

**RULE 1407. CONTROL OF EMISSIONS OF ARSENIC, CADMIUM, AND NICKEL FROM NON-CHROMIUM METAL MELTING OPERATIONS**

(a) Purpose

The purpose of this rule is to reduce emissions of arsenic, cadmium, and nickel from non-chromium metal melting operations.

(b) Applicability

This rule applies to an owner or operator of a facility conducting non-chromium metal melting operation(s), including but not limited to, smelters (primary and secondary), foundries, die-casters, coating processes (galvanizing and tinning), and other miscellaneous processes such as dip soldering, brazing, and aluminum powder production.

(c) Definitions

For the purpose of this rule, the following definitions shall apply:

- (1) ALUMINUM AND ALUMINUM-BASED ALLOY is any metal that contains at least 80 percent aluminum by weight.
- (2) APPROVED CLEANING METHODS are techniques to clean while minimizing fugitive dust emissions consisting of wet wash, wet mop, damp cloth, low pressure spray, or vacuum equipped with filter(s) rated by the manufacturer to achieve a 99.97% control efficiency for 0.3 micron particles.
- (3) BAG LEAK DETECTION SYSTEM is a system that monitors electrical charge transfer based on triboelectric or electrostatic induction to continuously monitor bag leakage and similar failures by detecting changes in particle mass loading in the exhaust.
- (4) BUILDING ENCLOSURE is a building or physical structure, or portion of a building, enclosed with a floor, walls, and a roof to prevent exposure to the elements (e.g. precipitation or wind), with limited enclosure openings to allow access for people, vehicles, or equipment. A room within a building enclosure that is enclosed with a floor, walls, and a roof would also meet this definition.
- (5) CAPTURE VELOCITY is the minimum hood induced air velocity necessary to capture and convey air contaminants into an emission collection system.

- (c) (6) CLEAN ALUMINUM SCRAP is any scrap that is composed solely of aluminum or aluminum alloys (including anodized aluminum) and that is free of paints, oils, greases, coatings, rubber, or plastics.
- (7) COPPER OR COPPER BASED ALLOY is any metal that contains more than 50 percent copper by weight, including, but not limited to, brass and bronze.
- (8) CUSTOMER RETURNS are any material that includes returns, trims, punch-outs, turnings, sprues, gates, risers, and similar material intended for remelting that has not been coated or surfaced with any other material, prior to resale of the product or further distribution in commerce, and includes documentation confirming that the materials contain less than 0.002 percent arsenic, 0.004 percent cadmium, and 0.5 percent chromium by weight.
- (9) DUST FORMING MATERIAL is any material containing more than 15 percent by weight of particulate matter less than 0.84 millimeter (mm) equivalent diameter as determined by ASTM C136-84a "Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates" using a Number 20 U.S. Bureau of Standards sieve with 0.84 mm square openings or an alternate method deemed acceptable by the Executive Officer.
- (10) EMISSION COLLECTION SYSTEM is any system installed for the purpose of directing, taking in, confining, and conveying an air contaminant, and which conforms to design and operation specifications given in the most current edition of *Industrial Ventilation: A Manual of Recommended Practice for Design*, published by the American Conference of Governmental Industrial Hygienists at the time the permit application is deemed complete by the South Coast AQMD.
- (11) EMISSION CONTROL DEVICE is any equipment installed in the exhaust system of a non-chromium metal melting furnace or after the emission collection system for the purpose of collecting and reducing metal emissions.
- (12) ENCLOSED STORAGE AREA is any space used to contain materials that has a wall or partition on at least three sides or three-quarters of its circumference and that screens the materials stored therein to prevent emissions of the material to the air.
- (13) ENCLOSURE OPENING is any opening that is designed to be part of a building enclosure, such as passages, doorways, bay doors, wall openings, roof openings, and windows. Stacks, ducts, and openings to accommodate stacks and ducts are not considered enclosure openings.
- (14) FACILITY is a source at which non-chromium metal melting operations are conducted, and is located on one or more contiguous or adjacent parcels of property

in actual contact or separated solely by a public roadway or other public right-of-way and is owned or operated by the same person or person(s), corporation, government agency, public district, public officer, association, joint venture, partnership, or any combination of such entities.

- (c) (15) FOUNDRY is any facility, operation, or process where a metal or a metal alloy is melted and casted.
- (16) FUGITIVE METAL DUST EMISSIONS are metal emissions from non-chromium metal melting operations that enter the atmosphere without passing through a stack or vent designed to direct or control their flow or escaping a stack or vent designed to direct or control their flow without passing through an emission control device.
- (17) FUNCTIONALLY SIMILAR FURNACE is a furnace used for metal melting that is the same type of furnace (electric, induction, cupola, reverberatory, etc.) and similar size, up to a 50 percent or 500 pound difference by charge weight, used at a facility to melt the same alloys.
- (18) LOW PRESSURE SPRAY is a liquid stream with a pressure of 35 pounds per square inch or less.
- (19) METAL CUTTING is a process used to abrasively cut ingot, log, billet stock, castings, or formed parts not conducted under a continuous flow of metal removal fluid.
- (20) METAL GRINDING is a process used to grind ingot, log, billet stock, castings, or formed parts not conducted under a continuous flow of metal removal fluid.
- (21) METAL MELTING FURNACE is any apparatus in which metal is brought to a liquid state including, but not limited to, blast, crucible, cupola, direct arc, electric arc, hearth, induction, pot, and sweat furnaces, and refining kettles, regardless of the heating mechanism.
- (22) METAL REMOVAL FLUID is a fluid used at the tool and workpiece interface to facilitate the removal of metal from the part, cool the part and tool, extend the life of the tool, or to flush away metal chips and debris, but does not include minimum quantity lubrication fluids used to coat the tool workpiece interface with a thin film of lubricant and minimize heat buildup through friction reduction. Minimum quantity lubrication fluids are applied by pre-coating the tool in the lubricant, or by direct application at the tool workpiece interface with a fine mist.
- (23) MOLTEN METAL is metal or metal alloy in a liquid state, in which a cohesive mass of metal will flow under atmospheric pressure and take the shape of a container in which it is placed.
- (24) NEW SAND is any sand not exposed to the casting process.

