2.46 Pressure Sensitive Tape and Label Surface Coating Operations (NSPS Sources)

2.46.1 Application and Designation of Affected Facility

(a) The affected facility to which the provisions of this source category apply is each coating line used in the manufacture of pressure sensitive tape and label materials.

(b) If an affected facility is not subject to 40CFR60.422(e)* for the reason stated in 60.440(b), it is nonetheless subject to all other applicable sections of this source category.

(c) This subpart applies to any affected facility which begins construction, modification, or reconstruction after December 30, 1980.

2.46.2 All symbols used in this source category not defined below are given meaning in the Clean Air Act or the Georgia Air Quality Act.

"a" means the gas stream vents exiting the emission control device.

"b" means the gas stream vents entering the emission control device.

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

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

"C_{fk}" means the concentration of VOC (carbon equivalent) in each gas stream (k) emitted directly to the atmosphere, in parts per million by volume.

"G" means the calculated weighted average mass (kg) of VOC per mass (kg) of coating solids applied each calendar month.

"M_{ci}" means the total mass (kg) of each coating (i) applied during the calendar month as determined from facility records.

"M_r" means the total mass (kg) of solvent recovered for a calendar month.

"Q_{aj}" means the volumetric flow rate of each effluent gas stream (j) exiting the emission control device, in dry standard cubic meters per hour.

"Q_{bi}" means the volumetric flow rate of each effluent gas stream (i) entering the emission control device, in dry standard cubic meters per hour.

"Q_{fk}" means the volumetric flow rate of each effluent gas stream (k) emitted to the atmosphere, in dry standard cubic meters per hour.

"R" means the overall VOC emission reduction achieved for a calendar month (in percent).

"R_q" means the required overall VOC emission reduction (in percent).

"W_{oi}" means the weight fraction of organics applied of each coating (i) applied during a calendar month as determined from Reference Method 24 or coating manufacturer's formulation data.

"W_{si}" means the weight fraction of solids applied of each coating (i) applied during a calendar month as determined from Reference Method 24 or coating manufacturer's formulation data.

2.46.3 Compliance Provisions

(a) To determine compliance with §60.442*, the owner or operator of the affected facility shall calculate a weighted average of the mass of solvent used per mass of coating solids applied for a one calendar month period according to the following procedures:

(1) Determine the weight fraction of organics and the weight fraction of solids of each coating applied by using Method 24 or by the coating manufacturer's formulation data.

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

$$G = \frac{\sum_{i=1}^{n} W_{oi} M_{ci}}{\sum_{i=1}^{n} W_{si} M_{si}}$$

(3) For each affected facility where the value of G is less than or equal to 0.20 kg VOC per kg of coating solids applied, the affected facility is in compliance with §60.442(a)(1).*

(b) To determine compliance with §60.442(a)(2)*, the owner or operator shall calculate the required overall VOC emission reduction according to the following equation:

$$R_q = \frac{G - 0.20}{G} \, x \, 100$$

If R_q is less than or equal to 90 percent, then the required overall VOC emission reduction is R_q. If R_q is greater than 90 percent, then the required overall VOC emission reduction is 90 percent.

(c) Where compliance with the emission limits specified in §60.442(a)(2)* is achieved through the use of a solvent recovery system, the owner or operator shall determine the overall VOC emission reduction for a one calendar month period by the following equation:

$$R = \frac{M_r}{\sum_{i=1}^{n} W_{oi} M_{ci}} \, x \, 100$$

If the R value is equal to or greater than the R_q value specified in paragraph (b) of this section, then compliance with §60.442(a)(2)* is demonstrated.

(d) Where compliance with the emission limit specified in §60.442(a)(2)* is achieved through the use of a solvent destruction device, the owner or operator shall determine calendar monthly compliance by comparing the monthly required overall VOC emission reduction specified in paragraph (b)1 of this section to the overall VOC emission reduction demonstrated in the most recent performance test which complied with §60.442(a)(2)*. If the monthly required overall VOC emission reduction is less than or equal to the overall VOC reduction of the most recent performance test, the affected facility is in compliance with §60.442(a)(2)*.

