

REGULATION 6.46 Standards of Performance for Existing Ferroalloy and Calcium Carbide Production Facilities

Air Pollution Control District of Jefferson County Jefferson County, Kentucky

Relates To: KRS Chapter 77 Air Pollution Control

Pursuant To: KRS Chapter 77 Air Pollution Control

Necessity and Function: KRS 77.180 provides that the Air Pollution Control Board may make and enforce all needful orders, rules, and regulations necessary or proper to accomplish the purposes of KRS Chapter 77. This regulation provides for control of emissions from existing ferroalloy and calcium carbide production facilities.

SECTION 1 Applicability

- 1.1 This regulation applies to the following affected facilities commenced before the classification date defined below:
 - 1.1.1 Electric submerged arc furnaces that produce silicon metal, ferrosilicon, calcium silicon, silicomanganese zirconium, ferrochrome silicon, silvery iron, high-carbon ferrochrome, charge chrome, standard ferromanganese, silicomanganese, ferromanganese silicon, or calcium carbide, and
 - 1.1.2 Dust-handling equipment associated with the electric submerged arc furnace processes specified in section 1.1.1.

SECTION 2 Definitions

As used in this regulation, all terms not defined herein shall have the meaning given them in Regulation 1.02.

- 2.1 "Blowing tap" means any tap in which an evolution of gas forces or projects jets of flame or metal sparks beyond the ladle, runner, or collection hood.
- 2.2 "Calcium carbide" means material containing 70 to 85% calcium carbide by weight.
- 2.3 "Calcium silicon" means that alloy as defined by ASTM A-495-64(70).
- 2.4 "Capture system" means the equipment (including hoods, ducts, fans, dampers, etc.) used to capture or transport particulate matter generated by an affected electric submerged arc furnace to the control device.
- 2.5 "Charge chrome" means that alloy containing 52 to 70% by weight chromium, 5 to 8% by weight carbon, and 3 to 6% by weight silicon.
- 2.6 "Classification date" means October 21, 1974.
- 2.7 "Concentrated discharge" means that the outlet from a control device consists of either stacks (one or more) or openings on the device's top or side that have a total area less than 5% of the corresponding top or side and that have a length of not more than twice the width.
- 2.8 "Control device" means the air pollution control equipment used to remove particulate matter from an effluent gas stream generated by an electric submerged arc furnace .
- 2.9 "Dispersed discharge" means that the outlet from a control device consists of openings on the device's top or side that have a total area exceeding 5% of the corresponding top or side or that have a length more than twice the width. A control device may have both dispersed and concentrated discharges.
- 2.10 "Dust-handling equipment" means any equipment used to handle particulate matter collected

- by the air pollution control device (and located at or near such device) serving any electric submerged arc furnace subject to this regulation.
- 2.11 "Electric submerged arc furnace" means any furnace wherein electrical energy is converted to heat energy by transmission of current between electrodes partially submerged in the furnace charge.
 - 2.12 "Ferrochrome silicon" means that alloy as defined by ASTM A-482-66(71).
 - 2.13 "Ferromanganese silicon" means that alloy containing 63 to 66% by weight manganese, 28 to 32% by weight silicon, and a maximum of 0.08% by weight carbon.
 - 2.14 "Ferrosilicon" means that alloy as defined by ASTM A-100-69(74) grades A,B,C,D, and E which contains 50% or more by weight silicon.
 - 2.15 "Furnace charge" means any material introduced into the electric submerged arc furnace and may consist of, but is not limited to, ores, slag, carbonaceous material, and limestone.
 - 2.16 "Furnace cycle" means the time period from completion of a furnace product tap to the completion of the next consecutive product tap.
 - 2.17 "Furnace power input" means the resistive electrical power consumption of an electric submerged arc furnace as measured in kilowatts.
 - 2.18 "High-carbon ferrochrome" means that alloy as defined by ASTM A-101-73 grade HC1 through HC6.
 - 2.19 "Product change" means any change in the composition of the furnace charge that would cause the electric submerged arc furnace to become subject to a different mass standard applicable under Section 3.
 - 2.20 "Silicomanganese" means that alloy as defined by ASTM A-483-64(74).
 - 2.21 "Silicomanganese zirconium" means that alloy containing 60 to 65% by weight silicon, 1.5 to 2.5% by weight calcium, 5 to 7% by weight zirconium, 0.75 to 1.25% by weight aluminum, 5 to 7% by weight manganese, and 2 to 3% by weight barium.
 - 2.22 "Silicon metal" means any silicon alloy containing more than 96% silicon by weight.
 - 2.23 "Silvery iron" means any ferrosilicon, as defined by ASTM A-100-69(74), which contains less than 30% silicon.
 - 2.24 "Slag" means the more or less completely fused and vitrified matter separated during the reduction of metal from its ore.
 - 2.25 "Standard ferromanganese" means that alloy as defined by ASTM A-99-66(71).
 - 2.26 "Tapping" means the removal of slag or product from the electric submerged arc furnace under normal operating conditions such as removal of metal under normal pressure and movement by gravity down the spout into the ladle.
 - 2.27 "Tapping Period" means the time duration from initiation of the process of opening the tap hole until plugging of the tap hole is complete.
 - 2.28 "Tapping station" means that general area where molten product or slag is removed from the electric submerged arc furnace.

SECTION 3 Standard for Particulate Matter

- 3.1 On and after the date on which the performance test required to be conducted by Regulation 6.01 is completed, no owner or operator subject to the provisions of this regulation shall cause to be discharged into the atmosphere from any electric submerged arc furnace any gases which:
 - 3.1.1 Exit from a control device and exhibit an opacity equal to or greater than 3%, where control device has dispersed discharge.

- 3.1.2 Exit from any building opening and exhibit an opacity equal to or greater than:
 - 3.1.2.1 Fifteen percent for these gases which are the result of routine smelting/melting operations where no auxiliary operations will occur,
 - 3.1.2.2 Twenty percent for those gases which are from a furnace associated with metallurgical treatment while no auxiliary operations are occurring,
 - 3.1.2.3 Twenty-five percent for those gases which are the result of tapping operations,
 - 3.1.2.4 Forty percent for those gases which occur only during a metallurgical treatment, or
 - 3.1.2.5 Forty percent for those gases which occur during the pouring of metal from slag ladles into castbeds or molds.
- 3.2 On and after the date on which the performance test required to be conducted by Regulation 6.01 is completed, no owner or operator subject to this regulation shall cause to be discharged into the atmosphere from any dust-handling equipment any gases which exhibit 15% opacity or greater.

SECTION 4 Test Methods and Procedures

Reference Method 9 in Appendix A of 40 CFR 60, except as provided in Regulation 1.04, shall be used to determine compliance with the standards prescribed in Section 3.

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