**Section 219.401 Flexographic and Rotogravure Printing**

a) No owner or operator of a subject flexographic or rotogravure printing line shall apply at any time any coating or ink unless the VOM content does not exceed the limitation specified in either subsection (a)(1) or (a)(2), as applicable. Compliance with this Section must be demonstrated through the applicable coating or ink analysis test methods and procedures specified in Section 219.105(a) and the recordkeeping and reporting requirements specified in Section 219.404(c) of this Part. As an alternative to compliance with this subsection, a subject printing line may meet the requirements of subsection (b) or (c).

1) Prior to August 1, 2010, either:

A) Forty percent VOM by volume of the coating and ink (minus water and any compounds which are specifically exempted from the definition of VOM); or

B) Twenty-five percent VOM by volume of the volatile content in the coating and ink; and

2) On and after August 1, 2010:

A) For owners or operators of flexographic or rotogravure printing lines that do not print flexible packaging, either:

i) Forty percent VOM by volume of the coating and ink (minus water and any compounds that are specifically exempted from the definition of VOM); or

ii) Twenty-five percent VOM by volume of the volatile content in the coating and ink;

B) For owners or operators of flexographic or rotogravure printing lines that print flexible packaging, or that print flexible packaging and non-flexible packaging on the same line, either:

i) 0.8 kg VOM/kg (0.8 lbs VOM/lb) solids applied; or

ii) 0.16 kg VOM/kg (0.16 lbs VOM/lb) inks and coatings applied.

b) Weighted Averaging Alternative

1) Prior to August 1, 2010, no owner or operator of a subject flexographic or rotogravure printing line shall apply coatings or inks on the subject printing line unless the weighted average, by volume. VOM content of all coatings and inks as applied each day on the subject printing line does not exceed the limitation specified in either subsection (a)(1)(A) (as determined by subsection (b)(1)(A)) or subsection (a)(1)(B) (as determined by subsection (b)(1)(B) of this Section). Compliance with this subsection must be demonstrated through the applicable coating or ink analysis test methods and procedures specified in Section 219.105(a) of this Part and the recordkeeping and reporting requirements specified in Section 219.404(d) of this Part.

A) The following equation shall be used to determine if the weighted average VOM content of all coatings and inks as applied each day on the subject printing line exceeds the limitation specified in subsection (a)(1)(A) of this Section.



where:

|  |  |  |
| --- | --- | --- |
| VOM(i)(A) | = | The weighted average VOM content in units of percent VOM by volume of all coatings and inks (minus water and any compounds that are specifically exempted from the definition of VOM) used each day; |
|  |  |  |
| i | = | Subscript denoting a specific coating or ink as applied; |
|  |  |  |
| n | = | The number of different coatings and/or inks as applied each day on a printing line; |
|  |  |  |
| Ci | = | The VOM content in units of percent VOM by volume of each coating or ink as applied (minus water and any compounds that are specifically exempted from the definition of VOM); |
|  |  |  |
| Li | = | The liquid volume of each coating or ink as applied in units of l (gal); |
|  |  |  |
| Vsi | = | The volume fraction of solids in each coating or ink as applied; |
|  |  |  |
| VVOMi | = | The volume fraction of VOM in each coating or ink as applied. |

B) The following equation shall be used to determine if the weighted average VOM content of all coatings and inks as applied each day on the subject printing line exceeds the limitation specified in subsection (a)(1)(B) of this Section.



where:

|  |  |  |
| --- | --- | --- |
| VOM(i)(B) | = | The weighted average VOM content in units of percent VOM by volume of the volatile content of all coatings and inks used each day; |
|  |  |  |
| i | = | Subscript denoting a specific coating or ink as applied; |
|  |  |  |
| n | = | The number of different coatings and/or inks as applied each day on a printing line; |
|  |  |  |
| Ci | = | The VOM content in units of percent VOM by volume of the volatile matter in each coating or ink as applied; |
|  |  |  |
| Li | = | The liquid volume of each coating or ink as applied in units of l (gal); |
|  |  |  |
| VVMi | = | The volume fraction of volatile matter in each coating or ink as applied. |

