# Safety Data Sheet (SDS)
## Antimony Metal (Powder)

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>Substance name:</th>
<th>Antimony Metal (Powder)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company name:</td>
<td>NIHON SEIKO CO., LTD.</td>
</tr>
<tr>
<td>Address</td>
<td>3-2 SHIMOMIYABIK-CHO SHINJUKU-KU TOKYO 162-0822 JAPAN</td>
</tr>
<tr>
<td>Charge section</td>
<td>NIHON SEIKO CO., LTD. SALES SECTION</td>
</tr>
<tr>
<td>Phone number</td>
<td>+81-3-3235-0031</td>
</tr>
<tr>
<td>Fax number</td>
<td>+81-3-3235-0034</td>
</tr>
<tr>
<td>E-mail address</td>
<td><a href="mailto:mail@nihonseiko.co.jp">mail@nihonseiko.co.jp</a></td>
</tr>
<tr>
<td>Emergency telephone number</td>
<td>NIHON SEIKO CO., LTD. NAKASE REFINERY QUALITY ASSURANCE SECTION +81-79-667-2121</td>
</tr>
</tbody>
</table>

### Recommended use and restriction on use:

Industrial materials: Glass fining agents, alloys, etc.

### 2. HAZARDS IDENTIFICATION

#### GHS classification:

**Physical hazards:**

- Out of category (Not classified)

**Health hazards:**

- Acute Toxicity (Oral): Not classified
- Acute Toxicity (Dermal): Not classified
- Acute Toxicity (Inhalation: dust/mist): Not classified
- Acute Toxicity (Inhalation: fume/vapors): Out of category
- Skin corrosion/irritation: Not classified
- Serious eye danger/eye irritation: Not classified
- Respiratory sensitization: Not classified
- Skin sensitization: Not classified
- Germ cell mutagenicity: Not classified
- Carcinogenicity: Category 2
- Reproductive toxicity: Not classified
- Specific target organ toxicity (STOT, single exposure): Not classified
- Specific target organ toxicity (STOT, repeated exposure): Not classified
- Aspiration hazard: Classification not possible

#### Environmental hazards:

- Hazardous to the aquatic environment (Acute): Classification not possible
- Hazardous to the aquatic environment (Chronic): Classification not possible
- Hazardous to the ozone layer: Not classified
### GHS label:

- **Hazard pictogram**: ❄️

#### Signal word

- **Warning**

#### Hazard statements

- **Suspected of causing cancer**

#### Precautionary statements

- **[Prevention]**
  - Obtain special instructions before use.
  - Do not handle until all safety precautions have been read and understood.
  - Wear protective gloves/protective clothing/eye protection/face protection.

- **[Response]**
  - If exposed or concerned: Get medical advice/attention.

- **[Storage]**
  - Store locked up.

- **[Disposal]**
  - Dispose of contents/container in accordance with local/regional/national/international regulations(to be specified).

### Other hazard not applicable to GHS classification hazard:

- No information.

### The summary of important signs and assumed emergency:

- No information.

### 3.COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Substance/Mixture:</th>
<th>Substance</th>
</tr>
</thead>
<tbody>
<tr>
<td>General product description:</td>
<td>Antimony</td>
</tr>
<tr>
<td>Other name:</td>
<td>Antimony Metal</td>
</tr>
<tr>
<td>Chemical property (Chemical formula etc):</td>
<td>Sb</td>
</tr>
<tr>
<td>CAS number:</td>
<td>7440-36-0</td>
</tr>
<tr>
<td>Component and its content:</td>
<td>It has indicated to the last page for every grade.</td>
</tr>
<tr>
<td>EINECS number:</td>
<td>231-146-5</td>
</tr>
<tr>
<td>Impurity and stabilizing additive that contribute to GHS Classification:</td>
<td>It has indicated to the last page for every grade.</td>
</tr>
</tbody>
</table>

### 4.FIRST AID MEASURES

#### Following inhalation:

- Move affected person to fresh air.
- If you feel sick, seek medical attention.

#### Following skin contact:

- Wash with water and remove clothes if necessary.
- Flush eyes thoroughly with water, also under eyelids.
- Rinse mouth with water.
- If you feel sick, seek medical attention.

#### After ingestion:

- Acute or delayed effects are not anticipated for antimony.

#### Most important symptoms and effects, both acute and delayed:

- Protection of person who do first aid:
- Special precaution statement for doctor:
- No information.

### 5.Fire-fighting measure

#### Extinguishing media:

- Use fire-fighting measures that suit the environment.
- The product is not combustible and does not support the combustion.

#### Unsuitable extinguishing media:

- No information.
### Special hazards arising from the substance or mixture:
- Antimony trioxide dust.