- (c)
  - (25) NON-CHROMIUM METAL is any metal that contains less than 0.5 percent by weight total chromium content as determined on a quarterly weighted average.
  - (26) RERUN SCRAP is any material that includes returns, trims, punch-outs, turnings, sprues, gates, risers, and similar material intended for remelting that has not been coated or surfaced with any other material and:
    - (A) Was generated at the metal melting facility as a consequence of a casting or forming process; or
    - (B) Was generated offsite of the metal melting facility as a consequence of a casting or forming process from materials generated at the metal melting facility, prior to resale of the product or further distribution in commerce, and includes documentation confirming that the materials were generated at the metal melting facility.
  - (27) RINGELMANN CHART is the Ringelmann Chart published in the United States Bureau of Mines Information Circular No. 1C8333, (May 1967), as specified in the Health and Safety Code Section 41701 (b).
  - (28) SCRAP is 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. This does not include rerun scrap or customer returns.
  - (29) SOLDER is any metal in which the sum of the lead and tin content is greater than 50 percent by weight and which is used to join two metals or join a metal to any other material.
- (d) Emission Control Requirements
  - (1) Until compliance is demonstrated with the provisions pursuant to paragraphs (d)(3) or (d)(4), an owner or operator of a non-chromium melting operation shall vent all emission points to an emission collection system and emission control device designed and operated in accordance with the manufacturer specifications, which was submitted in the permit application to the South Coast AQMD, and the conditions specified in the issued permit.
  - (2) Until compliance is demonstrated with the provisions pursuant to paragraphs (d)(3) or (d)(4), an owner or operator of a non-chromium metal melting operation shall vent the gas stream from any emission collection system to an emission control device which shall reduce the particulate emissions by 99 percent or more by weight.

- (d) (3) No later than January 1, 2021, an owner or operator of a non-chromium metal melting operation shall reduce emissions from a non-chromium metal melting furnace as demonstrated through a source test pursuant to subdivision (g), of:
- (A) Arsenic by a minimum of 99 percent;
  - (B) Cadmium by a minimum of 99 percent; and
  - (C) Nickel by a minimum of 99 percent.
- (4) As an alternative to paragraph (d)(3), an owner or operator of a non-chromium metal melting operation may elect to demonstrate aggregate mass emission limits for each of the specific pollutants above from all non-chromium metal melting furnaces and associated emission control devices by demonstrating through a source test pursuant to subdivision (g), achievement of the following limits:
- (A) Arsenic: less than 0.000066 pounds per hour, in lieu of the limit in subparagraph (d)(3)(A);
  - (B) Cadmium: less than 0.000514 pounds per hour, in lieu of the limit in subparagraph (d)(3)(B); or
  - (C) Nickel: less than 0.00848 pounds per hour, in lieu of the limit in subparagraph (d)(3)(C).
- (5) The owner or operator of a non-chromium metal melting operation shall not allow the temperature of the gas stream entering any emission control device that is part of the emission collection system to exceed 360 degrees Fahrenheit, unless it can be demonstrated and is approved in writing by the Executive Officer, that either:
- (A) A control efficiency of 99 percent or more for arsenic and cadmium, as demonstrated through a source test pursuant to subdivision (g), will be achieved at a higher temperature; or
  - (B) It can be demonstrated that the non-chromium metal melting operation is in compliance with paragraphs (d)(3) or (d)(4).
- (6) No activity associated with non-chromium metal melting at a facility, including furnace operation, casting, emission collection system and emission control device operation, and the storage, handling, or transfer of any materials (except new sand) shall discharge into the air any air contaminant, other than uncombined water vapor, for a period aggregating more than three minutes in any one hour which is:
- (A) Half as dark or darker in shade as that designed as Number 1 on the Ringelmann Chart, as published by the United States Bureau of Mines; or
  - (B) Of such opacity so as to obscure an observer's view to a degree equal to or greater than smoke as described in subparagraph (d)(6)(A) or 10 percent opacity.

- (d)
  - (7) An owner or operator of a non-chromium metal melting operation shall ensure visible emissions from a non-chromium metal melting furnace do not escape from the collection location(s) of an emission collection system(s).
  - (8) No later than July 1, 2020, the owner or operator of non-chromium metal melting furnaces existing prior to October 4, 2019, shall submit complete South Coast AQMD permit applications for emission control devices to the Executive Officer unless there is an approved source test demonstrating compliance with paragraphs (d)(3) through (d)(5).
  - (9) Beginning July 1, 2020, any emission control device required by this rule shall no longer be exempt from the requirement of a written permit pursuant to Rule 219 – Equipment Not Requiring a Written Permit Pursuant to Regulation II.
  
