

Subpart VVV—Standards of Performance for Polymeric Coating of Supporting Substrates Facilities

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§ 60.740 Applicability and designation of affected facility.

(a) The affected facility to which the provisions of this subpart apply is each coating operation and any onsite coating mix preparation equipment used to prepare coatings for the polymeric coating of supporting substrates.

(b) Any affected facility for which the amount of VOC used is less than 95 Mg per 12-month period is subject only to the requirements of §§ 60.744(b), 60.747(b), and 60.747(c). If the amount of VOC used is 95 Mg or greater per 12-month period, the facility is subject to all the requirements of this subpart. Once a facility has become subject to the requirements of this subpart, it will remain subject to those requirements regardless of changes in annual VOC use.

(c) This subpart applies to any affected facility for which construction, modification, or reconstruction begins after April 30, 1987, except for the facilities specified in paragraph (d) of this section.

(d) This subpart does not apply to the following:

(1) Coating mix preparation equipment used to manufacture coatings at one plant for shipment to another plant for use in an affected facility (coating operation) or for sale to another company for use in an affected facility (coating operation);

(2) Coating mix preparation equipment or coating operations during those times they are used to prepare or apply waterborne coatings so long as the VOC content of the coating does not exceed 9 percent by weight of the volatile fraction;

(3) Web coating operations that print an image on the surface of the substrate or any coating applied on the same printing line that applies the image.

§ 60.741 Definitions, symbols, and cross-reference tables.

(a) All terms used in this subpart not defined below have the meaning given to them in the Act and in subpart A of this part.

Coating applicator means any apparatus used to apply a coating to a continuous substrate.

Coating mix preparation equipment means all mixing vessels in which solvent and other materials are blended to prepare polymeric coatings.

Coating operation means any coating applicator(s), flashoff area(s), and drying oven(s) located between a substrate unwind station and a rewind station that coats a continuous web to produce a substrate with a polymeric coating. Should the coating process not employ a rewind station, the end of the coating operation is after the last drying oven in the process.

Common emission control device means a device controlling emissions from an affected coating operation as well as from any other emission source.

Concurrent means the period of time in which construction of an emission control device serving an affected facility is commenced or completed, beginning 6 months prior to the date that construction of the affected facility commences and ending 2 years after the date that construction of the affected facility is completed.

Control device means any apparatus that reduces the quantity of a pollutant emitted to the air.

Cover means, with respect to coating mix preparation equipment, a device that fits over the equipment opening to prevent emissions of volatile organic compounds (VOC) from escaping.

Drying oven means a chamber within which heat is used to dry a surface coating; drying may be the only process or one of multiple processes performed in the chamber.

Equivalent diameter means four times the area of an opening divided by its perimeter.

Flashoff area means the portion of a coating operation between the coating applicator and the drying oven where VOC begins to evaporate from the coated substrate.

Natural draft opening means any opening in a room, building, or total

enclosure that remains open during operation of the facility and that is not connected to a duct in which a fan is installed. The rate and direction of the natural draft across such an opening is a consequence of the difference in pressures on either side of the wall or barrier containing the opening.

Nominal 1-month period means a calendar month or, if established prior to the performance test in a statement submitted with notification of anticipated startup pursuant to 40 CFR 60.7(a)(2), a similar monthly time period (e.g., 30-day month or accounting month).

Onsite coating mix preparation equipment means those pieces of coating mix preparation equipment located at the same plant as the coating operation they serve.

Polymeric coating of supporting substrates means a web coating process that applies elastomers, polymers, or prepolymers to a supporting web other than paper, plastic film, metallic foil, or metal coil.

Substrate means the surface to which a coating is applied.

Temporary enclosure means a total enclosure that is constructed for the sole purpose of measuring the fugitive VOC emissions from an affected facility.

Total enclosure means a structure that is constructed around a source of emissions and operated so that all VOC emissions are collected and exhausted through a stack or duct. With a total enclosure, there will be no fugitive emissions, only stack emissions. The drying oven itself may be part of the total enclosure.

Vapor capture system means any device or combination of devices designed to contain, collect, and route solvent vapors released from the coating mix preparation equipment or coating operation.

VOC in the applied coating means the product of Method 24 VOC analyses or formulation data (if those data are demonstrated to be equivalent to Method 24 results) and the total volume of coating fed to the coating applicator.

