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the requirements of (c)(2), (3), and (4) of this section. Such a cover shall not be reused after once being removed.

(d) Each owner or operator of affected coating mix preparation equipment not subject to §60.712(c) shall control emissions from the coating mix preparation equipment by either:

(1) Installing and using a cover that meets the specifications in paragraphs (c)(1)–(5) of this section and venting VOC emissions from the equipment to a VOC control device; or

(2) Installing and using a cover that meets the specifications in paragraphs (c)(1)–(5) of this section.

(e) In lieu of complying with §60.712(a) through (d), each owner or operator may use coatings that contain a maximum of 0.20 kg of VOC per liter of coating solids as calculated on a weighted average basis for each nominal 1-month period.

§60.713 Compliance provisions.

(a) Applicability of §60.712(b)(1) and (2) (standards for modified or reconstructed coating operations) and determination of control level required in §60.712(b)(1)(ii)(B).

(1) To establish applicability of §60.712(b)(1), each owner or operator must demonstrate, prior to modification or reconstruction, that at least 90 percent of the VOC content of the coating applied at the coating applicator is recovered or destroyed. Such demonstration shall be made using the procedures of paragraph (b)(1), (b)(2), (b)(3), or (b)(4) of this section, as appropriate.

(2) To establish applicability of §60.712(b)(2), each owner or operator must demonstrate, prior to modification or reconstruction, that a total enclosure is installed around the existing coating operation and that all VOC emissions are ventilated to a control device that is at least 92 percent efficient. Such demonstration shall be made using the procedures of §60.713(b)(5).

(3) To determine the level of control required in §60.712(b)(1)(ii)(B), the owner or operator must demonstrate:

(i) That the VOC control device subsequently installed is at least 95 percent efficient. Such demonstration shall be made using Equation (2) speci-

fied in paragraph (b)(2)(iv) of this section or Equations (4) and (5) specified in paragraphs (b)(3)(iv) and (v) of this section, as applicable, and the test methods and procedures specified in §60.715(b)–(g); and

(ii) That the overall level of control after the VOC control device is installed is at least as high as the level demonstrated prior to modification or reconstruction pursuant to paragraph (a)(1) of this section. Such demonstrations shall be made using the procedures of paragraph (b)(1), (b)(2), (b)(3), or (b)(4) of this section, as appropriate. The required overall level of control subsequent to this demonstration shall be the level so demonstrated or 93 percent, whichever is lower.

(b) Compliance demonstrations for §60.712(a), (b)(1), (b)(2), (b)(3), (c), (d), and (e).

(1) To demonstrate compliance with §60.712(a), (b)(1), or (b)(3) (standards for coating operations) when emissions from only the affected coating operations are controlled by a dedicated solvent recovery device, each owner or operator of the affected coating operation shall perform a liquid-liquid VOC material balance over each and every nominal 1-month period. When demonstrating compliance by this procedure, §60.8(f) of the General Provisions does not apply. The amount of liquid VOC applied and recovered shall be determined as discussed in paragraph (b)(1)(iii) of this section. The overall VOC emission reduction (R) is calculated using the following equation:

$$R = \frac{M_r}{\sum_{i=1}^n [W_{oi} M_{ci} - RS_i]} \times 100$$

(Equation 1)

(i) The value of RS_i is zero unless the owner or operator submits the following information to the Administrator for approval of a measured value of RS_i that is greater than zero:

- (A) Measurement techniques; and
- (B) Documentation that the measured value of RS_i exceeds zero.

(ii) The measurement techniques of paragraph (b)(1)(i)(A) of this section

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shall be submitted to the Administrator for approval with the notification of anticipated startup required under § 60.7(a)(2) of the General Provisions.

(iii) Each owner or operator demonstrating compliance by the test method described in paragraph (b)(1) of this section shall:

(A) Measure the amount of coating applied at the coating applicator;

(B) Determine the VOC content of all coatings applied using the test method specified in § 60.715(a);

(C) Install, calibrate, maintain, and operate, according to the manufacturer's specifications, a device that indicates the cumulative amount of VOC recovered by the solvent recovery device over each nominal 1-month period. The device shall be certified by the manufacturer to be accurate to within ±2.0 percent;

(D) Measure the amount of VOC recovered; and

(E) Calculate the overall VOC emission reduction (R) for each and every nominal 1-month period using Equation 1.

