### What Must Be Monitored Under the Carbon Mass Balance Method?

**Measure these parameters on an annual basis (unless otherwise noted)…**

For Each Taconite Indurating Furnace

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass of solid fuel combusted each month</td>
<td>(metric tons)</td>
</tr>
<tr>
<td>Average carbon content of solid fuel</td>
<td>(percent by weight)</td>
</tr>
<tr>
<td>Volume of gaseous fuel combusted each month</td>
<td>(standard cubic feet [scf])</td>
</tr>
<tr>
<td>Average carbon content of gaseous fuel</td>
<td>(kilogram [kg] C per kg of fuel)</td>
</tr>
<tr>
<td>Average molecular weight of gaseous fuel</td>
<td>(kg/kg-mole)</td>
</tr>
<tr>
<td>Volume of liquid fuel combusted each month</td>
<td>(gallons)</td>
</tr>
<tr>
<td>Average carbon content of liquid fuel</td>
<td>(kg C per gallon of fuel)</td>
</tr>
<tr>
<td>Mass of greenball (taconite) pellets fed to furnace each month</td>
<td>(metric tons)</td>
</tr>
<tr>
<td>Average carbon content of greenball (taconite) pellets (percent by weight)</td>
<td></td>
</tr>
<tr>
<td>Mass of fired pellets produced by furnace each month</td>
<td>(metric tons)</td>
</tr>
<tr>
<td>Average carbon content of the fired pellets (percent by weight)</td>
<td></td>
</tr>
<tr>
<td>Mass of air pollution control residue collected each month</td>
<td>(metric tons)</td>
</tr>
<tr>
<td>Average carbon content of air pollution control residue (percent by weight)</td>
<td></td>
</tr>
<tr>
<td>Annual production quantity of taconite pellets</td>
<td>(metric tons)</td>
</tr>
<tr>
<td>Annual operating hours</td>
<td></td>
</tr>
<tr>
<td>For Each Basic Oxygen Process Furnace</td>
<td></td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>☐ Mass of molten iron charged to furnace each month (metric tons)</td>
<td>☐ Mass of molten steel produced by furnace each month (metric tons)</td>
</tr>
<tr>
<td>☐ Average carbon content of molten iron (percent by weight)</td>
<td>☐ Average carbon content of steel (percent by weight)</td>
</tr>
<tr>
<td>☐ Mass of ferrous scrap charged to furnace each month (metric tons)</td>
<td>☐ Mass of slag produced by furnace each month (metric tons)</td>
</tr>
<tr>
<td>☐ Average carbon content of ferrous scrap (percent by weight)</td>
<td>☐ Average carbon content of slag (percent by weight)</td>
</tr>
<tr>
<td>☐ Mass of flux materials (e.g., limestone, dolomite) charged to furnace each month (metric tons)</td>
<td>☐ Mass of air pollution control residue collected each month (metric tons)</td>
</tr>
<tr>
<td>☐ Average carbon content of the flux materials (percent by weight)</td>
<td>☐ Average carbon content of air pollution control residue (percent by weight)</td>
</tr>
<tr>
<td>☐ Mass of carbonaceous materials (e.g., coal, coke) charged to furnace each month (metric tons)</td>
<td>☐ Annual production quantity of steel (metric tons)</td>
</tr>
<tr>
<td>☐ Average carbon content of the carbonaceous materials (percent by weight)</td>
<td>☐ Annual operating hours</td>
</tr>
</tbody>
</table>
### For Each Non-Recovery Coke Oven Battery

- Mass of coal charged to battery each month (metric tons)
- Average carbon content of coal (percent by weight)
- Mass of coke produced by battery each month (metric tons)
- Average carbon content of coke (percent by weight)
- Mass of air pollution control residue collected each month (metric tons)

### For Each Sinter Process

- Volume of gaseous fuel combusted each month (scf)
- Average carbon content of gaseous fuel (kg c per kg fuel)
- Average molecular weight of gaseous fuel (kg/kg-mole)
- Mass of sinter feed material each month (metric tons)
- Average carbon content of sinter feed material (percent by weight)
- Mass of sinter produced each month (metric tons)
For Each Electric Arc Furnace

