

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

Applicability of affected facility - §60.740

Source	All Emissions
General	<ol style="list-style-type: none"> 1.) 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. 2.) 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. 3.) 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 (4) of this section. 4.) This subpart does not apply to the following: <ol style="list-style-type: none"> a.) 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); b.) 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; c.) 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

Standards for volatile organic compounds - §60.742

Source	All Emissions
General	Each 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
Coating operation	<ol style="list-style-type: none"> 1.) Facility shall either 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).

Source	All Emissions	
Facilities with onsite coating mix preparation equipment	Facility that has concurrent construction of a control device and uses at least 130 Mg of VOC per 12-month period	Facility 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.
	Facility that does not have concurrent construction of a control device but uses at least 130 Mg of VOC per 12-month period	Facility shall either: 1.) Install, operate, and maintain a cover on each piece of affected coating mix preparation equipment; or 2.) Install, operate, and maintain a cover on each piece of affected coating mix preparation equipment and vent VOC emissions to a VOC control device
	Facility that uses at least 95 Mg but less than 130 Mg of VOC per 12-month period	Facility shall either: 1.) Install, operate, and maintain a cover on each piece of affected coating mix preparation equipment; or 2.) Install, operate, and maintain a cover on each piece of affected coating mix preparation equipment and vent VOC emissions to a VOC control device

Compliance provisions - §60.743

Method	All Emissions
General	<ol style="list-style-type: none"> 1.) Each coating operation subject to the standard specified in § 60.742(b)(2) (alternative standard for coating operations) shall: <ol style="list-style-type: none"> a.) Demonstrate that a total enclosure is installed. The total enclosure shall either be approved by the Administrator in accordance with the provisions of §60.746, or meet the requirements in paragraphs (b)(1) (i) through (vi) of this section, as is found in §60.743 (b) (1) (i-v) b.) Determine the control device efficiency using Equation (1) or Equations (3) and (4), as applicable, and the test methods and procedures specified in §60.745 (b) through (g). c.) Compliance is demonstrated if the installation of a total enclosure is demonstrated and the value of E determined from Equation (1) or the value of H_{sys} determined from Equations (3) and (4), as applicable, is equal to or greater than 0.95. 2.) To demonstrate compliance with §60.742(c)(1) (standard for coating mix preparation equipment servicing a coating operation with concurrent construction of a control device that uses at least 130 Mg per year of VOC), each owner or operator of affected coating mix preparation equipment shall demonstrate the requirements found in §60.74(c)(1-4). 3.) To demonstrate compliance with §60.742(c)(2) (standard for coating mix preparation equipment servicing a coating operation that does not have concurrent construction of a control device but uses at least 130 Mg of VOC per year) or §60.742(c)(3) (standard for coating mix preparation equipment servicing a coating operation that uses at least 95 Mg but less than 130 Mg of VOC per year), each owner or operator of affected coating mix preparation equipment shall demonstrate upon inspection the requirements found in §60.74(d)(1-3). 4.) 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 approved by the Administrator. An example of such a device is a flare.

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

Gaseous emission test for coating operations not using carbon adsorption beds with individual exhausts

This method is applicable when the emissions from any affected coating operation are controlled by a control device other than a fixed-bed carbon adsorption system with individual exhaust stacks for each adsorber vessel. The owner or operator using this method shall comply with the following procedures:

- 1.) Construct the vapor capture system and control device so that all gaseous volumetric flow rates and total VOC emissions can be accurately determined by the applicable test methods and procedures specified in §60.745(b) through (g);
- 2.) Determine capture efficiency from the coating operation by capturing, venting, and measuring all VOC emissions from the coating 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 methods found in §60.743 (ii) (A-B).
- 3.) Operate the emission control device with all emission sources connected and operating.
- 4.) Determine the efficiency (E) of the control device by Equation 1 found in §60.743 (iv).
- 5.) Determine the efficiency (F) of the vapor capture system by Equation 2 found in §60.743 (v)
- 6.) For each affected coating operation subject to §60.742(b)(1) (emission reduction standard for coating operations), compliance is demonstrated if the product of (E)x(F) is equal to or greater than 0.90.

