

systems that meet the criteria in paragraph (i)(4)(ii) of this section. You also must use the results of Equation I-24 of this subpart in place of the terms d_{ij} in Equation I-8 of this subpart and d_{jk} in Equation I-9 of this subpart, and use the results of Equation I-23 of this subpart in place of the results of Equation I-15 of this subpart for the term UT_{ij} .

(i) Calculate emissions from consumption of each intermittent low-use fluorinated GHG as defined in § 98.98 of this subpart using the default utilization and by-product formation rates and equations specified in paragraph (i)(4) of this section. If a fluorinated GHG was not being used during the stack testing and does not meet the definition of intermittent low-use fluorinated GHG in § 98.98, then you must test the stack systems associated with the use of that fluorinated GHG at a time when that gas is in use at a magnitude that would allow you to determine an emission factor for that gas according to the procedures specified in paragraph (i)(3) of this section.

(ii) Calculate emissions from consumption of each fluorinated GHG used in tools vented to stack systems that meet the criteria specified in paragraphs (i)(2)(i) through (i)(2)(iii) of this section, and were not tested according to the procedures in paragraph (i)(3) of this section. Calculate emissions using the default utilization and by-product formation rates and equations specified in paragraph (i)(4) of this section. If you are using a fluorinated GHG not listed in Tables I-11, I-12, I-13, I-14, or I-15 of this subpart, then you must assume utilization and by-product formation rates of zero for that fluorinated GHG.

(5) To determine the total emissions of each fluorinated GHG from each fab under this stack testing option, you must sum the emissions of each fluorinated GHG determined from the procedures in paragraph (i)(3) of this section with the emissions of the same fluorinated GHG determined from the

procedures in paragraph (i)(4) of this section. Sum the total emissions of each fluorinated GHG from all fabs at your facility to determine the facility-level emissions of each fluorinated GHG.

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§ 98.94 Monitoring and QA/QC requirements.

(a) [Reserved]

(b) For purposes of Equation I-12 of this subpart, you must estimate fab-wide gas-specific heel factors for each container type for each gas used, according to the procedures in paragraphs (b)(1) through (b)(5) of this section. This paragraph (b) does not apply to fluorinated GHGs or N_2O that your fab uses in quantities of less than 50 kg in one reporting year and for which you calculate emissions as equal to consumption under § 98.93(a)(1), (a)(2), or (b), or for any intermittent low-use fluorinated GHG for which you calculate emissions according to § 98.93(i)(4)(i).

(1) Base your fab-wide gas-specific heel factors on the trigger point for change out of a container for each container size and type for each gas used. Fab-wide gas-specific heel factors must be expressed as the ratio of the trigger point for change out, in terms of mass, to the initial mass in the container, as determined by paragraphs (b)(2) and (3) of this section.

(2) The trigger points for change out you use to calculate fab-wide gas-specific heel factors in paragraph (b)(1) of this section must be determined by monitoring the mass or the pressure of your containers. If you monitor the pressure, convert the pressure to mass using the ideal gas law, as displayed in Equation I-25 of this subpart, with the appropriate Z value selected based upon the properties of the gas.

$$pV = ZnRT \quad (\text{Eq. I-25})$$

Where:

p = Absolute pressure of the gas (Pa).

V = Volume of the gas container (m^3).

Z = Compressibility factor.

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n = Amount of substance of the gas (moles).
R = Gas constant (8.314 Joule/Kelvin mole).
T = Absolute temperature (K).

(3) The initial mass you use to calculate a fab-wide gas-specific heel factor in paragraph (b)(1) of this section may be based on the weight of the gas provided to you in gas supplier documents; however, you remain responsible for the accuracy of these masses and weights under this subpart.

(4) If a container is changed in an exceptional circumstance, as specified in paragraphs (b)(4)(i) and (ii) of this section, you must weigh that container or measure the pressure of that container with a pressure gauge, in place of using a heel factor to determine the residual weight of gas. When using mass-based trigger points for change out, you must determine if an exceptional circumstance has occurred based on the net weight of gas in the container, excluding the tare weight of the container.

(i) For containers with a maximum storage capacity of less than 9.08 kg (20 lbs) of gas, an exceptional circumstance is a change out point that differs by more than 50 percent from the trigger point for change out used to calculate your fab-wide gas-specific heel factor for that gas and container type.

(ii) For all other containers, an exceptional circumstance is a change out point that differs by more than 20 percent from the trigger point for change out used to calculate your fab-wide gas-specific heel factor for that gas and container type.

