

**REGULATION 12
MISCELLANEOUS STANDARDS OF PERFORMANCE
RULE 13
METAL MELTING AND PROCESSING OPERATIONS**

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REGULATION 12
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RULE 13
METAL MELTING AND PROCESSING OPERATIONS

12-13-100 GENERAL

12-13-101 Description: The purpose of this Rule is to require the development of and compliance with Emissions Minimization Plans (EMP) designed to minimize the fugitive emissions of particulate matter and odorous substances from metal melting and processing facilities operating within the District.

12-13-102 Applicability: This Rule is applicable to any person who owns or operates a District-permitted furnace or oven (pursuant of District Regulation 2: Permits, Rule 1: General Requirements) at a metal melting or metal processing facility that processes at least one (1.0) tons of metal per rolling twelve month period.

12-13-103 Exemption, Clean Aluminum and Small Facilities: Neither the Standards (Sections 12-13-301 et seq.) nor the Administrative Requirements (Sections 12-13-401 et seq.) to the following facilities:

103.1 Clean Aluminum Melting: Aluminum die casting and other facilities that melt only aluminum that contains less than 0.004 percent cadmium and 0.002 percent arsenic;

103.2 Foundries that melt 1,000 tons or less of metal per rolling twelve month period; and

103.3 Forges that heat treat 1,000 tons or less of metal per rolling twelve month period.

12-13-200 DEFINITIONS

12-13-201 Alloy: A solid or molten mixture of two or more metals or of one or more metals and nonmetallic elements. Examples of alloys include steel, brass, and bronze.

12-13-202 Binder: A material consisting of resin, activator, or catalyst or a combination thereof, used to bind sand together in metal casting operations. Binders may include phenolic-based resins, urethanes, epoxy-acrylics, furfuryl alcohol, and sodium silicate.

12-13-203 Casting: The formation of metallic parts or casts by pouring molten metal into a mold and core assembly or into a mold for ingots, sows and cylinders.

12-13-204 Cooling: The act of allowing cast metal to cool close to ambient temperatures while being contained in the mold.

12-13-205 Cupola: A vertical cylindrical shaft furnace to melt iron and steel by combustion of a charging material forced upward by heated air. Charge components may include coke, limestone and forms of iron and steel, such as scrap and foundry returns.

12-13-206 Die Casting: The process of injecting molten metal under high pressure into a steel mold, known as a die, to form metal parts.

12-13-207 Dross: The solid impurities floating on a molten metal composed primarily of impurities, metal, and metal oxides.

- 12-13-208 Finishing Operation:** Operations that are performed once a cast metal part has been shaken out and cooled and that address imperfections and assembly in preparation of the final product for the customer. Finishing operations includes shot blasting, grinding, and welding.
- 12-13-209 Forge:** A metal melting and processing facility that conducts forging operations to shape malleable metal into shapes.
- 12-13-210 Foundry:** Any metal melting and processing facility operation that conducts foundry operations that produces products from cast melted metal.
- 12-13-211 Fugitive Emissions:** For the purpose of this Rule only, the emissions of particulate matter and odorous substances to the atmosphere from man-made sources that are not released through a system of equipment that is designed to capture pollutants at the source, convey them through ductwork, and exhaust them using forced ventilation. Fugitive emissions include mold vent gases, equipment leaks, particulate emissions from metal handling and uncontrolled product finishing, and emissions that are released through windows, doors, vents, and other general building ventilation or exhaust systems.
- 12-13-212 Furnace:** For the purposes of this Rule only, a device used to remelt metal. Types of furnaces include, but are not limited to, cupola, electric arc, pot, induction, blast, crucible, sweat, and reverberatory furnaces.
- 12-13-213 Grinding:** A machining process used to either shape components that are too hard to be machined by conventional methods, such as hardened tool steels and case or induction hardened components, or used to obtain a high degree of dimensional accuracy and surface finish on a component.
- 12-13-214 Metal:** For the purposes of this Rule, metals include ferrous (iron-based) metals and alloys and non-ferrous (non-iron-based) metals and alloys. Examples of metals include iron, steel, and other iron-based alloys; aluminum, copper, brass, bronze, gold, silver, zinc, tin, lead, platinum, nickel, chromium, cadmium, manganese, mercury, tungsten, and titanium and their non-ferrous alloys.
- 12-13-215 Metal Management:** The transport, receipt, collection, sorting, segregation, separation, compilation, crushing, shredding, and storage of metals, metal-containing materials and non-metallic materials at a metal melting and processing facility.
- 12-13-216 Metal Melting and Processing Facility:** Any real property or structure that contains forging operations or foundry operations.
- 12-13-217 Metal Melting and Processing Operations:** Any of the following operations at metal melting and processing facilities:
- 217.1 Forging Operations:** The operation of creating metal products by shaping metals. Forging operations include operation of an oven to heat treat metals to a temperature less than its melting point; plastic deformation or metal shaping; annealing, tempering, and quenching;
 - 217.2 Foundry Operations:** The operation of a furnace in which scrap metal, ingots, and/or other forms of metal is charged, melted, and tapped; the casting of metal parts; the cooling and shake-out of the cast metal parts; mold and core making; finishing of the cast metal part; metal management and sand reclamation.
- 12-13-218 Metal Throughput:** The following definitions for metal throughput shall be used for the following operations:
- 218.1 Forging Operations:** The weight of metal, in tons, heat treated in an oven during a forging operation;
 - 218.2 Foundry Operations:** The weight of metal, in tons, charged to a furnace and melted.