Gaseous emission test for coating operations using carbon adsorption beds with individual exhausts

This method is applicable when emissions from any affected coating operation are controlled by a fixed-bed carbon adsorption system with individual exhaust stacks for each adsorber vessel. The owner or operator using this method shall comply with the following procedures:

- 1.) Construct the vapor capture system and control device so that each volumetric flow rate and the total VOC emissions can be accurately determined by the applicable test methods and procedures specified in §60.745 (b) through (g);
- 2.) 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 §60.743(a)(1)(ii) (A) and (B);
- 3.) Operate the emission control device with all emission sources connected and operating;
- 4.) Determine the efficiency (H_v) of each individual adsorber vessel (v) using Equation 3 found in §60.743 (a) (2) (iv)
- 5.) 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 Equation 4 found in §60.743 (a) (2) (v)
- 6.) Determine the efficiency (F) of the vapor capture system using Equation (2).
- 7.) For each affected coating operation subject to §60.742(b)(1) (emission reduction standard for coating operations), compliance is demonstrated if the product of (H_{sys})x(F) is equal to or greater than 0.90

<p>Monthly liquid material balance</p>	<p>This method can be used only when a VOC recovery device controls only those emissions from one affected coating operation. It may not be used if the VOC recovery device controls emissions from any other VOC emission sources. When demonstrating compliance by this method, §60.8(f) (Performance Tests) of this part does not apply. The owner or operator using this method shall comply with the following procedures to determine the VOC emission reduction for each nominal 1-month period:</p> <ol style="list-style-type: none"> 1.) Measure the amount of coating applied at the coating applicator. This quantity shall be determined at a time and location in the process after all ingredients (including any dilution solvent) have been added to the coating, or appropriate adjustments shall be made to account for any ingredients added after the amount of coating has been determined; 2.) Determine the VOC content of all coatings applied using the test method specified in §60.745(a). This value shall be determined at a time and location in the process after all ingredients (including any dilution solvent) have been added to the coating, or appropriate adjustments shall be made to account for any ingredients added after the VOC content in the coating has been determined; 3.) Install, calibrate, maintain, and operate, according to the manufacturer's specifications, a device that indicates the cumulative amount of VOC recovered by the control device over each nominal 1-month period. The device shall be certified by the manufacturer to be accurate to within ± 2.0 percent; 4.) Measure the amount of VOC recovered; and 5.) Calculate the overall VOC emission reduction (R) for each and every nominal 1-month period using Equation 5 found in §60.743(a)(3)(v). Emissions during startups and shutdowns are to be included when determining R because startups and shutdowns are part of normal operation for this source category. If the value of R is equal to or greater than 0.90, compliance with §60.742(b)(1) is demonstrated. 6.) The point at which the VOC emission is to be measured shall be established when the compliance procedures are approved. The presumptive point of measurement shall be prior to separation/ purification; a point after separation/purification may be adopted for enhanced convenience or accuracy.
<p>Short-term liquid material balance</p>	<p>This method may be used as an alternative to the monthly liquid material balance described in paragraph (a)(3) of this section. The owner or operator using this method shall comply with the following procedures to determine VOC emission reduction for a 3- to 7-day period and shall continuously monitor VOC emissions as specified in §60.744.</p> <ol style="list-style-type: none"> 1.) Use the procedures described in paragraphs (a)(3) (i) through (vi) of this section to determine the overall emission reduction, R. Compliance is demonstrated if the value of R is equal to or greater than 0.90. 2.) The number of days for the performance test (3 to 7) is to be based on the affected facility's representative performance consistent with the requirements of §60.8(c). Data demonstrating that the chosen test period is representative shall be submitted to the Administrator for approval with the notification of anticipated startup required under §60.7(a)(2)

