MATERIAL SAFETY DATA SHEET
FOR
Coal Fly Ash
May be used to comply with OSHA's Hazard Communication Standard 29 CFR 1910.1200.
Standard must be consulted for specific requirements

Date Prepared: March 22, 1999

SECTION I  GENERAL INFORMATION

Subject: Bituminous Coal Fly Ash

Manufacturer:
Baltimore Gas and Electric
STI Processed Ash LLC.

Telephine Number for Information:
781-455-6600

SECTION II  HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

<table>
<thead>
<tr>
<th>Mineral Analysis of Ash</th>
<th>CAS Number</th>
<th>Wt. % Ignited Basis</th>
<th>OSHA PEL (mg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silica (SiO₂)</td>
<td>60676-86-0</td>
<td>40-70%</td>
<td>0.1</td>
</tr>
<tr>
<td>Crystalline Silica</td>
<td>14808-60-7</td>
<td>1-3%</td>
<td>0.1</td>
</tr>
<tr>
<td>Alumina (Al₂O₃)</td>
<td>1344-28-1</td>
<td>20-35%</td>
<td>15</td>
</tr>
<tr>
<td>Ferric Oxide (Fe₂O₃)</td>
<td>1309-37-1</td>
<td>5-15%</td>
<td>10</td>
</tr>
<tr>
<td>Potassium Oxide (K₂O)</td>
<td></td>
<td>1.6-2%</td>
<td>--</td>
</tr>
<tr>
<td>Titanium Oxide (TiO₂)</td>
<td>13463-67-7</td>
<td>1.2-1.5%</td>
<td>15</td>
</tr>
<tr>
<td>Lime (CaO)</td>
<td>1305-78-8</td>
<td>0.8 - 1.4%</td>
<td>5</td>
</tr>
<tr>
<td>Magnesia (MgO)</td>
<td>1309-48-4</td>
<td>0.1 - 0.7%</td>
<td>15</td>
</tr>
<tr>
<td>Sodium Oxide (NaO)</td>
<td>12401-86-4</td>
<td>0.1 - 0.5%</td>
<td>--</td>
</tr>
<tr>
<td>Sulfur Trioxide (SO₃)</td>
<td>7446-11-9</td>
<td>0.1 - 0.3%</td>
<td>--</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Trace Metals</th>
<th>CAS Number</th>
<th>Concentration (mg/kg)</th>
<th>OSHA PEL (mg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic (As)</td>
<td>7440-38-2</td>
<td>1 - 25</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Note: Concentrations are approximate and may vary with coal source and boiler operating conditions. The International Agency for Research on Cancer (IARC) has classified Crystalline Silica as a probable human carcinogen and Inorganic Arsenic as a human carcinogen.
SECTION III  PHYSICAL AND CHEMICAL CHARACTERISTICS

Appearance and Odor: Fine grained, gray powder. No Odor.

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boiling Point</td>
<td>N/A</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>N/A</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>N/A</td>
</tr>
<tr>
<td>Melting Point</td>
<td>N/A</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>N/A</td>
</tr>
<tr>
<td>Solubility in water</td>
<td>Insoluble</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>2.0 to 3.0</td>
</tr>
</tbody>
</table>

(UNST D854)

Note: N/A means "not applicable"

SECTION IV  FIRE AND EXPLOSION HAZARD DATA

Flammability Limits: N/A

Fire and Explosion Hazard: None

Fire Fighting Procedures: Coal ash is the final product of combustion; therefore, unusual hazards are not expected in a fire.

Flash Point: N/A

SECTION V  REACTIVITY DATA

Stability: Stable, will not polymerize.

Stable under normal conditions of storage and handling.

Conditions to avoid: None

Incompatibility: None

Hazardous Decomposition or By-Products: None Reported

SECTION VI  HEALTH HAZARD INFORMATION

Exposure Route:
- Inhalation
- Skin Contact
- Eye Contact

Ingestion: No information on the short term effects from ingestion in humans available. No observed effects in mice that ingest up to 1% coal fly ash in drinking water (Roy et. al. 1981).

Mutations: No information on mutagenicity in humans was found.

Birth Defects and Effects on Reproduction: No information on reproductive effects in humans was found.

Other Health Effects: Inhaled crystalline silica may cause pulmonary damage, resulting in silicosis. Silicosis is defined as a degenerative fibrotic lung disease. It has been determined that the pulmonary defense system of mice was significantly affected by coal fly ash (Aranyl a and Bradof, 1981).
SECTION VII  HEALTH HAZARD INFORMATION (continued)

Note: The International Agency for Research on Cancer (IARC) has classified crystalline silica as a probable human carcinogen.

Medical Conditions: No information was reported on medical conditions that may be aggravated by exposure to coal fly ash. However, emphysema and bronchitis frequently occur in cases of silicosis (Merchant et al. 1981)

Emergency and First Aid Procedures:

Inhalation: Move person to fresh air. Clear nasal passage and discourage affected individual from sniffing. If person is not breathing, contact emergency medical services and initiate basic life support.

Skin: Brush away ash particles. To avoid possible irritation, wash contaminated skin immediately with soap and water. Remove any contaminated clothing and rewash skin if necessary. If skin irritation results, obtain medical attention.

Eyes: Immediately flush the eyes for at least 15 minutes at an eyewash station. Use an appropriate flush solution or water while holding the eyelids open. Do not rub. Seek medical attention as soon as possible.

SECTION VIII  PRECAUTIONS FOR SAFE HANDLING AND USE

Personal Protection: Employees handling fly ash should wear gloves, goggles, NIOSH respiratory protection and disposable coverlets.

Storage and Handling: When storing coal fly ash in ash ponds, treat surface to avoid wind erosion of ash particles. When storing coal fly ash in landfills, the ash should be wetted and covered to avoid wind erosion of ash particles. Open trucks utilized in ash disposal should be properly covered and should be wetted.

Special Precautions and Control Measures: Employees handling fly ash should observe proper personal hygiene, wash hands, remove coverlets before eating, smoking, applying cosmetics or using toilet facilities. Local exhaust systems should be used whenever possible. Other practices such as wetting should be utilized to control dust. Compressed air should not be used.

SECTION IX  SPILL OR LEAK PROCEDURES

Spills/Releases: Fly ash should be placed in suitable containers and covered. Fly ash should be wetted where practical to control dust.

Fly ash is not considered a hazardous waste under EPA's Resource Conservation and Recovery Act (RCRA). Cool fly ash may be disposed of by adding to cement mixtures, asphalt additives, and as agricultural soil modifiers (Roy et al. 1981).

References


