



Ohio Administrative Code

Rule 3745-18-04 Measurement methods and procedures.

Effective: February 3, 2022

[Comment: For dates and availability of non-regulatory government publications, publications of recognized organizations and associations, federal rules, and federal statutory provisions referenced in this rule, see paragraph (C) of rule 3745-18-01 of the Administrative Code titled "referenced materials."]

(A) Unless otherwise specified in this rule, the non-continuous test methods used for determining compliance with the allowable emission limits in rules 3745-18-02 or 3745-18-06 to 3745-18-94 of the Administrative Code shall be those specified in 40 CFR Part 60.

(B) The test methods and procedures used for determining compliance with the allowable emission limits for any sulfur recovery plant shall be those specified in 40 CFR 60.46.

(C) The test methods and procedures used for determining compliance with the allowable emission limit for any sulfuric acid production unit or any primary zinc smelter shall be those specified in 40 CFR 60.85.

(D) Unless otherwise specified in this rule, the test methods and procedures used for determining compliance with the allowable emission limit for any fuel burning equipment burning coal shall be one of the following:

(1) Stack gas sampling using USEPA methods 1 to 4, and 6, 6A, 6B or 6C, at a frequency to be determined by the director.

(2) Continuous emission monitoring using continuous monitoring systems meeting the requirements of "Performance Specification 2" in 40 CFR Part 60, Appendix B and 40 CFR Part 60, Appendix F with any necessary modifications approved by the director. Emission rates shall be determined using methods specified in 40 CFR 60.45 and 40 CFR 60.47a, 40 CFR 60.47b or 40 CFR 60.47c.

Compliance with the applicable sulfur dioxide emission limitation shall be based on daily



calculations using an arithmetic average of all data available for the preceding thirty-day period.

(3) Coal sampling and analysis in accordance with USEPA method 19 or equivalent methods as approved by the director. The representative sulfur dioxide emission rate from any sample shall be calculated using the formulas in paragraph (F) of this rule. Coal monitoring and compliance determination procedures shall include the following:

(a) Except as specified by the director, for all facilities greater than one thousand MM Btus per hour heat input capacity, daily as-fired fuel sampling. Compliance with the applicable sulfur dioxide emission limit shall be determined based on the weighted arithmetic average of the preceding thirty consecutive daily sample analyses.

(b) For all facilities greater than one hundred MM Btus per hour heat input capacity and less than or equal to one thousand MM Btus per hour heat input capacity, monthly composite sampling. Such composite samples shall be composed of either periodic as-fired samples, with the collection frequency determined by the director, or as-received samples with a minimum of one sample per truckload or carload. Compliance with the applicable sulfur dioxide emission limit shall be determined based on the analysis of each monthly composite sample.

(c) For all facilities greater than ten MM Btus per hour heat input capacity and less than or equal to one hundred MM Btus per hour heat input capacity, either monthly composite sampling consistent with paragraph (D)(3)(b) of this rule, or monthly average fuel analysis based on fuel supplier analyses. Fuel supplier analyses shall be obtained for each shipment received during the calendar month. Compliance with the applicable sulfur dioxide emission limit shall be determined based on the weighted arithmetic average of all fuel supplier analyses for each calendar month.

(4) [Reserved.]

(5) [Reserved.]

(a)

(i)



(ii)

(6) For any fuel burning equipment burning coal at the "ArcelorMittal Cleveland LLC" (OEPA premise number 1318001613) facility located in Cleveland, Ohio, compliance shall be determined using one of the following:

(a) Stack gas sampling using methods specified in 40 CFR 60.46, at a frequency to be determined by the director.

(b) Continuous emission monitoring using continuous monitoring systems meeting the requirements of "Performance Specification 2" in 40 CFR Part 60, Appendix B and 40 CFR Part 60, Appendix F with any necessary modifications approved by the director. Emission rates shall be determined using methods specified in 40 CFR 60.45 and 40 CFR 60.47a. Compliance with the applicable sulfur dioxide emission limits shall be based on daily average calculations.