VOC used means the amount of VOC delivered to the coating mix preparation equipment of the affected facility (including any contained in premixed

coatings or other coating ingredients prepared off the plant site) for the formulation of polymeric coatings to be applied to supporting substrates at the coating operation, plus any solvent added after initial formulation is complete (e.g., dilution solvent added at the coating operation). If premixed coatings that require no mixing at the plant site are used, "VOC used" means the amount of VOC delivered to the coating applicator(s) of the affected facility.

Volatile organic compounds or *VOC* means any organic compounds that participate in atmospheric photochemical reactions; or that are measured by a reference method, an equivalent method, an alternative method, or that are determined by procedures specified under any subpart.

Waterborne coating means a coating which contains more than 5 weight percent water in its volatile fraction.

Web coating means the coating of products, such as fabric, paper, plastic film, metallic foil, metal coil, cord, and yarn, that are flexible enough to be unrolled from a large roll; and coated as a continuous substrate by methods including, but not limited to, knife coating, roll coating, dip coating, impregnation, rotogravure, and extrusion.

(b) The nomenclature used in this subpart has the following meaning:

A_k =the area of each natural draft opening (k) in a total enclosure, in square meters.

C_{aj} =the concentration of VOC in each gas stream (j) exiting the emission control device, in parts per million by volume.

C_{bi} =the concentration of VOC in each gas stream (i) entering the emission control device, in parts per million by volume.

C_{di} =the concentration of VOC in each gas stream (i) entering the emission control device from the affected coating operation, in parts per million by volume.

C_{fk} =the concentration of VOC in each uncontrolled gas stream (k) emitted directly to the atmosphere from the affected coating operation, in parts per million by volume.

C_{gv} =the concentration of VOC in the gas stream entering each individual carbon adsorber vessel (v), in parts per million by volume. For purposes of calculating the efficiency of the individual adsorber vessel, C_{gv} may be measured in the carbon adsorption system's common inlet duct prior to the branching of individual inlet ducts.

C_{nv} =the concentration of VOC in the gas stream exiting each individual carbon

adsorber vessel (v), in parts per million by volume.

E=the control device efficiency achieved for the duration of the emission test (expressed as a fraction).

F=the VOC emission capture efficiency of the vapor capture system achieved for the duration of the emission test (expressed as a fraction).

FV=the average inward face velocity across all natural draft openings in a total enclosure, in meters per hour.

H_v=the individual carbon adsorber vessel (v) efficiency achieved for the duration of the emission test (expressed as a fraction).

H_{sys}=the carbon adsorption system efficiency calculated when each adsorber vessel has an individual exhaust stack.

M_{ci}=the total mass (kg) of each coating (i) applied to the substrate at an affected coating operation during a nominal 1-month period as determined from facility records.

M_r=the total mass (kg) of VOC recovered for a nominal 1-month period.

Q_{aj}=the volumetric flow rate of each gas stream (j) exiting the emission control device, in dry standard cubic meters per hour when Method 18 or 25 is used to measure VOC concentration or in standard cubic meters per hour (wet basis) when Method 25A is used to measure VOC concentration.

Q_{bi}=the volumetric flow rate of each gas stream (i) entering the emission control device, in dry standard cubic meters per hour when Method 18 or 25 is used to measure VOC concentration or in standard cubic meters per hour (wet basis) when Method 25A is used to measure VOC concentration.

Q_{di}=the volumetric flow rate of each gas stream (i) entering the emission control device from the affected coating operation, in dry standard cubic meters per hour when Method 18 or 25 is used to measure VOC concentration or in standard cubic meters per hour (wet basis) when Method 25A is used to measure VOC concentration.

Q_{ik}=the volumetric flow rate of each uncontrolled gas stream (k) emitted directly to the atmosphere from the affected coating

operation, in dry standard cubic meters per hour when Method 18 or 25 is used to measure VOC concentration or in standard cubic meters per hour (wet basis) when Method 25A is used to measure VOC concentration.

Q_{gv}=the volumetric flow rate of the gas stream entering each individual carbon adsorber vessel (v), in dry standard cubic meters per hour when Method 18 or 25 is used to measure VOC concentration or in standard cubic meters per hour (wet basis) when Method 25A is used to measure VOC concentration. For purposes of calculating the efficiency of the individual adsorber vessel, the value of Q_{gv} can be assumed to equal the value of Q_{bv} measured for that adsorber vessel.