### Specific fire-fighting:
- Move the product to安全 place promptly when it is a fire in the surrounding.
- If it is non-transferable, sprinkle the container and the circle with water and cool down.

### Protection for fire-fighter:
- Wear suitable protective equipment in fire-fighting.

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### 6. Accidental release measures

**Personal precautions, protective equipment and emergency procedures:**
- Avoid formation of dust.
- Ensure adequate ventilation.
- Keep unprotected persons away.
- Although the substance has no acute toxicity, it is advised to avoid contact with skin, eyes, and clothing – wear suitable protective equipment.
- Avoid inhalation of dust.

**Environmental precautions:**
- It is advised that in the event of an accidental release the product should be prevented from reaching the sewage system or any water course and penetrating the soil.
- Dispose of spilled material in accordance with the relevant regulations.

**Methods and material for containment and cleaning up:**
- In any case avoid dust formation.
- Sweep all spilled material or use an appropriate industrial vacuum cleaner.
- Collect spilled material in suitable containers or closed plastic bags for recovery or disposal.

**Prevention of second disaster:**
- For more information on exposure controls/personal protection or disposal considerations, check section 8 and 13 of this safety data sheet.

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### 7. Handling and storage

**Handling:**
- Provide a local dust collection system in the places where dust can be generated. Provide dust protective mask in the handling position.
- Do not handle until all safety precautions have been read and understood.
- Work by wearing suitable protective equipment.
- Check section 10.

**Avoid contact**
- Avoid inhalation or ingestion.
- General occupational hygiene measures are required to ensure a safe handling of the substance.
- These measures involve good personal and housekeeping practices (i.e. regular cleaning with suitable cleaning devices).
- No eating, drinking and smoking at the workplace.
- Wash hands after use.
- Remove contaminated clothing and protective equipment before entering eating areas.
- Shower and change clothes at end of work shift.
- Do not wear contaminated clothing at home.
- Do not blow dust off with compressed air.

**Storage:**
- Store in well ventilated dry area with low humidity and sealed state.
- Establish whether the container conforms test standard on a voluntary basis.
### 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Engineering controls:**
Prevent formation of dust where possible. Ensure appropriate ventilation/exhaustion at machinery and places where dust can be generated. Any deposit of dust which cannot be avoided must be regularly removed using preferably appropriate industrial vacuum cleaners or central vacuum systems. Waste air is to be released into the atmosphere only when it has passed through suitable dust separators. Waste water generated during the production process or cleaning operations should be collected and should preferably be treated in an on-site waste water treatment plant which ensures efficient removal of antimony.

**Exposure control limits**

<table>
<thead>
<tr>
<th>Effect of over exposure:</th>
<th>0.5mg/m³ TLV-TWA (Antimony and compounds, as Sb)</th>
</tr>
</thead>
</table>

**Personal protective equipment:**

- Respiratory protection
- Hand protection
- Eye protection
- Skin and body protection
- Dust protective mask (As appropriate)
- Protective gloves
- Protective glasses
- Protective high boots and cloth
- Avoid environmental discharge.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance:**

<table>
<thead>
<tr>
<th>Physical state</th>
<th>Solid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure</td>
<td>Powder</td>
</tr>
<tr>
<td>Color</td>
<td>Black</td>
</tr>
</tbody>
</table>

**Odor:**
Odorless

**Odor threshold:**
Not applicable as odorless.

**pH:**
Not applicable to solids.

**Melting point:**
630 °C

**Initial boiling point and boiling range:**
1380 °C

**Flash point:**
Not applicable as only relevant for liquids or low melting point solids.

**Evaporation rate:**
Not applicable to solids.

**Flammability (solid, gas):**
Non-flammable. This substance does not contain any chemical groups that might lead to spontaneous ignition a short time after coming in contact with air at room temperature (circa 20°C). Furthermore, long-term industrial experience in handling shows that the substance does not ignite in contact with air.

**Upper/lower flammability or explosive limits:**
Non explosive. Antimony exhibits no chemical groups indicating explosive properties.

**Vapor pressure:**
1.66mmHg (800 °C)

**Vapor density:**
No information.

**Relative density:**
6.7

**Solubility(ies):**
18.2 mg/l (20°C - ISO 6341 medium-loading 2g Sb/l-pH 4.6)

**Partition coefficient n-octanol/water:**
No information.

**Auto-ignition temperature:**
Not relevant since this would require heat to be developed either by reaction of this substance with oxygen or by exothermic decomposition and which is not lost rapidly enough to the surroundings.