- 12-13-219 Mold and Core Making Operations:** The formation of molds and/or cores from sand; binders; and other substances, such as clay, starch, charcoal, acrylics, phenols, and urethane to form mold assemblies to be used in the casting of metallic objects.
- 12-13-220 Odorous Substance:** Air contaminants or compounds that cause the degradation of air quality and that are discerned by the olfactory senses (sense of smell).
- 12-13-221 Oven:** A device used to heat metal until it is malleable but not to the point of melting.
- 12-13-222 Particulate Matter:** Any material that is emitted as liquid or solid particles or gaseous material which becomes liquid or solid at the testing temperatures specified in the referenced test method with an aerodynamic diameter smaller than or equal to a nominal 10 microns, less any uncombined water.
- 12-13-223 Pouring and Casting Operations:** The act of transferring molten metal into a mold or mold assembly.
- 12-13-224 Responsible Manager:** An employee, designated by the owner or operator of a metal melting and processing facility, with the authority to direct, operate, manage or control the facility's foundry or forging operations.
- 12-13-225 Sand Reclamation:** The act of reducing lumps and removing foreign material and residual binder and/or carbonaceous, metallic and other contaminants from each sand grain from foundry sand used in mold assemblies.
- 12-13-226 Scrap Metal:** Any metal or metal-containing material that has been discarded or removed from the use for which it was produced or manufactured and which is intended for reprocessing. "Scrap" does not include sprues, gates, risers, foundry returns, and similar material intended for remelting that has been generated at the metal melting and processing facility as a consequence of casting or forming processes but has not been coated or surfaced with any material containing cadmium, arsenic, or nickel.
- 12-13-227 Shake Out:** The separation of a metal casting from a mold assembly.
- 12-13-228 Shot Blasting:** The act of impinging a metallic surface with shot such as sand, steel balls, or silicon carbide granules to texturize (smooth or roughen) or remove imperfections from a metallic surface.
- 12-13-229 Slag:** A partially vitreous by-product of metal melting which contains impurities, including metallic oxides. Slag may be lighter than, and rest above, the molten metal fraction in a furnace and may be poured off before the molten metal can be tapped.
- 12-13-230 Tapping:** The pouring of molten metal from a furnace into ladles for transport to an area for casting.
- 12-13-231 Welding:** The act of joining two pieces of metal together by the use of heat or pressure or both. Types of welding including metal arc, atomic hydrogen, submerged arc, resistance butt, flash, spot, stitch, stud and projection.
- 12-13-300 STANDARDS**
- 12-13-301 Compliance with Emissions Minimization Plan:** Effective 90 days from the date that the Emissions Minimization Plan (EMP) is approved by the APCO pursuant to Section 12-13-405.5, the owner or operator of a metal melting and processing facility shall operate the facility at all times in accordance with its approved EMP.
- 12-13-400 ADMINISTRATIVE REQUIREMENTS**

12-13-401 Emissions Minimization Plan Requirements: The owner or operator of any metal melting and processing facility subject to the requirements of this Rule shall develop an Emissions Minimization Plan (EMP) that details management practices, measures, equipment and procedures that are employed or are scheduled to be implemented to minimize fugitive emissions of particulate matter (PM) and odorous substances, as prescribed in Sections 12-13-402 and 403. The EMP shall be submitted to the APCO in accordance with Sections 12-13-404 and 405.