(e) Where compliance with §60.442(a)(2)* is achieved through the use of a solvent destruction device, the owner or operator shall continuously record the destruction device combustion temperature during coating operations for thermal incineration destruction devices or the gas temperature upstream and downstream of the incinerator catalyst bed during coating operations for catalytic incineration destruction devices. For thermal incineration destruction devices, the owner or operator shall record all 3-hour periods (during actual coating operations) during which the average temperature of the device is more than 28°C (50°F) below the average temperature of the device during the most recent performance test complying with §60.442(a)(2)*. For catalytic incineration destruction devices, the owner or operator shall record all 3-hour periods (during actual coating operations) during which the average temperature of the device immediately before the catalyst bed is more than 38°C (50°F) below the average temperature of the device during the most recent performance test complying with §60.442(a)(2)*, and all 3-hour periods (during actual coating operations) during which the average temperature difference across the catalyst bed is less than 80 percent of the average temperature difference of the device during the most recent performance test complying with §60.442(a)(2)*.

(f) After the initial performance test required for all affected facilities under §60.8, compliance with the VOC emission limitation and percentage reduction requirements under §60.442* is based on the average emission reduction for one calendar month. A separate compliance test is completed at the end of each calendar month after the initial performance test, and a new calendar month's average VOC emission reduction is calculated to show compliance with the standard.

(g) If a common emission control device is used to recover or destroy solvent from more than one affected facility, the performance of that control device is assumed to be equal for each of the affected facilities. Compliance with §60.442(a)(2)* is determined by the methods specified in paragraphs (c) and (d) of this section and is performed simultaneously on all affected facilities.

(h) If a common emission control device is used to recover solvent from an existing facility (or facilities) as well as from an affected facility (or facilities), the overall VOC emission reduction for the affected facility (or facilities), for the purpose of compliance, shall be determined by the following procedures:

(1) The owner or operator of the existing facility (or facilities) shall determine the mass of solvent recovered for a calendar month period from the existing facility (or facilities) prior to the connection of the affected facility (or facilities) to the emission control device.

(2) The affected facility (or facilities) shall then be connected to the emission control device.

(3) The owner or operator shall determine the total mass of solvent recovered from both the existing and affected facilities over a calendar month period. The mass of solvent determined in paragraph (h)(1) of this section from the existing facility shall be subtracted from the total mass of recovered solvent to obtain the mass of solvent recovered from the affected facility (or facilities). The overall VOC emission reduction of the affected facility (or facilities) can then be determined as specified in paragraph (c) of this section.

(i) If a common emission control device is used to destruct solvent from an existing facility (or facilities) as well as from an affected facility (or facilities), the overall VOC emission reduction for the affected facility (or facilities), for the purpose of compliance, shall be determined by the following procedures:

(1) The owner or operator shall operate the emission control device with both the existing and affected facilities connected.

(2) The concentration of VOC (in parts per million by volume) after the common emission control device shall be determined as specified in 2.46.4(c). This concentration is used in the calculation of compliance for both the existing and affected facilities.

(3) The volumetric flow out of the common control device attributable to the affected facility (or facilities) shall be calculated by first determining the ratio of the volumetric flow entering the common control device attributable to the affected facility (facilities) to the total volumetric flow entering the common control device from both existing and affected facilities. The multiplication of this ratio by the total volumetric flow out of the common control device yields the flow attributable to the affected facility (facilities). Compliance is determined by the use of the equation specified in 2.46.4(c).

(j) Startups and shutdowns are normal operation for this source category. Emissions from these operations are to be included when determining if the standard specified at §60.442(a)(2)* is being attained.

2.46.4 Performance Test Procedures

(a) The performance test for affected facilities complying with §60.442* without the use of add-on controls shall be identical to the procedures specified in 2.46.3(a).

(b) The performance test for affected facilities controlled by a solvent recovery device shall be

conducted as follows:

(1) The performance test shall be a one calendar month test and not the average of three runs as specified in Section 1.2(h).

(2) The weighted average mass of VOC per mass of coating solids applied for a one calendar month period shall be determined as specified in 2.46.3(a)(1) and 2.46.3(a)(2).

(3) Calculate the required percent overall VOC emission reduction as specified in 2.46.3(b).

(4) Inventory VOC usage and VOC recovery for a one calendar month period.

(5) Determine the percent overall VOC emission reduction as specified in 2.46.3(c).

(c) The performance test for affected facilities controlled by a solvent destruction device shall be conducted as follows:

(1) The performance of the solvent destruction device shall be determined by averaging the results of three test runs as specified in Section 1.2(h).

(2) Determine for each affected facility prior to each test run the weighted average mass of VOC per mass of coating solids applied being used at the facility. The weighted average shall be determined as specified in 2.46.3(a). In this application the quantities of W_{oi}, W_{si}, and M_{ci} shall be determined for the time period of each test run and not a calendar month as specified in 2.46.2.

