

EMISSIONS ACTIVITY CATEGORY FORM IRON AND STEEL FOUNDRIES

This form is to be completed for each foundry operation conducted at this facility. State/Federal regulations which may apply to iron and steel foundries are listed in the instructions. Note that there may be other regulations which apply to these operations which are not included in this list.

Note: This emissions activity category (EAC) form does not include roadways and parking areas, storage piles, and material handling operations which may also be associated with an iron or steel foundry. Therefore, additional EAC forms for these emissions units may need to be submitted.

1. Reason this form is being submitted (Check one)

New Permit Renewal or Modification of Air Permit Number(s) (e.g. P001)_____

2. Maximum Operating Schedule: _____ hours per day; _____ days per year

If the schedule is less than 24 hours/day or 365 days/year, what limits the schedule to less than maximum? See instructions for examples. _____

3. Identify the type(s) of processes included in foundry operations:

<u>Check Those</u> <u>Emissions Units</u> <u>Present</u>	<u>Fugitive Dust</u> <u>Emissions Units</u>	<u>How</u> <u>many</u> <u>?</u>
<input type="checkbox"/>	Scrap material handling and preparation	_____
<input type="checkbox"/>	Melting furnace(s) <i>(includes charging, melting and tapping)</i>	_____
<input type="checkbox"/>	Holding furnace(s)	_____
<input type="checkbox"/>	Transfer ladles <i>(includes transfers between melting, holding and pouring)</i>	_____
<input type="checkbox"/>	Inoculation/refining	_____
<input type="checkbox"/>	Mold pouring and cooling	_____
<input type="checkbox"/>	Shakeout machines	_____
<input type="checkbox"/>	Sand reclaiming/reprocessing lines	_____
<input type="checkbox"/>	Blast cleaning <i>(includes shot/sand blast cleaning)</i>	_____
<input type="checkbox"/>	Grinding/finishing areas <i>(includes grinding, welding, torching, etc.)</i>	_____
<input type="checkbox"/>	New sand/additive unloading and storage	_____
<input type="checkbox"/>	Core making lines <i>(includes sand mixing, molding, baking, core wash)</i>	_____
<input type="checkbox"/>	Mold making lines <i>(includes sand mixing, molding, baking, mold wash)</i>	_____
<input type="checkbox"/>	Ladle/refractory preheating units	_____
<input type="checkbox"/>	Annealing/heat treating furnaces	_____
<input type="checkbox"/>	Other, explain _____	_____

4. Scrap Material Handling and Preparation:

- a. Maximum hourly scrap/charge processing rate (tons/hour): _____
- b. Projected maximum annual scrap/charge processing rate (tons/year): _____
- c. If the scrap material is preheated provide the following information using one column for each preheater:

	Preheater 1	Preheater 2	Preheater 3	Preheater 4
Company ID	_____	_____	_____	_____
Oven manufacturer	_____	_____	_____	_____
Method of heating (electric, natural gas, #2 oil, etc.)	_____	_____	_____	_____
Maximum heat input rate (Million BTU/hr) <i>fuel fired units only</i>	_____	_____	_____	_____
Maximum weight of scrap processed per hour (tons/hr)	_____	_____	_____	_____
Maximum weight of scrap processed per year (tons/year)	_____	_____	_____	_____
Exit gas temperature at preheater (deg. Fahrenheit)	_____	_____	_____	_____

5. Melting furnace data: Complete one column for each melting furnace.

	Furnace 1	Furnace 2	Furnace 3	Furnace 4
a. Company ID	_____	_____	_____	_____
b. Furnace manufacturer	_____	_____	_____	_____
e. Furnace type (electric arc, induction, reverberatory, cupola, other - describe)	_____	_____	_____	_____
d. Maximum metal melting design capacity (tons/hour)	_____	_____	_____	_____
e. Maximum metal melting actual capacity (tons/hour)	_____	_____	_____	_____
f. Maximum heat input rate (Million BTU/hr) <i>fuel fired units only</i>	_____	_____	_____	_____
g. Average cycle time for one heat (hours)	_____	_____	_____	_____
h. Maximum weight of all materials charged in furnace (tons/hour)	_____	_____	_____	_____
i. Maximum quantity of molten metal produced per year (tons/year)	_____	_____	_____	_____

(for cupolas only): Maximum sulfur content of coke (% by weight) _____

6. Are any melting furnaces identified in #5 above operationally united, i.e., sharing common power supply, with other furnaces? Yes No

If yes, provide the company IDs and describe how they are operationally united: _____