(5) You must re-calculate a fab-wide gas-specific heel factor if you execute a process change to modify the trigger point for change out for a gas and container type that differs by more than 5 percent from the previously used trigger point for change out for that gas and container type.

(c) You must develop apportioning factors for fluorinated GHG and N₂O consumption (including the fraction of gas consumed by process tools connected to abatement systems as in Equations I-8, I-9, I-10, I-19, I-20, I-21, and I-22 of this subpart), to use in the equations of this subpart for each input gas i, process sub-type, process type, stack system, and fab as appropriate,

using a fab-specific engineering model that is documented in your site GHG Monitoring Plan as required under § 98.3(g)(5). This model must be based on a quantifiable metric, such as wafer passes or wafer starts, or direct measurement of input gas consumption as specified in paragraph (c)(3) of this section. To verify your model, you must demonstrate its precision and accuracy by adhering to the requirements in paragraphs (c)(1) and (2) of this section.

(1) You must demonstrate that the fluorinated GHG and N₂O apportioning factors are developed using calculations that are repeatable, as defined in § 98.98.

(2) You must demonstrate the accuracy of your fab-specific model by comparing the actual amount of input gas i consumed and the modeled amount of input gas i consumed in the fab, as follows:

(i) You must analyze actual and modeled gas consumption for a period when the fab is at a representative operating level (as defined in § 98.98) lasting at least 30 days but no more than the reporting year.

(ii) You must compare the actual gas consumed to the modeled gas consumed for one fluorinated GHG reported under this subpart for the fab. You must certify that the fluorinated GHG selected for comparison corresponds to the largest quantity, on a mass basis, of fluorinated GHG consumed at the fab during the reporting year for which you are required to apportion following the procedures specified in § 98.93(a), (b), or (i). You may compare the actual gas consumed to the modeled gas consumed for two fluorinated GHGs and demonstrate conformance according to paragraph (c)(2)(iii) of this section on an aggregate use basis for both fluorinated GHGs if one of the fluorinated GHGs selected for comparison corresponds to the largest quantity, on a mass basis, of fluorinated GHGs used at each fab that requires apportionment during the reporting year.

(iii) You must demonstrate that the comparison performed for the largest quantity of gas(es), on a mass basis, consumed in the fab in paragraph (c)(2)(ii) of this section, does not result in a difference between the actual and

modeled gas consumption that exceeds 20 percent relative to actual gas consumption, reported to two significant figures using standard rounding conventions.

(iv) If you are required to apportion gas consumption and you use the procedures in § 98.93(i) to calculate annual emissions from a fab, you must verify your apportioning factors using the procedures in paragraphs (c)(2)(ii) and (iii) of this section such that the time period specified in paragraph (c)(2)(i) of this section and the last day you perform the sampling events specified under § 98.93(i)(3) occur in the same accounting month.

(v) If your facility has multiple fabs with a single centralized fluorinated-GHG supply system, you must verify that your apportioning model can apportion fluorinated GHG consumption among the fabs by adhering to the procedures in paragraphs (c)(2)(ii) through (c)(2)(iv) of this section.

(3) As an alternative to developing apportioning factors for fluorinated GHG and N₂O consumption using a fab-specific engineering model, you may develop apportioning factors through the use of direct measurement using gas flow meters and weigh scales to measure process sub-type, process type, stack system, or fab-specific input gas consumption. You may use a combination of apportioning factors developed using a fab-specific engineering model and apportioning factors developed through the use of direct measurement, provided this is documented in your site GHG Monitoring Plan as required under 98.3(g)(5).

(d)–(e) [Reserved]

(f) If your fab employs abatement systems and you elect to reflect emission reductions due to these systems, or if your fab employs abatement systems designed for fluorinated GHG abatement and you elect to calculate fluorinated GHG emissions using the stack test method under 98.93(i), you must comply with the requirements of paragraphs (f)(1) through (f)(3) of this section. If you use an average of properly measured destruction or removal efficiencies for a gas and process sub-type or process type combination, as applicable, in your emission calculations under § 98.93(a), (b), and/or (i), you

must also adhere to procedures in paragraph (f)(4) of this section.

(1) You must certify and document that the abatement systems are properly installed, operated, and maintained according to the site maintenance plan for abatement systems that is developed and maintained in your records as specified in § 98.97(d)(9).

(2) You must calculate and document the uptime of abatement systems using Equation I-15 or I-23 of this subpart, as applicable.

(3) If you use default destruction and removal efficiency values in your emissions calculations under § 98.93(a), (b), and/or (i), you must certify and document that the abatement systems at your facility for which you use default destruction or removal efficiency values are specifically designed for fluorinated GHG or N₂O abatement, as applicable. If you elect to calculate fluorinated GHG emissions using the stack test method under § 98.93(i), you must also certify that you have included and accounted for all abatement systems designed for fluorinated GHG abatement and any respective downtime in your emissions calculations under § 98.93(i)(3).

