

(2) The annual mass of spent liquor solids must be determined using either of the methods specified in paragraph (b)(2)(i) or (b)(2)(ii) of this section.

(i) Measure the mass of spent liquor solids annually (or more frequently) using T-650 om-05 Solids Content of Black Liquor, TAPPI (incorporated by reference in §98.7). If measurements are performed more frequently than annually, then the mass of spent liquor solids used in Equation AA-1 of this subpart must be based on the average of the representative measurements made during the year.

(ii) Determine the annual mass of spent liquor solids based on records of measurements made with an online measurement system that determines the mass of spent liquor solids fired in a chemical recovery furnace or chemical recovery combustion unit.

(3) Carbon analyses for spent pulping liquor must be determined no less than annually 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). If measurements using ASTM D5373-08 are performed more frequently than annually, then the spent pulping liquor carbon content used in Equation AA-2 of this subpart must be based on the average of the representative measurements made during the year.

(c) Each facility must keep records that include a detailed explanation of how company records of measurements are used to estimate GHG emissions. The owner or operator must also document the procedures used to ensure the accuracy of the measurements of fuel, spent liquor solids, and makeup chemical usage, including, but not limited to calibration of weighing equipment, fuel flow meters, and other measurement devices. The estimated accuracy of measurements made with these devices must be recorded and the technical basis for these estimates must be provided. The procedures used to convert spent pulping liquor flow rates to units of mass (i.e., spent liquor solids firing rates) also must be documented.

(d) Records must be made available upon request for verification of the calculations and measurements.

#### § 98.275 Procedures for estimating missing data.

A complete record of all measured parameters used in the GHG emissions calculations is required. Therefore, whenever a quality-assured value of a required parameter is unavailable (e.g., if a meter malfunctions during unit operation or if a required sample is not taken), a substitute data value for the missing parameter shall be used in the calculations, according to the requirements of paragraphs (a) through (c) of this section:

(a) There are no missing data procedures for measurements of heat content and carbon content of spent pulping liquor. A re-test must be performed if the data from any annual measurements are determined to be invalid.

(b) For missing measurements of the mass of spent liquor solids or spent pulping liquor flow rates, use the lesser value of either the maximum mass or fuel flow rate for the combustion unit, or the maximum mass or flow rate that the fuel meter can measure.

(c) For the use of makeup chemicals (carbonates), the substitute data value shall be the best available estimate of makeup chemical consumption, based on available data (e.g., past accounting records, production rates). The owner or operator shall document and keep records of the procedures used for all such estimates.

#### § 98.276 Data reporting requirements.

In addition to the information required by §98.3(c), each annual report must contain the information in paragraphs (a) through (k) of this section as applicable:

(a) Annual emissions of CO<sub>2</sub>, biogenic CO<sub>2</sub>, CH<sub>4</sub>, biogenic CH<sub>4</sub>, N<sub>2</sub>O, and biogenic N<sub>2</sub>O (metric tons per year).

(b) Annual quantities fossil fuels by type used in chemical recovery furnaces and chemical recovery combustion units in short tons for solid fuels, gallons for liquid fuels and scf for gaseous fuels.

(c) Annual mass of the spent liquor solids combusted (short tons per year), and basis for determining the annual mass of the spent liquor solids combusted (whether based on T650 om-05 Solids Content of Black Liquor, TAPPI

**§ 98.277**

**40 CFR Ch. I (7–1–10 Edition)**

(incorporated by reference, *see* § 98.7) or an online measurement system).

(d) The high heat value (HHV) of the spent liquor solids used in Equation AA-1 of this subpart (mmBtu per kilogram).

(e) The default emission factor for CO<sub>2</sub>, CH<sub>4</sub>, or N<sub>2</sub>O, used in Equation AA-1 of this subpart (kg CO<sub>2</sub>, CH<sub>4</sub>, or N<sub>2</sub>O per mmBtu).

(f) The carbon content (CC) of the spent liquor solids, used in Equation AA-2 of this subpart (percent by weight, expressed as a decimal fraction, e.g., 95% = 0.95).

(g) Annual quantities of fossil fuels by type used in pulp mill lime kilns in short tons for solid fuels, gallons for liquid fuels and scf for gaseous fuels.

(h) Make-up quantity of CaCO<sub>3</sub> used for the reporting year (metric tons per year) used in Equation AA-3 of this subpart.

(i) Make-up quantity of Na<sub>2</sub>CO<sub>3</sub> used for the reporting year (metric tons per year) used in Equation AA-3 of this subpart.

(j) Annual steam purchases (pounds of steam per year).

(k) Annual production of pulp and/or paper products produced (metric tons).

records in paragraphs (a) through (f) of this section.

(a) GHG emission estimates (including separate estimates of biogenic CO<sub>2</sub>) for each emissions source listed under § 98.270(b).

(b) Annual analyses of spent pulping liquor HHV for each chemical recovery furnace at kraft and soda facilities.

(c) Annual analyses of spent pulping liquor carbon content for each chemical recovery combustion unit at a sulfite or semichemical pulp facility.

(d) Annual quantity of spent liquor solids combusted in each chemical recovery furnace and chemical recovery combustion unit, and the basis for determining the annual quantity of the spent liquor solids combusted (whether based on T650 om-05 Solids Content of Black Liquor, TAPPI (incorporated by reference, *see* § 98.7) or an online measurement system). If an online measurement system is used, you must retain records of the calculations used to determine the annual quantity of spent liquor solids combusted from the continuous measurements.

(e) Annual steam purchases.

(f) Annual quantities of makeup chemicals used.

**§ 98.277 Records that must be retained.**

In addition to the information required by § 98.3(g), you must retain the

**§ 98.278 Definitions.**

All terms used in this subpart have the same meaning given in the Clean Air Act and subpart A of this part.

TABLE AA-1 TO SUBPART AA OF PART 98—KRAFT PULPING LIQUOR EMISSIONS FACTORS FOR BIOMASS-BASED CO<sub>2</sub>, CH<sub>4</sub>, AND N<sub>2</sub>O

Wood furnish	Biomass-based emissions factors (kg/mmBtu HHV)		
	CO <sub>2</sub> <sup>a</sup>	CH <sub>4</sub>	N <sub>2</sub> O
North American Softwood .....	94.4	0.030	0.005
North American Hardwood .....	93.7		
Bagasse .....	95.5		
Bamboo .....	93.7		
Straw .....	95.1		

<sup>a</sup> Includes emissions from both the recovery furnace and pulp mill lime kiln.

TABLE AA-2 TO SUBPART AA OF PART 98—KRAFT LIME KILN AND CALCINER EMISSIONS FACTORS FOR FOSSIL FUEL-BASED CO<sub>2</sub>, CH<sub>4</sub>, AND N<sub>2</sub>O

Fuel	Fossil fuel-based emissions factors (kg/mmBtu HHV)					
	Kraft lime kilns			Kraft calciners		
	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O
Residual Oil .....	76.7	0.0027	0	76.7	0.0027	0.0003
Distillate Oil .....	73.5			73.5		0.0004