

**PROPOSED RULE 1407.1. EMISSIONS OF TOXIC AIR CONTAMINANTS FROM  
ALLOY STEEL, CHROMIUM ALLOY, STAINLESS STEEL,  
AND SUPERALLOY MELTING OPERATIONS**

(a) Purpose

The purpose of this rule is to gather information regarding toxic air contaminant emissions from alloy steel, chromium alloy, stainless steel, and superalloy melting operations.

(b) Applicability

This rule shall apply to the owner or operator of any facility conducting alloy steel, chromium alloy, stainless steel, and superalloy melting operation(s), including but not limited to, smelters (primary and secondary), foundries, die-casters, and other miscellaneous melting processes.

(c) Definitions

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

- (1) ALLOY STEEL is a steel that is alloyed with a variety of elements, in addition to carbon, in total amounts between 1.0% and 50% by weight.
- (2) CASTING is the formation of metallic parts or casts by pouring molten metal into a mold and core assembly or into a mold for ingots, sows, or cylinders.
- (3) CHROMIUM ALLOY is any metal that is at least 0.5% chromium by weight.
- (4) DIE-CASTER is any facility, operation, or process where molten metal is forced under pressure into a mold cavity.
- (5) DUCT SECTION is any length of duct, including angles and bends, which is contiguous between processes, emission collection systems, emission control devices, or ventilation inlets or outlets. Examples include ducting between a furnace and heat exchanger; baghouse and scrubber; and scrubber and blower, or the exhaust stack itself.
- (6) EMISSION COLLECTION SYSTEM is any equipment, including the associated ducting, installed for the purpose of directing, taking in, confining, and conveying an air contaminant.

**Proposed Rule 1407.1 (Cont.)**

- (7) EMISSION CONTROL DEVICE is any equipment installed in the ventilation system of a point source or after the emission collection system designed to reduce toxic metal air contaminants and dust emissions from metal melting operations.
- (8) EMISSION POINT is any location where molten metal is or can be exposed to air, including, but not limited to, furnaces, crucibles, refining kettles, ladles, tap holes, pouring spouts, and slag channels.
- (9) FACILITY is any real or personal property which 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.
- (10) FOUNDRY is any facility, operation, or process where metal or a metal alloy is melted and cast.
- (11) FUGITIVE METAL EMISSIONS are emissions of metal-containing material from locations other than emission point sources including, but not limited to, foot and vehicular traffic and storage piles where the dust forming material at the emission source contains metals.
- (12) METAL any ferrous (iron-based) metals and alloys and non-ferrous (non-iron-based) metals and alloys. Examples of metals include, but are not limited to, iron, stainless steel, and their iron-based alloys and aluminum, brass, bronze, cadmium chromium, copper, gold, lead, manganese, mercury, nickel, platinum, silver, tin, titanium, tungsten, and zinc, and their non-ferrous alloys.
- (13) 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.
- (14) 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 the container in which it is placed.
- (15) POINT SOURCE is any process or equipment used for melting operations to process alloy steel, chromium alloy, stainless steel, and superalloy.
- (16) RERUN SCRAP is any material that has been generated at the facility as a consequence of casting or forming process, but has not been coated or surfaced with any material containing arsenic, cadmium, chromium, or nickel, intended for re-melting, including but not limited to, sprues, gates, risers, foundry returns, and similar material.

**Proposed Rule 1407.1 (Cont.)**

- (17) 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. SCRAP does not include rerun scrap.
- (18) SLAG is the inorganic by-product material discharged, in melted state, from the smelting process.
- (19) SMELTER is any facility, operation, or process where heat is applied to ore in order to melt out a base metal.
- (20) STAINLESS STEEL is a steel alloy with a minimum of 10.5% chromium content by mass.
- (21) STEEL is a metal alloy of iron and carbon and other elements.
- (22) SUPERALLOY is a heat-resisting metal alloy based on nickel, nickel-iron, or cobalt.