(4) If you do not use the default destruction or removal efficiency values in Table I-16 of this subpart to calculate and report controlled emissions, including situations in which your fab employs abatement systems not specifically designed for fluorinated GHG or N₂O abatement and you elect to reflect emission reduction due to these systems, you must use an average of properly measured destruction or removal efficiencies for each gas and process sub-type or process type combination, as applicable, determined in accordance with procedures in paragraphs (f)(4)(i) through (vi) of this section. You must not use a default value from Table I-16 of this subpart for any abatement system not specifically designed for fluorinated GHG and N₂O abatement, or for any gas and process type combination for which you have measured the destruction or removal efficiency according to the requirements of paragraphs (f)(4)(i) through (vi) of this section.

(i) A properly measured destruction or removal efficiency value must be determined in accordance with EPA 430-R-10-003 (incorporated by reference, see § 98.7), or according to an alternative method approved by the Administrator (or authorized representative) as specified in paragraph (k) of this section. If you are measuring destruction or removal efficiency according to EPA 430-R-10-003 (incorporated by reference, see § 98.7), you may follow the alternative procedures specified in Appendix A to this subpart.

(ii) You must select and properly measure the destruction or removal efficiency for a random sample of abatement systems to include in a random sampling abatement system testing program in accordance with procedures in paragraphs (f)(4)(ii)(A) and (B) of this section.

(A) For the first 2 years for which your fab is required to report emissions of fluorinated GHG and N₂O, for each abatement system gas and process sub-type or process type combination, as applicable, a random sample of a minimum of 10 percent of installed abatement systems must be tested annually for a total of a minimum of 20 percent, or a minimum of 20 percent may be tested in the first year. For every 3-year period following the initial 2-year period, a random sample of at least 15 percent of installed abatement systems must be tested for each gas and process sub-type or process type combination; you may test 15-percent in the first year of the 3-year period, but you must test at least 5 percent each year until 15 percent are tested. For each 3-year period, you must determine the number of abatement systems to be tested based on the average number of abatement systems in service over the 3-year period. If the required percent of the total number of abatement systems to be tested for each gas and process sub-type or process type combination does not equate to a whole number, the number of systems to be tested must be determined by rounding up to the nearest integer. Except as provided in paragraph (f)(4)(v) of this section, you may not retest an abatement system for any gas and process sub-type or process type combination, as applicable, until all of the abatement systems for that

gas and process sub-type or process type combination have been tested.

(B) If testing of a randomly selected abatement system would be disruptive to production, you may replace that system with another randomly selected system for testing and return the system to the sampling pool for subsequent testing. Any one abatement system must not be replaced by another randomly selected system for more than three consecutive selections. When you have to replace a system in one year, you may select that specific system to be tested in one of the next two sampling years so that you may plan testing of that abatement system to avoid disrupting production.

(iii) If you elect to take credit for abatement system destruction or removal efficiency before completing testing on 20 percent of the abatement systems for that gas and process sub-type or process type combination, as applicable, you must use default destruction or removal efficiencies for a gas and process type combination. You must not use a default value from Table I-16 of this subpart for any abatement system not specifically designed for fluorinated GHG and N₂O abatement, and must not take credit for abatement system destruction or removal efficiency before completing testing on 20 percent of the abatement systems for that gas and process sub-type or process type combination, as applicable. Following testing on 20 percent of abatement systems for that gas and process sub-type or process type combination, you must calculate the average destruction or removal efficiency as the arithmetic mean of all test results for that gas and process sub-type or process type combination, until you have tested at least 30 percent of all abatement systems for each gas and process sub-type or process type combination. After testing at least 30 percent of all systems for a gas and process sub-type or process type combination, you must use the arithmetic mean of the most recent 30 percent of systems tested as the average destruction or removal efficiency. You may include results of testing conducted on or after January 1, 2011 for use in determining the site-specific destruction or removal efficiency for a

given gas and process sub-type or process type combination if the testing was conducted in accordance with the requirements of paragraph (f)(4)(i) of this section.

(iv) If a measured destruction or removal efficiency is below the manufacturer-claimed fluorinated GHG or N₂O destruction or removal efficiency for any abatement system specifically designed for fluorinated GHG or N₂O abatement and the abatement system is installed, operated, and maintained in accordance with the site maintenance plan for abatement systems that is developed and maintained in your records as specified in § 98.97(d)(9), the measured destruction or removal efficiency must be included in the calculation of the destruction or removal efficiency value for that gas and process sub-type or process type.