(c) Coal sampling and analysis in accordance with USEPA method 19 or equivalent methods as approved by the director. Coal monitoring and compliance determination procedures shall consist of daily, as-fired fuel sampling for all sources greater than one hundred MM Btus per hour actual heat input capacity. The representative sulfur dioxide emission rate from any sample shall be calculated using the formulas in paragraph (F) of this rule. Compliance with the applicable sulfur dioxide emission limits shall be determined based on a daily average.

(7) [Reserved.]

(8) For any fuel burning equipment burning coal at any sulfur dioxide emissions source subject to, and not specifically exempted from, rule 3745-18-37 of the Administrative Code, Hamilton county emission limits, emission tracking, recordkeeping, and reporting requirements shall be one of the following:

(a) Continuous emission monitoring using continuous monitoring systems meeting the requirements of "Performance Specification 2" in 40 CFR Part 60, Appendix B and 40 CFR Part 60, Appendix F. Emission rates shall be determined using methods specified in 40 CFR 60.45 and 40 CFR 60.47a, 40



CFR 60.47b or 40 CFR 60.47c.

(b) Coal sampling and analysis in accordance with USEPA method 19. Emission tracking procedures shall consist of weekly, as-fired fuel sampling for all sources greater than one hundred MM Btus per hour actual heat input capacity. The representative sulfur dioxide emission rate from any sample shall be calculated using the formulas in paragraph (F) of this rule.

(c) Either monthly composite sampling consistent with paragraph (D)(8)(b) of this rule, or fuel supplier analyses, for all sources greater than ten MM Btus per hour heat input capacity and less than one hundred MM Btus per hour heat input capacity. Fuel supplier analyses shall be obtained for each shipment received. The representative sulfur dioxide emission rate from any sample or fuel supplier analysis shall be calculated using the formulas in paragraph (F) of this rule.

(d) [Reserved.]

(e) Any owner or operator required to perform emissions tracking pursuant to paragraph (D)(8) of this rule shall maintain such records for a period of not less than three years and shall make such records available for inspection by and submittal to the director upon request.

(9) For any fuel burning equipment burning coal at any sulfur dioxide emissions source subject to, and not specifically exempted from, rule 3745-18-15 of the Administrative Code compliance with the applicable sulfur dioxide emission limits shall be determined using one of the following methods:

(a) Stack gas sampling using USEPA methods 1 to 4, and 6, 6A, 6B or 6C, at a frequency to be determined by the director.

(b) Continuous emission monitoring using continuous monitoring systems meeting the requirements of "Performance Specification 2" as specified in 40 CFR Part 60, Appendix B and the requirements specified in 40 CFR Part 60, Appendix F, with any necessary modifications approved by the director. Emission rates shall be determined using methods specified in 40 CFR 60.45 and 40 CFR 60.47a, 40 CFR 60.47b or 40 CFR 60.47c. Compliance with the applicable sulfur dioxide emission limits shall be based on daily average calculations.



(c) Coal sampling and analysis in accordance with USEPA method 19 or equivalent methods as approved by the director. The representative sulfur dioxide emission rate from any sample shall be calculated using the formulas in paragraph (F) of this rule. Coal monitoring and compliance determination procedures shall include the following:

(i) Except as specified by the director, for all facilities greater than one thousand MM Btus per hour heat input capacity, daily as-fired fuel sampling. Compliance with the applicable sulfur dioxide emission limits shall be determined based on a daily average.

(ii) For all facilities greater than one hundred MM Btus per hour heat input capacity and less than or equal to one thousand MM Btus per hour heat input capacity, monthly composite sampling. Such composite samples shall be composed of either periodic as-fired samples, with the collection frequency determined by the director, or as-received samples with a minimum of one sample per truckload or carload. Compliance with the applicable sulfur dioxide emission limit shall be determined based on the analysis of each monthly composite sample.

(iii) For all facilities greater than ten MM Btus per hour heat input capacity and less than or equal to one hundred MM Btus per hour heat input capacity, either monthly composite sampling consistent with paragraph (D)(9)(c)(ii) of this rule, or monthly average fuel analysis based on fuel supplier analyses. Fuel supplier analyses shall be obtained for each shipment received during the calendar month. Compliance with the applicable sulfur dioxide emission limit shall be determined based on the weighted arithmetic average of all fuel supplier analyses for each calendar month.

A determination of noncompliance pursuant to any of these methods shall not be refuted by evidence of compliance pursuant to any other of these methods.