(iv) For facilities subject to § 60.712(a) or (b)(3), compliance is demonstrated if the value of R is equal to or greater than 93 percent.

(v) Subject to the provisions of (b)(1)(vi) of this section, for facilities subject to § 60.712(b)(1), compliance is demonstrated if the value of R is equal to or greater than the percent reduction demonstrated pursuant to § 60.713(a)(1) prior to modification or reconstruction or 93 percent whichever is lower.

(vi) For facilities subject to § 60.712(b)(1)(ii), compliance is demonstrated if the value of E (control device efficiency) is greater than or equal to 0.95 and if the value of R is equal to or greater than the percent reduction demonstrated pursuant to § 60.713(a)(3) or 93 percent, whichever is lower.

(2) To demonstrate compliance with § 60.712(a), (b)(1), or (b)(3) (standards for coating operations) when the emissions from only an affected coating operation are controlled by a dedicated incinerator or when a common emission control device (other than a fixed-bed carbon adsorption system with individual exhaust stacks for each adsorber

vessel) is used to control emissions from an affected coating operation as well as from other sources of VOC, each owner or operator of an affected coating operation shall perform a gaseous emission test using the following procedures:

(i) Construct the overall VOC emission reduction system so that all volumetric flow rates and total VOC emissions can be accurately determined by the applicable test methods and procedures specified in § 60.715(b) through (g);

(ii) Determine capture efficiency from the coating operation by capturing, venting, and measuring all VOC emissions from the operation. During a performance test, the owner or operator of an affected coating operation located in an area with other sources of VOC shall isolate the coating operation emissions from all other sources of VOC by one of the following methods:

(A) Build a temporary enclosure (see § 60.711(a)(16)) around the affected coating operation; or

(B) Shut down all other sources of VOC and continue to exhaust fugitive emissions from the affected coating operation through any building ventilation system and other room exhausts such as drying ovens. All ventilation air must be vented through stacks suitable for testing;

(iii) Operate the emission control device with all emission sources connected and operating;

(iv) Determine the efficiency (E) of the control device using the following equation:

$$E = \frac{\sum_{i=1}^n Q_{bi}C_{bi} - \sum_{j=1}^p Q_{aj}C_{aj}}{\sum_{i=1}^n Q_{bi}C_{bi}}$$

(Equation 2)

(v) Determine the efficiency (F) of the VOC capture system using the following equation:

$$F = \frac{\sum_{i=1}^n Q_{di} C_{di}}{\sum_{i=1}^n Q_{di} C_{di} + \sum_{k=1}^p Q_{fk} C_{fk}}$$

(Equation 3)

(vi) For each affected coating operation subject to § 60.712(a) or (b)(3), compliance is demonstrated if the product of (E)×(F) is equal to or greater than 0.93.

(vii) For each affected coating operation subject to § 60.712(b)(1)(i), compliance is demonstrated if the product of (E)×(F) is equal to or greater than the fractional reduction demonstrated pursuant to § 60.713(a)(1) prior to modification or reconstruction or 0.93, whichever is lower.

(viii) For each affected coating operation subject to § 60.712(b)(1)(ii), compliance is demonstrated if the value of E is greater than or equal to 0.95 and if the product of (E)×(F) is equal to or greater than the fractional reduction demonstrated pursuant to § 60.713(a)(3) or 0.93, whichever is lower.