7. Holding furnace data: Complete one column for each holding furnace.

	Furnace 1	Furnace 2	Furnace 3	Furnace 4
a. Company ID	_____	_____	_____	_____
b. Furnace manufacturer	_____	_____	_____	_____
c. Maximum metal holding design capacity (tons)	_____	_____	_____	_____
d. Maximum metal melting actual capacity (tons)	_____	_____	_____	_____
e. Maximum quantity of metal processed per year (tons/year)	_____	_____	_____	_____
f. Method of heating (electric, natural gas, #2 oil, etc.)	_____	_____	_____	_____
g. Maximum heat input rate (Million BTU/hr) <i>fuel fired units only</i>	_____	_____	_____	_____

8. Transfer ladles:

- a. Maximum actual hourly hot metal transfer rate from furnace area(s) to pouring area(s) (tons/hour): _____
- b. Projected maximum annual hot metal transfer rate (tons/year): _____
- c. Describe hot metal transfer operation (e.g. from/to transfer locations, method of transfer, ladle capacity):

9. Inoculation/refining operations:

- a. Check where inoculation/refining process takes place:
 in melting furnace in transfer ladle in holding/refining furnace
- b. Check the types of iron produced (*iron foundries only*)
 Gray iron Malleable (white) iron Ductile iron
- c. Describe the inoculation/refining process:

- d. Identify inoculation/refining materials and the typical amounts used per heat:

- e. Maximum amount of metal inoculated/refined per hour (tons/hour): _____
- f. Projected maximum annual amount of metal inoculated/refined per year (tons/year): _____

10. Mold pouring and cooling lines and areas: Complete one column for each mold pouring line or area.

	Line/area 1	Line/area 2	Line/area 3	Line/area 4
a. Company ID	_____	_____	_____	_____
b. Manufacturer	_____	_____	_____	_____
c. Maximum metal pouring design capacity (tons/hr)	_____	_____	_____	_____
d. Maximum metal pouring actual capacity (tons/hr)	_____	_____	_____	_____
e. Maximum quantity of metal poured per year (tons/year)	_____	_____	_____	_____
f. Maximum weight of molds and poured metal (tons/hr)	_____	_____	_____	_____

11. Shakeout: Complete one column for each shakeout machine.

	Machine 1	Machine 2	Machine 3	Machine 4
a. Company ID	_____	_____	_____	_____
b. Manufacturer	_____	_____	_____	_____
c. Maximum metal casting design capacity (tons/hr)	_____	_____	_____	_____
d. Maximum metal casting actual capacity (tons/hr)	_____	_____	_____	_____
e. Maximum weight of castings handled per year (tons/year)	_____	_____	_____	_____
f. Maximum weight of molds and castings handled (tons/hr)	_____	_____	_____	_____

12. Sand handling and reclamation: Complete one column for each sand reclaim system.

	System 1	System 2	System 3	System 4
a. Company ID	_____	_____	_____	_____
b. Maximum sand handling design capacity (tons/hr)	_____	_____	_____	_____
c. Maximum sand handling actual capacity (tons/hr)	_____	_____	_____	_____
d. Maximum weight of sand handled per year (tons/year)	_____	_____	_____	_____

List the equipment, i.e., lump knockout, magnetic separator, screen, storage silos, etc., which comprises each sand reclaim system: _____

13. Blast Cleaning: Complete one column for each shot/sand blast unit used to clean castings.

	Machine 1	Machine 2	Machine 3	Machine 4
a. Company ID	_____	_____	_____	_____
b. Manufacturer	_____	_____	_____	_____
c. Maximum metal casting design capacity (tons/hr)	_____	_____	_____	_____
d. Maximum metal casting actual capacity (tons/hr)	_____	_____	_____	_____
e. Maximum weight of castings processed per year (tons/year)	_____	_____	_____	_____

14. Grinding/Finishing area (includes hand and stationary grinders, welders, torching, etc.):

n. Equipment included in grinding/finishing operations:

Number of stationary grinders _____
 Number of hand-held grinding stations _____
 Number of welding stations _____

b. Maximum actual hourly casting finishing rate, all operations (tons/hour): _____

c. Maximum weight of castings finished per year, all operations (tons/year): _____

15. New sand/additive unloading and storage: Complete one column for each sand unloading and storage system.

	System 1	System 2	System 3	System 4
a. Company ID	_____	_____	_____	_____
b. Maximum hourly sand unloading rate (tons/hr)	_____	_____	_____	_____
c. Maximum hourly additive unloading rate (tons/hr)	_____	_____	_____	_____
d. Maximum weight of sand unloaded per year (tons/year)	_____	_____	_____	_____
e. Maximum weight of additive unloaded per year (tons/year)	_____	_____	_____	_____

List the equipment, i.e., pneumatic conveyor, belt conveyors, storage silos, etc., which comprises each sand/additive unloading and storage system: _____

16. Core Making (includes sand mixers, core machines, core wash, baking oven, etc.):

a. Identify type(s) of cores made (check all that apply):

Type

Percentage of total core production (%)

Phenolic urethane cold box

- Phenolic urethane no-bake _____
- Baked "green sand" _____
- Other, describe _____

b. Identify binder system, including trade names, used for each core type: _____

c. Equipment included in each core making line or area: Complete one column per line or area.