- (e) Housekeeping Requirements
  - (1) An owner or operator of a non-chromium metal melting operation shall conduct the following housekeeping requirements:
    - (A) Dust-forming metal-containing material including, but not limited to, dross, ash, feed material, trash, or debris, shall be stored in an enclosed storage area, a building enclosure, or covered containers to prevent any metal dust emissions. Containers shall remain covered at all times, except when material is actively deposited or actively removed into a receptacle, and shall be free of liquid and dust leaks;
    - (B) Material collected by an emission control device shall be discharged into closed containers or an enclosed system that is completely sealed to prevent any metal dust emissions;
    - (C) All floor areas within 20 feet of where furnace and casting operations occur and waste generated from housekeeping activities is stored, disposed of, recovered, or recycled shall be cleaned at least weekly using an approved cleaning method; and
    - (D) All areas where furnace, casting, metal cutting, and metal grinding operations occur shall not be cleaned using:
      - (i) Dry sweeping, unless dry sweeping is allowed in an approved Housekeeping Compliance Plan; or
      - (ii) Compressed air cleaning, unless compressed air cleaning is conducted on electric motors within a fixed or portable impermeable barrier, including, but not limited to, walls or welding screens and

- the enclosed area is cleaned within 30 minutes afterward using an approved cleaning method. The barrier shall:
- (e) (1) (D) (ii) (A) Restrict the movement of compressed air through the facility and minimize the release of dust-forming metal-containing fugitive emissions;
  - (B) Minimize any dust-forming metal-containing emissions from interfering with an emission collection system; and
  - (C) Enclose the area of compressed air cleaning operations, a minimum of three feet taller than the height of the part(s) being air cleaned and a maximum of six inches from the ground.
- (2) Effective July 1, 2020, an owner or operator of a non-chromium metal melting operation shall conduct the following housekeeping requirements:
- (A) Collection vents, openings, and ducting of each non-chromium metal melting operation emission control device shall be inspected quarterly and if necessary, cleaned using an approved cleaning method;
  - (B) Any stack that is a source of emissions associated with non-chromium metal melting operations shall not utilize a weather cap that restricts the flow of exhaust air;
  - (C) Unless located within a building enclosure or an enclosed storage area, any dust-forming slag and any waste generated from the housekeeping requirements of this subdivision and the construction or maintenance activities of subdivision (f), shall be transported within closed conveyor systems or in covered containers to prevent any fugitive metal dust emissions. This subparagraph shall not be applicable to the transport of high temperature materials exceeding 500 degrees Fahrenheit;
  - (D) Unless the metal cutting or metal grinding activity is conducted under a continuous flow of metal removal fluid, the following locations shall be cleaned, at a minimum, weekly, using an approved cleaning method:
    - (i) Floors within 20 feet of a work station or work stations dedicated to metal grinding or metal cutting operations;
    - (ii) Floors within 20 feet of any entrance/exit point of an enclosed storage area or building enclosure that houses the grinding or cutting operations; and
    - (iii) Floors within 10 feet of the transfer points of an emission control device used for metal grinding or metal cutting operations;

- (e) (2) (E) Dust-forming metal-containing material including slag or materials generated from housekeeping, construction, or maintenance requirements of this subdivision, shall be stored in an enclosed storage area, a building enclosure, or covered containers. Containers shall remain covered, except when material is actively deposited into or actively removed from a receptacle, and shall be free of liquid and dust leaks; and
- (F) After any construction or maintenance activity or event, including, but not limited to, accidents, process upsets, or equipment malfunction that results in the deposition of fugitive metal dust emissions, the area where the construction or maintenance activity occurred shall be cleaned within an hour using an approved cleaning method.
- (3) For the housekeeping requirements specified in subparagraph (e)(1)(C), an owner or operator of a non-chromium metal melting operation may use an approved alternative housekeeping measure in lieu of an approved cleaning method. If requesting an alternative housekeeping measure, the owner or operator shall submit a Housekeeping Compliance Plan to the Executive Officer for approval. The Housekeeping Compliance Plan shall be subject to plan fees specified in Rule 306 – Plan Fees.
  - (A) The Housekeeping Compliance Plan shall include information to substantiate that the alternative housekeeping measure meets the same air quality objective and effectiveness of the housekeeping requirement it is replacing.
  - (B) The Executive Officer may request additional information from the owner or operator.
  - (C) The owner or operator shall submit all requested information within 14 days of the request for additional information.
  - (D) The Executive Officer will review the request for a Housekeeping Compliance Plan and will approve the Housekeeping Compliance Plan if the alternative housekeeping measure can clean or remove accumulated dust-forming metal-containing material for the areas specified in subparagraph (e)(1)(C) at a frequency that provides the same or better efficiency than implementing an approved cleaning method and the alternative housekeeping measure minimizes generation of dust-forming metal-containing material. The Executive Office will notify the owner or operator in writing of approval or disapproval.



- (e) (3) (D) (i) If the Housekeeping Compliance Plan is disapproved, an owner or operator shall resubmit the Housekeeping Compliance Plan within 30 calendar days after notification of disapproval of the Housekeeping Compliance Plan. The resubmitted Housekeeping Compliance Plan shall include any information to address deficiencies identified in the disapproval letter. An owner or operator may appeal a disapproved Housekeeping Compliance Plan to the Hearing Board pursuant to Rule 216 – Appeals and Rule 221 – Plans.
  - (E) Approved alternative housekeeping measures may not be used retroactively.
  
- (f) **Building Enclosure Requirements**
  - (1) No later than July 1, 2020, an owner or operator of a non-chromium metal melting operation shall conduct all metal melting, metal grinding, and metal cutting operations in a building enclosure. If the building enclosure contains enclosure openings to the exterior that are on opposite ends of the building enclosure where air can pass through any space where non-chromium metal melting, metal grinding, or metal cutting operations occur, an owner or operator of a non-chromium metal melting operation shall close all enclosure openings on one end for each pair of opposing ends of the building enclosure, except during the passage of vehicles, equipment, or people, by using one or more of the following:
    - (A) Door that automatically closes;
    - (B) Overlapping floor-to-ceiling plastic strip curtains;
    - (C) Vestibule;
    - (D) Airlock system;
    - (E) Barrier, such as a large piece of equipment that restricts air from moving through the building enclosure; or
    - (F) Approved alternative method to minimize the release of dust-forming metal-containing fugitive emissions from the building enclosure that an owner or operator of a facility has demonstrated to the Executive Officer is an equivalent or more effective method(s) to prevent dust-forming metal-containing fugitive emissions escaping a building enclosure.
  - (2) An owner or operator of a non-chromium metal melting operation may submit a Building Enclosure Compliance Plan to the Executive Officer for review and approval no later than January 4, 2020 for facilities existing before October 4, 2019,

and prior to initial start-up for all other operations if any of the requirements specified in paragraph (f)(1) cannot be complied with due to conflicting requirements set forth by United State Department of Labor Occupational Safety and Health Administration (OSHA), California Division of Occupational Safety and Health (Cal/OSHA), or other municipal codes or agency requirements directly related to worker safety. The Building Enclosure Compliance Plan shall be subject to plan fees specified in Rule 306 – Plan Fees and include:

