401 KAR 61:165. Existing primary aluminum reduction plants.

RELATES TO: KRS 224.20-100, 224.20-110, 224.20-120
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 the control of emissions from existing primary aluminum reduction plants.

Section 1. Applicability.

(1) The provisions of this administrative regulation shall apply to each affected facility which means each potroom group within a primary aluminum reduction plant commenced before the classification date defined below.

(2) A physical change in, or change in the method of operation of, each potroom group within a primary aluminum reduction plant in conformance with the change from this administrative regulation, as effective November 5, 1981, to this administrative regulation, as effective October 1, 1984, shall not be a modification; provided, that the potroom group within a primary aluminum reduction plant was an affected facility at the time of the physical or operational change.

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) "Primary aluminum reduction plant" means any source manufacturing aluminum by electrolytic reduction.

(2) "Potroom" means a building unit which houses a group of electrolytic cells in which aluminum is produced.

(3) "Potroom group" means an uncontrolled potroom, a potroom which is controlled individually, or a group of potrooms or potroom segments ducted to a common control system.

(4) "Roof monitor" means that portion of the roof of a potroom where gases not captured at the cell exit from the potroom.

(5) "Total fluorides" and "gaseous fluorides" means elemental fluorine and all fluoride compounds, as measured and distinguished by reference methods specified in Section 7 or equivalent or alternative methods.

(6) "Primary control system" means an air pollution control system designed to remove gaseous and particulate fluorides from exhaust gases which are captured at the cell.

(7) "Classification date" means October 23, 1974.

(8) "Dry scrubbing plant" means each primary aluminum reduction plant with a primary control system which operates in a manner whereby potroom group gases flow through a reaction bed consisting of alumina prior to being treated by dry removal methods for particulate emissions control. The resulting reaction bed products are then used as feed to the potroom group electrolytic reduction cells.

(9) "Start-up cell" means an electrolytic reduction cell which is initially devoid of any materials other than carbon cathodes and anodes. Such a cell undergoes a prebake period by passing electrical current through anodes resting on the cathode floor, then has the necessary electrolyte and aluminum added, such that it will produce aluminum.

(10) "Sick cell" means an electrolytic reduction cell which has lost its proper heat balance, cannot maintain a solid crust, and must be removed from the primary control system to receive corrective attention.

(11) "Normal potroom operations" means any potroom activity and includes uncaptured cell gases resulting from start-up cells, cell tapping, anode changing, ore additions, or any other potroom operation but does not include operations due to sick cells.

(12) "State Implementation Plan" means the most recently prepared plan or revision thereof required by Section 110 of the Clean Air Act which has been approved by the U.S. EPA.

Section 3. Standard for Visible Emissions. 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:

(1) From any potroom roof monitor any gases which exhibit ten (10) percent opacity or greater during normal potroom operation except start-up cells;

(2) From any potroom roof monitor section directly above sick cells or start-up cells any gases which exhibit forty (40) percent opacity or greater;

(3) From any dry scrubbing plant primary control system any gases which exhibit ten (10) percent opacity or greater; or

(4) From any primary aluminum reduction plant other than a dry scrubbing plant primary control system any gases which exhibit twenty-five (25) percent opacity or greater.

Section 4. Standard for Fluorides.

(1) On and after the date on which the performance test required to be conducted by 401 KAR 61:005 is completed, the owner or operator subject to the provisions of this administrative regulation shall:

(a) For a dry scrubbing plant cause to be discharged into the atmosphere no gases which contain total fluorides in excess of one and nine-tenths (1.9) lb/ton of aluminum produced except that emissions between one and nine-tenths (1.9) lb/ton and two and five-tenths (2.5) lb/ton will be considered in compliance if the owner or operator demonstrates to the cabinet's satisfaction that exemplary operation and maintenance procedures were used with respect to the emission control system and that proper control equipment was operating at the affected facility during the performance test.

(b) For any primary aluminum reduction plant other than a dry scrubbing plant cause to be discharged into the atmosphere through each potroom roof monitor no gases which contain gaseous fluorides in excess of 3.25 lb/hr.

(c) For a primary aluminum reduction plant other than a dry scrubbing plant cause to be discharged into the atmosphere from any primary control system no gases which contain gaseous fluorides in excess of one (1.0) lbs/ton of aluminum produced except that any such plant may cause to be discharged into the atmosphere gases which contain gaseous fluorides not exceeding 290 lb/hr providing that a State Implementation Plan allowing such emissions has been approved by the U.S. EPA. The minimum stack height for the primary control system shall be 400 feet.

(2) In the event of a recorded violation of the fluoride standard prescribed in 401 KAR 53:010, the cabinet shall require that remedial measures be initiated from the source(s) responsible for causing said violation.

Section 5. Standard for Particulate Emissions. 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 any primary aluminum reduction plant other than a dry scrubbing plant primary control system any gases which contain particulate emissions in excess of 0.010 gr/scf. Addition of dilution air shall not constitute compliance.

Section 6. Monitoring of Operations.