(d) Operational Information Survey Requirements

Within [90 Days After Date of Adoption], the owner or operator of a facility conducting alloy steel, chromium alloy, stainless steel, and superalloy melting operation(s) shall submit an Operational Information Survey that includes:

- (1) Casting techniques or processes performed;
- (2) Finishing activities or operations performed;
- (3) For each metal melting furnace:
  - (A) South Coast Air Quality Management District (SCAQMD) application or permit number and Device ID, if applicable;
  - (B) The equipment make, model, serial number, date of manufacture, and date of installation;
  - (C) Furnace type;
  - (D) Size and capacity;
  - (E) Minimum, average, and maximum weight of metal processed per batch and per day, based on data from calendar year 2017;
  - (F) Fuel type, if gas fired, include British Thermal Unit (BTU) gas rating and burner age;
  - (G) Refractory information, including, but not limited to, type of refractory brick and refractory coating, chromium content, frequency of refractory brick replacement and refractory coating application, based on data from calendar year 2017;
  - (H) Minimum, average and maximum operating temperatures;

**Proposed Rule 1407.1 (Cont.)**

- (I) The equipment make, model, serial number, date of manufacture, and date of installation of associated Emission Collection System(s) and/or Emission Control Device(s), and corresponding South Coast Air Quality Management District application or permit number and Device Identification Number (ID), if applicable; and
  - (J) Metals and alloys melted; and
  - (4) Housekeeping activities routinely performed, including schedule, method(s) used, and location(s) of activities.
- (e) Source Test Requirements
- (1) In submitting the Source Test Protocol and conducting emissions testing, capture efficiency testing, and Materials Composition Testing pursuant to paragraphs (e)(2) through (e)(11), the owner or operator of a facility conducting alloy steel, chromium alloy, stainless steel, and superalloy melting operation(s) shall source test the metal melting furnace:
    - (A) With an emissions control device;
    - (B) Melting the alloy with the highest chromium concentration processed in the facility;
    - (C) Operating with the highest throughput, if there are multiple furnaces that meet subparagraph (e)(1)(A) and (e)(1)(B); and
    - (D) Operating all furnaces during the source test if multiple furnaces are vented to a single control device unless otherwise restricted by permit condition.
  - (2) The owner or operator of a facility conducting alloy steel, chromium alloy, stainless steel, and superalloy melting operation(s) shall submit a Source Test Protocol to the Executive Officer for approval no later than [60 Days After Date of Adoption] or as required by a SCAQMD permit. Source Test Protocols shall follow the procedures specified in *SCAQMD Guidelines for the Development of Rule 1407.1 Source Test Protocols*.
  - (3) The Executive Officer will approve or reject the Source Test Protocol and notify the owner or operator. Approval or rejection will be based on whether the Source Test Protocol was prepared consistent with paragraph (e)(1) and *SCAQMD Guidelines for the Development of Rule 1407.1 Source Test Protocols*. If the Source Test Protocol is rejected:
    - (A) Within 30 days of the date of notification by the Executive Officer of Source Test Protocol rejection, an owner or operator shall revise and resubmit a Source Test Protocol that corrects all identified deficiencies.

**Proposed Rule 1407.1 (Cont.)**

- (B) The Executive Officer will either approve the revised and resubmitted Source Test Protocol or modify the Source Test Protocol and approve it as modified.
- (4) No later than 90 days after approval of the Source Test Protocol, the owner or operator of a facility conducting alloy steel, chromium alloy, stainless steel, and superalloy melting operation(s) shall perform the following source tests for mass emissions and concentration on the metal melting furnace and associated emissions collection system and emissions control device pursuant to paragraph (e)(1):
  - (A) Particulate matter;
  - (B) Multiple metals; and
  - (C) Hexavalent chromium.
- (5) The owner or operator of a facility conducting alloy steel, chromium alloy, stainless steel, and superalloy melting operation(s) shall conduct source tests representative of typical operating conditions in the facility and in accordance with the following applicable test methods as approved by the Executive Officer:
  - (A) Particulate matter by:
    - (i) SCAQMD Method 5.1 – *Determination of Particulate Matter Emissions from Stationary Sources Using a Wet Impingement Train;*
    - (ii) SCAQMD Method 5.2 – *Determination of Particulate Matter Emissions from Stationary Sources Using Heated Probe and Filter;*  
or
    - (iii) SCAQMD Method 5.3 – *Determination of Particulate Matter Emissions from Stationary Sources Using an In-Stack Filter;*
  - (B) Multiple metals by CARB Method 436 – *Determination of Multiple Metal Emissions from Stationary Sources;* and
  - (C) Hexavalent chromium by CARB Method 425 – *Determination of Total Chromium and Hexavalent Chromium Emissions from Stationary Sources.*
- (6) At the time the source tests are conducted, the owner or operator of a facility conducting alloy steel, chromium alloy, stainless steel, and superalloy melting operation(s) shall perform capture efficiency testing. Data and results shall include quantitative velocity measurements using a hot-wire anemometer, a vane anemometer, or a device or method approved by the Executive Officer and qualitative visual demonstration using smoke generators.
- (7) At the time the source tests are conducted, the owner or operator of a facility conducting alloy steel, chromium alloy, stainless steel, and superalloy melting

