### Subpart G—Ammonia Manufacturing

#### § 98.70 Definition of source category.

The ammonia manufacturing source category comprises the process units listed in paragraphs (a) and (b) of this section.

(a) Ammonia manufacturing processes in which ammonia is manufactured from a fossil-based feedstock produced via steam reforming of a hydrocarbon.

(b) Ammonia manufacturing processes in which ammonia is manufactured through the gasification of solid and liquid raw material.

#### § 98.71 Reporting threshold.

You must report GHG emissions under this subpart if your facility contains an ammonia manufacturing process and the facility meets the requirements of either §98.2(a)(1) or (2).

#### § 98.72 GHGs to report.

You must report:

(a) \( \text{CO}_2 \) process emissions from steam reforming of a hydrocarbon or the gasification of solid and liquid raw material, reported for each ammonia manufacturing process unit following the requirements of this subpart (\( \text{CO}_2 \) process emissions reported under this subpart may include \( \text{CO}_2 \) that is later consumed on site for urea production, and therefore is not released to the ambient air from the ammonia manufacturing process unit).

(b) \( \text{CO}_2 \), \( \text{CH}_4 \), and \( \text{N}_2\text{O} \) emissions from each stationary fuel combustion unit. You must report these emissions under subpart C of this part (General Stationary Fuel Combustion Sources), by following the requirements of subpart C, except that for ammonia manufacturing processes subpart C does not apply to any \( \text{CO}_2 \) resulting from combustion of the waste recycle stream (commonly referred to as the purge gas stream).

(c) \( \text{CO}_2 \) emissions collected and transferred off site under subpart PP of this part (Suppliers of \( \text{CO}_2 \)), following the requirements of subpart PP.


### \( \text{CO}_2 \) Emissions From Pitch Volatiles Combustion (VSS and HSS)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Data source</th>
</tr>
</thead>
<tbody>
<tr>
<td>( S_c ): sulfur content in calcined coke (percent weight)</td>
<td>1.9.</td>
</tr>
<tr>
<td>( \text{Ash}_c ): ash content in calcined coke (percent weight)</td>
<td>0.2.</td>
</tr>
<tr>
<td>( \text{CD} ): carbon in skimmed dust from Soderberg cells (metric ton C/metric ton Al)</td>
<td>0.01.</td>
</tr>
</tbody>
</table>

### \( \text{CO}_2 \) Emissions From Bake Furnace Packing Materials (CWPB and SWPB)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Data source</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \text{PCC} ): annual packing coke consumption (metric tons/metric ton baked anode)</td>
<td>0.015.</td>
</tr>
<tr>
<td>( \text{BA} ): annual baked anode production (metric tons)</td>
<td>Individual facility records.</td>
</tr>
<tr>
<td>( S_{pc} ): sulfur content in packing coke (percent weight)</td>
<td>Individual facility records.</td>
</tr>
<tr>
<td>( \text{Ash}_{pc} ): ash content in packing coke (percent weight)</td>
<td>Individual facility records.</td>
</tr>
</tbody>
</table>

through (b)(5) of this section for gaseous feedstock, liquid feedstock, or solid feedstock, as applicable.

(1) Gaseous feedstock. You must calculate, from each ammonia manufacturing unit, the CO$_2$ process emissions from gaseous feedstock according to Equation G–1 of this section:

\[
\text{CO}_2\text{,G,k} = \left( \sum_{n=1}^{12} \frac{44}{12} \cdot \text{Fdstk}_{n,k} \cdot \text{CC}_n \cdot \frac{\text{MW}}{\text{MVC}} \right) \times 0.001 \quad (\text{Eq. G-1})
\]

Where:
- \(\text{CO}_2\text{,G,k}\) = Annual CO$_2$ emissions arising from gaseous feedstock consumption (metric tons).
- \(\text{Fdstk}_{n,k}\) = Volume of the gaseous feedstock used in month \(n\) (scf of feedstock).
- \(\text{CC}_n\) = Carbon content of the gaseous feedstock, for month \(n\) (kg C per kg of feedstock), determined according to 98.74(c).
- \(\text{MW}\) = Molecular weight of the gaseous feedstock (kg/kg-mole).
- \(\text{MVC}\) = Molar volume conversion factor (849.5 scf per kg-mole at standard conditions).
- \(\frac{44}{12}\) = Ratio of molecular weights, CO$_2$ to carbon.
- 0.001 = Conversion factor from kg to metric tons.
- \(k\) = Processing unit.
- \(n\) = Number of month.

(2) Liquid feedstock. You must calculate, from each ammonia manufacturing unit, the CO$_2$ process emissions from liquid feedstock according to Equation G–2 of this section:

\[
\text{CO}_2\text{,L,k} = \left( \sum_{n=1}^{12} \frac{44}{12} \cdot \text{Fdstk}_{n,k} \cdot \text{CC}_n \right) \times 0.001 \quad (\text{Eq. G-2})
\]

Where:
- \(\text{CO}_2\text{,L,k}\) = Annual CO$_2$ emissions arising from liquid feedstock consumption (metric tons).
- \(\text{Fdstk}_{n,k}\) = Volume of the liquid feedstock used in month \(n\) (gallons of feedstock).
- \(\text{CC}_n\) = Carbon content of the liquid feedstock, for month \(n\) (kg C per gallon of feedstock), determined according to 98.74(c).
- \(\frac{44}{12}\) = Ratio of molecular weights, CO$_2$ to carbon.
- 0.001 = Conversion factor from kg to metric tons.
- \(k\) = Processing unit.
- \(n\) = Number of month.

(3) Solid feedstock. You must calculate, from each ammonia manufacturing unit, the CO$_2$ process emissions from solid feedstock according to Equation G–3 of this section:

\[
\text{CO}_2\text{,S,k} = \left( \sum_{n=1}^{12} \frac{44}{12} \cdot \text{Fdstk}_{n,k} \cdot \text{CC}_n \right) \times 0.001 \quad (\text{Eq. G-3})
\]

Where:
- \(\text{CO}_2\text{,S,k}\) = Annual CO$_2$ emissions arising from solid feedstock consumption (metric tons).
- \(\text{Fdstk}_{n,k}\) = Mass of the solid feedstock used in month \(n\) (kg of feedstock).
- \(\text{CC}_n\) = Carbon content of the solid feedstock, for month \(n\) (kg C per kg of feedstock), determined according to 98.74(c).
- \(\frac{44}{12}\) = Ratio of molecular weights, CO$_2$ to carbon.
- 0.001 = Conversion factor from kg to metric tons.
- \(k\) = Processing unit.
§ 98.74 Monitoring and QA/QC requirements.

(a) You must continuously measure the quantity of gaseous or liquid feedstock consumed using a flow meter. The quantity of solid feedstock consumed can be obtained from company records and aggregated on a monthly basis.

(b) You must document the procedures used to ensure the accuracy of the estimates of feedstock consumption.

(c) You must determine monthly carbon contents and the average molecular weight of each feedstock consumed from reports from your supplier. As an alternative to using supplier information on carbon contents, you can also collect a sample of each feedstock on a monthly basis and analyze the carbon content and molecular weight of the fuel using any of the following methods listed in paragraphs (c)(1) through (c)(8) of this section, as applicable.

(1) ASTM D1945–03 Standard Test Method for Analysis of Natural Gas by Gas Chromatography (incorporated by reference, see §98.7).

(2) ASTM D1946–90 (Reapproved 2006) Standard Practice for Analysis of Reformed Gas by Gas Chromatography (incorporated by reference, see §98.7).