(3) To demonstrate compliance with § 60.712(a), (b)(1), or (b)(3) (standards for coating operations) when a fixed-bed carbon adsorption system with individual exhaust stacks for each adsorber vessel is used to control emissions from an affected coating operation as well as from other sources of VOC, each owner or operator of an affected coating operation shall perform a gaseous emission test using the following procedures:

(i) Construct the overall VOC emission reduction system so that each volumetric flow rate and the total VOC emissions can be accurately determined by the applicable test methods and procedures specified in § 60.715(b) through (g);

(ii) Assure that all VOC emissions from the coating operation are segregated from other VOC sources and that the emissions can be captured for measurement, as described in § 60.713(b)(2)(ii)(A) and (B);

(iii) Operate the emission control device with all emission sources connected and operating;

(iv) Determine the efficiency (H_v) of each individual adsorber vessel (v) using the following equation:

$$H_v = \frac{Q_{gv} C_{gv} - Q_{hv} C_{hv}}{Q_{gv} C_{gv}}$$

(Equation 4)

(v) Determine the efficiency of the carbon adsorption system (H_{sys}) by computing the average efficiency of the adsorber vessels as weighted by the volumetric flow rate (Q_{hv}) of each individual adsorber vessel (v) using the following equation:

$$H_{sys} = \frac{\sum_{v=1}^g H_v Q_{hv}}{\sum_{v=1}^g Q_{hv}}$$

(Equation 5)

(vi) Determine the efficiency (F) of the VOC capture system using Equation (3).

(vii) For the affected coating operation subject to § 60.712(a) or (b)(3), compliance is demonstrated if the product of (H_{sys})×(F) is equal to or greater than 0.93.

(viii) For the affected coating operation subject to § 60.712(b)(1)(i), compliance is demonstrated if the product of (H_{sys})×(F) is equal to or greater than the fractional reduction demonstrated pursuant to § 60.713(a)(1) prior to modification or reconstruction or 0.93, whichever is lower.

(ix) For each affected coating operation subject to § 60.712(b)(1)(ii), compliance is demonstrated if the value of H_{sys} is greater than or equal to 0.95 and if the product of (H_{sys})×(F) is equal to or greater than the fractional reduction demonstrated pursuant to § 60.713(a)(3) or 0.93, whichever is lower.

(4) To demonstrate compliance with § 60.712(a), (b)(1), or (b)(3) (standards for coating operations) when the VOC emissions from more than one affected coating operation are collected by a common capture system and are vented through a common duct to a control

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device that is also controlling emissions from nonaffected sources and the emissions from the nonaffected sources are vented separately from the affected coating operations, the owner or operator may:

(i) Consider the combined affected coating operations as a single emission source; and

(ii) Conduct a compliance test on this single source by the methods described in § 60.713(b)(2) or (3), as applicable.

(5) An alternative method of demonstrating compliance with § 60.712(a) or (b)(3) (standards for coating operations) and the sole method of demonstrating compliance with § 60.712(b)(2) (standards for modified or reconstructed coating operations) is the installation of a total enclosure around the coating operation and the ventilation of all VOC emissions from the total enclosure to a control device with the efficiency specified in paragraph (b)(5)(iii)(A) or (B) of this section, as applicable. If this method is selected, the compliance test methods described in paragraphs (b)(1), (b)(2), (b)(3), and (b)(4) of this section are not required. Instead, each owner or operator of an affected coating operation shall:

(i) Demonstrate that a total enclosure is installed. An enclosure that meets the requirements in paragraphs (b)(5)(i)(A) through (D) of this section shall be assumed to be a total enclosure. The owner or operator of an enclosed coating operation that does not meet the requirements may apply to the Administrator for approval of the enclosure as a total enclosure on a case-by-case basis. The enclosure shall be considered a total enclosure if it is demonstrated to the satisfaction of the Administrator that all VOC emissions from the affected coating operation are contained and vented to the control device. The requirements for automatic approval are as follows:

(A) Total area of all natural draft openings shall not exceed 5 percent of the total surface area of the total enclosure's walls, floor, and ceiling;

(B) All sources of emissions within the enclosure shall be a minimum of four equivalent diameters away from each natural draft opening;

(C) Average inward face velocity across all natural draft openings (FV) shall be a minimum of 3,600 meters per hour as determined by the following procedures:

(1) Construct all forced makeup air ducts and all exhaust ducts so that the volumetric flow rate in each can be accurately determined by the test methods and procedures specified in § 60.715(c) and (d). Volumetric flow rates shall be calculated without the adjustment normally made for moisture content; and

(2) Determine FV by the following equation:

$$FV = \frac{\sum_{j=1}^n Q_{out\ j} - \sum_{i=1}^p Q_{in\ i}}{\sum_{k=1}^q A_k}$$

(Equation 6)

(D) The air passing through all natural draft openings shall flow into the enclosure continuously. If FV is less than or equal to 9,000 meters per hour, the continuous inward flow of air shall be verified by continuous observation using smoke tubes, streamers, tracer gases, or other means approved by the Administrator over the period that the volumetric flow rate tests required to determine FV are carried out. If FV is greater than 9,000 meters per hour, the direction of airflow through the natural draft openings shall be presumed to be inward at all times without verification.