Monitoring requirements - §60.744

Source	All Emissions	
General	<ol style="list-style-type: none"> 1.) Facilities shall install and calibrate all monitoring devices required under the provisions of this section according to the manufacturer's specifications, prior to the initial performance test in locations such that representative values of the monitored parameters will be obtained. The parameters to be monitored shall be continuously measured and recorded during each performance test 2.) Facility shall record time periods of mixing or coating operations when the emission control device is malfunctioning or not in use. 3.) Facility shall record time periods of mixing or coating operations when each monitoring device is malfunctioning or not in use. 4.) Records of the measurements and calculations required in §60.743 and §60.744 must be retained for at least 2 years following the date of the measurements and calculations. 	
Facility that uses less than 95 Mg of VOC per year and each owner or operator of an affected facility subject to the provisions specified in §60.742(c)(3)	<p>Facility shall:</p> <ol style="list-style-type: none"> 1.) Make semiannual estimates of the projected annual amount of VOC to be used for the manufacture of polymeric coated substrate at the affected coating operation in that year; and 2.) Maintain records of actual VOC use. 	
<p>Facility controlled by a carbon adsorption system and demonstrating compliance by the procedures described in §60.743 (a)(1), (2), (b), or (c) or §60.743</p> <p>Facility shall carry out the monitoring provisions of paragraph (c)(1) or (2) of this section, as appropriate:</p>	Carbon adsorption systems with a common exhaust stack for all the individual adsorber vessels, install, calibrate, maintain, and operate, according to the manufacturer's specifications	Facility shall install a monitoring device that continuously indicates and records the concentration level of organic compounds in either the control device outlet gas stream or in both the control device inlet and outlet gas streams. The outlet gas stream shall be monitored if the percent increase in the concentration level of organic compounds is used as the basis for reporting, as described in §60.747(d)(1)(i). The inlet and outlet gas streams shall be monitored if the percent control device efficiency is used as the basis for reporting, as described in §60.747(d)(2)(i).
	Carbon adsorption systems with individual exhaust stacks for each adsorber vessel, install, calibrate, maintain, and operate, according to the manufacturer's specifications	Facility shall install a monitoring device that continuously indicates and records the concentration level of organic compounds in the outlet gas stream for a minimum of one complete adsorption cycle per day for each adsorber vessel. The owner or operator may also monitor and record the concentration level of organic compounds in the common carbon adsorption system inlet gas stream or in each individual carbon adsorber vessel inlet stream. The outlet gas streams shall be monitored if the percent increase in the concentration level of organic compounds is used as the basis for reporting, as described in §60.747(d)(1)(ii). In this case, the owner or operator shall compute daily a 3-day rolling average concentration level of organics in the outlet gas stream from each individual adsorber vessel. The inlet and outlet gas streams shall be monitored if the percent control device efficiency is used as the basis for reporting, as described in §60.747(d)(2)(ii). In this case, the owner or operator shall compute daily a 3-day rolling average efficiency for each individual adsorber vessel.
Facility controlled by a condensation system and demonstrating compliance by the test methods described in §60.743 (a)(1), (2), (b), or (c) or §60.743(a)(4)	Facility shall install, calibrate, maintain, and operate, according to the manufacturer's specifications, a monitoring device that continuously indicates and records the temperature of the condenser exhaust stream.	
Source	All Emissions	

<p>Facility controlled by a thermal incinerator and demonstrating compliance by the test methods described in §60.743 (a)(1), (2), (b), or (c)</p>	<p>Facility shall install, calibrate, maintain, and operate, according to the manufacturer's specifications, a monitoring device that continuously indicates and records the combustion temperature of the incinerator. The monitoring device shall have an accuracy within ± 1 percent of the temperature being measured in Celsius degrees.</p>
<p>Facility controlled by a catalytic incinerator and demonstrating compliance by the test methods described in §60.743 (a)(1), (2), (b), or (c)</p>	<p>Facility shall install, calibrate, maintain, and operate, according to the manufacturer's specifications, a monitoring device that continuously indicates and records the gas temperature both upstream and downstream of the catalyst bed. The monitoring device shall have an accuracy within ± 1 percent of the temperature being measured in Celsius degrees</p>
<p>Facility who demonstrates compliance by the test methods described in §60.743(a)(1) or (2) or §60.743(a)(4)</p>	<p>Facility shall submit a monitoring plan for the vapor capture system to the Administrator for approval with the notification of anticipated startup required under §60.7(a)(2) of the General Provisions. This plan shall identify the parameter to be monitored as an indicator of vapor capture system performance (e.g., the amperage to the exhaust fans or duct flow rates) and the method for monitoring the chosen parameter. The owner or operator shall install, calibrate, maintain, and operate, according to the manufacturer's specifications, a monitoring device that continuously indicates and records the value of the chosen parameter.</p>
<p>Facility who demonstrates compliance as described in §60.743(b)</p>	<p>Facility shall follow the procedures described in paragraph (g) of this section to establish a monitoring system for the total enclosure.</p>