(10) For any fuel burning equipment burning coal at the "Painesville Municipal Electric Plant" (OEPA premise number 0243110008) facility located in Painesville, Ohio, compliance with the sulfur dioxide emissions rates specified in paragraphs (F)(4) to (F)(6) of rule 3745-18-49 of the Administrative Code shall be demonstrated by calculating an average emission rate in pounds per hour over thirty operating days. Emissions shall be calculated for each operating hour by multiplying the heat input times the applicable emission rate in pounds of sulfur dioxide per MM Btu. The emission rate shall be determined in accordance with paragraph (F) of this rule. The average



emission rate shall be calculated using the following equation:

$$E_{avg} = \frac{\sum_{i=1}^n H_i * ER_i}{n}$$

where: E_{avg} is the arithmetic average emissions in pounds per hour.

H_i is the hourly heat input in MM Btu for hour i . H_i is determined by a computerized system, or by monitoring the hourly steam production rate and back-calculating the heat input in accordance with the heat balance method or other approved equivalent method.

ER_i is the emission rate in pounds of sulfur dioxide per MM Btu, determined in accordance with paragraph (F) of this rule. If multiple fuels are used, the emission rate shall be calculated as a weighted average based on the heat input of each fuel burned.

n is the number of operating hours during a period of thirty consecutive operating days. An operating day means a twenty-four-hour period that begins at midnight and ends the following midnight during which any fuel is combusted at any time, except that if the schedule for calculating emission averages is revised, an operating day shall mean a twenty-four-hour period between consecutive scheduled emission average calculations during which any fuel is combusted at any time.

The daily rolling arithmetic average is calculated on a fixed schedule updated at twelve a.m. every operating calendar day unless an alternative fixed daily schedule is approved by the director. The director shall notify the United States environmental protection agency upon the approval of any alternate averaging schedule.

(11) For any fuel burning equipment burning coal at the "Cardinal Power Plant" (OEPA premise number 0641050002) or any subsequent owner or operator of the "Cardinal Power Plant" facility in Brilliant, Ohio, compliance with the sulfur dioxide emissions rate specified in paragraph (D)(3) of rule 3745-18-47 of the Administrative Code shall be demonstrated by calculating an average emission rate in pounds per hour over thirty operating days. Emissions shall be calculated for each operating hour for main boiler unit numbers 1, 2 and 3 (OEPA source numbers B001, B002 and B009), combined, as a summation of the emission rates determined in accordance with paragraph



(D)(2) of this rule. The permittee may remove values which were substituted for missing data in accordance with 40 CFR Part 75 Subpart D. Compliance with the combined average sulfur dioxide emission rate shall be calculated using the following equation:

$$E_{avg} = \left(\sum_{i=1}^n (SO_{2,B001} + SO_{2,B002} + SO_{2,B009}) \right) / n$$

where: E_{avg} is the arithmetic average SO₂ emissions in pounds per hour as a rolling, thirty-operating-day average computed at the end of each operating day.

$SO_{2,B001}$ = SO₂ emissions from emissions unit B001, in pounds/hr for hour i.

$SO_{2,B002}$ = SO₂ emissions from emissions unit B002, in pounds/hr for hour i.

$SO_{2,B009}$ = SO₂ emissions from emissions unit B009, in pounds/hr for hour i.

n = number of operating hours in the rolling, thirty-operating-day averaging period, minus the number of operating hours excluded from the calculation due to missing data.

An operating hour is an hour in which any of units B001, B002 or B009 are operating. An operating day is a day in which any of units B001, B002 or B009 are operating for any portion of the day. A value of E_{avg} shall be computed for each operating day and the twenty-nine preceding operating days.

(E) Unless otherwise specified in this rule, the test methods and procedures used for determining compliance with the allowable emission limit for any fuel burning equipment burning fuels other than coal shall be one of the following:

(1) Stack gas sampling using USEPA methods 1 to 4, and 6, 6A, 6B or 6C, at a frequency to be determined by the director.

