



## U.S. Environmental Protection Agency Applicability Determination Index

**Control Number: 0200083**

**Category:** NSPS  
**EPA Office:** Region 5  
**Date:** 07/02/2002  
**Title:** Electric Arc Furnaces in Steel Forging Plants  
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**Subparts:** Part 60, AA, Steel Plants-Electric Arc Furnaces  
Part 60, AAa, Steel Plants-EAFs, Argon-Oxygen Decarb. Vess. (PT 8/17/83)

**References:** 60.270  
60.270a

### Abstract:

Q: Are electric arc furnaces in steel forging plants regulated by Subparts AA and AAa?

A: If a plant manufactures a product that comes from a mold and that product, as it comes out from the mold, is modified by rolling, forging, hot or cold working to alter its shape, the furnaces are regulated.

### Letter:

DATE: July 2, 2002

SUBJECT: Applicability determination for electric arc furnaces in steel forging plants

FROM: George T. Czerniak, Chief  
Air Enforcement and Compliance Assurance Branch

TO: Nathan Frank, Environmental Engineer  
Air Enforcement and Compliance Assurance Section (MN/OH)

This is in response to your June 3, 2002, memorandum to Edward Wojciechowski of our branch, regarding applicability of New Source Performance Standards (NSPS) for Electric Arc Furnaces (EAFs) in steel plants, Subparts AA and AAa, to EAFs that are in steel forging plants. As you state in your memorandum, there is no language in either Subpart that exempts these sources. However, the history of these Subparts needs to be investigated given the initial promulgation of Subpart AA, which included language exempting EAFs that are in certain sources, such as foundries. This language raises the question of whether or not it was EPA's intent to include steel forging plants under the exemption, or if a steel forging plant is considered to be a steel plant.

In order to answer this question, we have to first look at the exemption language. It can be found in U.S. EPA's promulgation of Standards of Performance for Steel Plants: Electric Arc Furnace, Subpart AA (40 FR 43850), September 23, 1975, Section 60.271 Definitions:

"Electric arc furnace (EAF) means any furnace that produces molten steel and heats the charge materials with electric arcs from carbon electrodes. Furnaces from which the molten steel is cast into the shape of finished products, such as in a foundry, are not affected facilities included within the scope of this definition." (emphasis added)

The reasoning behind the exemption is stated in "Public Comment Summary: Electric Arc Furnaces In the Steel Industry", August 1975, U.S. EPA, Office of Air Quality Planning and Standards (OAQPS). In this document, a comment on Section 60.271 of the proposed rule (Comment No. 1) is made that the definition of "electric arc furnaces" should not exclude steel foundries, and that the rationale for the exclusion is not clear. EPA's response is:

"Electric arc furnaces in steel foundries are excluded from the standards of performance because of the differences between the two industry's economic structures, process differences, and product differences. Development of standards of performance for electric arc furnaces in steel foundries is scheduled for sometime in the future."

It should be noted that the exemption language has since been removed and does not appear in either Subpart AA or Subpart AAa. This change occurred in U.S. EPA's promulgation of Subpart AAa - Standards of Performance for Steel Plants: Electric Arc Furnaces and Argon- Oxygen Decarburization Vessels Constructed After August 17, 1983, and the revisions to Subpart AA (49 FR 43845), October 31, 1984. The rationale for removal of the exemption is explained in a letter to David Kee, Director, Air Management Division, Region 5, dated November 12, 1985, from OAQPS. In the letter, Jack Farmer, Director, Emission Standards and Engineering Division states:

"The wording was deleted because it created the impression that any EAF located in a "foundry" would not be regulated by the NSPS."

The letter goes on to clarify what the exemption is intended to apply to:

"[I]t is not the intent of the regulation to now apply to EAFs in all foundries. The exemption continues for foundries that cast into finished products....In determining the applicability of Subparts AA and AAa, you must consider the intended function of the furnace to determine whether it is a foundry or steel plant EAF. Foundry EAFs cast molten iron or steel into the shape of finished products; steel plant EAFs cast molten steel into the shape of intermediate products."

The question now becomes whether the forging plant you are dealing with falls into the category of a foundry or a steel plant. As stated in the Farmer letter, molten steel from foundry EAFs is poured into pre-shaped molds for finished product, such as valve bodies. At the steel forging plant in question, you describe the process as pouring the molten steel into ingot molds, after which the ingots are removed from the molds, forged to customer's specifications, then shipped out. Clearly, this process doesn't fit into the foundry category, since the EAFs do not cast the steel into the shape of finished product, but rather into ingots, which is an intermediate product. In steel plants, molten steel has historically been poured into molds to make ingots, which were subsequently rolled into shapes such as slabs, blooms or billets. This is similar to the process in the forging plant, except that rather than change the ingot's shape through rolling, it is done in the forging operation by pounding.

One document which puts forging operations into the steel plant category is U.S. EPA's "Background Information For Standards Of Performance: Electric Arc Furnaces In The Steel Industry, Volume 1: Proposed Standards", October 1974. On page 65, language that refers to operations in covered shops states:

"The electric arc furnace is the primary facility and overwhelmingly the major source of air pollutant emission in an electric arc furnace shop. However, there are also other facilities that emit air pollutants. They include: 1. Argon-oxygen decarburizing vessels; 2. Vacuum-arc remelting furnaces; 3. Inert atmosphere remelting furnaces; 4. Electroslag remelting furnaces; 5. Teeming; and 6. Continuous casters."

This indicates that plants with EAFs that incorporate teeming operations would be covered by the rule. As explained in "EAFs Making and Treating Steel", the word "teeming" in the steel industry is the process of pouring liquid steel into ingot molds. Teeming, as defined in this way, is found in the forging plant you are looking into.

Another document which further supports treating forging operations as steel plants is U.S. EPA's "Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels in Steel Industry - Background Information for Proposed Revisions to Standards", July 1983. Page 9-4 of this document states:

"The blast furnaces and steel mills industry (hereafter the steel industry) is the name given to those firms classified in SIC 3312."

In the Standard Industrial Code (SIC) manual, listed under SIC 3312 is "Forgings, iron and steel: made in steel works or rolling mills." Clearly, the intent of this language is to include forging operations that occur within plants that produce the steel for the forgings (i.e., melt scrap steel to make new steel to exact specifications), or first roll the steel before it is forged. The SIC manual separately lists other forging operations under SIC 3462, which is entitled "Iron and Steel Forgings." The listing language here is: "Forgings, iron and steel: not made in rolling mills." (emphasis added) Plants falling under this SIC code would receive steel already made, heat it to the proper temperature and then forge it. Since the listing language for SIC 3312 specifies forgings made in steel works or rolling mills, plants that have melting capability (EAFs) but do not have a rolling mill would still fall under SIC 3312. It is important to note that interpreting a "steel plant" as simply a plant that has rolling mills does not preclude plants that reshape the steel by means of forging operations rather than rolling from being considered to be a steel mill.

From the above discussion, the EAFs in the steel forging plant you are dealing with are part of a steel plant and therefore, are subject to NSPS Subpart AA or Subpart AAa. If you need further discussion on this matter, contact Ed Wojciechowski at 312-886-6785.