Test methods and procedures - §60.745

Source	All Emissions
General	<p>Methods in appendix A of this part, except as provided under §60.8(b), shall be used to determine compliance as follows:</p> <ol style="list-style-type: none"> 1.) Method 24 is used to determine the VOC content in coatings. If it is demonstrated to the satisfaction of the Administrator that coating formulation data are equivalent to Method 24 results, formulation data may be used. In the event of any inconsistency between a Method 24 test and a facility's formulation data, the Method 24 test will govern. For Method 24, the coating sample must be a 1-liter sample collected in a 1-liter container at a point in the process where the sample will be representative of the coating applied to the substrate (i.e., the sample shall include any dilution solvent or other VOC added during the manufacturing process). The container must be tightly sealed immediately after the sample is collected. Any solvent or other VOC added after the sample is taken must be measured and accounted for in the calculations that use Method 24 results. 2.) Method 25 shall be used to determine VOC concentrations from incinerator gas streams. Alternative Methods (18 or 25A), may be used as explained in the applicability section of Method 25 in cases where use of Method 25 is demonstrated to be technically infeasible. The owner or operator shall submit notice of the intended test method to the Administrator for approval along with the notification of the performance test required under §60.8(d) of the General Provisions. Except as indicated in paragraphs (b)(1) and (b)(2) of this section, the test shall consist of three separate runs, each lasting a minimum of 30 minutes. <ol style="list-style-type: none"> a.) When the method is to be used in the determination of the efficiency of a fixed-bed carbon adsorption system with a common exhaust stack for all the individual adsorber vessels pursuant to §60.743 (a)(1), (b), or (c), the test shall consist of three separate runs, each coinciding with one or more complete system rotations through the adsorption cycles of all the individual adsorber vessels. b.) When the method is to be used in the determination of the efficiency of a fixed-bed carbon adsorption system with individual exhaust stacks for each adsorber vessel pursuant to §60.743 (a)(2), (b), or (c), each adsorber vessel shall be tested individually. Each test shall consist of three separate runs, each coinciding with one or more complete adsorption cycles. 3.) Method 1 or 1A is used for sample and velocity traverses; 4.) Method 2, 2A, 2C, or 2D is used for velocity and volumetric flow rates; 5.) Method 3 is used for gas analysis; 6.) Method 4 is used for stack gas moisture; 7.) Methods 2, 2A, 2C, or 2D; 3; and 4 shall be performed, as applicable, at least twice during each test run.

Permission to use alternative means of emission limitation - §60.746

Source	All Emissions
General	<ol style="list-style-type: none"> 1.) If, in the Administrator's judgment, an alternative means of emission limitation will achieve a reduction in emissions of VOC from any emission point subject to §60.742(c) at least equivalent to that required by §60.742(b)(2) or §60.742(c), respectively, the Administrator will publish in the Federal Register a notice permitting the use of the alternative means. The Administrator may condition permission on requirements that may be necessary to ensure operation and maintenance to achieve the same emission reduction as specified in §60.742(b)(2) or §60.742(c), respectively. 2.) Any notice under paragraph (1) of this section shall be published only after public notice and an opportunity for a public hearing. 3.) Any person seeking permission under this section shall submit to the Administrator either results from an emission test that accurately collects and measures all VOC emissions from a given control device or an engineering evaluation that accurately determines such emissions.