(2) Continuous emission monitoring using continuous monitoring systems meeting the requirements



of "Performance Specification 2" as specified in 40 CFR Part 60, Appendix B and the requirements of 40 CFR Part 60, Appendix F with any necessary modifications approved by the director. Emissions rates shall be determined using methods specified in 40 CFR 60.45 and 40 CFR 60.47a, 40 CFR 60.47b or 40 CFR 60.47c. Compliance with the applicable sulfur dioxide emission limitation shall be based on daily calculations using an arithmetic average of all data available for the preceding thirty-day period.

(3) Fuel sampling and analysis in accordance with USEPA method 19 or the appropriate ASTM methods, or equivalent methods as approved by the director. In lieu of performing onsite sampling, representative fuel analyses performed by fuel suppliers may be acceptable. The representative sulfur dioxide emission rate from any sample shall be calculated using the formulas in paragraph (F) of this rule. The sampling frequency shall be, at a minimum, such that a sulfur dioxide emission rate representative of the thirty-day average emission rate can be determined.

(4) For any fuel burning equipment burning fuels other than coal at the "ArcelorMittal Cleveland LLC" (OEPA premise number 1318001613) facility located in Cleveland, Ohio, compliance shall be determined using one of the following:

(a) Stack gas sampling using USEPA methods 1 to 4, and 6, at a frequency to be determined by the director.

(b) Continuous emission monitoring using continuous monitoring systems meeting the requirements of "Performance Specification 2" as specified in 40 CFR Part 60, Appendix B and Appendix F with any necessary modifications approved by the director. Emission rates shall be determined using methods specified in 40 CFR 60.45 and 40 CFR 60.47a. Compliance with the applicable sulfur dioxide emission limits shall be based on daily average calculations.

(c) Fuel sampling and analysis in accordance with USEPA method 19 or the appropriate ASTM methods, or equivalent methods as approved by the director. In lieu of performing on-site sampling, representative fuel analyses performed by the fuel suppliers may be acceptable. The representative sulfur dioxide emission rate from any sample shall be calculated using the formulas in paragraph (F) of this rule. The sampling frequency shall be, at a minimum, such that a sulfur dioxide emission rate representative of the daily average emission rate can be determined.



(5) For any fuel burning equipment burning fuels other than coal at any sulfur dioxide emissions source subject to, and not specifically exempted from, rule 3745-18-37 of the Administrative Code, Hamilton county emission limits, compliance with the applicable sulfur dioxide emission limits shall be determined using stack gas sampling using USEPA methods 1 to 4 and 6, 6A, 6B or 6C.

(6) For any fuel burning equipment burning fuels other than coal at any sulfur dioxide emissions source subject to, and not specifically exempted from, rule 3745-18-37 of the Administrative Code, Hamilton county emission limits, emission tracking, recordkeeping and reporting requirements shall be one of the following:

(a) Continuous emission monitoring using continuous monitoring systems meeting the requirements of "Performance Specification 2" as specified in 40 CFR Part 60, Appendix B and 40 CFR Part 60, Appendix F. Emission rates shall be determined using methods specified in 40 CFR 60.45 and 40 CFR 60.47a, 40 CFR 60.47b or 40 CFR 60.47c.

(b) Fuel sampling and analysis in accordance with USEPA method 19, or the appropriate ASTM methods. In lieu of performing on-site sampling, representative fuel analyses performed by the fuel suppliers may be acceptable. The representative sulfur dioxide emission rate from any sample shall be calculated using the formulas in paragraph (F) of this rule. The sampling frequency shall be, at a minimum, such that at least one analysis is obtained from each shipment of fuel.

(7) For any fuel burning equipment burning fuels other than coal at any sulfur dioxide emissions source subject to, and not specifically exempted from, rule 3745-18-15 of the Administrative Code, Butler county emission limits, compliance with the applicable sulfur dioxide emission limits shall be determined using the methods described in paragraphs (E)(7)(a) to (E)(7)(c) of this rule. A determination of noncompliance pursuant to any of these methods shall not be refuted by evidence of compliance pursuant to any other of these methods:

(a) Stack gas sampling using USEPA methods 1 to 4, and 6, 6A, 6B or 6C, at a frequency to be determined by the director.