	Line 1	Line 2	Line 3	Line 4
Company ID	_____	_____	_____	_____
Type of core sand	_____	_____	_____	_____
Number of mixers	_____	_____	_____	_____
Number of core making machines	_____	_____	_____	_____
Maximum hourly sand preparation rate (tons/hr)	_____	_____	_____	_____
Maximum annual sand preparation rate (tons/hr)	_____	_____	_____	_____
Maximum annual binder usage rate (tons/year)	_____	_____	_____	_____

d. If core wash is used, provide the following:

1. Provide core wash composition:

2. Provide wash VOC content (lbs. VOC/gallon): _____
3. Identify maximum wash used (gallons/hour): _____
4. Identify maximum wash used (gallons/year): _____

e. If core release is used, provide the following:

1. Provide core release composition:

2. Provide release VOC content (lbs. VOC/gallon): _____
3. Identify maximum release used (gallons/hour): _____
4. Identify maximum release used (gallons/year): _____

f. Core Baking: Complete one column for each core baking oven.

	Oven 1	Oven 2	Oven 3	Oven 4
Company ID	_____	_____	_____	_____
Oven manufacturer	_____	_____	_____	_____
Method of heating (electric,	_____	_____	_____	_____

natural gas, #2 oil, etc.)	_____	_____	_____	_____
Maximum heat input rate (Million BTU/hr) <i>fuel fired units only</i>	_____	_____	_____	_____
Maximum weight of cores baked per hour (tons/hr)	_____	_____	_____	_____
Maximum weight of cores baked per year (tons/year)	_____	_____	_____	_____

17. Mold making (includes sand mixers, mold machines, mold wash, baking oven, etc.):

a. Identify type(s) of molds made (check all that apply):

<u>Type</u>	<u>Percentage of total mold production (%)</u>
<input type="checkbox"/> Phenolic urethane cold box	_____
<input type="checkbox"/> Phenolic urethane no-bake	_____
<input type="checkbox"/> Baked "green sand"	_____
<input type="checkbox"/> Other, describe _____	_____

b. Identify binder system, including trade names, used for each type of mold sand: _____

c. Equipment included in each mold making line or area: Complete one column per line or area.

	Line 1	Line 2	Line 3	Line 4
Company ID	_____	_____	_____	_____
Type of mold sand	_____	_____	_____	_____
Number of mixers	_____	_____	_____	_____
Number of mold making machines	_____	_____	_____	_____
Maximum hourly sand preparation rate (tons/hr)	_____	_____	_____	_____
Maximum annual sand preparation rate (tons/hr)	_____	_____	_____	_____
Maximum annual binder usage rate (tons/year)	_____	_____	_____	_____

d. If mold wash is used, provide the following:

1. Provide mold wash composition:

2. Provide wash VOC content (lbs. VOC/gallon): _____
3. Identify maximum wash used (gallons/hour): _____

4. Identify maximum wash used (gallons/year): _____

e. If mold release is used, provide the following:

1. Provide mold release composition:

2. Provide release VOC content (lbs. VOC/gallon): _____

3. Identify maximum release used (gallons/hour): _____

4. Identify maximum release used (gallons/year): _____

f. Mold Baking: Complete one column for each mold baking oven.

