



Ohio Administrative Code

Rule 3745-51-783 Material determination procedures - tanks and containers.

Effective: June 12, 2023

(A) Material determination procedure to determine average volatile organic (VO) concentration of a hazardous secondary material at the point of material origination.

(1) Determining average VO concentration at the point of material origination. A remanufacturer or other person who stores or treats the hazardous secondary material shall determine the average VO concentration at the point of material origination for each hazardous secondary material placed in a hazardous secondary material management unit exempted under paragraph (C)(1) of rule 3745-51-782 of the Administrative Code from using air emission controls in accordance with standards specified in rules 3745-51-784 to 3745-51-787 of the Administrative Code, as applicable to the hazardous secondary material management unit.

(a) An initial determination of the average VO concentration of the material stream shall be made before the first time any portion of the material in the hazardous secondary material stream is placed in a hazardous secondary material management unit exempted under paragraph (C)(1) of rule 3745-51-782 of the Administrative Code from using air emission controls, and thereafter an initial determination of the average VO concentration of the material stream shall be made for each averaging period that a hazardous secondary material is managed in the unit; and

(b) Perform a new material determination whenever changes to the source generating the material stream are reasonably likely to cause the average VO concentration of the hazardous secondary material to increase to a level that is equal to or greater than the applicable VO concentration limits specified in rule 3745-51-782 of the Administrative Code.

(2) Determination of average VO concentration using direct measurement or knowledge. For a material determination that is required by paragraph (A)(1) of this rule, the average VO concentration of a hazardous secondary material at the point of material origination shall be determined using either direct measurement as specified in paragraph (A)(3) of this rule or by knowledge as specified in paragraph (A)(4) of this rule.



(3) Direct measurement to determine average VO concentration of a hazardous secondary material at the point of material origination.

(a) Identification. The remanufacturer or other person who stores or treats the hazardous secondary material shall identify and record in a log that is kept at the facility the point of material origination for the hazardous secondary material.

(b) Sampling. Samples of the hazardous secondary material stream shall be collected at the point of material origination in a manner such that volatilization of organics contained in the material and in the subsequent sample is minimized and an adequately representative sample is collected and maintained for analysis by the selected method.

(i) The averaging period to be used for determining the average VO concentration for the hazardous secondary material stream on a mass-weighted average basis shall be designated and recorded. The averaging period can represent any time interval that the remanufacturer or other person who stores or treats the hazardous secondary material determines is appropriate for the hazardous secondary material stream but shall not exceed one year.

(ii) A sufficient number of samples, but no less than four samples, shall be collected and analyzed for a hazardous secondary material determination. All of the samples for a given material determination shall be collected within a one-hour period. The average of the four or more sample results constitutes a material determination for the material stream. One or more material determinations may be required to represent the complete range of material compositions and quantities that occur during the entire averaging period due to normal variations in the operating conditions for the source or process generating the hazardous secondary material stream. Examples of such normal variations are seasonal variations in material quantity or fluctuations in ambient temperature.

(iii) All samples shall be collected and handled in accordance with written procedures prepared by the remanufacturer or other person who stores or treats the hazardous secondary material and documented in a site sampling plan. This site sampling plan shall describe the procedure by which representative samples of the hazardous secondary material stream are collected such that a minimum loss of organics occurs throughout the sample collection and handling process, and by



which sample integrity is maintained. A copy of the written sampling plan shall be maintained at the facility. An example of acceptable sample collection and handling procedures for a total volatile organic constituent concentration may be found in method 25D in 40 CFR Part 60 appendix A.

(iv) Sufficient information, as specified in the "site sampling plan" required under paragraph (A)(3)(b)(iii) of this rule, shall be prepared and recorded to document the material quantity represented by the samples and, as applicable, the operating conditions for the source or process generating the hazardous secondary material represented by the samples.