Q_{bv}=the volumetric flow rate of the gas stream exiting each individual carbon adsorber vessel (v), in dry standard cubic meters per hour when Method 18 or 25 is used to measure VOC concentration or in standard cubic meters per hour (wet basis) when Method 25A is used to measure VOC concentration.

Q_{in i}=the volumetric flow rate of each gas stream (i) entering the total enclosure through a forced makeup air duct, in standard cubic meters per hour (wet basis).

Q_{out j}=the volumetric flow rate of each gas stream (j) exiting the total enclosure through an exhaust duct or hood, in standard cubic meters per hour (wet basis).

R=the overall VOC emission reduction achieved for the duration of the emission test (expressed as a fraction).

RS_r=the total mass (kg) of VOC retained on the coated substrate after oven drying or contained in waste coating for a given combination of coating and substrate.

W_{oi}=the weight fraction of VOC in each coating (i) applied at an affected coating operation during a nominal 1-month period as determined by Method 24.

(c) Tables 1a and 1b present a cross reference of the affected facility status and the relevant section(s) of the regulation.

TABLE 1a—CROSS REFERENCE^{a b}

| Status | Standard | Compliance provisions § 60.743 |
|---------------------------------------|--|---|
| A. Coating operation: | | |
| 1. If projected VOC use is <95 Mg/yr. | § 60.740(b): Monitor VOC use | Not applicable. |
| 2. If projected VOC use is ≥95 Mg/yr. | § 60.742(b)(1): Reduce VOC emissions to the atmosphere from the coating operation by at least 90 percent; or. § 60.742(b)(2): Install, operate, and maintain a total enclosure around the coating operation and vent the captured VOC emissions from the total enclosure to a control device that is at least 95 percent efficient. | (a)(1), (a)(2), (a)(3), or (a)(4); (b), (e). |

TABLE 1a—CROSS REFERENCE^a ^b—Continued

| Status | Standard | Compliance provisions § 60.743 |
|--|---|--------------------------------|
| B. Coating mix preparation equipment: | | |
| 1. If projected VOC use is ≥95 Mg/yr but <130 Mg/yr. | § 60.742(c)(3): (i) Install, operate, and maintain a cover on each piece of affected equipment; or (ii) install, operate, and maintain a cover on each piece of affected equipment and vent VOC emissions to a VOC control device. | (d), (e). |
| 2. If projected VOC use is ≥130 Mg/yr but there is no concurrent construction of a control device. | § 60.742(c)(2): (i) Install, operate, and maintain a cover on each piece of affected equipment; or (ii) install, operate, and maintain a cover on each piece of affected equipment and vent VOC emissions to a VOC control device. | (d). |
| 3. If projected VOC use is ≥130 Mg/yr and there is concurrent construction of a control device. | § 60.742(c)(1): Install, operate, and maintain a cover on each piece of affected equipment and vent VOC emissions from the covered equipment to a 95 percent efficient control device while preparation of the coating is taking place within the vessel. | (c), (e). |

^aThis table is presented for the convenience of the user and is not intended to supersede the language of the regulation. For the details of the requirements, refer to the text of the regulation.

^bRefer to Table 1b to determine which subsections of §§ 60.744, 60.745, and 60.747 correspond to each compliance provision (§ 60.743).