- Mass of direct reduced iron charged to furnace each month (metric tons)
- Average carbon content of direct reduced iron (percent by weight)
- Mass of ferrous scrap charged to furnace each month (metric tons)
- Average carbon content of ferrous scrap (percent by weight)
- Mass of flux materials (e.g., limestone, dolomite) charged to furnace each month (metric tons)
- Average carbon content of flux materials (percent by weight)
- Mass of carbon electrode consumed each month (metric tons)
- Average carbon content of carbon electrode (percent by weight)
- Mass of carbonaceous materials (e.g., coal, coke) charged to furnace each month (metric tons)
- Average carbon content of carbonaceous materials (percent by weight)
- Mass of molten steel produced by furnace each month (metric tons)
- Average carbon content of steel (percent by weight)
- Mass of slag produced by furnace each month (metric tons)
- Average carbon content of slag (percent by weight)
- Mass of air pollution control residue collected each month (metric tons)
- Average carbon content of air pollution control residue (percent by weight)
- Annual production quantity of steel (metric tons)
- Annual operating hours
For Each Argon-Oxygen Decarburization Vessel

- Mass of molten steel charged to vessel each month (metric tons)
- Average carbon content of molten steel before decarburization (percent by weight)
- Average carbon content of molten steel after decarburization (percent by weight)

For Each Direct Reduction Furnace

- Volume of gaseous fuel combusted each month (scf)
- Average carbon content of gaseous fuel (percent by weight)
- Average molecular weight of gaseous fuel (kg/kg-mole)
- Mass of iron ore or iron ore pellets fed to furnace each month (metric tons)
- Average carbon content of iron ore (percent by weight)
- Mass of carbonaceous materials (e.g., coal, coke) charged to furnace each month (metric tons)
- Average carbon content of carbonaceous materials (percent by weight)
- Mass of other materials charged to furnace each month (metric tons)
- Average carbon content of other materials (percent by weight)

- Mass of air pollution control residue collected each month (metric tons)
- Average carbon content of air pollution control residue (percent by weight)
- Average carbon content of iron (percent by weight)
- Mass of non-metallic materials produced each month (metric tons)
- Average carbon content of non-metallic materials (percent by weight)
- Mass of air pollution control residue collected each month (metric tons)
- Average carbon content of air pollution control residue (percent by weight)
- Annual production quantity of iron (metric tons)
- Annual operating hours
What Must Be Monitored to Determine Emissions from Coke Oven Pushing?

☐ Annual mass of coke produced (metric tons)
☐ Mass of coal charged to the coke ovens each month (metric tons)

☐ Annual operating hours

What are the Requirements for Using the Site-Specific Emission Factor Method?

☐ Conduct a performance test and measure CO2 emissions from all exhaust stacks for the process and calculate the average hourly CO2 emission rate (metric tons CO2/hr).

☐ Calculate the site-specific emission factor for the process in metric tons of CO2 per metric ton of feed or production, as applicable, by dividing the average hourly CO2 emission rate during the test by the average hourly feed or production rate during the test.

☐ Measure the process production rate or feed rate, as applicable, during the test and calculate the average rate for the test period in metric tons per hour.

☐ Calculate CO2 emissions for the process by multiplying the emission factor by the total amount of feed or production, as applicable, for the reporting period.

Other Requirements for Using the Site-Specific Emission Factor Method:

The annual performance test must occur under representative performance (i.e., performance based on normal operating conditions) of the affected process. If your process operates under different conditions as part of normal operations in such a manner that CO2 emissions change by more than 20 percent (e.g., routine changes in the carbon content of the sinter feed or change in grade of product), you must perform emission testing and develop separate emission factors for these different operating conditions and determine emissions based on the number of hours the process operates and the production or feed rate (as applicable) at each specific different condition. Specific performance test requirements for each process are listed in subpart Q of the rule.

What are the Monitoring Requirements for Using a CEMS?

Report the relevant information required under 40 CFR subpart C (General Stationary Fuel Combustion Sources) for the Tier IV calculation methodology.


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