(ii) Determine the control device efficiency using Equation (2) or Equations (4) and (5), as applicable, and the test methods and procedures specified in § 60.715(b) through (g).

(iii) Compliance is demonstrated if the installation of a total enclosure is demonstrated and the value of E determined from Equation (2) (or the value of H_{sys} determined from Equations (4) and (5), as applicable) is equal to or greater than the required efficiency as specified below:

(A) For coating operations subject to the standards of § 60.712(a), (b)(2)(ii), and (b)(3), 0.95 (95 percent); or

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(B) For coating operations subject to the standards of § 60.712(b)(2)(i), the value of E determined from Equation (2) (or the value of H_{sys} determined from Equations (4) and (5), as applicable) pursuant to § 60.713(a)(2) prior to modification or reconstruction or 0.95 (95 percent), whichever is lower.

(6) To demonstrate compliance with § 60.712(c) (standard for new mix equipment with concurrent construction of a control device), each owner or operator of affected coating mix preparation equipment shall demonstrate upon inspection that:

(i) Covers satisfying the requirements of § 60.712(c)(1)–(5) have been installed and are being used properly;

(ii) Procedures detailing the proper use of covers, as specified in § 60.712(c)(1), have been posted in all areas where affected coating mix preparation equipment is used;

(iii) The coating mix preparation equipment is vented to a control device; and

(iv) The control device efficiency (E or H_{sys}, as applicable) determined using Equation (2) or Equations (4) and (5), respectively, and the test methods and procedures specified in § 60.715(b)–(g) is equal to or greater than 0.95.

(7) To demonstrate compliance with § 60.712(d)(1) (standard for mix equipment), each owner or operator of affected coating mix preparation equipment shall demonstrate upon inspection that:

(i) Covers satisfying the requirements of § 60.712(c)(1)–(5) have been installed and are being used properly;

(ii) Procedures detailing the proper use of covers, as specified in § 60.712(c)(1), have been posted in all areas where affected coating mix preparation equipment is used; and

(iii) The coating mix preparation equipment is vented to a control device.

(8) To demonstrate compliance with § 60.712(d)(2) (standard for mix equipment), each owner or operator of affected coating mix preparation equipment shall demonstrate upon inspection that both:

(i) Covers satisfying the requirements of § 60.712(c)(1)–(5) have been installed and are being used properly; and

(ii) Procedures detailing the proper use of covers, as specified in § 60.712(c)(1), have been posted in all areas where affected coating mix preparation equipment is used.

(9) To determine compliance with § 60.712(e) (high-solids coatings alternative standard), each owner or operator of an affected facility shall determine the weighted average mass of VOC contained in the coating per volume of coating solids applied for each and every nominal 1-month period according to the following procedures:

(i) Determine the weight fraction of VOC in each coating applied using Method 24 as specified in § 60.715(a);

(ii) Determine the volume of coating solids in each coating applied from the facility records; and

(iii) Compute the weighted average by the following equation:

$$G = \frac{\sum_{i=1}^n W_{oi} M_{ci}}{\sum_{i=1}^n L_{si} V_{ci}} \quad \text{(Equation 7)}$$

(iv) For each affected facility where the value of G is less than or equal to 0.20 kilogram of VOC per liter of coating solids applied, the facility is in compliance.

(c) Startups and shutdowns are normal operation for this source category. Emissions from these operations are to be included when determining if the standards for coating operations specified in § 60.712(a) and (b) are being attained.

(d) If a control device other than a carbon adsorber, condenser, or incinerator is used to control emissions from an affected facility, the necessary operating specifications for that device must be obtained from the Administrator. An example of such a device is a flare.

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