TABLE 1b—CROSS REFERENCE

| Compliance provisions—§ 60.743 | Test methods—§ 60.745 | Category/equipment ^a | Monitoring requirements—§ 60.744 | Reporting and recordkeeping requirements—§ 60.747 |
|---|-----------------------|----------------------------------|---|---|
| A. Coating operation: | | | | |
| (a)(1)—Gaseous emission test for coating operations not using carbon adsorption beds with individual exhausts. | (b)–(g) | General, CA, CO, TI, CI, PE, TE. | (a), (i), (j), (k), (c)(1), (d), (e), (f), (g). | (a), (d)(7), (f), (g), (h), (d)(1)(i), (d)(2)(i), (d)(3), (d)(4), (d)(5), (d)(6). |
| (a)(2)—Gaseous emission test for coating operations using carbon adsorption beds with individual exhausts. | (b)–(g) | General, CA, PE, TE | (a), (i), (j), (k), (c)(2), (g). | (a), (d)(7), (f), (g), (h), (d)(1)(ii), (d)(2)(ii), (d)(6). |
| (a)(3)—Monthly liquid material balance—can be used only when a VOC recovery device controls only those emissions from one affected coating operation. | (a) | VOC recovery | (i), (k) | (e), (f), (g), (h). |
| (a)(4)—Short-term (3 to 7 day) liquid material balance—may be used as an alternative to (a)(3). | (a) | General, CA, CO, PE, TE. | (a), (i), (j), (k), (c)(1), (c)(2), (d), (g). | (a), (d)(7), (f), (g), (h), (d)(1), (d)(2), (d)(3), (d)(6). |
| (b)—Alternative standard for coating operation—demonstrate use of approved total enclosure and emissions vented to a 95 percent efficient control device. | (b)–(g) | General, CA, CO, TI, CI, PE, TE. | (a), (i), (j), (k), (c)(1), (c)(2), (d), (e), (f), (h). | (a), (d)(7), (f), (g), (h), (d)(1), (d)(2), (d)(3), (d)(4), (d)(5), (d)(6). |
| B. Coating mix preparation equipment: | | | | |
| (c)—Standard for equipment servicing a coating operation with concurrent construction of a control device that uses at least 130 Mg/yr of VOC—demonstrate that covers meeting specifications are installed and used properly; procedures detailing proper use are posted; the mix equipment is vented to a 95 percent efficient control device. | (b)–(g) | General, CA, TI, CI | (a), (i), (j), (k), (c)(1), (c)(2), (e), (f). | (a), (d)(7), (f), (g), (h), (d)(1), (d)(2), (d)(4), (d)(5). |

TABLE 1b—CROSS REFERENCE—Continued

| Compliance provisions—§ 60.743 | Test methods—§ 60.745 | Category/equipment ^a | Monitoring requirements—§ 60.744 | Reporting and recordkeeping requirements—§ 60.747 |
|---|------------------------------|---------------------------------|----------------------------------|---|
| (d)—Standard for equipment servicing a coating operation that does not have concurrent construction of a control device but uses at least 130 Mg/yr of VOC or for equipment servicing a coating operation that uses <130 Mg/yr but ≥95 Mg/yr of VOC—demonstrate that covers meeting specifications are installed and used properly; procedures detailing proper use are posted; the mix equipment is vented to a control device (optional). | No other requirements apply. | | | |

^aCA=carbon adsorber; CO=condenser; TI=thermal incinerator; CI=catalytic incinerator; PE=partial enclosure; TE=total enclosure.

§ 60.742 Standards for volatile organic compounds.

(a) Each owner or operator of an affected facility that is subject to the requirements of this subpart shall comply with the emissions limitations set forth in this section on and after the date on which the initial performance test required by § 60.8 is completed, but not later than 60 days after achieving the maximum production rate at which the affected facility will be operated or 180 days after initial startup, whichever date comes first.

(b) For the coating operation, each owner or operator of an affected facility shall either:

(1) Reduce VOC emissions to the atmosphere from the coating operation by at least 90 percent (“emission reduction” standard); or

(2) Install, operate, and maintain a total enclosure around the coating operation and vent the captured VOC emissions from the total enclosure to a control device that is at least 95 percent efficient (alternative standard).

(c) For the onsite coating mix preparation equipment of an affected facility, the owner or operator shall comply with the following requirements, as applicable:

(1) For an affected facility that has concurrent construction of a control device and uses at least 130 Mg of VOC per 12-month period, the owner or operator shall install, operate, and maintain a cover on each piece of affected coating mix preparation equipment and vent VOC emissions from the covered

mix equipment to a 95 percent efficient control device while preparation of the coating is taking place within the vessel.

(2) For an affected facility that does not have concurrent construction of a control device but uses at least 130 Mg of VOC per 12-month period, the owner or operator shall either:

(i) Install, operate, and maintain a cover on each piece of affected coating mix preparation equipment; or

(ii) Install, operate, and maintain a cover on each piece of affected coating mix preparation equipment and vent VOC emissions to a VOC control device.

(3) For an affected facility that uses at least 95 Mg but less than 130 Mg of VOC per 12-month period, the owner or operator shall either:

(i) Install, operate, and maintain a cover on each piece of affected coating mix preparation equipment; or

(ii) Install, operate, and maintain a cover on each piece of affected coating mix preparation equipment and vent VOC emissions to a VOC control device.

§ 60.743 Compliance provisions.

(a) To demonstrate compliance with the emission reduction standard for coating operations specified in § 60.742(b)(1), the owner or operator of the affected facility shall use one of the following methods.

(1) *Gaseous emission test for coating operations not using carbon adsorption beds with individual exhausts.* This method is