(v) If a measured destruction or removal efficiency is below the manufacturer-claimed fluorinated GHG or N₂O destruction or removal efficiency for any abatement system specifically designed for fluorinated GHG or N₂O abatement and the abatement system is not installed, operated, or maintained in accordance with the site maintenance plan for abatement systems that is developed and maintained in your records as specified in § 98.97(d)(9), you must implement corrective action and perform a retest to replace the measured value within the reporting year. In lieu of retesting within the reporting year, you may use the measured value in calculating the average destruction or removal efficiency for the reporting year, implement corrective action, and then include the same system in the next abatement system testing period in addition to the testing of randomly selected systems for that next testing period. Regardless of whether you use the lower measured destruction or removal efficiency and when you perform the retest of the abatement system, you must count the time that the abatement system is not operated and maintained according to the site maintenance plan for abatement systems as not being in operational mode for purposes of calculating abatement system uptime.

(vi) If your fab uses redundant abatement systems, you may account for the total abatement system uptime (that is, the time that at least one abatement system is in operational mode) calculated for a specific exhaust stream during the reporting year.

(g) You must adhere to the QA/QC procedures of this paragraph when calculating fluorinated GHG and N₂O emissions from electronics manufacturing production processes:

(1)-(2) [Reserved]

(3) Follow the QA/QC procedures in accordance with those in EPA 430-R-10-003 (incorporated by reference, see § 98.7), or the applicable QA/QC procedures specified in an alternative method approved by the Administrator (or authorized representative) according to paragraph (k) of this section, when calculating abatement systems destruction or removal efficiencies. If you are measuring destruction or removal efficiency according to EPA 430-R-10-003 (incorporated by reference, see § 98.7), and you elect to follow the alternative procedures specified in Appendix A to this subpart according to paragraph (f)(4)(i) of this section, you must follow any additional QA/QC procedures specified in Appendix A to this subpart.

(4) As part of normal operations for each fab, the inventory of gas stored in containers at the beginning of the reporting year must be the same as the inventory of gas stored in containers at the end of the previous reporting year. You must maintain records documenting the year end and year beginning inventories under § 98.97(a).

(h) You must adhere to the QA/QC procedures of this paragraph (h) when calculating annual gas consumption for each fluorinated GHG and N₂O used at each fab and emissions from the use of each fluorinated heat transfer fluid on a fab basis.

(1) Review all inputs to Equations I-11 and I-16 of this subpart to ensure that all inputs and outputs are accounted for.

(2) Do not enter negative inputs into the mass balance Equations I-11 and I-16 of this subpart and ensure that no negative emissions are calculated.

(3) Ensure that the inventory at the beginning of one reporting year is identical to the inventory at the end of the

previous reporting year. You must maintain records documenting the year end and year beginning inventories under § 98.97(a) and (r).

(4) Ensure that the total quantity of gas *i* in containers in service at the end of a reporting year is accounted for as if the in-service containers were full for Equation I-11 of this subpart. Ensure also that the same quantity is accounted for in the inventory of input gas *i* stored in containers at the beginning of the subsequent reporting year.

(i) All flow meters, weigh scales, pressure gauges, and thermometers used to measure quantities that are monitored under this section or used in calculations under § 98.93 must meet the calibration and accuracy requirements specified in § 98.3(i).

(j) *Stack test methodology.* For each fab for which you calculate annual emissions for any fluorinated GHG emitted from your facility using the stack test method according to the procedure specified in § 98.93(i)(3), you must adhere to the requirements in paragraphs (j)(1) through (8) of this section. You may request approval to use an alternative stack test method and procedure according to paragraph (k) of this section.

(1) *Stack system testing.* Conduct an emissions test for each applicable stack system according to the procedures in paragraphs (j)(1)(i) through (iv) of this section.

(i) You must conduct an emission test during which the fab is operating at a representative operating level, as defined in § 98.98, and with the abatement systems connected to the stack system being tested operating with at least 90 percent uptime, averaged over all abatement systems, during the 8-hour (or longer) period for each stack system, or at no less than 90 percent of the abatement system uptime rate measured over the previous reporting year, averaged over all abatement systems.

(ii) You must measure for the expected and possible by-products identified in Table I-17 of this subpart and those fluorinated GHGs used as input fluorinated GHG in process tools vented to the stack system, except for any intermittent low-use fluorinated GHG as defined in § 98.98. You must calculate

annual emissions of intermittent low-use fluorinated GHGs by adhering to the procedures in § 98.93(i)(4)(i).