**Decomposition temperature:**
Cannot decompose.
### 10. STABILITY AND REACTIVITY

<table>
<thead>
<tr>
<th>Reactivity:</th>
<th>No information.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical stability:</td>
<td>Under normal conditions of use and storage, the product is stable.</td>
</tr>
<tr>
<td>Possibility of hazardous reactions:</td>
<td>Reaction with H\textsuperscript{-}equivalents releases antimony hydride (stibine, SbH\textsubscript{3}). When heated in air, it burns with a blue flame and antimony trioxide is generated. Antimony pentachloride is generated and catch fire if Antimony meets chlorine. If Antimony reacts with bromine and iodine, it reacts violently at ordinary temperatures. Sulfur dioxide is generated if it meets hot sulfuric acid. The mixture of antimony powder and nitrate salt has the quality of explosiveness. Antimony reacts with salt of permanganic acid, become reduced and antimonate is generated.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Conditions to avoid:</th>
<th>Avoid dust formation and high temperature</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Hazardous decomposition products:</th>
<th>Not applicable.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other:</td>
<td>No information.</td>
</tr>
</tbody>
</table>

### 11. TOXICOLOGICAL INFORMATION

<table>
<thead>
<tr>
<th>Acute Toxicity (Oral):</th>
<th>Based on read-across from antimony trioxide, antimony does not require a classification. LD\textsubscript{50} rat &gt; 20,000 mg/kg bw (Antimony trioxide) (Fleming, 1938; Gross et al, 1955; Weil et al, 1978)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Toxicity (Dermal):</td>
<td>Based on read-across from antimony trioxide, antimony does not require a classification. LD\textsubscript{50} rabbit &gt; 8,300 mg/kg bw (Gross et al, 1955) (Antimony trioxide)</td>
</tr>
<tr>
<td>Acute Toxicity (Inhalation: dust/mist):</td>
<td>Based on read-across from antimony trioxide, antimony does not require a classification. LC\textsubscript{50} rat &gt; 5,200 mg/m\textsuperscript{3} (Leuschner, 2006) (Antimony trioxide)</td>
</tr>
<tr>
<td>Acute Toxicity (Inhalation: fume/vapors):</td>
<td>Out of category to solids.</td>
</tr>
<tr>
<td>Skin corrosion/irritation:</td>
<td>Causes mild skin irritation. Especially can cause dermatitis on contact with sweat-damp region over again or prolonged contact. Dermatitis that known as “antimony spots” can cause rash after itchiness.</td>
</tr>
<tr>
<td>Serious eye danger/irritation:</td>
<td>Antimony trioxide is not irritating to eyes. (Leuschner, 2005)</td>
</tr>
<tr>
<td>Respiratory or skin sensitization:</td>
<td>Not skin sensitizing (Chevalier, 2005; Moore, G.E, 1994) /no respiratory sensitizer. Based on read-across from antimony trioxide, antimony does not require a classification.</td>
</tr>
<tr>
<td>Other:</td>
<td>Not skin sensitizing (Chevalier, 2005; Moore, G.E, 1994) /no respiratory sensitizer. Based on read-across from antimony trioxide, antimony does not require a classification.</td>
</tr>
</tbody>
</table>
Germs cell mutagenicity: Antimony trioxide does not cause systemic mutagenicity in vivo after oral administration. Negative in vivo results on chromosome aberrations and micronuclei were obtained in two different species via oral application – mouse (Elliot et al., 1998) and rat (Whitwell, 2006), (Kirkland et al., 2007). Based on read-across from antimony trioxide, antimony does not require a classification.

Carcinogenicity:

- Japan Society for Occupational Health
- ACGIH
- EPA
- NTP
- EU

Not classified as carcinogen. But antimony trioxide is classified as inhalation carcinogen category 2 (according to Regulation (EC) 1272/2008). Based on read across from antimony trioxide, antimony powder gets the same carcinogen classification, and is classified as inhalation carcinogen category 2.

IARC

Reproductive toxicity: Based on the available long-term toxicity studies in rodents (Omura et al, 2002) and the relevant information on the toxicokinetic behavior in rats, it is concluded that antimony trioxide does not present a reproductive toxicity hazard. Based on read-across from antimony trioxide, antimony does not require a classification.

STOT single exposure: Antimony trioxide is not classified as STOT, single exposure. Based on read-across from antimony trioxide, antimony does not require a classification.

STOT repeated exposure: Antimony trioxide is not classified as STOT, repeated exposure. Based on read-across from antimony trioxide, antimony does not require a classification.

Aspiration hazard: Classification not possible, because of a lack of information.

Other: No information.

12. ECOLOGICAL INFORMATION
Antimony metal and antimony containing compounds will dissolve and generate antimony ions. The environmental section will therefore discuss the fate of antimony in general.