12-13-402 Operations Subject to the EMP: The EMP shall address all of the following operations that are conducted at the metal melting and processing facility:

- 402.1** Mold and Core Making Operations;
- 402.2** Metal Management;
- 402.3** Furnace Operations, including tapping and pouring;
- 402.4** Forging;
- 402.5** Casting and Cooling Operations;
- 402.6** Shake-Out Operations;
- 402.7** Finishing Operations;
- 402.8** Sand Reclamation;
- 402.9** Dross and Slag Management.

12-13-403 Contents of the EMP: The owner or operator of the metal melting and processing facility subject to Section 12-13-401 shall prepare a complete and accurate EMP that details the management practices, measures, equipment and procedures that are employed or scheduled to be implemented to minimize fugitive emissions of particulate matter and odorous substances for the operations subject to the EMP:

403.1 Technical Data: The EMP shall include:

- 1.1** A detailed process flow diagram that clearly and accurately indicates all operations and the flows of materials at the facility, starting from the point of material receipt from offsite to the achievement of the final product. The process flow diagram shall identify all process, monitoring and control equipment associated with operations that minimize particulate and odorous emissions, including, but not limited to baghouses, baghouse leak detectors, afterburners, carbon abatement, FID monitors, temperature and pressure monitors. All abatement and control devices should be identified using District Source Numbers according to the District Permit where applicable.
- 1.2** A facility layout/floor plan that clearly and accurately indicates the relative locations of all items identified in Section 12-13-403.1.1, including all equipment and permitted and exempt sources at a facility, all building walls, partitions, doors, windows, vents, and openings, and indicate all areas that have particulate or odor abatement, all metal melting and metal processing equipment, and any other source(s) that may contribute to particulate and/or odorous emissions. All metal melting and metal processing equipment shall be labeled using District Source Numbers according to the District Permit where applicable;

403.2 Fugitive Emissions Reductions Previously Realized: A description of the equipment, processes and procedures installed or implemented within the last five years to reduce fugitive emissions.

403.3 Schedule for the Implementation of the EMP Elements: A list of each of the following:

- 3.1** The specific elements of the EMP that are in place as of the initial date of the submission of the EMP to the APCO for approval; and
- 3.2** The specific elements of the EMP that will be implemented following APCO approval of the EMP and the implementation schedule for each of those specific elements.

12-13-404 Compliance Schedule for the EMP: The owner or operator of a metal melting and processing facility required to develop an EMP shall submit a complete and accurate EMP in accordance with the following schedule:

404.1 Submission of the Proposed EMP: Submit the EMP to the APCO no later than [six months following adoption of this Rule] or no later than the last day of the sixth month after becoming subject to the requirements set forth in Section 12-13-401. The Responsible Manager shall certify the EMP as complete and accurate and sign it. The APCO may require the owner or operator to submit additional information to assure the completeness and accuracy of the EMP to ensure the minimization of fugitive emissions of particulate matter and odorous substances.

404.2 Completeness Determination: Within 30 days of receipt of the EMP, the APCO will notify the owner or operator in writing whether the EMP is complete. The EMP is complete if the APCO determines that it includes all of the information required by Sections 12-13-402 and 403. If the APCO determines that the proposed EMP is not complete, the notification will specify the basis for this determination and the required corrective action.

404.3 Corrective Action: Upon receipt of such notification, the owner or operator shall correct the identified completeness deficiencies and resubmit the proposed EMP within 30 days. If the APCO determines that the owner or operator failed to correct any completeness deficiency identified in the notification, the APCO will reject the EMP as incomplete.

12-13-405 Review and Approval of the Emissions Minimization Plan: The procedures for determining whether each EMP meets the applicable requirements of this regulation are as follows:

405.1 EMP Receipt and File Creation: Upon receipt of an EMP from a facility subject to the requirements of Sections 12-13-402 and 403, the APCO shall create a file that shall include the EMP as received, the results of the completeness determination, any comments received during the public comment period, and any recommendations made by the APCO.

405.2 Public Comment: The APCO shall make the complete EMP (with exception of facility-designated confidential information) available for public comment for 30 days. The APCO will collect and forward all public comments to the facility for consideration at the end of the 30-day comment period.

405.3 APCO Recommendations: Within 30 days of the close of the public comment period, the APCO shall review the draft EMP and the public comments and notify the owner or operator of the APCO's recommendations, if any, for additional processes and procedures to further reduce or prevent fugitive emissions from the metal melting and processing facility, based on technical and economic feasibility.