	Oven 1	Oven 2	Oven 3	Oven 4
Company ID	_____	_____	_____	_____
Oven manufacturer	_____	_____	_____	_____
Method of heating (electric, natural gas, #2 oil, etc.)	_____	_____	_____	_____
Maximum heat input rate (Million BTU/hr) <i>fuel fired units only</i>	_____	_____	_____	_____
Maximum weight of molds baked per hour (tons/hr)	_____	_____	_____	_____
Maximum weight of molds baked per year (tons/year)	_____	_____	_____	_____

18. Ladle/refractory preheating units: Complete one column for each preheater.

	Heater 1	Heater 2	Heater 3	Heater 4
a. Company ID	_____	_____	_____	_____
b. Manufacturer	_____	_____	_____	_____
c. Method of heating (electric, natural gas, #2 oil, etc.)	_____	_____	_____	_____
d. Maximum heat input rate (Million BTU/hr) <i>fuel fired units only</i>	_____	_____	_____	_____

19. Annealing/heat treating furnaces: Complete one column for each furnace.

	Oven 1	Oven 2	Oven 3	Oven 4
a. Company ID	_____	_____	_____	_____
b. Oven manufacturer	_____	_____	_____	_____
c. Method of heating (electric, natural gas, #2 oil, etc.)	_____	_____	_____	_____
d. Maximum heat input rate (Million BTU/hr) <i>fuel fired units only</i>	_____	_____	_____	_____
e. Maximum weight of castings processed per hour (tons/hr)	_____	_____	_____	_____

f. Maximum weight of castings processed per year (tons/year) _____

20. Other:

a. Describe Process:

b. Maximum design hourly process weight rate (tons/hour) _____

c. Maximum actual hourly process weight rate (tons/hour) _____

d. Projected maximum annual process weight rate (tons/year) _____

e. Specify all raw materials used in the process and their respective maximum hourly usage rates

<u>Material Name</u>	<u>Maximum Hourly Usage Rate (lbs/hour)</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

21. Control methods used for foundry processes:

	Capture Method	Capture Efficiency (%)	Install Capture Date	Control Method	Control Efficiency (%)	Install Control Date
Scrap material handling and preparation						
Melting furnace(s)						
Holding furnace(s)						
Inoculation/refining						
Mold pouring and cooling line(s)						
Shakeout machine(s)						
Sand reclaiming/reprocessing line(s)						
Blast cleaning machine(s)						
Grinding/finishing						
New sand/additive unloading and storage system(s)						
Core making line(s)						
Mold making line(s)						
Other: _____ _____ _____						

INSTRUCTIONS FOR COMPLETION OF THE EMISSIONS ACTIVITY CATEGORY FORM FOR IRON AND STEEL FOUNDRIES

GENERAL INSTRUCTIONS:

Provide complete responses to all applicable questions. If an item does not apply to the emissions unit, write in "Not Applicable" or "NA." If the answer is not known, write in "Not Known" or "NK." If you need assistance in understanding a question after reading the instructions below, contact your Ohio EPA District Office or Local Air Agency for assistance. Submittal of an incomplete application will delay application review and processing. In addition, the application may be returned as incomplete if all applicable questions are not answered appropriately.

APPLICABLE REGULATIONS:

The following State and Federal Regulations may be applicable to iron and steel foundries. Note that there may be other regulations which apply to this emissions unit which are not included in this list.

Federal: 40 CFR 60, (NSPS) Subpart A, Subpart AA, AAa,
40 CFR 63, (MACT) Subpart A, Subpart EEEEE

State: OAC 3745-31-02 (Permit to Install)
OAC 3745-35-02 (Permit to Operate)
OAC 3745-17-07, 17-08, 17-11 (Particulate Matter rules)
OAC 3745-21-07 (Control of Emissions of Organic Compounds)
OAC rule 3745-15-07 (Nuisances Prohibited)

If you would like a copy of these regulations, contact your Ohio EPA District Office or Local Air Agency. State regulations may also be viewed and downloaded from the Ohio EPA website at <http://www.epa.state.oh.us/dapc/regs/regs.html>. Federal regulations may be viewed and downloaded at <http://www.epa.gov/docs/epacr40/chapt-l.info/subch-C.htm>.

CALCULATING EMISSIONS:

Manufacturers of some types of emissions units and most types of control equipment develop emissions estimates or have stack test data which you can request. Stack testing of the emissions may be done. Emissions unit sampling test data may be either for this emissions unit or a similar one located at the facility or elsewhere. You may develop your own emission factors by mass balance or other knowledge of your process, if you can quantify inputs and outputs accurately. You may be able to do this on a small scale or over a short period of time, if it is not practical during regular production. If you have control equipment, you may be able to quantify the amount of pollutants collected over a known time period or production amount.

USEPA has developed emission factors for many types of emissions units and published them in a document titled "Compilation of Air Pollutant Emission Factors, AP-42", available from the following website: <http://www.epa.gov/ttn/chief/ap42/index.html> See Chapter 12.10 (Gray Iron Foundries) and Chapter 12.13 (Steel Foundries). Any emission factor calculation should include a reference to the origin of the emission factor or control efficiency. To obtain specific VOC emission factors for mold and core making operations which are used by Ohio EPA, contact your Ohio EPA District Office or Local Air Agency.