- (f) (2) (A) An explanation as to why any of the provisions specified in paragraph (f)(1) are in conflict with the requirements set forth by OSHA, Cal/OSHA, or other municipal codes or agency requirements directly related to worker safety; and
- (B) Alternative compliance measure(s) that will be implemented to minimize the release of dust-forming metal-containing fugitive emissions to the outside of the building enclosure.
- (3) The Executive Officer shall notify an owner or operator of a non-chromium metal melting operation in writing whether the Building Enclosure Compliance Plan is approved or disapproved.
  - (A) If the Building Enclosure Compliance Plan is disapproved, an owner or operator shall resubmit the Building Enclosure Compliance Plan within 30 calendar days after notification of disapproval of the Building Enclosure Compliance Plan. The resubmitted Building Enclosure Compliance Plan shall include any information to address deficiencies identified in the disapproval letter. In the alternative, an owner or operator may appeal the Building Enclosure Compliance Plan disapproved by the Executive Officer to the Hearing Board pursuant to Rule 216 – Appeals and Rule 221 – Plans.
  - (B) The Executive Officer will either approve the revised and resubmitted Building Enclosure Compliance Plan or modify the Building Enclosure Compliance Plan and approve it as modified. An owner or operator may appeal the Building Enclosure Compliance Plan modified by the Executive Officer to the Hearing Board pursuant to Rule 216 – Appeals and Rule 221 – Plans.
- (4) An owner or operator of a non-chromium metal melting operation shall implement the Building Enclosure Compliance Plan, as approved by the Executive Officer, no later than 90 days after receiving notification of approval for facilities existing before October 4, 2019, and prior to initial start-up for all other facilities.

Compliance with the approved alternative compliance measures shall constitute compliance with the applicable provisions of paragraph (f)(1).

(g) Source Testing Requirements

- (1) No later than October 1, 2020 for the initial source test required pursuant to paragraph (g)(2), and no later than three months prior to the deadline for the periodic source test required pursuant to paragraph (g)(3), an owner or operator of a non-chromium metal melting operation shall submit a source test protocol to the Executive Officer for approval. The source test protocol shall include the following:
  - (A) The source test criteria, all assumptions, and required data;
  - (B) Calculated target arsenic, cadmium, and nickel concentrations or mass emission standards;
  - (C) Planned sampling parameters;
  - (D) Evaluation of the capture efficiency and velocity of the emission collection system; and
  - (E) Information on equipment, logistics, personnel, and other resources necessary to conduct an efficient and coordinated source test.
- (2) No later than January 1, 2021, an owner or operator of a non-chromium metal melting operation shall conduct an initial source test of all non-chromium metal melting furnaces to determine compliance with the emission limits for arsenic, cadmium, and nickel pursuant to paragraphs (d)(3) and (d)(4).
- (3) An owner or operator of a non-chromium metal melting operation shall conduct a periodic source test of all non-chromium metal melting furnaces once every 60 months after the initial source test to demonstrate compliance with the emissions limits for arsenic, cadmium, and nickel pursuant to paragraphs (d)(3) and (d)(4).
- (4) An owner or operator of a non-chromium metal melting operation may source test an uncontrolled furnace and apply the emission rate established by the source test results proportionately to all uncontrolled functionally similar furnaces at the facility.
- (5) An owner or operator with a new or modified non-chromium metal melting furnace or emission control device for a non-chromium metal melting furnace installed on or after October 4, 2019, shall submit a source test protocol pursuant to subparagraphs (g)(1)(A) through (g)(1)(E) within 90 days after its Permit to Construct is issued by the Executive Officer and conduct the initial source test for the emission control device no later than 120 days after the approval of the source test protocol.

- (g) (6) An owner or operator of a non-chromium metal melting operation shall notify the Executive Officer, in writing, of the intent to conduct source testing, one week prior to conducting any source test required by paragraphs (g)(2) through (g)(5) and (i)(3). A change in the source test date shall be reported to 1-800-CUT-SMOG at least twenty four hours prior to cancelling or rescheduling.
- (7) An owner or operator of a non-chromium metal melting operation shall notify the Executive Officer within five calendar days of when the facility knew or should have known of any source test result(s) that exceeded any of the emission standards specified in subdivision (d). Notifications shall be made to 1-800-CUT-SMOG and followed up in writing to the Executive Officer with the results of the source tests within 10 calendar days of notification.
- (8) An owner or operator shall conduct source tests while operating at a minimum of 80 percent of the equipment's permitted charging throughput by weight and in accordance with California Air Resources Board (CARB) Method 436 – *Determination of Multiple Metal Emissions from Stationary Sources*.
- (A) The total sample volume for each sample must be sufficient to achieve analytical results at the method reporting limit. Alternatively, collect a minimum sample volume of 150 dry standard cubic feet for each sample, assuming the following method reporting limits:
- (i) Arsenic  $\leq 0.2$  micrograms per sample;
  - (ii) Cadmium  $\leq 0.2$  micrograms per sample; and
  - (iii) Nickel  $\leq 0.2$  micrograms per sample.
- (B) For the purposes of this rule, if at least one test run is below the method reporting limit, the following quantification procedures shall be used:
- (i) In situations in which all test runs and analyses indicate levels below the method reporting limit, the compound can be identified as “not detected” and its inclusion will not be required.
  - (ii) In cases in which one or more of the test runs and analyses show measured values above the method reporting limit, the runs or analysis that were below the method reporting limit shall be assign one half of the method reporting limit for that run.
- (9) An owner or operator of a non-chromium metal melting operation may use alternative or equivalent source test methods as defined in United States Environmental Protection Agency (U.S. EPA) 40 CFR Part 60, Section 60.2, if approved in writing by the Executive Officer, in addition to the CARB or the U.S. EPA, as applicable.