(c) Analysis. Each collected sample shall be prepared and analyzed in accordance with method 25D in 40 CFR Part 60 appendix A for the total concentration of volatile organic constituents, or using one or more methods when the individual organic compound concentrations are identified and summed and the summed material concentration accounts for and reflects all organic compounds in the material with Henry's law constant values at least 0.1 mole-fraction-in-the-gas-phase/mole-fraction-in-the-liquid-phase (0.1 Y/X) [which can also be expressed as 1.8×10^{-6} atmospheres/gram-mole/m³] at twenty-five degrees Celsius. At the discretion of the remanufacturer or other person who stores or treats the hazardous secondary material, the test data obtained may be adjusted by any appropriate method to discount any contribution to the total volatile organic concentration that is a result of including a compound with a Henry's law constant value of less than 0.1 Y/X at twenty-five degrees Celsius. To adjust these data, the measured concentration of each individual chemical constituent contained in the material is multiplied by the appropriate constituent-specific adjustment factor (f_{m25D}). If the remanufacturer or other person who stores or treats the hazardous secondary material elects to adjust the test data, the adjustment shall be made to all individual chemical constituents with a Henry's law constant value greater than or equal to 0.1 Y/X at twenty-five degrees Celsius contained in the material. Constituent-specific adjustment factors (f_{m25D}) can be obtained by contacting the "Waste and Chemical Processes Group, Office of Air Quality Planning and Standards, Research Triangle Park, NC" 27711. Other test methods may be used if those test methods meet the requirements in paragraph (A)(3)(c)(i) or (A)(3)(c)(ii) of this rule and provided the requirement to reflect all organic compounds in the material with Henry's law constant values greater than or equal to 0.1 Y/X [which can also be expressed as 1.8×10^{-6} atmospheres/gram-mole/m³] at twenty-five degrees Celsius, is met.

(i) Any U.S. EPA standard method that has been validated in accordance with "Alternative



Validation Procedure for EPA Waste and Wastewater Methods," 40 CFR Part 63 appendix D.

(ii) Any other analysis method that has been validated in accordance with the procedures specified in section 5.1 or section 5.3, and the corresponding calculations in section 6.1 or section 6.3, of method 301 in 40 CFR Part 63 appendix A. The data are acceptable if the data meet the criteria specified in section 6.1.5 or section 6.3.3 of method 301. If correction is required under section 6.3.3 of method 301, the data are acceptable if the correction factor is within the range 0.7 to 1.30. Other sections of method 301 are not required.

(d) Calculations.

(i) The average VO concentration (C) on a mass-weighted basis shall be calculated by using the results for all material determinations conducted in accordance with paragraphs (A)(3)(b) to (A)(3)(c) of this rule and the following equation:

$$\bar{C} = \frac{1}{Q_T} \times \sum_{i=1}^n (Q_i \times C_i)$$

Where:

C = Average VO concentration of the hazardous secondary material at the point of material origination on a mass-weighted basis, parts per million by weight (ppmw).

i = Individual material determination "I" of the hazardous secondary material.

n = Total number of material determinations of the hazardous secondary material conducted for the averaging period (not to exceed one year).

Q_i = Mass quantity of hazardous secondary material stream represented by C_i , kilograms per hour (kg/hr).

Q_T = Total mass quantity of hazardous secondary material during the averaging period, kg/hr.



C_i = Measured VO concentration of material determination

"I" as determined in accordance with the requirements of paragraph (A)(3)(c) of this rule [i.e. the average of the four or more samples specified in paragraph (A)(3)(b)(ii) of this rule], parts per million by weight (ppmw).

(ii) For the purpose of determining C_i , for individual material samples analyzed in accordance with paragraph (A)(3)(c) of this rule, the remanufacturer or other person who stores or treats the hazardous secondary material shall account for VO concentrations determined to be below the limit of detection of the analytical method by using the following VO concentration:

(a) If method 25D in 40 CFR Part 60 appendix A is used for the analysis, one-half the blank value determined in the method at section 4.4 of method 25D in 40 CFR Part 60 appendix A.

(b) If any other analytical method is used, one-half the sum of the limits of detection established for each organic constituent in the material that has a Henry's law constant values at least 0.1 mole-fraction-in-the-gas-phase/mole-fraction-in-the-liquid-phase (0.1 Y/X) [which can also be expressed as 1.8×10^{-6} atmospheres/gram-mole/ m^3] at twenty-five degrees Celsius.