(iii) If a fluorinated GHG being consumed in the reporting year was not being consumed during the stack testing and does not meet the definition of intermittent low-use fluorinated GHG in § 98.98, then you must test the stack systems associated with the use of that fluorinated GHG at a time when that gas is in use at a magnitude that would allow you to determine an emission factor for that gas. If a fluorinated GHG consumed in the reporting year was not being consumed during the stack testing and is no longer in use by your fab (e.g., use of the gas has become obsolete or has been discontinued), then you must calculate annual emissions for that fluorinated GHG according to the procedure specified in § 98.93(i)(4).

(iv) Although all applicable stack systems are not required to be tested simultaneously, you must certify that no significant changes in stack flow configuration occur between tests conducted for any particular fab in a reporting year. You must certify that no more than 10 percent of the total number of fluorinated GHG emitting process tools are connected or disconnected from a stack system during testing. You must also certify that no process tools that were in operation at the start of the test period have been moved to a different stack system during the test period (i.e., during or in between testing of individual stack systems) and that no point-of-use abatement systems have been permanently removed from service during the test period. You must document any changes in stack flow configuration in the emissions test data and report required to be kept as records under § 98.97(i)(4).

(2) *Test methods and procedures.* You must adhere to the applicable test methods and procedures specified in Table I-9 to this subpart, or adhere to an alternative method approved by the Administrator (or authorized representative) according to paragraph (k) of this section. If you select Method 320 of 40 CFR part 63, Appendix A to measure the concentration of each fluorinated GHG in the stack system,

you must complete a method validation according to Section 13 of Method 320 of 40 CFR part 63, Appendix A for each FTIR system (hardware and software) and each tester (testing company). Method 320 validation is necessary when any change occurs in instrumentation, tester (i.e., testing company), or stack condition (e.g., acid gas vs. base). Measurement of new compounds require validation for those compounds according to Section 13 of Method 320 of 40 CFR part 63, Appendix A. The field detection limits achieved under your test methods and procedures must fall at or below the maximum field detection limits specified in Table I-10 to this subpart.

(3) *Fab-specific fluorinated GHG consumption measurements.* You must determine the amount of each fluorinated GHG consumed by each fab during the sampling period for all process tools connected to the stack systems tested under § 98.93(i)(3), according to the procedures in paragraphs (j)(3)(i) and (ii) of this section. This determination must include apportioning gas consumption between stack systems that are being tested and those that are not tested under § 98.93(i)(2).

(i) Measure fluorinated GHG consumption using gas flow meters, scales, or pressure measurements. Measure the mass or pressure, as applicable, at the beginning and end of the sampling period and when containers are changed out. If you elect to measure gas consumption using pressure (i.e., because the gas is stored in a location above its critical temperature) you must estimate consumption as specified in paragraphs (j)(3)(i)(A) and (B) of this section.

(A) For each fluorinated GHG, you must either measure the temperature of the fluorinated GHG container(s) when the sampling periods begin and end and when containers are changed out, or measure the temperature of the fluorinated GHG container(s) every hour for the duration of the sampling period. Temperature measurements of the immediate vicinity of the containers (e.g., in the same room, near the containers) shall be considered temperature measurements of the containers.

(B) Convert the sampling period-beginning, sampling period-ending, and container change-out pressures to masses using Equation I-25 of this subpart, with the appropriate Z value selected based upon the properties of the gas (e.g., the Z value yielded by the Redlich, Kwong, Soave equation of state with appropriate values for that gas). Apply the temperatures measured at or nearest to the beginning and end of the sampling period and to the time(s) when containers are changed out, as applicable. For each gas, the consumption during the sampling period is the difference between the masses of the containers of that gas at the beginning and at the end of the sampling period, summed across containers, including containers that are changed out.

(ii) For each fluorinated GHG gas for which consumption is too low to be accurately measured during the sampling period using gas flow meters, scales, or pressure measurements as specified in paragraph (j)(3)(i) of this section, you must follow at least one of the procedures listed in paragraph (j)(3)(ii)(A) through (C) of this section to obtain a consumption measurement.

(A) Draw the gas from a single gas container if it is normally supplied from multiple containers connected by a shared manifold.

(B) Calculate consumption from prorated long-term consumption data (for example, calculate and use hourly consumption rates from monthly consumption data).

(C) Increase the duration of the sampling period for consumption measurement beyond the minimum duration specified in Table I-9 of this subpart.