2) On and after August 1, 2010, no owner or operator of a subject flexographic or rotogravure printing line that does not print flexible packaging shall apply coatings or inks on the subject printing line unless the weighted average, by weight, VOM content of all coatings and inks as applied each day on the subject printing line does not exceed the limitation specified in either subsection (a)(2)(A)(i) (calculated in accordance with the equation in subsection (b)(1)(A)) or (a)(2)(A)(ii) (calculated in accordance with the equation in subsection (b)(1)(B)) of this Section. Compliance with this subsection (b)(2) shall be demonstrated through the applicable coating or ink analysis test methods and procedures specified in Section 219.105(a) of this Part and the recordkeeping and reporting requirements specified in Section 219.404(d) of this Subpart.

3) On and after August 1, 2010, no owner or operator of a subject flexographic or rotogravure printing line that prints flexible packaging, or that prints flexible packaging and non-flexible packaging on the same line, shall apply coatings or inks on the subject printing line unless the weighted average, by weight, VOM content of all coatings and inks as applied each day on the subject printing line does not exceed the limitation specified in either subsection (a)(2)(B)(i) (calculated in accordance with the equation in subsection (b)(3)(A)) or subsection (a)(2)(B)(ii) (calculated in accordance with the equation in subsection (b)(3)(B)) of this Section. Compliance with this subsection (b)(3) shall be demonstrated through the applicable coating or ink analysis test methods and procedures specified in Section 219.105(a) of this Part and the recordkeeping and reporting requirements specified in Section 219.404(d) of this Subpart.

A) The following equation shall be used to determine if the weighted average VOM content of all coatings and inks as applied each day on the subject printing line exceeds the limitation specified in subsection (a)(2)(B)(i) of this Section.



where:

|  |  |  |
| --- | --- | --- |
| VOM(A) | = | The weighted average VOM content in units of kg VOM per kg (lbs VOM per lb) solids of all coatings and inks used each day; |
|  |  |  |
| i | = | Subscript denoting a specific coating or ink as applied; |
|  |  |  |
| n | = | The number of different coatings and/or inks as applied each day on a printing line; |
|  |  |  |
| Ci | = | The VOM content in units of kg VOM per kg (lbs VOM per lb) solids of each coating or ink as applied; |
|  |  |  |
| Wi | = | Weight of solids in each coating or ink, as applied, in units of kg (lb). |

B) The following equation shall be used to determine if the weighted average VOM content of all coatings and inks as applied each day on the subject printing line exceeds the limitation specified in subsection (a)(2)(B)(ii) of this Section.



where:

|  |  |  |
| --- | --- | --- |
| VOM(B) | = | The weighted average VOM content in units of kg (lbs) VOM per weight in kg (lbs) of all coatings or inks as applied each day; |
|  |  |  |
| i | = | Subscript denoting a specific coating or ink as applied; |
|  |  |  |
| n | = | The number of different coatings and/or inks as applied each day on each printing line; |
|  |  |  |
| Ci | = | The VOM content in units of kg (lbs) VOM per weight in kg (lbs) of each coating or ink as applied; |
|  |  |  |
| Li | = | The weight of each coating or ink, as applied, in units of kg (lb). |

c) Capture System and Control Device Requirements

1) Prior to August 1, 2010, no owner or operator of a subject flexographic or rotogravure printing line equipped with a capture system and control device shall operate the subject printing line unless the owner or operator meets the requirements in subsection (c)(1)(A)(i), (c)(1)(A)(ii), or (c)(1)(A)(iii), as well as subsections (c)(1)(B), (c)(5), and (c)(6).

