R307. Environmental Quality, Air Quality.**

2 **R307-351. Graphic Arts.**

3 **R307-351-1. Purpose.**

4 The purpose of this rule is to reduce volatile organic
5 compound (VOC) emissions from graphic arts printing operations.
6

7 **R307-351-2. Applicability.**

8 R307-351 applies to graphic arts printing operations that
9 are located in Box Elder, Cache, Davis, Salt Lake, Tooele, Utah
10 and Weber counties.
11

12 **R307-351-3. Definitions.**

13 The following additional definitions apply to R307-351:

14 "Blanket" means a synthetic rubber mat used in offset-
15 lithography to transfer or "offset" an image from a planographic
16 printing plate to paper or other substrate.

17 "Coating" means material applied onto or impregnated into a
18 substrate. Such materials include, but are not limited to,
19 solvent-borne and waterborne coatings.

20 "Flexible packaging" means any package or part of a package
21 the shape of which can be readily changed. Flexible packaging
22 includes, but is not limited to, bags, pouches, liners and wraps
23 utilizing paper, plastic, film, aluminum foil, metalized or
24 coated paper or film, or any combination of these materials.

25 "Flexographic press" means an unwind or feed section, which
26 may include more than one unwind or feed station (such as on a
27 laminator); a series of individual work stations, one or more of
28 which is a flexographic print station; any dryers (including
29 interstage dryers and overhead tunnel dryers) associated with
30 the work stations; and a rewind, stack, or collection section.

31 "Flexographic printing" means the application of words,
32 designs, and pictures to substrate by means of a roll printing
33 technique in which the pattern to be applied is raised above the
34 printing roll and the image carrier is made of rubber or other
35 elastomeric materials.

36 "Fountain solution" means a solution that is applied to the
37 image plate to maintain the hydrophilic properties of the non-
38 image areas, is composed mainly of water, and contains at least
39 one of the following materials: etchants such as mineral salts;
40 hydrophilic gums; or other additives.

41 "Heatset ink" means a quick-drying ink in which the
42 solvents are vaporized by passing the printed surface through a
43 dryer or oven.

44 "Letterpress printing" means a method where the image area
45 is raised relative to the non-image area and the ink is
46 transferred to the substrate directly from the image surface.

47 "Narrow-web flexographic press" means a flexographic press

1 that is not capable of printing substrates greater than 18
2 inches in width and that does not also meet the definition of
3 rotogravure press (i.e., it has no rotogravure print stations).

4 "Non-heatset ink" also called coldset ink, means an ink
5 which dries by oxidation and/or absorption into the substrate
6 without the use of heat from dryers or ovens.

7 "Offset lithographic printing" means a plane-o-graphic
8 method in which the image and non-image areas are on the same
9 plane and the ink is offset from a plate to a rubber blanket,
10 and then from the blanket to the substrate.

11 "Overall control efficiency" means the total efficiency of
12 a control system, determined either by the product of the
13 capture efficiency and the control device efficiency or a
14 liquid-liquid material balance.

15 "Packaging rotogravure printing" means rotogravure
16 printing, not otherwise defined as publication rotogravure
17 printing, upon paper, paper board, metal foil, plastic film, and
18 other substrates, which are, in subsequent operations, formed
19 into packaging products and labels. This includes, but is not
20 limited to, folding cartons, flexible packaging, labels and
21 wrappers.

22 "Printing operation" means the formation of words, designs,
23 or pictures on a substrate. All units in a machine which has
24 both coating and printing units will be considered as performing
25 a printing operation.

26 "Publication of rotogravure printing" means rotogravure
27 printing upon paper that is subsequently formed into books,
28 magazines, catalogues, brochures, directories, newspaper
29 supplements, and other types of printed materials.

30 "Publication rotogravure press" means a rotogravure press
31 used for publication rotogravure printing. A publication
32 rotogravure press may include one or more flexographic
33 imprinters. A publication rotogravure press with one or more
34 flexographic imprinters is not a flexographic press.

35 "Roll coating" means the application of a coating material
36 to a substrate by means of hard rubber or steel rolls.

37 "Roll printing" means the application of words, designs and
38 pictures to a substrate usually by means of a series of hard
39 rubber or steel rolls each with only partial coverage.

40 "Rotogravure coating" means the application of a uniform
41 layer of material across the entire width of the web to
42 substrate by means of a roll coating technique in which the
43 pattern to be applied is etched on the coating roll. The
44 coating material is picked up in these recessed areas and is
45 transferred to the substrate.