- (g) (10) An owner or operator of a non-chromium metal melting operation shall use a test laboratory approved under the South Coast AQMD Laboratory Approval Program for the source test methods cited in this subdivision. If there is no approved laboratory, then approval of the testing procedures used by the laboratory may be granted by the Executive Officer on a case-by-case basis based on South Coast AQMD protocols and procedures.
  - (11) When more than one source test method or set of source test methods are specified for any testing, the application of these source test methods to a specific set of test conditions is subject to approval by the Executive Officer. In addition, a violation established by any one of the specified source test methods or set of source test methods shall constitute a violation of the rule.
  - (12) An existing source test conducted on or after January 1, 2016 for a non-chromium metal melting furnace or emission control device for a non-chromium metal melting furnace existing before October 4, 2019 may be used as the initial source test specified in paragraph (g)(2) to demonstrate compliance with the emission limits of subdivision (d) so long as the source test meets the following criteria:
    - (A) The source test conducted is the most recent since January 1, 2016;
    - (B) The source test demonstrated compliance with the emission limit requirements of subdivision (d);
    - (C) The source test demonstrated compliance with emission collection system requirements of paragraph (i)(4); and
    - (D) The source test was conducted using applicable and approved test methods and test laboratories specified in paragraphs (g)(8) through (g)(10).
  - (13) Reports from source testing conducted pursuant to subdivision (g) and paragraph (i)(3) shall be submitted to the South Coast AQMD within 90 days of completion of source testing.
- (h) **Material Testing Requirements**
- (1) Until January 1, 2021, an owner or operator of a non-chromium metal melting operation shall use one of the following methods as identified in subparagraphs (h)(1)(A) through (h)(1)(F) or an alternate method approved, in writing, by the Executive Officer . Sampling for these methods shall comply with ASTM E 88-58 (1986), “Standard Practice for Sampling Nonferrous Metals and Alloys in Cast Form for Determination of Chemical Composition.”
    - (A) To determine the composition of alloys defined in paragraph (c)(1) and to determine the cadmium content of aluminum alloys to evaluate eligibility

for exemption under paragraph (k)(2), one of the following methods shall be used:

- (h) (1) (A) (i) ASTM E 227-67 (1982), “Standard Method for Optical Emission Spectrometric Analysis of Aluminum and Aluminum Alloys by the Point-to-Plane Technique;”
- (ii) ASTM E 607-90, “Standard Method for Optical Emission Spectrometric Analysis of Aluminum and Aluminum Alloys by the Point-to-Plane Technique, Nitrogen Atmosphere;” or
- (iii) ASTM E 1251-88, “Standard Method for Optical Emission Spectrometric Analysis of Aluminum and Aluminum Alloys by the Argon Atmosphere, Point-to-Plane Unipolar Self-Initiating Capacitor Discharge.”
- (B) To determine alloy composition as defined in paragraph (c)(29), ASTM E 46-87 “Test Method for Chemical Analysis of Lead and Tin-Base Solder” shall be used.
- (C) To determine cadmium concentration in zinc and zinc alloys to evaluate eligibility for exemption under paragraph (k)(3), ASTM E 536-84 (1988), “Standard Test Method for Chemical Analysis of Zinc and Zinc Alloys” shall be used.
- (D) To determine cadmium concentration in copper and copper based alloys to evaluate eligibility for exemption under paragraph (k)(3), ASTM E 53-86a “Standard Test Method for Chemical Analysis of Copper” shall be used.
- (E) To determine arsenic concentration in copper and copper based alloys to evaluate eligibility for exemption under paragraph (k)(3), ASTM E 62-89, “Standard Test Method for Chemical Analysis of Copper and Copper Alloys” shall be used.
- (F) 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 paragraph (k)(3), U.S. EPA Method 7061 (Revision 1, December , 1987), “Arsenic (Atomic Absorption, Gaseous Hydride),” U.S. EPA Test Methods for Evaluating Solid Waste Physical and Chemical Methods, First Update (3<sup>rd</sup> Edition), January, 1988; EPA/530/SW-846.3-1; PB 89-14876 shall be used. For aluminum alloys, Method 1 listed in Attachment A – Digestion of Metal Aluminum Sample for Determining Arsenic shall be employed.

- (h) (2) On and after January 1, 2021, an owner or operator of a non-chromium metal melting operation shall use one of the following test methods most applicable to the sample matrix, method detection limit, and interferences:
  - (A) U.S. EPA-approved method(s);
  - (B) Active ASTM International method(s);
  - (C) Metallurgical assay(s) for raw materials; or
  - (D) Alternative method(s) approved, in writing, by the Executive Officer.
- (3) Using one of the test methods identified in paragraph (h)(2), an owner or operator of a non-chromium metal melting operation shall conduct the following material testing:
  - (A) Quarterly analyses to determine the weighted average percentage of arsenic, cadmium, chromium, and nickel contained in metals and alloys melted in non-chromium metal melting furnaces; and
  - (B) Quarterly analyses to determine the weight percentage of arsenic, cadmium, chromium, and nickel contained in bulk samples of baghouse catches of baghouses associated with non-chromium metal melting operations.
- (i) Emission Control Device Monitoring
  - (1) Bag Leak Detection System