(4) Use of knowledge by the remanufacturer or other person who stores or treats the hazardous secondary material to determine average VO concentration of a hazardous secondary material at the point of material origination.

(a) Documentation shall be prepared that presents the information used as the basis for the knowledge by the remanufacturer or other person who stores or treats the hazardous secondary material of the hazardous secondary material stream's average VO concentration. Examples of information that may be used as the basis for knowledge include material balances for the source or process generating the hazardous secondary material stream, constituent-specific chemical test data for the hazardous secondary material stream from previous testing that are still applicable to the current material stream, previous test data for other locations managing the same type of material stream, or other knowledge based on information included in shipping papers or material certification notices.



(b) If test data are used as the basis for knowledge, then the remanufacturer or other person who stores or treats the hazardous secondary material shall document the test method, sampling protocol, and the means by which sampling variability and analytical variability are accounted for in the determination of the average VO concentration. For example, a remanufacturer or other person who stores or treats the hazardous secondary material may use organic concentration test data for the hazardous secondary material stream that are validated in accordance with method 301 in 40 CFR Part 63 appendix A as the basis for knowledge of the material.

(c) A remanufacturer or other person who stores or treats the hazardous secondary material using chemical constituent-specific concentration test data as the basis for knowledge of the hazardous secondary material may adjust the test data to the corresponding average VO concentration value which would have been obtained had the material samples been analyzed using method 25D in 40 CFR Part 60 appendix A. To adjust these data, the measured concentration for each individual chemical constituent contained in the material is multiplied by the appropriate constituent-specific adjustment factor (f_{m25D}).

(d) In the event that the director and the remanufacturer or other person who stores or treats the hazardous secondary material disagree on a determination of the average VO concentration for a hazardous secondary material stream using knowledge, then the results from a determination of average VO concentration using direct measurement as specified in paragraph (A)(3) of this rule shall be used to establish compliance with the applicable requirements of rules 3745-51-780 to 3745-51-789 of the Administrative Code. The director may perform or request that the remanufacturer or other person who stores or treats the hazardous secondary material perform this determination using direct measurement. The remanufacturer or other person who stores or treats the hazardous secondary material may choose one or more appropriate methods to analyze each collected sample in accordance with the requirements of paragraph (A)(3)(c) of this rule.

(B) [Reserved.]

(C) Procedure to determine the maximum organic vapor pressure of a hazardous secondary material in a tank.

(1) A remanufacturer or other person who stores or treats the hazardous secondary material shall



determine the maximum organic vapor pressure for each hazardous secondary material placed in a tank using "Tank Level 1" controls in accordance with standards specified in paragraph (C) of rule 3745-51-784 of the Administrative Code.

(2) A remanufacturer or other person who stores or treats the hazardous secondary material shall use either direct measurement as specified in paragraph (C)(3) of this rule or knowledge of the waste as specified by paragraph (C)(4) of this rule to determine the maximum organic vapor pressure which is representative of the hazardous secondary material composition stored or treated in the tank.

(3) Direct measurement to determine the maximum organic vapor pressure of a hazardous secondary material.

(a) Sampling. A sufficient number of samples shall be collected to be representative of the hazardous secondary material contained in the tank. All samples shall be collected and handled in accordance with written procedures prepared by the remanufacturer or other person who stores or treats the hazardous secondary material and documented in a site sampling plan. This site sampling plan shall describe the procedure by which representative samples of the hazardous secondary material are collected such that a minimum loss of organics occurs throughout the sample collection and handling process and by which sample integrity is maintained. A copy of the written site sampling plan shall be maintained at the facility. An example of acceptable sample collection and handling procedures is in method 25D in 40 CFR Part 60 appendix A.

(b) Analysis. Any appropriate one of the following methods may be used to analyze the samples and compute the maximum organic vapor pressure of the hazardous secondary material:

(i) Method 25E in 40 CFR Part 60 appendix A;

(ii) Methods described in "American Petroleum Institute Publication 2517, Third Edition, February 1989," "Evaporative Loss from External Floating-Roof Tanks," (incorporated by reference- see rule 3745-50-11 of the Administrative Code);

(iii) Methods obtained from standard reference texts;



(iv) ASTM method D2879-92 (incorporated by reference-see rule 3745-50-11 of the Administrative Code); and

(v) Any other method approved by the director.

