

**REGULATION 12  
MISCELLANEOUS STANDARDS OF PERFORMANCE  
RULE 13  
FOUNDRY AND FORGING OPERATIONS**

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**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 the emissions odorous substances from foundries and forges 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 to District Regulation 2: Permits, Rule 1: General Requirements) at a foundry or forge that processes at least one (1.0) tons of metal per rolling twelve month period.

**12-13-103 Exemption, Metal or Alloy Purity and Small Facilities:** Neither the Standards (Sections 12-13-301 et seq.) nor the Administrative Requirements (Sections 12-13-401 et seq.) apply to the following facilities:

**103.1 Clean Metal or Alloy Purity Exemption:** Facilities or furnaces that melt only clean aluminum scrap or a metal or alloy (other than lead, solder, or zinc scrap) that is demonstrated to have a content of no more than 0.004 percent of cadmium and no more than 0.002 percent of arsenic pursuant to Section 12-13-601 and 602;

**103.2 Small Facilities Exemptions:** Foundries or forges that melt or heat treat 2,500 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, pigs, sows and cylinders.

**12-13-204 Charging:** The process of adding materials, such as metal, coke, flux, and charcoal to a furnace in preparation to heat and melt metal.

**12-13-205 Cooling:** The act of allowing cast metal to cool close to ambient temperatures while being contained in the mold.

**12-13-206 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.

**12-13-207 Die Casting:** The process of injecting molten metal under high pressure into a steel mold, known as a die, to form metal parts.

**12-13-208 Dross:** The solid impurities floating on a molten metal composed primarily of impurities, metal, and metal oxides.

- 12-13-209 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.
- 12-13-210 Forge:** Any facility at which forging operations are conducted.
- 12-13-211 Forging Operations:** The act of creating metal products by heat treating and shaping metals. Forging operations include operation of an oven in which metal is heated until it is malleable, hardening, annealing, tempering stamping, pressing, extruding, hammering, and quenching.
- 12-13-212 Foundry:** Any facility at which foundry operations are conducted.
- 12-13-213 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..
- 12-13-214 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.
- 12-13-215 Furnace:** For the purposes of this Rule only, a device used to melt metal. Types of furnaces include, but are not limited to, cupola, electric arc, pot, induction, blast, crucible, sweat, and reverberatory furnaces.
- 12-13-216 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.
- 12-13-217 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.
- 12-13-218 Metal Management:** The transport, receipt, collection, sorting, segregation, separation, compilation, and storage of metals, metal-containing materials and non-metallic materials at a foundry or forge.
- 12-13-219 Metal Throughput:** The weight of metal, in tons, charged to a furnace and melted.
- 12-13-220 Minimization:** The reduction to the smallest amount.
- 12-13-221 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.
- 12-13-222 Odorous Substances:** For the purposes of this rule only, odorous substances are phenols and phenolic compounds used in or emitted from mold and core making, casting, cooling, and shake out operations.
- 12-13-223 Oven:** A device used to heat metal until it is malleable, but not to the point of

melting.

- 12-13-224 Particulate Matter:** Any material that is emitted as liquid or solid particles or gaseous material which becomes liquid or solid particles that can remain suspended in the air, excluding uncombined water.
- 12-13-225 Pouring and Casting Operations:** The act of transferring molten metal into a mold or mold assembly.
- 12-13-226 Responsible Manager:** An employee, designated by the owner or operator of a foundry or forge with the authority to direct, operate, manage or control the facility's foundry or forging operations.
- 12-13-227 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.
- 12-13-228 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 metal" does not include sprues, gates, risers, foundry or forge returns, and similar material intended for remelting that has been generated at the foundry or forge as a consequence of casting or forming processes but that has not been coated or surfaced with any material containing cadmium, arsenic, or nickel.
- 12-13-229 Shake Out:** The separation of a metal casting from a mold assembly.
- 12-13-230 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.
- 12-13-231 Slag:** A partially vitreous by-product of metal melting which contains impurities, including metallic oxides. Slag may be lighter than, and rest upon, the molten metal fraction in a furnace and may be poured off before the molten metal can be tapped.
- 12-13-232 Tapping:** The pouring of molten metal from a furnace into ladles for transport to an area for casting.
- 12-13-233 Welding:** The act of joining two pieces of metal together by the use of heat or pressure or both to produce a metal product. 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 Requirement to Comply with an Emissions Minimization Plan:**

- 301.1** 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 foundry or forge shall operate the facility at all times in accordance with an approved EMP; or
- 301.2** Thirty days following the disapproval of the EMP by the APCO, the owner or operator of a foundry or forge shall be in violation of this section.

**12-13-400 ADMINISTRATIVE REQUIREMENTS**

- 12-13-401 Emissions Minimization Plan Requirements:** The owner or operator of any foundry or forge 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 of odorous substances, as prescribed in Sections 12-13-402 and 403.

**12-13-402 Operations Subject to the EMP:** The EMP shall address all of the following operations that are conducted at the foundry or forge:

- 402.1** Mold and Core Making Operations;
- 402.2** Metal Management;
- 402.3** Furnace Operations, including tapping and pouring;
- 402.4** Forging Operations;
- 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 foundry or forge 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 listed in Section 12-13-402 and the flows of materials used or produced in those operations 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 the monitoring and the processes and controls that minimize particulate matter 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 shall be identified using either District Source Numbers according to their District Permit or as exempt from District permit requirements.
- 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 identified using either District Source Numbers according to their District Permit or as exempt from District permit requirements.
- 1.3** The name of the Responsible Manager and alternate responsible manager(s), if any, their schedule, and contact information.

**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 foundry or forge required to develop an EMP shall submit a complete and accurate EMP in accordance with the following schedule:

**404.1 Submission:** Submit the EMP to the APCO no later than [12 months following adoption of this Rule] or no later than 12 months following 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 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 EMP:** The procedures for determining whether each EMP meets the applicable requirements of this regulation are as follows:

**405.1 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. At the APCO's discretion, the District may extend the comment period up to 90 days and/or may hold a public meeting to discuss the draft EMP during the 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 foundry or forge, based on technical and economic feasibility, and made in consideration of worker health and safety.

**405.4 Revision and Final Submission:** 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 EMP with the incorporated recommendations to the APCO and certified by the Responsible Manager; or

**4.2** Specify the APCO recommendations that are accepted, and submit the EMP with the incorporated APCO recommendations to the APCO and provide a basis for the rejection of any the APCO's recommendations. The Responsible Manager shall certify the EMP.

**405.5 Approval:** 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 foundry or forge 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 foundry or forge 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 foundry 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 foundry 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 YYYYYY: 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 foundry 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 foundry or forge 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 District, State or federal air quality regulations pertaining to emissions of PM or odorous substances; 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 foundry or forge that is subject to the requirements of Section 12-13-401 to submit a complete and accurate revised EMP to the APCO that update the EMP to include the modified operation or source or to prevent a future violation of the EMP or applicable law or regulation specified herein, 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 foundry or forge 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 ferrous and non-ferrous 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 Method for Evaluating Solid Waste Physical and Chemical Methods. First Update (3rd Edition), January 1988; EPA / 530 / SW-846.3-1; PB 89-14876. 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)).