SPECIFIC INSTRUCTIONS:

This emissions activity category (EAC) form is to be used for operations at iron and steel foundries which emit air pollutants. Typical emissions units to be included on this form are listed in item #3. Other EAC forms may need to be completed for emissions units at foundries which are not on this list. If an emissions unit at a foundry is not specifically listed in item #3 and another type of EAC form is not appropriate, enter the information for the emissions unit on this form under "Other".

1. Indicate whether this is an application for a new permit or an application for permit renewal. If applying for a permit renewal, provide the 4-character OEPA emissions unit identification number.
2. Provide the maximum number of hours per day and days per year the lime plant is expected to operate. The following are examples of why the maximum number of hours per day may be less than 24 or the maximum number of days per year may be less than 365 (this list is not all-inclusive):
 - The facility can only operate during daylight hours.
 - The process can only operate within a certain range of ambient temperatures.
 - The process is limited by another operation (i.e., a bottleneck).
3. Identify the emissions units at the facility by placing a check mark in the appropriate block adjacent to the respective emissions unit type and indicate how many of these units are present at the facility. If there are other emissions units at the facility which are not specifically listed in item #3 and another EAC form is inappropriate, identify such emissions unit(s) in the section marked "Other (describe)" and list the equipment included.
4. Complete the items which describe the scrap handling and preparation operations. Complete one column for each separate scrap preheater or dryer.
5. Complete items which describe the type, capacity, and fuel used in each melting furnace at the facility using one column for each furnace. The maximum heat input rate for the furnace is the total of all individual maximum burner ratings. Note that coke sulfur content is required for cupola furnaces.
6. Identify and describe any melting furnaces that are operationally united, such as sharing a common power supply, such that each furnace is incapable of operating independently.
7. Complete items which describe the type, capacity, and fuel used in each holding furnace at the facility using one column for each furnace. The maximum heat input rate for the furnace is the total of all individual maximum burner ratings.
8. Provide data on the maximum amounts of hot metal which can be transferred from the melting area to the pouring area considering plant design, number of ladles, etc.
9. Describe inoculation or refining process and identify the materials used in these processes.
10. Complete items which describe each mold pouring line using one column for each line or general pouring area. If molds are poured in designated floor area, enter "Floor" for Company ID.
11. Complete items in the table which describe each shakeout machine at the facility using one column for each machine. The maximum weight of molds and castings, 11(f), is the combined weight of molds, cores, mold boxes, and castings.

12. Complete items which describe each sand reclaim system which handles and reprocesses sand from the shakeout operations. List the equipment which comprises each independent reclaim system.
13. Complete items which describe the make and handling capacity of each holding shot blast or sand blast unit at the facility using one column for each furnace. Ohio EPA exempts certain blasting operations which have dust collectors vented back into the building. See OAC rule 3745-31-03.
14. Complete items which identify each grinding or finishing area at the facility.
15. Complete items which describe each sand or additive unloading system which handles new dry bulk material using one column for each system. List the equipment which comprises each independent unloading system.
16. Identify the type of core sand(s) utilized for core making and list the type of binder system used. Identify the number of mixers, core making machines, core washes, etc. that a part of the core making operations. The VOC content for core washes and core releases may be obtained from the Material Safety Data Sheet or the supplier and should be reported "as mixed" or "as applied". Provide the maximum heat input rating for baking ovens in the same manner as question #5.
17. Identify the type of mold sand(s) utilized for mold making and list the type of binder system used. Identify the number of mixers, mold making machines, mold washes, etc. that a part of the mold making operations. The VOC content for mold washes and mold releases may be obtained from the Material Safety Data Sheet or the supplier and should be reported "as mixed" or "as applied". Provide the maximum heat input rating for baking ovens in the same manner as question #5.
18. Provide the maximum heat input rating for each ladle/refractory preheating unit in the same manner as question #5.
19. Provide the maximum heat input rating for each annealing or heat treating furnace in the same manner as question #5.
20. Describe process materials and usage rates. Describe the process on a separate sheet of paper if necessary.
21. For each operation identified elsewhere in this form, describe how the emissions are captured and estimate the percentage of emissions which are captured and express this as a percentage. Enter the month/year that capture methods were implemented. Also describe how the captured emissions are controlled and estimate the percentage of reduction (control efficiency) attained. Enter the month/year that control methods were implemented. Efficiencies may be determined, in order of preference, by testing, design, published estimation methods or best engineering judgement. For multiple methods, enter them in the blank separated by a slash (/) and do the same for the efficiency.