401 KAR 61:075. Steel plants and foundries using existing electric arc furnaces.

RELATES TO: KRS Chapter 224
STATUTORY AUTHORITY: KRS 224.10-100
CERTIFICATION STATEMENT:
NECESSITY, FUNCTION, AND CONFORMITY: KRS 224.10-100 requires the Environmental and Public Protection Cabinet to prescribe administrative regulations for the prevention, abatement, and control of air pollution. This administrative regulation provides for control of emissions from steel plants or foundries using existing electric arc furnaces.

Section 1. Applicability. The provisions of this administrative regulation apply to the following affected facilities in steel plants and foundries commenced before the classification date defined below: electric arc furnaces and/or associated metallurgical equipment located in the same shop as well as associated dust-handling equipment.

Section 2. Definitions. As used in this administrative regulation, all terms not defined herein shall have the meaning given them in 401 KAR 50:010.

(1) "Electric arc furnace (EAF)" means any furnace that produces molten steel and heats the charge materials with electric arcs from carbon electrodes. Furnaces from which the molten steel is cast into the shape of finished products, such as in a foundry, are affected facilities included within the scope of this definition. Furnaces which, as the primary source of iron, continuously feed prereduced ore pellets are not affected facilities within the scope of this definition.

(2) "Dust-handling equipment" means any equipment used to handle particulate matter collected by the control device and located at or near the control device for an EAF subject to this administrative regulation.

(3) "Control device" means the air pollution control equipment used to remove particulate matter generated by an EAF(s) from the effluent gas stream.

(4) "Capture system" means the equipment (including ducts, hoods, fans, dampers, etc.) used to capture or transport particulate matter generated by an EAF and associated metallurgical equipment to the air pollution control device.

(5) "Associated metallurgical equipment" in the shop includes but is not limited to scrap preheaters and degreasers, and equipment for hot metal transfer, charging, lancing, boiling, slagging and deslagging, tapping, inoculating, teeming, hot-topping, vacuum degassing, continuous casting, etc.

(6) "Charge" means the addition of iron and steel scrap or other materials into the top of an electric arc furnace.

(7) "Charging period" means the time period commencing at the moment an EAF starts to open and ending three (3) minutes after the EAF roof is returned to its closed position.

(8) "Tap" means the pouring of molten steel from an EAF.

(9) "Tapping period" means the time period commencing at the moment an EAF begins to tilt to pour and ending three (3) minutes after an EAF returns to an upright position.

(10) "Meltdown and refining" means that phase of the steel production cycle when charge material is melted and undesirable elements are removed from the metal.

(11) "Meltdown and refining period" means the time period commencing at the termination of the initial charging period and ending at the initiation of the tapping period, excluding any intermediate charging periods.

(12) "Heat time" means the period commencing when scrap is charged to an empty EAF and terminating when the EAF tap is completed.

(13) "Shop" means the building which houses one (1) or more EAF.

(14) "Direct shell evacuation system" means any system that maintains a negative pressure within the EAF above the slag or metal and ducts the emissions to the control device.

(15) "Concentrated discharge" means that the outlet from a control device consists of either stacks (one (1) or more) or openings on the device's top or side which has (have) a total area less than five (5) percent of the corresponding top or side and which has (have) a length of not more than twice the width.

(16) "Dispersed discharge" means that the outlet from a control device consists of opening(s) on the device's top or side which has (have) a total area exceeding five (5) percent of the corresponding top or side or which have a length more than twice the width.

(17) "Classification date" means October 21, 1974.

Section 3. Standard for Particulate Matter.

(1) On and after the date on which the performance test required to be conducted by 401 KAR 61:005 is completed, no owner or operator subject to the provisions of this administrative regulation shall cause to be discharged into the atmosphere from an electric arc furnace and associated metallurgical equipment any gases which:

(a) Exit from a control device and contain particulate matter in excess of 0.010 grains/dscf (twenty-three (23) mg/dscm);

(b) Exit from a control device and exhibit opacity in excess of:

1. Ten (10) percent for a control device with a concentrated discharge.
2. Three (3) percent for a control device with a dispersed discharge.

(c) Exit directly from a shop and exhibit an opacity greater than twenty (20) percent for more than eleven (11) times as observed at fifteen (15) second intervals over a period of any sixty (60) consecutive minutes. Reference Method 9 of Appendix A to 40 CFR 60, filed by reference in 401 KAR 50:015, shall be used in determining opacity in this paragraph, except for averaging time and number of observations.

(2) On and after the date on which the performance test required to be conducted by 401 KAR 61:005 is completed, no owner or operator subject to the provisions of this administrative regulation shall cause to be discharged into the atmosphere from dust-handling equipment any gases which exhibit ten (10) percent opacity or greater.

Section 4. Monitoring of Operations.

(1) The owner or operator subject to the provisions of this administrative regulation shall maintain records daily of the following information:

(a) Time and duration of each charge;

(b) Time and duration of each tap;

(c) All flow rate data obtained under subsection (2) of this section or equivalent obtained under subsection (4) of this section; and

(d) All pressure data obtained under subsection (5) of this section.

(2) Except as provided under subsection (4) of this section, the owner or operator subject to the provisions of this administrative regulation shall install, calibrate, and maintain a monitoring device that continuously records the volumetric flow rate through each separately ducted hood. The monitoring device(s) may be installed in any appropriate location in the exhaust duct such that reproducible flow rate monitoring will result. The flow rate monitoring device(s) shall have an accuracy of plus or minus ten (10) percent over its normal operating range and shall be calibrated according to the manufacturer's instructions. The cabinet may require the owner or operator to demonstrate the accuracy of the monitoring device(s) relative to Methods 1 and 2 of Appendix A of 40 CFR 60.