(4) *Emission test results.* The results of an emission test must include the analysis of samples, number of test runs, the average emission factor for each fluorinated GHG measured, the analytical method used, calculation of emissions, the fluorinated GHGs consumed during the sampling period, an identification of the stack systems tested, and the fluorinated GHGs that were included in the test. The emissions test report must contain all information and data used to derive the fab-specific emission factor.

(5) *Emissions testing frequency.* You must conduct emissions testing to develop fab-specific emission factors on a frequency according to the procedures in paragraph (j)(5)(i) or (ii) of this section.

(i) *Annual testing.* You must conduct an annual emissions test for each stack system for which emissions testing is required under §98.93(i)(3), unless you meet the criteria in paragraph (j)(5)(ii) of this section to skip annual testing. Each set of emissions testing for a stack system must be separated by a period of at least 2 months.

(ii) *Criteria to test less frequently.* After the first 3 years of annual testing, you may calculate the relative standard deviation of the emission factors for each fluorinated GHG included in the test and use that analysis to determine the frequency of any future testing. As an alternative, you may conduct all three tests in less than 3 calendar years for purposes of this paragraph (j)(5)(ii), but this does not relieve you of the obligation to conduct subsequent annual testing if you do not meet the criteria to test less frequently. If the criteria specified in paragraphs (j)(5)(ii)(A) and (B) of this section are met, you may use the arithmetic average of the three emission factors for each fluorinated GHG and fluorinated GHG by-product for the current year and the next 4 years with no further testing unless your fab operations are changed in way that triggers the re-test criteria in paragraph (j)(8) of this section. In the fifth year following the last stack test included in the previous average, you must test each of the stack systems for which testing is required and repeat the relative standard deviation analysis using the results of the most recent three tests (i.e., the new test and the two previous tests conducted prior to the 4 year period). If the criteria specified in paragraphs (j)(5)(ii)(A) and (B) of this section are not met, you must use the emission factors developed from the most recent testing and continue annual testing. You may conduct more than one test in the same year, but each set of emissions testing for a stack system must be separated by a period of at least 2 months. You may repeat the relative standard deviation analysis using the most recent

three tests, including those tests conducted prior to the 4 year period, to determine if you are exempt from testing for the next 4 years.

(A) The relative standard deviation of the total CO₂e emission factors calculated from each of the three tests (expressed as the total CO₂e fluorinated GHG emissions of the fab divided by the total CO₂e fluorinated GHG use of the fab) is less than or equal to 15 percent.

(B) The relative standard deviation for all single fluorinated GHGs that individually accounted for 5 percent or more of CO₂e emissions were less than 20 percent.

(C) For those fluorinated GHG that do not have GWP values listed in Table A-1 to subpart A of this part, you must use a GWP value of 2,000 in calculating CO₂e in paragraphs (j)(5)(ii)(A) and (B) of this section.

(6) *Subsequent measurements.* You must make an annual determination of each stack system's exemption status under §98.93(i)(2) by March 31 each year. If a stack system that was previously not required to be tested per §98.93(i)(2), no longer meets the criteria in §98.93(i)(2), you must conduct the emissions testing for the stack system during the current reporting and develop the fab-specific emission factor from the emissions testing.

(7) *Previous measurements.* You may include the results of emissions testing conducted on or after January 1, 2011 for use in the relative standard deviation calculation in paragraph (j)(5)(ii) of this section if the previous results were determined using a method meeting the requirements in paragraph (j)(2) of this section. You may request approval to use results of emissions testing conducted between January 1, 2011 and January 1, 2014 using a method that deviated from the requirements in paragraph (j)(2) of this section by adhering to the requirements in paragraphs (j)(7)(i) through (j)(7)(iv) of this section.

(i) Notify the Administrator (or an authorized representative) of your intention to use the results of the previous emissions testing. You must include in the notification the data and results you intend to use for meeting

either reporting or recordkeeping requirements, a description of the method, and any deviations from the requirements in paragraph (j)(2) of this section. Your description must include an explanation of how any deviations do not affect the quality of the data collected.

(ii) The Administrator will review the information submitted under paragraph (j)(7)(i) and determine whether the results of the previous emissions testing are adequate and issue an approval or disapproval of the use of the results within 120 days of the date on which you submit the notification specified in paragraph (j)(7)(i) of this section.

(iii) If the Administrator finds reasonable grounds to disapprove the results of the previous emissions testing, the Administrator may request that you provide additional information to support the use of the results of the previous emissions testing. Failure to respond to any request made by the Administrator does not affect the 120 day deadline specified in paragraph (j)(7)(ii) of this section.

(iv) Neither the approval process nor the failure to obtain approval for the use of results from previous emissions testing shall abrogate your responsibility to comply with the requirements of this subpart.