46 "Rotogravure press" means an unwind or feed section, which
47 may include more than one unwind or feed station (such as on a

1 laminator); a series of individual work stations, one or more of
2 which is a rotogravure print station; any dryers associated with
3 the work stations; and a rewind, stack, or collection section.
4 Inboard and outboard work stations, including those employing
5 any other technology, such as flexography, are included if they
6 are capable of printing or coating on the same substrate.

7 "Rotogravure printing" means the application of words,
8 designs, and pictures to a substrate by means of a roll printing
9 technique that involves a recessed image area in the form of
10 cells.

11 "Specialty printing operations" means all gravure and
12 flexographic operations that print a design or image, excluding
13 publication gravure and packaging gravure printing. Specialty
14 printing operations include, among other things, printing on
15 paper cups and plates, patterned gift wrap, wallpaper, and floor
16 coverings.

17 "Web" means a continuous sheet of substrate.

18 "Web-wide flexographic press" means a flexographic press
19 capable of printing substrates greater than 18 inches in width.
20

21 **R307-351-4. Standards for Rotogravure, Flexographic, and** 22 **Specialty Printing Operating Operations.**

23 (1) R307-351-4 applies to packaging and publication
24 rotogravure, excluding flexible packaging printing; packaging
25 and publication flexographic, excluding flexible packaging
26 printing; and specialty printing operations employing solvent
27 containing inks that have the potential emissions of at least 25
28 tons per year of VOCs on a per press basis. Solvent shall
29 include that used for dilution of ink and for equipment
30 cleaning. Machines that have both coating units (application of
31 a uniform layer of material across the entire width of a web)
32 and printing units (formation of words, designs and pictures)
33 shall be considered as performing a printing operation.

34 (2) No owner or operator of a packaging and publication
35 rotogravure, packaging and publication flexographic, or
36 specialty printing operation employing solvent containing ink
37 shall operate, or allow or permit the operation of a facility
38 unless:

39 (a) The volatile fraction of ink, as it is applied to the
40 substrate, contains 25% by volume or less of organic solvent and
41 75% by volume or more of water;

42 (b) The ink as it is applied to the substrate, less water,
43 contains 60% by volume or more nonvolatile material; or

44 (c) The owner or operator installs and operates a carbon
45 adsorption, incineration or other control system that reduces
46 the VOC emissions by a minimum of 90%.
47

1 **R307-351-5. Standards for Flexible Packaging Printing**
2 **Operations.**

3 (1) R307-351-5 applies to presses used for flexible
4 packaging printing with potential to emit, on a per press basis,
5 from the dryer, prior to controls, at least 25 tons per year of
6 VOC from inks, coatings and adhesives combined. The owner or
7 operator shall install and operates an add-on control system
8 that reduces the VOC emissions by a minimum of 80% control
9 efficiency.

10 (2) As an alternate to the add-on control, the following
11 two equivalent VOC content limits may be met by use of low VOC
12 content materials or combinations of materials and controls as
13 follows:

14 (a) 0.8 kg VOC/kg solids applied; or

15 (b) 0.16 kg VOC/kg materials applied

16 (3) The VOC content limits in R307-351-5(2) are met by
17 averaging the VOC content of materials used on a single press,
18 i.e., within a line. The use of averaging to meet the VOC
19 content limits is not allowed for cross-line, i.e., across
20 multiple lines.

21
22 **R307-351-6. Standards for Offset Lithographic Printing and**
23 **Letterpress Printing Operations.**

24 (1) R307-351-6 applies to heatset web offset lithographic
25 and heatset letterpress inks and dryers. Heatset presses used
26 for book printing and heatset presses with maximum web width of
27 22 inches or less are exempt from this section.

28 (a) Individual heatset web offset lithographic printing
29 presses and individual heatset web letterpress printing presses
30 with potential to emit from the dryer, on a per press basis,
31 prior to controls, of at least 25 tons per year. The owner or
32 operator shall install and operates an add-on control system
33 that reduces the VOC emissions by a minimum of 95% control
34 efficiency for the control device on heatset dryers.

35 (b) As an alternate to the control efficiency in R307-351-
36 6(1)(a), the control device outlet concentration may be reduced
37 to 20 ppmv as hexane on a dry basis to accommodate situations
38 where the inlet VOC concentration is low or where there is no
39 identifiable measurable inlet.