405.4 Revision and Final Submission of the EMP: Within 30 days of receipt of the APCO recommendations, the owner or operator shall:

4.1 Accept all of the APCO's recommendations and submit the certified EMP with the incorporated recommendations to the APCO; or

4.2 Specify the APCO recommendations that are accepted, and submit the certified EMP with the incorporated APCO recommendations to the APCO and provide a basis for the rejection of any the APCO's recommendations.

405.5 Approval of EMP: With 30 days of the receipt of the final submission of the EMP, the APCO will review the EMP.

5.1 If the APCO determines that the EMP does not meet the requirements of Sections 12-13-402, 403, 405.3 and 405.4, the APCO will notify the owner or operator in writing. The notification will specify the basis for this determination. Upon receipt of such notification, the owner or operator shall correct the identified deficiencies and resubmit the EMP to the APCO within 30 days. If the APCO determines that the owner or

operator failed to correct any deficiency identified in the notification, the APCO will disapprove the EMP.

- 5.2** If the APCO determines that the EMP meets the requirements of Sections 12-13-402, 403, 405.3 and 405.4, the APCO will approve the EMP and shall provide written notification to the owner or operator. This period may be extended if necessary to comply with state law.

12-13-406 Designation of Confidential Information: With each submission of an EMP or any portions thereof or revisions thereto, the owner or operator of a metal melting and processing facility subject to Section 12-13-401 shall designate as confidential any information claimed to be exempt from public disclosure as trade secrets or by other provisions of law. If a document is submitted that contains information designated confidential in accordance with this Section, the owner or operator shall provide a justification for this designation and shall submit a separate copy of the document marked as “public copy,” with the information claimed to be confidential redacted.

12-13-407 Reporting Requirements for Planned Fugitive Emissions Reductions and Prevention Measures: The owner or operator of a metal melting and processing facility subject to Section 12-13-401 shall report to the APCO no later than two years following the adoption of the Rule a description of the equipment and all feasible processes and procedures to be installed or implemented within the next five years to reduce or prevent fugitive emissions, with a schedule of implementation.

12-13-408 Reporting Requirements for Operation and Maintenance Plan Requirements Pursuant to the NESHAPs and District Regulation 11, Rule 15:

408.1 Metal Melting, Tapping and Mold and Core Making Operations: The owner or operator of the metal melting and processing facility subject to Section 12-13-301, shall report to the APCO within 90 days of the adoption of this Rule a list of the operations, processes, and equipment used to comply with the following provisions of federal NESHAP to which it is subject:

- 1.1 40 CFR Part 63, Subpart RRR: NESHAP for Secondary Aluminum Production, Section 63.1506(c)(1) through (c)(3) Capture/collection systems design, installation, and operation;
- 1.2 40 CFR Part 63, Subpart EEEEE: NESHAP for Major Source Iron and Steel Foundries, Section 63.7690(b)(1);
- 1.3 40 CFR Part 63, Subpart YYYYY: NESHAP for Area Sources: Electric Arc Furnace Steelmaking Facilities, Section 63.10686;
- 1.4 40 CFR Part 63, Subpart ZZZZZ: NESHAP for Iron and Steel Foundries Area Sources, Section 63.10895(b);
- 1.5 District Regulation 11: Hazardous Air Pollutants, Rule 15: Airborne Toxic Control Measure for Emissions of Metals from Non-Ferrous Metal Melting, Section 11-15 (b)(1) and (b)(3).

408.2 Operation and Maintenance Plan Requirements: The owner or operator of the metal melting and processing facility subject to Section 12-13-301 shall submit to the APCO a copy of the written Operation and Maintenance Plan or the Operation, Maintenance, and Monitoring Plan that was submitted to and approved by the US EPA Administrator pursuant to the following provisions set forth in the federal NESHAP to which it is subject within 90 days of the adoption of this Rule:

- 2.1 40 CFR Part 63, Subpart RRR: NESHAP for Secondary Aluminum Production, Section 63.1510(b);
- 2.2 40 CFR Part 63, Subpart EEEEE: NESHAP for Major Source Iron and Steel Foundries, Section 63.7710(b);
- 2.3 40 CFR Part 63, Subpart YYYYY: NESHAP for Area Sources: Electric Arc Furnace Steelmaking Facilities, Section 63.10685(a) and (b);
- 2.4 40 CFR Part 63, Subpart ZZZZZ: NESHAP for Iron and Steel Foundries Area Sources, Section 63.10896;

2.5 40 CFR Part 63, Subpart ZZZZZZ: NESHAP: Area Source Standards for Aluminum, Copper, and Other Nonferrous Foundries, Section 63.11550(a)(3).