(8) *Scenarios that require a stack system to be re-tested.* By March 31 of each reporting year, you must evaluate and determine whether any changes to your fab operations meet the criteria specified in paragraphs (j)(8)(i) through (vi) of this section. If any of the scenarios specified in paragraph (j)(8)(i) through (vi) of this section occur, you must perform a re-test of any applicable stack system, irrespective of whether you have met the criteria for less frequent testing in paragraph (j)(5)(ii) of this section, before the end of the year in which the evaluation was completed. You must adhere to the methods and procedures specified in § 98.93(i)(3) for performing a stack system emissions test and calculating emissions. If you meet the criteria for less frequent testing in paragraph (j)(5)(ii), and you are required to perform a re-test as specified in paragraph (j)(8)(i) through (vi) of this section, the

requirement to perform a re-test does not extend the date of the next scheduled test that was established prior to meeting the requirement to perform a re-test. If the criteria specified in paragraph (j)(5)(ii) of this section are not met using the results from the re-test and the two most recent stack tests, you must use the emission factors developed from the most recent testing to calculate emissions and resume annual testing. You may resume testing less frequently according to your original schedule if the criteria specified in paragraph (j)(5)(ii) of this section are met using the most recent three tests.

(i) Annual consumption of a fluorinated GHG used during the most recent emissions test (expressed in CO₂e) changes by more than 10 percent of the total annual fluorinated GHG consumption, relative to gas consumption in CO₂e for that gas during the year of the most recent emissions test (for example, if the use of a single gas goes from 25 percent of CO₂e to greater than 35 percent of CO₂e, this change would trigger a re-test). For those fluorinated GHGs that do not have GWP values listed in Table A-1 to subpart A of this part, you must use a GWP value of 2,000 in calculating CO₂e for purposes of this paragraph.

(ii) A change in the consumption of an intermittent low-use fluorinated GHG (as defined in § 98.98) that was not used during the emissions test and not reflected in the fab-specific emission factor, such that it no longer meets the definition of an intermittent low-use fluorinated GHG.

(iii) A decrease by more than 10 percent in the fraction of tools with abatement systems, compared to the number during the most recent emissions test.

(iv) A change in the wafer size manufactured by the fab since the most recent emissions test.

(v) A stack system that formerly met the criteria specified under § 98.93(i)(2) for not being subject to testing no longer meets those criteria.

(vi) If a fluorinated GHG being consumed in the reporting year was not being consumed during the stack test and does not meet the definition of intermittent, low-use fluorinated GHG in § 98.98, then you must test the stack systems associated with the use of that

fluorinated GHG at a time when that gas is in use as required in paragraph (j)(1)(iii) of this section.

(k) You may request approval to use an alternative stack test method and procedure or to use an alternative method to determine abatement system destruction or removal efficiency by adhering to the requirements in paragraphs (k)(1) through (6) of this section. An alternative method is any method of sampling and analyzing for a fluorinated GHG or N₂O, or the determination of parameters other than concentration, for example, flow measurements, that is not a method specified in this subpart and that has been demonstrated to the Administrator's satisfaction, using Method 301 in appendix A of part 63, to produce results adequate for the Administrator's determination that it may be used in place of a method specified elsewhere in this subpart.

(1) You may use an alternative method from that specified in this subpart provided that you:

(i) Notify the Administrator (or an authorized representative) of your intention to use an alternative method. You must include in the notification a site-specific test plan describing the alternative method and procedures (the alternative test plan), the range of test conditions over which the validation is intended to be applicable, and an alternative means of calculating the fab-level fluorinated GHG or N₂O emissions or determining the abatement system destruction or removal efficiency if the Administrator denies the use of the results of the alternative method under paragraph (k)(2) or (3) of this section.

(ii) Use Method 301 in appendix A of part 63 of this chapter to validate the alternative method. This may include the use of only portions of specific procedures of Method 301 if use of such procedures are sufficient to validate the alternative method; and

(iii) Submit the results of the Method 301 validation process along with the notification of intention and the rationale for not using the specified method.

(2) The Administrator will determine whether the validation of the proposed alternative method is adequate and issue an approval or disapproval of the

alternative test plan within 120 days of the date on which you submit the notification and alternative test plan specified in paragraph (k)(1) of this section. If the Administrator approves the alternative test plan, you are authorized to use the alternative method(s) in place of the methods described in paragraph (f)(4)(i) of this section for measuring destruction or removal efficiency or paragraph (j) of this section for conducting the stack test, as applicable, taking into account the Administrator's comments on the alternative test plan. Notwithstanding the requirement in the preceding sentence, you may at any time prior to the Administrator's approval or disapproval proceed to conduct the stack test using the methods specified in paragraph (j) of this section or the destruction or removal efficiency determination specified in (f)(4)(i) of this section if you use a method specified in this subpart instead of the requested alternative. If an alternative test plan is not approved and you still want to use an alternative method, you must recommence the process to have an alternative test method approved starting with the notification of intent to use an alternative test method specified in paragraph (k)(1)(i) of this section.