(4) Use of knowledge to determine the maximum organic vapor pressure of the hazardous secondary material. Documentation shall be prepared and recorded that presents the information used as the basis for the knowledge by the remanufacturer or other person who stores or treats the hazardous secondary material that the maximum organic vapor pressure of the hazardous secondary material is less than the maximum vapor pressure limit listed in paragraph (B)(1)(a) of rule 3745-51-785 of the Administrative Code for the applicable tank design capacity category. An example of information that may be used is documentation that the hazardous secondary material is generated by a process for which at other locations it previously has been determined by direct measurement that the hazardous secondary material's waste maximum organic vapor pressure is less than the maximum vapor pressure limit for the appropriate tank design capacity category.

(D) Procedure for determining no detectable organic emissions for the purpose of complying with rules 3745-51-780 to 3745-51-789 of the Administrative Code.

(1) The test shall be conducted in accordance with the procedures specified in method 21 of 40 CFR Part 60 appendix A. Each potential leak interface (i.e., a location where organic vapor leakage could occur) on the cover and associated closure devices shall be checked. Potential leak interfaces that are associated with covers and closure devices include, but are not limited to, the interface of the cover and the cover's foundation mounting, the periphery of any opening on the cover and associated closure device, and the sealing seat interface on a spring-loaded pressure relief valve.

(2) The test shall be performed when the unit contains a hazardous secondary material having an organic concentration representative of the range of concentrations for the hazardous secondary material expected to be managed in the unit. During the test, the cover and closure devices shall be secured in the closed position.

(3) The detection instrument shall meet the performance criteria of method 21 of 40 CFR Part 60 appendix A, except the instrument response factor criteria in section 3.1.2(a) of method 21 shall be



for the average composition of the organic constituents in the hazardous secondary material placed in the hazardous secondary management unit, not for each individual organic constituent.

(4) The detection instrument shall be calibrated before use on each day of use by the procedures specified in method 21 of 40 CFR Part 60 appendix A.

(5) Calibration gases shall be as follows:

(a) Zero air (less than ten parts per million by volume (ppmv) hydrocarbon in air), and

(b) A mixture of methane or n-hexane and air at a concentration of approximately, but less than, ten thousand parts per million by volume (ppmv) methane or n-hexane.

(6) The background level shall be determined according to the procedures in method 21 of 40 CFR Part 60 appendix A.

(7) Each potential leak interface shall be checked by traversing the instrument probe around the potential leak interface as close to the interface as possible, as described in method 21 of 40 CFR Part 60 appendix A. In the case when the configuration of the cover or closure device prevents a complete traverse of the interface, all accessible portions of the interface shall be sampled. In the case when the configuration of the closure device prevents any sampling at the interface and the device is equipped with an enclosed extension or horn (e.g., some pressure relief devices), the instrument probe inlet shall be placed at approximately the center of the exhaust area to the atmosphere.

(8) The arithmetic difference between the maximum organic concentration indicated by the instrument and the background level shall be compared with the value of five hundred parts per million by volume (ppmv) except when monitoring a seal around a rotating shaft that passes through a cover opening, in which case the comparison shall be as specified in paragraph (D)(9) of this rule. If the difference is less than five hundred parts per million by volume (ppmv), then the potential leak interface is determined to operate with no detectable organic emissions.

(9) For the seals around a rotating shaft that passes through a cover opening, the arithmetic



difference between the maximum organic concentration indicated by the instrument and the background level shall be compared with the value of ten thousand ppmw. If the difference is less than ten thousand ppmw, then the potential leak interface is determined to operate with no detectable organic emissions.

[Comment: For dates of non-regulatory government publications, publications of recognized organizations and associations, federal rules, and federal statutory provisions referenced in this rule, see rule 3745-50-11 of the Administrative Code titled "Incorporated by reference."]