12-13-409 Review of Alternative Binder Formulations: The owner or operator of any metal melting and processing facility subject to the requirements of this Rule that uses mold and core binders formulated with an odorous substance, including phenol and cresol, shall:

- 409.1** Investigate the availability and efficacy of alternative binders that produce fewer odorous emissions to ambient air than binders currently in use at the facility; and
- 409.2** Report the results of the investigation required pursuant to Section 12-13-409.1 to the APCO no later than two years following the adoption of the Rule and once before each two-year anniversary of the receipt of the initial reporting.

12-13-410 Five-Year Review of Emissions Minimization Plan: The owner or operator of a metal melting and processing facility subject to the requirements of Section 12-13-401 shall update the APCO-approved EMP and submit the updated EMP to the APCO for review within 90 days of the five-year anniversary date of the approval of the original EMP and within 90 days of every five-year anniversary thereafter. Review and approval of the EMP will follow the schedule in Sections 12-13-402 and 403. The updated EMP must be certified by a Responsible Manager.

12-13-411 Review and Modification of Emissions Minimization Plan: Within 90 days of any of the following events:

- 411.1** The APCO determined that the owner or operator violated Section 12-13-301; or
- 411.2** The APCO determined that the owner or operator violated applicable District, State or federal air quality regulations; or
- 411.3** The owner or operator commenced a facility operation, process, equipment, or throughput change that required a modification of the Permit to Operate for that operation, process, equipment or throughput change;

the APCO may notify the owner or operator of a metal melting and processing facility that is subject to the requirements of Section 12-13-401 to review and submit a complete and accurate revised EMP to the APCO in accordance with schedule set forth in Section 12-13-404.

12-13-500 RECORDS AND MONITORING

12-13-501 Recordkeeping Requirements: The owner or operator of any metal melting and processing facility subject to the requirements of this Rule shall maintain all records that are necessary to determine compliance with the requirements of Section 12-13-301 for a minimum of five years and make them available to the APCO or a designee of the APCO upon request including, but not limited to:

- 501.1** The monthly throughput of each type of metal processed, including metal melted, heated, scrapped, or recycled and the basis for each throughput determination;
- 501.2** The monthly throughput of each type of binder used;
- 501.3** The monthly throughput of sand used and the amount in pounds of sand used;
- 501.4** Documentation to demonstrate eligibility for exemption under Section 12-13-103.1. Documentation may include, but is not limited to:
 - 4.1 Certification from the supplier demonstrating the chemical composition of the aluminum;
 - 4.2 Demonstration of the chemical composition of the aluminum as determined in accordance to Sections 12-13-601 and 602;
 - 4.3 A method approved by the APCO.

12-13-600 MANUAL OF PROCEDURES

12-13-601 Methods for Determining the Cadmium Content of Aluminum: To determine the cadmium content of aluminum alloys to evaluate eligibility for exemption under Section 12-13-103.1 one of the following shall be used:

601.1 ASTM E 227-67 (1982), "Standard Method for Optical Emission Spectrometric Analysis of Aluminum and Aluminum Alloys by the Point-to-Plane Technique"; or

601.2 ASTM E 607-90, "Standard Test Method for Optical Emission Spectrometric Analysis of Aluminum and Aluminum Alloys by the Point-to-Plane Technique, Nitrogen Atmosphere"; or

601.3 ASTM E 1251-88, "Standard Test Method for Optical Emission Spectrometric Analysis of Aluminum and Aluminum Alloys by the Argon Atmosphere, Point-to-Plane, Unipolar Self-Initiating Capacitor Discharge."

12-13-602 Methods for Determining the Arsenic Content of Aluminum: To determine arsenic content in aluminum or zinc (or any other alloy in which determination of arsenic by spectrochemical methods is compromised by interference) to evaluate eligibility for exemption under section (c)(2), EPA Method 7061 (Revision 1, December 1987), "Arsenic (Atomic Absorption, Gaseous Hydride)", published in U.S. EPA Test. For aluminum alloys, sample digestion shall employ the hydroxide digestion technique given in appendix A to Regulation 11: Hazardous Pollutants, Rule 15: Airborne Toxic Control Measure for Emissions of Toxic Metals from Non-Ferrous Metal Melting, Sections 11-15 (b)(1) and (b)(3)..