(3) You must report the results of stack testing or destruction or removal efficiency determination using the alternative method and procedure specified in the approved alternative test plan. You must include in your report for an alternative stack test method and for an alternative abatement system destruction or removal efficiency determination the information specified in paragraph (j)(4) of this section, including all methods, calculations and data used to determine the fluorinated GHG emission factor or the abatement system destruction or removal efficiency. The Administrator will review the results of the test using the alternative methods and procedure and then approve or deny the use of the results of the alternative test method and procedure no later than 120 days after they are submitted to EPA.

(4) If the Administrator finds reasonable grounds to dispute the results obtained by an alternative method for the purposes of determining

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fluorinated GHG emissions or destruction or removal efficiency of an abatement system, the Administrator may require the use of another method specified in this subpart.

(5) Once the Administrator has approved the use of the alternative method for the purposes of determining fluorinated GHG emissions for specific fluorinated GHGs and types of stack systems or abatement system destruction or removal efficiency, that method may be used at any other facility for the same fluorinated GHGs and types of stack systems, or fluorinated GHGs and abatement systems, if the approved conditions apply to that facility. In granting approval, the Administrator may limit the range of test conditions and emission characteristics for which that approval is granted and under which the alternative method may be used without seeking approval under paragraphs (k)(1) through (4) of this section. The Administrator will specify those limitations, if any, in the approval of the alternative method.

(6) Neither the validation and approval process nor the failure to validate or obtain approval of an alternative method shall abrogate your responsibility to comply with the requirements of this subpart.

[75 FR 74818, Dec. 1, 2010, as amended at 76 FR 36342, June 22, 2011; 76 FR 59551, Sept. 27, 2011; 77 FR 10380, Feb. 22, 2012; 77 FR 48089, Aug. 13, 2012; 78 FR 68209, Nov. 13, 2013]

§ 98.95 Procedures for estimating missing data.

(a) Except as provided in paragraph (b) of this section, a complete record of all measured parameters used in the fluorinated GHG and N₂O emissions calculations in § 98.93 and § 98.94 is required.

(b) If you use fluorinated heat transfer fluids at your facility and are missing data for one or more of the parameters in Equation I-16 of this subpart, you must estimate fluorinated heat transfer fluid emissions using the arithmetic average of the emission rates for the reporting year immediately preceding the period of missing data and the months immediately following the period of missing data. Alternatively, you may estimate missing information using records from the

fluorinated heat transfer fluid supplier. You must document the method used and values used for all missing data values.

[75 FR 74818, Dec. 1, 2010, as amended at 77 FR 10381, Feb. 22, 2012]

§ 98.96 Data reporting requirements.

In addition to the information required by § 98.3(c), you must include in each annual report the following information for each electronics manufacturing facility:

(a) Annual manufacturing capacity of each fab at your facility used to determine the annual manufacturing capacity of your facility in Equation I-5 of this subpart.

(b) For facilities that manufacture semiconductors, the diameter of wafers manufactured at each fab at your facility (mm).

(c) Annual emissions, on a fab basis as described in paragraph (c)(1) through (5) of this section.

(1) When you use the procedures specified in § 98.93(a) of this subpart, each fluorinated GHG emitted from each process type for which your fab is required to calculate emissions as calculated in Equations I-6 and I-7 of this subpart.

(2) Each fluorinated GHG emitted from each process type or process subtype as calculated in Equations I-8 and I-9 of this subpart, as applicable.

(3) N₂O emitted from all chemical vapor deposition processes and N₂O emitted from the aggregate of other N₂O-using manufacturing processes as calculated in Equation I-10 of this subpart.

(4) Each fluorinated heat transfer fluid emitted as calculated in Equation I-16 of this subpart.

(5) When you use the procedures specified in § 98.93(i) of this subpart, annual emissions of each fluorinated GHG, on a fab basis.

(d) The method of emissions calculation used in § 98.93.

(e) Annual production in terms of substrate surface area (e.g., silicon, PV-cell, glass).

(f)-(l) [Reserved]

(m) For the fab-specific apportioning model used to apportion fluorinated GHG and N₂O consumption under § 98.94(c), the following information to