Effective January 1, 2021, an owner or operator of a non-chromium metal melting operation shall operate, calibrate, and maintain a Bag Leak Detection System for all baghouses, subject to Rule 1407, regardless of size, pursuant to the Tier 3 requirements of Rule 1155 – Particulate Matter (PM) Control Devices.
  - (2) Effective January 1, 2021, for each emission control device, an owner or operator of a non-chromium metal melting operation shall use a gauge to continuously monitor the pressure drop across the emission control device. The gauge shall be located so that it is easily visible and in clear sight of an owner or operator or maintenance personnel. For the purposes of this requirement, an owner or operator shall ensure that the monitoring device:
    - (A) Is equipped with ports to allow for periodic calibration in accordance with manufacturer's specifications;
    - (B) Is calibrated according to manufacturer's specifications at least once every calendar year;
    - (C) Is equipped with a continuous data acquisition system (DAS). The DAS shall record the data output from the monitoring device at a frequency of at least once every 60 minutes;

- (i)
    - (2)
      - (D) Generates a data file from the computer system interfaced with each DAS each calendar day saved in Microsoft Excel (xls orxlsx) format or other format as approved by the Executive Officer. The file shall contain a table of chronological date and time and the corresponding data output value from the monitoring device in inches of water column. The operator shall prepare a separate data file each day showing the four-hour average pressure readings recorded by this device each calendar day; and
      - (E) Is maintained in accordance with manufacturer's specifications.
  - (3) An owner or operator of a non-chromium metal melting operation emission control device shall conduct a source test pursuant to subdivision (g), if the pressure across the emission control device is not maintained within the range specified by the manufacturer or according to conditions of the Permit to Operate for the emission control device as determined by hourly or more frequent recordings by the DAS for the averaging periods below, no later than 30 days after the discrepancy is detected:
    - (A) A four-hour time period on three or more separate occasions over 60 consecutive days; or
    - (B) Any consecutive 24-hour period.
  - (4) Effective January 1, 2021, an owner or operator of a non-chromium metal melting operation shall operate the emission collection system associated with an emission control device at a minimum capture velocity specified in the most current edition of the *Industrial Ventilation: A Manual of Recommended Practice for Design*, published by the American Conference of Governmental Industrial Hygienists, at the time a permit application is deemed complete with the South Coast AQMD.
  - (5) Effective January 1, 2021, for each emission collection system subject to this subdivision, an owner or operator of a non-chromium metal melting operation shall conduct and pass a smoke test during source testing, pursuant to paragraphs (g)(2) through (g)(5), and at least once every six months thereafter, using the procedure set forth in Attachment B – Smoke Test to Demonstrate Capture Efficiency for Emission Collection Systems of an Emission Control Device of this rule. The smoke test does not need to be performed if conducting the smoke test can be demonstrated to the Executive Officer that the smoke test would create an unreasonable risk. If the emission collection system failed a smoke test, the owner or operator of a non-chromium metal melting operation shall not use the associated furnace(s) for production until the emission collection system passes a smoke test.
  - (6) Effective January 1, 2021, for each emission collection system, an owner or operator of a non-chromium metal melting operation shall use a calibrated



anemometer to measure the slot velocity of each slot and pressure at each push air manifold at least once every six months, based on its location within a non-chromium metal melting operation and its design configuration.

- (i) (6) (A) An emission collection system designed with a hood or enclosure shall maintain a capture velocity of at least 200 feet per minute as measured at the face of the enclosure or maintain at least the minimum slot velocity that verifies 100 percent collection efficiency measured in the most recent source test.
  - (B) An emission collection system without an enclosing hood that is designed with collection slots shall maintain a capture velocity of at least 2,000 feet per minute or maintain at least the minimum slot velocity that verifies 100 percent collection efficiency measured in the most recent source test.
  - (C) An emission collection system designed with a canopy hood without an enclosure shall maintain a capture velocity of at least 200 feet per minute across the entirety of all open sides extending from the perimeter of the hood and operating without cross drafts or maintain at least the minimum slot velocity that verifies 100 percent collection efficiency measured in the most recent source test.
- (7) The owner or operator of a non-chromium metal melting operation shall report, within 24 hours, to 1-800-CUT-SMOG a malfunctioning DAS pursuant to subparagraph (i)(2)(D), failed smoke test pursuant to paragraph (i)(5), or anemometer reading indicating that the required velocity in paragraph (i)(6) has not been maintained.
- (j) Recordkeeping Requirements
- An owner or operator of a non-chromium metal melting operation shall maintain records of the following:
- (1) Quarterly quantities of raw materials processed, including ingots, scrap, customer returns, and rerun scrap and the purchase records, if applicable, to verify these quantities;
  - (2) Material testing data as required by subdivision (h);
  - (3) Source test data as required by subdivision (g) and paragraph (i)(3);
  - (4) Housekeeping activities conducted as required by subdivision (e);
  - (5) Inspection, calibration documentation, and maintenance of emission control devices as required by subdivision (i), including the name of the person conducting the activity and the dates and times at which specific activities were completed;

- (j) (6) Anemometer data collected, including capture velocities, dates of measurement, and calibration documentation as required by paragraph (i)(6); and
- (7) Smoke test documentation as required in Attachment B – Smoke Test to Demonstrate Capture Efficiency for Emission Collection Systems of an Emission Control Device.

An owner or operator shall maintain all records for three years, with at least the two most recent years kept onsite, and made available to the South Coast AQMD upon request. Records kept offsite shall be made available within one week.

(k) Exemptions

- (1) An owner or operator of a non-chromium metal melting operation that melts no more than one ton per year of the total of all non-chromium metals melted shall only be subject to paragraph (j)(1).
- (2) Until January 1, 2021, for facilities melting solely metals listed in Table I – Exemption Limits for Metal Melted, [not including any metal or alloy which is shown by laboratory analysis to have less than 0.004 percent of cadmium and less than 0.002 percent of arsenic by weight], the eligibility for exemption from subdivisions (d) and (i) shall be determined using the formula:

$$A/A_0 + B/B_0 + C/C_0 + \dots \leq 1$$

Where A, B, C, ..., are quantities of Table I metals melted and  
A<sub>0</sub>, B<sub>0</sub>, C<sub>0</sub>, ..., are the exemption limits listed in Table I.