(b) Continuous emission monitoring using continuous monitoring systems meeting the requirements



of "Performance Specification 2" as specified in 40 CFR Part 60, Appendix B and 40 CFR Part 60, Appendix F with any necessary modifications approved by the director. Emission rates shall be determined using methods specified in 40 CFR 60.45 and 40 CFR 60.47a, 40 CFR 60.47b or 40 CFR 60.47c. Compliance with the applicable sulfur dioxide emission limits shall be based on daily average calculations.

(c) Fuel sampling and analysis in accordance with USEPA method 19 or the appropriate ASTM methods, or equivalent methods as approved by the director. In lieu of performing on-site sampling, representative fuel analyses performed by the fuel suppliers may be acceptable. The representative sulfur dioxide emission rate from any sample shall be calculated using the formulas in paragraph (F) of this rule. The sampling frequency shall be, at a minimum, such that a sulfur dioxide emission rate representative of the thirty-day average emission rate can be determined.

(F) Sulfur dioxide emissions from fuel samples shall be calculated as follows:

(1) From solid fuels:

$$ER = (1 \times 10^6) / H \times S \times 1.9$$

where: ER = the emission rate in pounds of sulfur dioxide per MM Btu.

H = the heat content of the solid fuel in Btu per pound.

S = the decimal fraction of sulfur in the solid fuel.

(2) From liquid fuels:

$$ER = (1 \times 10^6) / H \times D \times S \times 1.974$$

where: ER = the emission rate in pounds of sulfur dioxide per MM Btu.

H = the heat content of the liquid fuel in Btu per gallon.



D = the density of the liquid fuel in pounds per gallon.

S = the decimal fraction of sulfur in the liquid fuel.

(3) From gaseous fuels other than natural gas as specified in paragraph (F)(4) of this rule:

$$ER = (1 \times 10^6) / H \times D \times S \times 1.998$$

where: ER = the emission rate in pounds of sulfur dioxide per MM Btu.

H = the heat content of the gaseous fuel in Btu per standard cubic foot.

D = the density of the gaseous fuel in pounds per standard cubic foot.

S = the decimal fraction of sulfur in the gaseous fuel.

(4) From natural gas, the sulfur dioxide emission rate shall be considered to be equal to 0.0 pounds of sulfur dioxide per MM Btu.

(G) All data, calculations and reports from any performance test, continuous monitor or fuel sample developed for the purpose of demonstrating compliance with rules 3745-18-02 or 3745-18-06 to 3745-18-94 of the Administrative Code shall be retained for a minimum of three years and shall be available for inspection by the director or the director's representative.

(H) Any owner or operator of any sulfur dioxide emissions source subject to, and not specifically exempted from, rule 3745-18-37 of the Administrative Code, Hamilton county emission limits, shall document any compliance test or applicable emission tracking procedure, shall document compliance with any applicable operating rate limits and shall retain all data, calculations and reports from any performance test, continuous emission monitor, fuel sample, or operating rate monitor utilized for the purpose of demonstrating compliance with the applicable emission limits, emission tracking requirements, or operating rate limits for a period of not less than three years and shall make such records available for inspection by and submittal to the director upon request.



(I) [Reserved.]

(J) Any owner or operator of any sulfur dioxide source subject to, and not specifically exempted from, paragraphs (B)(5), (B)(6), (B)(7), (B)(8), (B)(11), (B)(13) and (B)(14) of rule 3745-18-49 of the Administrative Code, "Lubrizol Corporation" processes "M", "N", "O", "W" and "AC" (OEPA source numbers P012, P013, P014, P022 and P030), shall demonstrate compliance with the combined hourly emission limits by performing emission tests in accordance with USEPA method 6 or USEPA method 6C, and by employing the continuous emission rate monitoring system. The combined allowable sulfur dioxide emission limit for these processes for any hour shall be the sum of the individual allowable sulfur dioxide emissions limits for those processes that are in operation during any part of that hour. The combined allowable sulfur dioxide emission limit for these processes for any rolling three hour period shall be the average of the three, one hour allowable limits comprising the three hour period.

(K) Nothing in this rule shall be interpreted to prevent the director from issuing orders pursuant to section 3704.03 of the Revised Code to require performance testing, continuous emission monitoring, or fuel sampling or to require record-keeping and reporting of emission information. Any such data may be used to further evaluate compliance with rules 3745-18-02 or 3745-18-06 to 3745-18-94 of the Administrative Code.