40 (2) Requirements for fountain solution. Any press with
41 total fountain solution reservoir of less than one gallon and
42 sheet-fed presses with maximum sheet size of 11 inches by 17
43 inches or smaller are exempt from this section.

44 (a) For heatset web offset lithographic printing, the
45 level of control for VOC emissions from on-press (as-applied)
46 fountain solution shall be 1.6% alcohol (by weight) in the
47 fountain or equivalent by:

1 (i) Reducing the on-press (as-applied) alcohol content to
2 1.6% alcohol or less (by weight);

3 (ii) Using 3% alcohol or less (by weight) on-press (as-
4 applied) in the fountain solution if the fountain solution is
5 refrigerated to below 60°F (15.5°C);

6 (iii) Using 5% alcohol substitute or less (by weight) on-
7 press (as-applied) and no alcohol in the fountain solution, or

8 (iv) Using other methods approved by the director.

9 (b) For sheet-fed offset lithographic printing, the level
10 of control for VOC emissions from on-press (as-applied) fountain
11 solution shall be equivalent to 5% alcohol (by weight) in the
12 fountain or equivalent by:

13 (i) Reducing the on-press (as-applied) alcohol content to
14 5% alcohol or less (by weight);

15 (ii) Using 8.5% alcohol or less (by weight) on-press (as-
16 applied) in the fountain solution provided the fountain solution
17 is refrigerated to below 60°F (15.5°C);

18 (iii) Using 5% alcohol substitute or less (by weight) on-
19 press (as-applied) and no alcohol in the fountain solution; or

20 (iv) Using other methods approved by the director.

21 (c) For non-heatset web offset lithographic printing, the
22 level of control for VOC emissions shall be 5% alcohol
23 substitute or less (by weight) on-press (as-applied) and no
24 alcohol in the fountain solution.

25 (3) Requirements for cleaning materials.

26 (a) For blanket washing, roller washing, plate cleaners,
27 metering roller cleaners, impression cylinder cleaners, rubber
28 rejuvenators, and other cleaners used for cleaning a press,
29 press parts, or to remove dried ink from areas around a press,
30 only cleaning materials with a VOC composite vapor pressure of
31 less than 10 mm Hg at 20°C or cleaning materials containing less
32 than 70 weight percent VOC shall be used.

33 (b) Cleaners used on electronic components of a press,
34 pre-press cleaning operations (e.g., platemaking), post-press
35 cleaning operations (e.g., binding), cleaning supplies (e.g.,
36 detergents) used to clean the floor (other than dried ink) in
37 the area around a press, or cleaning performed in parts washers
38 or cold cleaners are exempt from this section.

39 40 **R307-351-7. Work Practices and Recordkeeping.**

41 (1) Fugitive emissions. Control techniques and work
42 practices are to be implemented at all times to reduce VOC
43 emissions from fugitive type sources. Control techniques and
44 work practices include:

45 (a) Using tight fitting covers for open tanks;

46 (b) Keeping cleaning materials, used shop towels, and
47 solvent wiping cloths in closed containers;

- 1 (c) Cleaning up spills immediately;
2 (c) Using collection hoods for areas where solvent is used
3 for cleanup; and
4 (d) Disposing of dirty cleanup solvent by recycling,
5 reclaiming, or by incineration in an incinerator approved to
6 process hazardous materials or by an alternate means approved by
7 the director.
8 (2) The owner or operator shall maintain records from the
9 manufacturer that demonstrates compliance with the emission
10 standards of R307-348-5.
11

12 **R307-344-8. Add-On Controls.**

- 13 (1) The owner or operator of an add-on control device
14 shall provide certification from the manufacturer that the
15 emission control system will attain 90% efficiency performance.
16 (2) Emission control systems shall be operated and
17 maintained in accordance with the manufacturer recommendations.
18 The owner or operator shall maintain for a minimum of two years
19 records of operating and maintenance sufficient to demonstrate
20 that the equipment is being operated and maintained in
21 accordance with the manufacturer recommendations.
22

23 **R307-351-9. Compliance Schedule.**

24 All sources within Davis and Salt Lake counties shall be in
25 compliance with this rule by the effective date. All sources
26 within Box Elder, Cache, Tooele, Utah and Weber counties shall
27 be in compliance with this rule by September 1, 2013.
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29 **KEY: air pollution, emission controls, graphic arts, surface
30 coating,**

31 **Date of Enactment or Last Substantive Amendment: 2012**

32 **Authorizing, and Implemented or Interpreted Law: 19-2-104(1)(a)**
33