A) One of:

i) A carbon adsorption system is used that reduces the captured VOM emissions by at least 90 percent by weight; or

ii) An incineration system is used that reduces the captured VOM emissions by at least 90 percent by weight; or

iii) An alternative VOM emission reduction system is used that is demonstrated to have at least a 90 percent control device efficiency, approved by the Agency and approved by USEPA as a SIP revision; and

B) The printing line is equipped with a capture system and control device that provides an overall reduction in VOM emissions of at least:

i) 75 percent where a publication rotogravure printing line is employed; or

ii) 65 percent where a packaging rotogravure printing line is employed; or

iii) 60 percent where a flexographic printing line is employed;

2) On and after August 1, 2010, no owner or operator of a flexographic or rotogravure printing line that does not print flexible packaging and that is equipped with a capture system and control device shall operate the subject printing line unless the owner or operator meets the requirements in subsection (c)(1)(A)(i), (c)(1)(A)(ii), or (c)(1)(A)(iii), as well as subsections (c)(1)(B), (c)(5), and (c)(6) of this Section;

3) On and after August 1, 2010, no owner or operator of a flexographic or rotogravure printing line that prints flexible packaging and that is equipped with a capture system and control device shall operate the subject printing line unless the owner or operator meets the requirements in subsections (c)(5) and (c)(6) of this Section and the capture system and control device provides an overall reduction in VOM emissions of at least:

A) 65 percent in cases in which a subject printing line was first constructed at the subject source prior to March 14, 1995 and utilizes a control device that was first constructed at the subject source prior to January 1, 2010; or

B) 70 percent when a subject printing line was first constructed at the subject source prior to March 14, 1995 and utilizes a control device that was first constructed at the subject source on or after January 1, 2010; or

C) 75 percent when a subject printing line was first constructed at the subject source on or after March 14, 1995 and utilizes a control device that was first constructed at the subject source prior to January 1, 2010; or

D) 80 percent when a subject printing line was first constructed at the subject source on or after March 14, 1995 and utilizes a control device that was first constructed at the subject source on or after January 1, 2010;

4) On and after August 1, 2010, the owner or operator of a flexographic or rotogravure printing line that prints flexible packaging and non-flexible packaging on the same line and that is equipped with a control device shall be subject to the requirements of either subsection (c)(1)(B) or (c)(3) of this Section, whichever is more stringent, as well as subsections (c)(5) and (c)(6) of this Section;

5) The control device is equipped with the applicable monitoring equipment specified in Section 219.105(d)(2) of this Part and, except as provided in Section 219.105(d)(3) of this Part, the monitoring equipment is installed, calibrated, operated and maintained according to vendor specifications at all times the control device is in use; and

6) The capture system and control device are operated at all times when the subject printing line is in operation. The owner or operator shall demonstrate compliance with this subsection by using the applicable capture system and control device test methods and procedures specified in Section 219.105(c) of this Part through Section 219.105(f) of this Part and by complying with the recordkeeping and reporting requirements specified in Section 219.404(e) of this Part. The owner or operator of a printing line subject to the requirements in subsection (c)(1)(B) or (c)(2) of this Section that performed all testing necessary to demonstrate compliance with subsection (c)(1)(B) prior to August 1, 2010, is not required to retest pursuant to this subsection (c)(6). The owner or operator of a printing line subject to the requirements in subsection (c)(3) shall perform testing in compliance with this subsection (c)(6), even if the owner or operator already performed such testing prior to August 1, 2010, unless the following conditions are met. Nothing in this subsection (c)(6), however, shall limit the Agency's ability to require that the owner or operator perform testing pursuant to 35 Ill. Adm. Code 201.282:

A) On or after May 1, 2000, the owner or operator of the subject printing line performed all testing necessary to demonstrate compliance with subsection (c)(1)(B);

B) Such testing also demonstrated an overall control efficiency equal to or greater than the applicable control efficiency requirements in subsection (c)(3);

C) The owner or operator submitted the results of such tests to the Agency, and the tests were not rejected by the Agency;

D) The same capture system and control device subject to the tests referenced in subsection (c)(6)(A) of this Section is still being used by the subject printing line; and

E) The owner or operator complies with all recordkeeping and reporting requirements in Section 219.404(e)(1)(B).

d) No owner or operator of subject flexographic or rotogravure printing lines that print flexible packaging or print flexible packaging and non-flexible packaging on the same line shall cause or allow VOM containing cleaning materials, including used cleaning towels, associated with the subject flexographic or rotogravure printing lines to be kept, stored, or disposed of in any manner other than in closed containers, or conveyed from one location to another in any manner other than in closed containers or pipes, except when specifically in use.

(Source: Amended at 35 Ill. Reg. 13676, effective July 27, 2011)