(3) Calculate the required percent overall VOC emission reduction as specified in 2.46.3(b).

(4) Determine the percent overall VOC emission reduction of the solvent destruction device by the following equation and procedures:

$$R = \frac{\sum_{i=1}^{n} Q_{bi}\, C_{bi} - \sum_{j=1}^{m} Q_{aj}\, C_{aj}}{\sum_{i=1}^{n} Q_{bi}\, C_{bi} + \sum_{k=1}^{p} Q_{fk}\, C_{fk}} \; x\, 100$$

(i) The owner or operator of the affected facility shall 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 2.46.6(b).

(ii) The owner or operator of an affected facility shall construct a temporary total enclosure around the coating line applicator and flashoff area during the performance test for the purpose of capturing fugitive VOC emissions. If a permanent total enclosure exists in the affected facility prior to the performance test and the Director is satisfied that the enclosure is totally capturing fugitive VOC emissions, then no additional total enclosure will be required for the performance test.

(iii) For each affected facility where the value of R is greater than or equal to the value of R_q calculated in 2.46.3(b), compliance with §60.442(a)(2)* is demonstrated.

2.46.5 Monitoring of Operations and Recordkeeping

(a) The owner or operator of an affected facility subject to this source category shall maintain a calendar month record of all coatings used and the results of the reference test method specified in 2.46.6(a) or the manufacturer's formulation data used for determining the VOC content of those coatings.

(b) The owner or operator of an affected facility controlled by a solvent recovery device shall maintain a calendar month record of the amount of solvent applied in the coating at each affected facility.

(c) The owner or operator of an affected facility controlled by a solvent recovery device shall install, calibrate, maintain, and operate a monitoring device for indicating the cumulative amount of solvent recovered by the device over a calendar month period. The monitoring device shall be accurate within ± 2.0 percent. The owner or operator shall maintain a calendar month record of the amount of solvent recovered by the device.

(d) The owner or operator of an affected facility operating at the conditions specified in 2.46.1(b) shall maintain a 12 month record of the amount of solvent applied in the coating at the facility.

(e) The owner or operator of an affected facility controlled by a thermal incineration solvent destruction device shall install, calibrate, maintain, and operate a monitoring device which continuously indicates and records the temperature of the solvent destruction device's exhaust gases. The monitoring device shall have an accuracy of the greater of ± 0.75 percent of the temperature being measured expressed in degrees Celsius or $\pm 2.5\,^{\circ}C$.

(f) The owner or operator of an affected facility controlled by a catalytic incineration solvent destruction device shall install, calibrate, maintain, and operate a monitoring device which continuously indicates and records the gas temperature both upstream and downstream of the catalyst bed.

(g) The owner or operator of an affected facility controlled by a solvent destruction device which uses a hood or enclosure to capture fugitive VOC emissions shall install, calibrate, maintain, and operate a monitoring device which continuously indicates that the hood or enclosure is operating. No continuous monitor shall be required if the owner or operator can demonstrate that the hood or enclosure system is interlocked with the affected facility's oven recirculation air system.

(h) Records of the measurements required in 2.46.3 and 2.46.5 must be retained for at least two years following the date of the measurements.

2.46.6 Test Methods and Procedures

(a) The VOC content per unit of coating solids applied and compliance with §60.422(a)(1)* shall be determined by either Method 24 and the equations specified in 2.46.3 or by manufacturers' formulation data. In the event of any inconsistency between a Method 24 test and manufacturers' formulation data, the Method 24 test will govern. The Director may require an owner or operator to perform Method 24 tests during such months as he deems appropriate. For Method 24, the coating sample must be a one liter sample taken into a one liter container at a point where the sample will be representative of the coating applied to the web substrate.

(b) Method 25 shall be used to determine the VOC concentration, in parts per million by volume, of each effluent gas stream entering and exiting the solvent destruction device or its equivalent, and each effluent gas stream emitted directly to the atmosphere. Methods 1, 2, 3, and 4 shall be used to determine the sampling location, volumetric flowrate, molecular weight, and moisture of all sampled gas streams. For Method 25, the sampling time for each of three runs must be at least 1 hour. The minimum sampling volume must be 0.003 dscm except that shorter sampling times or smaller volumes, when necessitated by process variables or other factors, may be approved by the Director.

(c) If the owner or operator can demonstrate to the Director satisfaction that testing of representative stacks yields results comparable to those that would be obtained by testing all stacks, the Director will approve testing of representative stacks on a case-by-case basis.

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*Code of Federal Regulations, Title 40, Part 60.