Reporting and recordkeeping requirements - §60.747

Source	All Emissions
General	<ol style="list-style-type: none"> 1.) For each affected facility subject to the requirements of §60.742(b) and (c), the owner or operator shall submit the performance test data and results to the Administrator as specified in §60.8(a) of this part. In addition, the average values of the monitored parameters measured at least every 15 minutes and averaged over the period of the performance test shall be submitted with the results of all performance tests. 2.) Each owner or operator of an affected facility subject to the provisions specified in § 60.742(c)(3) and claiming to use less than 130 Mg of VOC in the first year of operation and each owner or operator of an affected facility claiming to use less than 95 Mg of VOC in the first year of operation shall submit to the Administrator, with the notification of anticipated startup required under §60.7(a)(2) of the General Provisions, a material flow chart indicating projected VOC use. The owner or operator shall also submit actual VOC use records at the end of the initial year. 3.) Each owner or operator of an affected facility subject to the provisions of § 60.742(c)(3) and initially using less than 130 Mg of VOC per year and each owner or operator of an affected facility initially using less than 95 Mg of VOC per year shall: <ol style="list-style-type: none"> a.) Record semiannual estimates of projected VOC use and actual 12-month VOC use; b.) Report the first semiannual estimate in which projected annual VOC use exceeds the applicable cutoff; and c.) Report the first 12-month period in which the actual VOC use exceeds the applicable cutoff. 4.) Each owner or operator of an affected facility demonstrating compliance by the methods described in §60.743(a)(1), (2), (4), (b), or (c) shall maintain records and submit quarterly reports to the Administrator documenting the following: <ol style="list-style-type: none"> a.) For those affected facilities monitoring only the carbon adsorption system outlet concentration levels of organic compounds, the periods (during actual coating operations) specified in §60.747 (d) (1) (i) or (ii) of this section, as applicable. b.) For those affected facilities monitoring both the carbon adsorption system inlet and outlet concentration levels of organic compounds, the periods (during actual coating operations), specified in §60.747 (d) (2) (i) or (ii) of this section, as applicable. c.) For those affected facilities monitoring condenser exhaust gas temperature, all 3-hour periods (during actual coating operations) during which the average exhaust temperature is 5 or more Celsius degrees above the average temperature measured during the most recent performance test that demonstrated compliance; d.) For those affected facilities monitoring thermal incinerator combustion gas temperature, all 3-hour periods (during actual coating operations) during which the average combustion temperature of the device is more than 28 Celsius degrees below the average combustion temperature of the device during the most recent performance test that demonstrated compliance; e.) For those affected facilities monitoring catalytic incinerator catalyst bed temperature, all 3-hour periods (during actual coating operations) during which the average gas temperature immediately before the catalyst bed is more than 28 Celsius degrees below the average gas temperature during the most recent performance test that demonstrated compliance and all 3-hour periods (during actual coating operations) during which the average gas temperature difference across the catalyst bed is less than 80 percent of the average gas temperature difference during the most recent performance test that demonstrated compliance; f.) For each affected facility monitoring a total enclosure pursuant to §60.744(h) or vapor capture system pursuant to §60.744(g), all 3-hour periods (during actual coating operations) during which the average total enclosure or vapor capture system monitor readings vary by 5 percent or more from the average value measured during the most recent performance test that demonstrated compliance. g.) Each owner or operator of an affected coating operation not required to submit reports under paragraphs (d)(1) through (6) of this section because no reportable periods have occurred shall submit semiannual statements clarifying this fact. 5.) Each owner or operator of an affected coating operation, demonstrating compliance by the test methods described in §60.743(a)(3) (liquid-liquid material balance) shall submit the following: <ol style="list-style-type: none"> a.) For months of compliance, semiannual reports to the Administrator stating that the affected coating operation was in compliance for each 1-month period; and b.) For months of noncompliance, quarterly reports to the Administrator documenting the 1-month amount of VOC contained in the coatings, the 1-month amount of VOC recovered, and the percent emission reduction for each month. 6.) Each owner or operator of an affected coating operation, either by itself or with associated coating mix preparation equipment, shall submit the following with the reports required under paragraphs (d) and (e) of this section: <ol style="list-style-type: none"> a.) All periods during actual mixing or coating operations when a required monitoring device (if any) was malfunctioning or not operating; and b.) All periods during actual mixing or coating operations when the control device was malfunctioning or not operating. 7.) The reports required under paragraphs (b), (c), (d), and (e) of this section shall be postmarked within 30 days of the end of the reporting period. 8.) Records required in §60.747 must be retained for at least 2 years. 9.) The requirements of this section remain in force until and unless EPA, in delegating enforcement authority to a State under section 111(c) of the Act, approves reporting requirements or an alternative means of compliance surveillance adopted by such States. In this event, affected sources within the State will be relieved of the obligation to comply with this subsection, provided that they comply with the requirements established by the State.