- (A) For each metal listed in Table I, divide the quantity melted by the specific exemption limit listed.
- (B) Sum the resulting fractions for all the metals.
- (C) If the sum does not exceed 1.0, the facility qualifies for exemption under paragraph (k)(2).

**Table I**  
Exemption Limits for Metal Melted

<u>Metal</u>	<u>Exemption Limit</u> (tons per year)
Pure Lead <sup>1</sup>	400
Hard Lead <sup>2</sup>	200
Aluminum Scrap	125
Aluminum Ingot containing more than 0.004 percent cadmium or 0.002 percent arsenic by weight	125
Solder	100
Zinc Scrap	30
Copper or copper-based alloys (except scrap) containing more than 0.004 percent cadmium or 0.002 percent arsenic by weight	30
Type Metal <sup>3</sup>	25

1: Pure Lead is any alloy that contains at least 90 percent lead and contains no more than 0.001 percent cadmium by weight and no more than 0.001 percent arsenic by weight.

2: Hard Lead is an alloy containing at least 90 percent lead and more than 0.001 percent arsenic by weight or 0.001 percent cadmium by weight.

3: Type Metal is any lead-based alloy used for Linotype machines.

(k) (3) Metal or Alloy Purity Exemptions

An owner or operator of a non-chromium metal melting operation shall be exempt from subdivisions (d), (g), and (i) provided that the facility:

- (A) Melts less than 8,400 tons per year of non-chromium metal in furnaces which: do not melt more than one percent scrap except rerun scrap and customer returns; and melts metals or alloys which are shown by laboratory analysis to have less than 0.002 percent arsenic, less than 0.004 percent cadmium, and less than 0.5 percent chromium by weight on a quarterly weighted average;

- (k) (3) (B) Melts less than 42,000 tons per year of non-chromium metal in furnaces which: do not melt more than one percent scrap except rerun scrap and customer returns; and melts metals or alloys which are shown by laboratory analysis to have less than less than 0.0004 percent arsenic, 0.0008 percent cadmium, and less than 0.5 percent chromium by weight on a quarterly weighted average; or
- (C) Melts less than 84,000 tons per year of non-chromium metal in furnaces which: do not melt more than one percent scrap except rerun scrap and customer returns; and melts metals or alloys which are shown by laboratory analysis to have less than less than 0.0002 percent arsenic, 0.0004 percent cadmium, and less than 0.5 percent chromium by weight on a quarterly weighted average.

An owner or operator seeking exemption under subparagraphs (k)(3)(A) through (k)(3)(C) shall demonstrate eligibility through material testing pursuant to paragraph (h)(3).

(4) Clean Aluminum Scrap

Until January 1, 2021, furnaces used exclusively to process clean aluminum scrap or a mixture of clean aluminum scrap and aluminum ingot to produce extrusion billet are exempt from subdivisions (d), (g), and (i).

(5) Aluminum Scrap Furnaces

Until January 1, 2021, the combustion chamber in a reverberatory furnace is exempt from the requirements in subdivisions (d), (g), and (i) if the furnace meets the following conditions:

- (A) The furnace is used solely to melt aluminum and aluminum based alloys; and
- (B) The furnace is constructed with a charging well or similar device in which feed is added to molten metal in a separate chamber.

(6) Aluminum Pouring Exemption

Ladles, launders, or other equipment used to convey aluminum from a melting or holding furnace to casting equipment shall only be subject to the requirements in subdivisions (e), (f), and (j) of this rule.

(7) Rules 1420 and 1420.2

Equipment and operations subject to the requirements of Rule 1420 – Emissions Standard for Lead and Rule 1420.2 – Emission Standards for Lead from Metal Melting Facilities shall only be subject to paragraph (d)(5). If a Regulation XIV rule is adopted or amended that includes a provision for facilities subject to Rules

1420 and 1420.2 that addresses arsenic emissions, equipment and operations subject to the requirements of Rules 1420 and 1420.2 shall be exempt from the requirements of this rule.

- (k) (8) Rule 1420.1  
Equipment and operations subject to the requirements of Rule 1420.1 – Emission Standards for Lead and Other Toxic Air Contaminants from Large Lead-Acid Battery Facilities shall be exempt from the requirements of this rule.
- (9) The owner or operator of a non-chromium metal melting operation shall be exempt from subdivision (d) provided that the facility has a Health Risk Assessment or Air Toxics Inventory Report approved or prepared by the South Coast AQMD for the purpose of the Hot Spots Act or this rule that, as approved or prepared by the South Coast AQMD, is currently below a maximum individual cancer risk of ten in one million pursuant to Rule 1402 – Control of Toxic Air Contaminants from Existing Sources or a current Facility Priority Score of less than ten pursuant to the most recent version of the South Coast AQMD *Facility Prioritization Procedure for the AB 2588 Program*. An owner or operator seeking exemption under this paragraph shall notify the Executive Officer in writing and maintain onsite the Health Risk Assessment or Air Toxics Inventory Report as approved or prepared by the South Coast AQMD, and made available to the South Coast AQMD upon request.
- (10) Brazing, dip soldering, metal cutting, or metal grinding operations conducted during maintenance activities are exempt from the requirements of this rule.

