

Environmental Protection Agency

§ 98.334

introduced into each Waelz kiln and electrothermic furnace at your facility for each year and calculate annual CO₂ process emissions from each affected unit at your facility using Equation GG-1 of this section. For electrothermic furnaces, carbon containing input materials include carbon electrodes and carbonaceous reducing

agents. For Waelz kilns, carbon containing input materials include carbonaceous reducing agents. If you document that a specific material contributes less than 1 percent of the total carbon into the process, you do not have to include the material in your calculation using Equation R-1 of § 98.183.

$$E_{CO_2k} = \frac{44}{12} * \frac{2000}{2205} * [(Zinc)_k * (C_{Zinc})_k + (Flux)_k * (C_{Flux})_k + (Electrode)_k * (C_{Electrode})_k + (Carbon)_k * (C_{Carbon})_k] \quad (\text{Eq. GG-1})$$

Where:

- E_{CO₂k} = Annual CO₂ process emissions from individual Waelz kiln or electrothermic furnace "k" (metric tons).
- 44/12 = Ratio of molecular weights, CO₂ to carbon.
- 2000/2205 = Conversion factor to convert tons to metric tons.
- (Zinc)_k = Annual mass of zinc bearing material charged to kiln or furnace "k" (tons).
- (C_{Zinc})_k = Carbon content of the zinc bearing material, from the annual carbon analysis for kiln or furnace "k" (percent by weight, expressed as a decimal fraction).
- (Flux)_k = Annual mass of flux materials (e.g., limestone, dolomite) charged to kiln or furnace "k" (tons).
- (C_{Flux})_k = Carbon content of the flux materials charged to kiln or furnace "k", from the annual carbon analysis (percent by weight, expressed as a decimal fraction).
- (Electrode)_k = Annual mass of carbon electrode consumed in kiln or furnace "k" (tons).
- (C_{Electrode})_k = Carbon content of the carbon electrode consumed in kiln or furnace "k", from the annual carbon analysis (percent by weight, expressed as a decimal fraction).
- (Carbon)_k = Annual mass of carbonaceous materials (e.g., coal, coke) charged to the kiln or furnace "k" (tons).
- (C_{Carbon})_k = Carbon content of the carbonaceous materials charged to kiln or furnace, "k", from the annual carbon analysis (percent by weight, expressed as a decimal fraction).

(2) You must determine the CO₂ emissions from all of the Waelz kilns or electrothermic furnaces at your facility using Equation GG-2 of this section.

$$CO_2 = \sum_{k=1}^n E_{CO_2k} \quad (\text{Eq. GG-2})$$

Where:

- CO₂ = Annual combined CO₂ emissions from all Waelz kilns or electrothermic furnaces (tons).
- E_{CO₂k} = Annual CO₂ emissions from each Waelz kiln or electrothermic furnace k calculated using Equation GG-1 of this section (tons).
- n = Total number of Waelz kilns or electrothermic furnaces at facility used for the zinc production.

(c) If GHG emissions from a Waelz kiln or electrothermic furnace are vented through the same stack as any combustion unit or process equipment that reports CO₂ emissions using a CEMS that complies with the Tier 4 Calculation Methodology in subpart C of this part (General Stationary Fuel Combustion Sources), then the calculation methodology in paragraph (b) of this section shall not be used to calculate process emissions. The owner or operator shall report under this subpart the combined stack emissions according to the Tier 4 Calculation Methodology in § 98.33(a)(4) and all associated requirements for Tier 4 in subpart C of this part.

§ 98.334 Monitoring and QA/QC requirements.

If you determine CO₂ emissions using the carbon input procedure in § 98.333(b)(1) and (b)(2), you must meet the requirements specified in paragraphs (a) and (b) of this section.

(a) Determine the mass of each solid carbon-containing input material consumed using facility instruments, procedures, or records used for accounting purposes including direct measurement weighing or through the use of purchase records same plant instruments

or procedures that are used for accounting purposes (such as weigh hoppers, belt weigh feeders, weighed purchased quantities in shipments or containers, combination of bulk density and volume measurements, etc.). Record the total mass for the materials consumed each calendar month and sum the monthly mass to determine the annual mass for each input material.

(b) For each input material identified in paragraph (a) of this section, you must determine the average carbon content of the material consumed or used in the calendar year using the methods specified in either paragraph (b)(1) or (b)(2) of this section.

(1) Information provided by your material supplier.

(2) Collecting and analyzing at least three representative samples of the material using the appropriate testing method. For each carbon-containing input material identified for which the carbon content is not provided by your material supplier, the carbon content of the material must be analyzed at least annually using the appropriate standard methods (and their QA/QC procedures), which are identified in paragraphs (b)(2)(i) through (b)(2)(iii) of this section, as applicable. If you document that a specific process input or output contributes less than one percent of the total mass of carbon into or out of the process, you do not have to determine the monthly mass or annual carbon content of that input or output.

(i) Using ASTM E1941–04 Standard Test Method for Determination of Carbon in Refractory and Reactive Metals and Their Alloys (incorporated by reference, see § 98.7), analyze zinc bearing materials.

(ii) Using ASTM D5373–08 Standard Test Methods for Instrumental Determination of Carbon, Hydrogen, and Nitrogen in Laboratory Samples of Coal (incorporated by reference, see § 98.7), analyze carbonaceous reducing agents and carbon electrodes.

(iii) Using ASTM C25–06 Standard Test Methods for Chemical Analysis of Limestone, Quicklime, and Hydrated Lime (incorporated by reference, see § 98.7), analyze flux materials such as limestone or dolomite.

§ 98.335 Procedures for estimating missing data.

For the carbon input procedure in § 98.333(b), a complete record of all measured parameters used in the GHG emissions calculations is required (e.g., raw materials carbon content values, etc.). Therefore, whenever a quality-assured value of a required parameter is unavailable, a substitute data value for the missing parameter shall be used in the calculations as specified in paragraphs (a) and (b) of this section. You must document and keep records of the procedures used for all such estimates.

(a) For missing records of the carbon content of inputs for facilities that estimate emissions using the carbon input procedure in § 98.333(b); 100 percent data availability is required. You must repeat the test for average carbon contents of inputs according to the procedures in § 98.335(b) if data are missing.

(b) For missing records of the annual mass of carbon-containing inputs using the carbon input procedure in § 98.333(b), the substitute data value must be based on the best available estimate of the mass of the input material from all available process data or information used for accounting purposes, such as purchase records.

§ 98.336 Data reporting requirements.

In addition to the information required by § 98.3(c), each annual report must contain the information specified in paragraphs (a) or (b) of this section, as applicable, for each Waelz kiln or electrothermic furnace.

(a) If a CEMS is used to measure CO₂ emissions, then you must report under this subpart the relevant information required for the Tier 4 Calculation Methodology in § 98.37 and the information listed in this paragraph (a):

(1) Annual zinc product production capacity (tons).

(2) Annual production quantity for each zinc product (tons).

(3) Annual facility production quantity for each zinc product (tons).

(4) Number of Waelz kilns at each facility used for zinc production.

(5) Number of electrothermic furnaces at each facility used for zinc production.