(3) When the owner or operator of an EAF is required to demonstrate compliance with the standard under Section 3(1)(c) of this administrative regulation, and at any other time the cabinet may require, the volumetric flow rate through each separately ducted hood shall be determined during all periods in which the hood is operated for the purpose of capturing emissions from the EAF using the monitoring device under subsection (2) of this section. The owner or operator may petition the cabinet for reestablishment of these

flow rates whenever the owner or operator can demonstrate to the cabinet's satisfaction that the EAF operating conditions upon which the flow rates were previously established are no longer applicable. The flow rates determined during the most recent demonstration of compliance shall be maintained (or may be exceeded) at the appropriate level for each applicable period. Operation at lower flow rates may be considered by the cabinet to be unacceptable operation and maintenance of the affected facility.

(4) The owner or operator may petition the cabinet to approve any alternative method that will provide a continuous record of operation of each emission capture system.

(5) Where emissions during any phase of the heat time are controlled by use of a direct shell evacuation system, the owner or operator shall install, calibrate and maintain a monitoring device that continuously records the pressure in the free space inside the EAF. The pressure shall be recorded as fifteen (15) minute integrated averages. The monitoring device may be installed in any appropriate location in the EAF such that reproducible results will be obtained. The pressure monitoring device shall have an accuracy of plus or minus five (5) mm of water gauge over its normal operating range and shall be calibrated according to the manufacturer's instructions.

(6) When the owner or operator of an EAF is required to demonstrate compliance with the standard under Section 3(1)(c) of this administrative regulation and at any other time the cabinet may require, the pressure in the free space inside the furnace shall be determined during the meltdown and refining period(s) using the monitoring device under subsection (5) of this section. The owner or operator may petition the cabinet for reestablishment of the fifteen (15) minute integrated average pressure whenever the owner or operator can demonstrate to the cabinet's satisfaction that the EAF operating conditions upon which the pressures were previously established are no longer applicable. The pressure determined during the most recent demonstration of compliance shall be maintained at all times the EAF is operating in a meltdown and refining period. Operation at higher pressures may be considered by the cabinet to be unacceptable operation and maintenance of the affected facility.

(7) Where the capture system is designed and operated such that all emissions are captured and ducted to a control device, the owner or operator shall not be subject to the requirements of this section.

(8) Where each EAF in a shop has an actual tapping capacity of less than ten (10) tons, the owner or operator shall not be subject to the requirements of this section.

Section 5. Test Methods and Procedures.

(1) Reference methods in Appendix A of 40 CFR 60, except as provided under 401 KAR 50:045, shall be used to determine compliance with this administrative regulation as follows:

(a) Reference Method 5 for concentration of particulate matter and associated moisture content;

(b) Reference Method 1 for sample and velocity traverses;

(c) Reference Method 2 for velocity and volumetric flow rate;

(d) Reference Method 3 for gas analysis; and

(e) Reference Method 9 for opacity determination of gases discharged through a control device and from dust-handling equipment.

(2) For Reference Method 5, the sampling time for each run shall be at least four (4) hours. When a single EAF is sampled, the sampling time for each run shall also include an integral number of heats. Shorter sampling times, when necessitated by process variables or other factors, may be approved by the cabinet. The minimum sample volume shall be four and five-tenths (4.5) dscm (160 dscf).

(3) For the purpose of this section, the owner or operator shall conduct the demonstration of compliance with Section 3(1)(c) of this administrative regulation and furnish the

cabinet a written report of the results of the test.

(4) During any performance test required under 401 KAR 61:005 no gaseous diluents may be added to the effluent gas stream after the fabric in any pressurized fabric filter collector, unless the amount of dilution is separately determined and considered in the determination of emissions.

(5) When more than one (1) control device serves the EAF(s) being tested, the concentration of particulate matter shall be determined using the equation in Appendix A to this administrative regulation.

(6) Any control device subject to the provisions of this administrative regulation shall be designed and constructed to allow measurement of volumetric flow rate and emissions using applicable test methods and procedures.

(7) Where emissions from any EAF(s) are combined with emissions from other affected facilities in the same shop and controlled by a common capture system and control device, the owner or operator may use any of the following procedures during a performance test:

(a) Base compliance on control of the combined emissions;

(b) Utilize a method acceptable to the cabinet which compensates for the emissions from the other affected facilities; and

(c) Any combination of the criteria of paragraphs (a) and (b) of this subsection.

Section 6. Compliance Timetable. The owner or operator of an affected facility shall demonstrate compliance with Section 3(1)(c) of this administrative regulation on or before October 15, 1982. Compliance with all other provisions of the administrative regulation shall have been demonstrated on or before June 6, 1979.

Section 7. Appendix A . Equation for Concentration of Particulate Matter for More Than One Control Device.

$$C_S = \frac{\sum_{n=1}^{N} (C_S Q_S)_n}{\sum_{n=1}^{N} (Q_S)_n}$$

Where:

C_s = concentration of particulate matter in mg/dscm (gr/dscf) as determined by Reference Method 5.

N = total number of control devices tested.

Q_s = volumetric flow rate of the effluent gas stream in dscm/hr (dscf/hr) as determined by Reference Method 2.

$(C_sQ_s)_n$ or $(Q_s)_n$ = value of the applicable parameter for each control device tested.

(5 Ky.R. 489; eff. 6-6-1979; 8 Ky.R. 1438; eff. 12-1-1982; TAm eff. 8-9-2007; Crt eff. 1-25-2019; Crt eff. 1-20-2026.)