**ATTACHMENT A****Digestion of Metal Aluminum Sample for Determining Arsenic**

1. Introduction:

Metal aluminum cannot react with nitric acid ( $\text{HNO}_3$ ) or concentrated sulfuric acid ( $\text{H}_2\text{SO}_4$ ). It can dissolve in dilute sulfuric acid or hydrochloric acid ( $\text{HCl}$ ). Active hydrogen, generated during the acid digestion process, will reduce arsenic to arsine ( $\text{AsH}_3$ ), which will escape from solution, resulting in a low or negative arsenic value. The proposed method sets up a protocol to dissolve metal alumina without loss of arsenic.
2. Reagent:

3M Sodium Hydroxide ( $\text{NaOH}$ ), 10% Mercury Sulfate ( $\text{HgSO}_4$ ) Solution, 30% Hydrogen Peroxide ( $\text{H}_2\text{O}_2$ ), 1:1  $\text{H}_2\text{SO}_4$ , Concentrated  $\text{HNO}_3$ , and Tiling Copper.
3. Procedure:
  - 3.1. Dissolve
    - 3.1.1 Dissolve using  $\text{NaOH}$  (Method 1).

Weigh 0.5 g of metal aluminum sample to a 125 milliliter (ml) Erlenmeyer flask, add 15 ml of 3M  $\text{NaOH}$  solution, allow to react and dissolve about 20 minutes. Again add 10 ml of 3M  $\text{NaOH}$ , continue reaction until no gas bubbles are present and the sample is dissolved completely.
    - 3.1.2 Dissolve using  $\text{HgSO}_4$  (Method 2).

Weigh 0.5 g of metal aluminum sample to a 125 ml Erlenmeyer flask, add 10 ml of 10%  $\text{HgSO}_4$  solution and 5 ml of 30%  $\text{H}_2\text{O}_2$ . After 20 minutes, add appropriate amount of  $\text{HgSO}_4$ . Allow reaction to continue until no gas bubbles are present. Add metal copper strips (large surface area) into the sample solution. After 10 minutes, withdraw the copper strips and add new copper strips. Repeat until the surface of the copper strips in sample solution do not change to a silver color. Withdraw all copper strips from sample solution.
  - 3.2. Digestion

Add 3 ml of concentrated  $\text{HNO}_3$ , 5 ml of 1:1  $\text{H}_2\text{SO}_4$  into the sample solution obtained from 3.1.1 or 3.1.2. Heat slowly and evaporate the sample solution until sulfur trioxide ( $\text{SO}_3$ ) fumes are present for 5 minutes. Cool and dilute the sample to 50.0 ml. Determine Arsenic by Atomic Absorption method.

**ATTACHMENT B**

**Smoke Test to Demonstrate Capture Efficiency for Emission Collection Systems of an Emission Control Device**

1. Applicability and Principle:

1.1 Applicability

This method is applicable to all furnaces where an emission control device is used to capture and control emissions from non-chromium metal melting operations.

1.2 Principle

Collection of emissions from a non-chromium metal melting operation is achieved by the emission collection system associated with the emission control device for the non-chromium metal melting operation. Emission control efficiency at the exhaust of an emission control device is related to capture efficiency at the inlet of the emission collection system. For this reason, 100 percent capture efficiency shall be maintained. A smoke generator placed within the area where collection of emissions by the emission collection system occurs reveals this capture efficiency.

2. Apparatus:

2.1 Smoke Generator

The smoke generator shall be adequate to produce a persistent stream of visible smoke (e.g. Model S102 Regin Smoke Emitter Cartridges). The smoke generator shall not provide excessive momentum to the smoke stream that may create a bias in the determination of collection efficiency. If the smoke generator provides slight momentum to the smoke stream, it shall be released perpendicular to the direction of the collection velocity.

3. Testing Conditions:

3.1 Equipment Operation

Any equipment to be smoke tested that is capable of generating heat as part of normal operation shall be smoke tested under those normal operating conditions. Operating parameters of the equipment during the smoke test shall be recorded. The smoke test shall be conducted while the emission collection system and the emission control device are in normal operation. The position of any adjustable dampers that can affect air flow shall be documented. Precautions shall be taken by the facility to evaluate any potential physical hazards to ensure the smoke test is conducted in a safe manner.

**3.2 Cross-Draft**

The smoke test shall be conducted while the emission collection system and emission control device are in normal operation and under typical draft conditions representative of the facility's non-chromium metal melting operations. This includes cooling fans and enclosure openings affecting draft conditions including, but not limited to, vents, windows, doorways, and bay doors, as well as the operation of other work stations and traffic. The smoke generator shall be at full generation during the entire test and operated according to manufacturer's suggested use.

**4. Procedure:****4.1 Collection Slots**

4.1.1 For work stations equipped with collection slots or hoods, the smoke shall be released at points where emissions from non-chromium metal melting operations are generated (e.g. the point where melting occurs). Smoke shall be released at points not to exceed 12 inches apart across ventilated work areas.

4.1.2 Observe the collection of the smoke from the smoke generator and emissions from the operations to the collection location(s) of the emission collection system. Record these observations at each of the points providing a qualitative assessment of the collection of smoke and emissions to the emission collection system.

**4.2 Equipment Enclosures**

4.2.1 Equipment enclosures include equipment where emissions are generated inside the equipment, and the equipment is intended to have inward air flow through openings to prevent the escape of process emissions. The smoke shall be released at points outside of the plane of the opening of the equipment, over an evenly spaced matrix across all openings with points not to exceed 12 inches apart.

4.2.2 Observe the inward movement of the smoke from the smoke generator and emissions from the operations to the collection location(s) of the emission collection system. Record these observations at each of the points providing a qualitative assessment of the collection of smoke and emissions to the emission collection system.



5. Results:

A passing smoke test shall demonstrate a direct stream of smoke and emissions to the collection location(s) of the emission collection system without meanderings out of this direct path.

6. Documentation:

The smoke test shall be documented by photographs or video at each point that clearly show the path of the smoke and emissions. Documentation shall also include a list of equipment tested and any repairs that were performed in order to pass the smoke test. As previously discussed, the documentation shall include the position of adjustable dampers, cross-draft conditions, and the heat input of the equipment, if applicable. The documentation shall be signed and dated by the person performing the test.