**Proposed Rule 1407.1 (Cont.)**

operation(s) shall perform Materials Composition Testing pursuant to paragraphs (f)(2) and (f)(3) of the following materials:

- (A) All raw material(s);
  - (B) Molten material;
  - (C) Final product;
  - (D) Slag;
  - (E) Dross; and
  - (F) Baghouse catch.
- (8) The owner or operator of a facility conducting alloy steel, chromium alloy, stainless steel, and superalloy melting operation(s) may use alternative or equivalent source test methods and materials composition tests as defined in 40 CFR Part 60.2, if approved in writing by the Executive Officer.
- (9) The owner or operator of a facility conducting alloy steel, chromium alloy, stainless steel, and superalloy melting operation(s) shall use a test laboratory approved under the SCAQMD Laboratory Approval Program for the source test, capture efficiency testing, and Metals Composition Testing. If there is no approved laboratory, then the testing procedures used by the laboratory may be submitted to the Executive Officer, who may approve these procedures on a case-by-case basis based on SCAQMD protocols and procedures.
- (10) The owner or operator conducting alloy steel, chromium alloy, stainless steel, and superalloy melting operation(s) shall notify the Executive Officer in writing at least 10 calendar days prior to conducting any test required by this subdivision.
- (11) No later than 60 days after the completion of the source tests, the owner or operator of a facility conducting alloy steel, chromium alloy, stainless steel, and superalloy melting operation(s) shall submit to the Executive Officer, using a format approved by the Executive Officer, reports from source tests, capture efficiency, and materials composition testing conducted.
- (f) Metals Composition Testing
- (1) The owner or operator of a facility conducting alloy steel, chromium alloy, stainless steel, and superalloy melting operation(s) not required to source testing requirements pursuant to subdivision (e) shall perform Materials Composition Testing for one batch representative of melting the alloy with the highest chromium concentration processed in the facility pursuant to subdivision (f) of the following
- (A) All raw material(s);
  - (B) Molten material;

**Proposed Rule 1407.1 (Cont.)**

- (C) Final product;
  - (D) Slag; and
  - (E) Dross.
- (2) Metals composition testing shall determine the content of arsenic, cadmium, chromium, hexavalent chromium, and nickel in percent by weight.
- (3) Metals composition testing shall be in accordance with the following test methods most applicable to the sample matrix and as approved by the Executive Officer:
- (A) U.S. EPA 200.7 – *Determination of Metals and Trace Elements in Water and Wastes by Inductively Coupled Plasma-Atomic Emission Spectrometry*;
  - (B) U.S. EPA 6010D – *Inductively Coupled Plasma-Optical Emissions Spectrometry*;
  - (C) U.S. EPA 6020B – *Inductively Coupled Plasma-Mass Spectrometry*;
  - (D) U.S. EPA 6200 – *Field Portable X-Ray Fluorescence Spectrometry for the Determination of Elemental Concentrations in Soil and Sediment*;
  - (E) U.S. EPA 7196A – *Chromium, Hexavalent (Chelation/Extraction)*; and/or
  - (F) U.S. EPA 7199 – *Determination of Hexavalent Chromium in Drinking Water, Groundwater and Industrial Wastewater Effluents by Ion Chromatography*.
- (g) Recordkeeping Requirements
- (1) Between January 1, 2019 and January 1, 2020, the owner or operator of a facility conducting alloy steel, chromium alloy, stainless steel, and superalloy melting operation(s) shall keep records of the following:
- (A) For each metal melting furnace, monthly records of run hours and weight and type of raw materials processed, including additives, alloys, ingots, scrap, and reruns;
  - (B) For each batch of raw material, vendor information; and
  - (C) For each baghouse, records of weight of the baghouse catch per container and date collected.
- (2) The owner or operator of a facility conducting alloy steel, chromium alloy, stainless steel, and superalloy melting operation(s) shall maintain records for a period of not less than three years and make such records available to the Executive Officer upon request.
- (3) No later than February 1, 2020, the owner or operator of a facility conducting alloy steel, chromium alloy, stainless steel, and superalloy melting operation(s) shall

**Proposed Rule 1407.1 (Cont.)**

submit to the Executive Officer, using a format approved by the Executive Officer, records pursuant to paragraph (g)(1).

(h) Exemptions

Equipment and operations subject to the requirements of Rules 1420 – Emissions Standard for Lead, 1420.1 – Emission Standards for Lead and Other Toxic Air Contaminants from Large Lead-Acid Battery Recycling Facilities, or 1420.2 – Emission Standards for Lead from Metal Melting Facilities, shall be exempt from the requirements of this rule.

DRAFT