(1) The owner or operator of any primary aluminum reduction plant other than a dry scrubbing plant subject to the provisions of this administrative regulation shall install, calibrate, maintain, and operate monitoring devices which can be used to determine daily the weight of the aluminum produced. The weighing devices shall have an accuracy of plus or minus five (5) percent over their operating range.

(2) The owner or operator of any primary aluminum reduction plant other than a dry scrubbing plant shall maintain a record of daily production rates of aluminum, raw material

feed rates, and cell or potline voltages.

(3) The owner or operator of any affected facility shall install, use, and maintain ambient air monitoring equipment in accordance with such methods as the cabinet shall prescribe; establish and maintain records of same; and make periodic emission reports at intervals prescribed by the cabinet.

Section 7. Test Methods and Procedures.

(1) Reference methods as defined in Appendix A of 40 CFR 60 or as otherwise specified, filed by reference in 401 KAR 50:015, except as provided for in 401 KAR 50:045, shall be used to determine compliance with the standards prescribed in Section 3, 4 and 5 as follows:

(a) For sampling emissions from stacks:

1. Reference Method 13A or 13B for the concentration of total fluoride and the associated moisture content;
2. Reference Method 1 for sample and velocity traverses;
3. Reference Method 2 for velocity and volumetric flow rate;
4. Reference Method 3 for gas analysis; and
5. Reference Method 5 for particulate emissions.

(b) For sampling emissions from roof monitors not employing stacks or pollutant collection systems:

1. Reference Method 14 and Kentucky Method 130 for the concentration of gaseous fluorides and associated moisture content;
2. Reference Method 1 for sample and velocity traverses;
3. Reference Method 2 and Reference Method 14 for velocity and volumetric flow rate; and
4. Reference Method 3 for gas analysis.

(c) For opacity determination: Reference Method 9.

(2) For Reference Method 13A or 13B, 14, and Kentucky Method 130, the sampling time for each run shall be at least eight (8) hours for any potroom sample, and the minimum sample volume shall be six and eight-tenths (6.8) dscm (240 dscf) for any potroom sample except that shorter sampling times or smaller volumes, when necessitated by process variables or other factors, may be approved by the cabinet.

(3) The air pollution control system for each affected facility shall be constructed so that volumetric flow rates and total fluoride emissions can be accurately determined using applicable methods specified under subsection (1) of this section.

(4) The rate of aluminum production is determined by dividing 720 hours into the weight of aluminum tapped from the affected facility during a period of thirty (30) days prior to and including the final run of a performance test.

(5) For each run for any plant with an emission limitation expressed in lbs/ton of aluminum produced, potroom group emissions expressed in kg/metric ton of aluminum produced shall be determined using the equation in Appendix A of this administrative regulation.

(6) For any sampling harness which does not comply with Reference Method 14 in Appendix A to 40 CFR 60, as amended on June 30, 1980, the cabinet shall prescribe such sampling procedures as it deems appropriate.

Section 8. Compliance Timetable.

(1) The owner or operator of an affected facility shall be required with respect to start-up cell and sick cell emissions to achieve compliance with this administrative regulation no later than February 1, 1982, except as provided for under Section 9 of this administrative regulation.

(2) The owner or operator of an affected facility shall be required with respect to the primary removal system to achieve final compliance no later than February 1, 1981.

Section 9. Variance. To allow for technological and economic circumstances unique to a source, variation from the visible emission standard for sick or start-up cells specified in

Section 3(2) of this administrative regulation shall be granted by the cabinet when supported by adequate technical and economic documentation reasonably acceptable to the cabinet.

Section 10. Appendix.

Equation for Potroom Group Emissions.

$$E_p = \frac{(CQ)_1 10^{-6} + (CQ)_2 10^{-6}}{M}$$

Where:

E_P = Primary control system emissions of gaseous fluorides in kg/metric ton of aluminum produced at any plant other than a dry scrubbing plant.

= Potroom group emissions of total fluorides in kg/metric ton of aluminum produced at dry scrubbing plants.

C = For dry scrubbing plants, concentration of total fluorides in mg/dscm as determined by Reference Method 13A or 13B, or Reference Method 14 as applicable.

= For plants other than dry scrubbing plants, concentration of gaseous fluorides as determined by Kentucky Method 130.

Q = Volumetric flow rate of the effluent gas stream in dscm/hour as determined by Reference Method 2 and/or Reference Method 14, as applicable.

10^{-6} = Conversion factor for mg to kg.

M = Rate of aluminum production in metric ton/hour as determined by Section 7(4).

$(CQ)_1$ = Product of C and Q for measurements of primary control system effluent gas streams.

$(CQ)_2$ = Product of C and Q for measurements of roof monitor effluent gas stream at dry scrubbing plants. $(CQ)_2$ shall be equal to zero for any plant other than a dry scrubbing plant.

(7 Ky.R. 384; 478; eff. 1-7-1981; 8 Ky.R. 164; eff. 11-5-1981; 11 Ky.R. 574; eff. 10-1-1984; 1461; eff. 6-4-1985; TAm eff. 8-9-2007; Crt eff. 1-25-2019; Crt eff. 1-20-2026.)