Ecotoxicity: The test result is given below

**Acute aquatic toxicity test results:**

<table>
<thead>
<tr>
<th>Marine fish</th>
<th>96 h LC50</th>
<th>≤ 6.9 mg Sb/L (Takayanagi, 2001)</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Red seabream, Pargus major]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freshwater fish</td>
<td>96 h LC50</td>
<td>≤ 14.4 mg Sb/L (Brooke et al, 1986)</td>
</tr>
<tr>
<td>[Pimephales promelas]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Invertebrates</td>
<td>96 h LC50</td>
<td>= 1.77 mg Sb/L (TAI, 1990)</td>
</tr>
<tr>
<td>[Chlorohydra viridissimus]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Algae</td>
<td>72 h ErC50</td>
<td>&gt; 36.6 mg Sb/L (Heijerick et al, 2004)</td>
</tr>
<tr>
<td>[Pseudokirchneriella subcapitata]</td>
<td>(growth rate)</td>
<td></td>
</tr>
<tr>
<td>Plants</td>
<td>4 d EC50</td>
<td>&gt; 25.5 mg Sb/L (Brooke et al, 1986)</td>
</tr>
<tr>
<td>[Lemna minor]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Chronic aquatic toxicity test results:**

| Fish [Pimephales promelas] | 28 d NOEC/LOEC | = 1.13/2.31 mg Sb/L (Kimball, 1978) |
| Invertebrates [Daphnia magna] | 21 d NOEC/LOEC | = 1.74/3.13 mg Sb/L (Heijerick et al, 2003) |
Antimony Metal (Powder)

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persistence and degradability</td>
<td>Antimony cannot be degraded, but may be transformed between different phases, chemical species, and oxidation states.</td>
</tr>
<tr>
<td>Bioaccumulative potential</td>
<td>Bioaccumulation of antimony by both aquatic and terrestrial organisms is low. A BCF of 40 has been determined for aquatic organisms and a BSAF of 1 for earthworms.</td>
</tr>
<tr>
<td>Mobility in soil</td>
<td>$\log K_{p} = 2.07$</td>
</tr>
<tr>
<td>Hazardous to the ozone layer</td>
<td>Antimony is not expected to contribute to ozone depletion, ozone formation, global warming or acidification.</td>
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</tbody>
</table>

### 13. DISPOSAL CONSIDERATIONS

**Waste from residues:** Dispose of contents in accordance with local/regional/national/international regulations (to be specified).

**Contaminated container/packing:** Dispose of container in accordance with local/regional/national/international regulations (to be specified).

### 14. TRANSPORT INFORMATION

**International regulation:**

- **UN code:** 2871
- **Proper shipping name:** Antimony powder
- **UN Class:** 6.1
- **Packing group:** III
- **Marine pollutant:** Not applicable.

### 15. REGULATORY INFORMATION

**Worldwide chemical inventories:**

- **ENCS (Japan):** Not listed
- **TSCA (USA):** Listed
- **ECL (Korea):** KE-01834
- **DSL (Canada):** Listed
- **PICCS (Philippines):** Listed
- **AICS (Australia):** Listed
- **IECSC (China):** Listed
- **NECI (Taiwan):** Listed

**Other regulatory information:** Follow regulation and law of each country or region.

### 16. OTHER INFORMATION

**Treatment of stated contents:** The contents of this information sheet are based on the data, information available at moments, and may be revised by additional data coming up in future. The precautions mentioned in this sheet are intended for normal use of this material, when used in unusual manner, the proper safety method is required. Read this SDS before use the ingredients. Keep this SDS in your file for your timely reference. The contents of this information sheet are not warranted and the company can accept no liability to any customer or any other person.

**References:**

1. GHS taiou guideline
   - Edit: Japan Chemical Industry Association
   - Issuance: Japanese Standards Association
2. Antimony Trioxide SDS form of International Antimony Association (i2a)
Each Antimony Metal grades of purity and impurity content.

<table>
<thead>
<tr>
<th></th>
<th>METAL-P</th>
<th>METAL-H 3N (Only powder)</th>
<th>METAL-H 4N (Only powder)</th>
<th>METAL-H 4.5N (Only powder)</th>
<th>METAL-H 5N (Only powder)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sb(%)</td>
<td>99.8</td>
<td>99.9</td>
<td>99.99</td>
<td>99.995</td>
<td>99.999</td>
</tr>
<tr>
<td>As(%)</td>
<td>0.04</td>
<td>0.02</td>
<td>4ppm</td>
<td>2ppm</td>
<td>1ppm</td>
</tr>
<tr>
<td>Pbi(%)</td>
<td>0.06</td>
<td>0.04</td>
<td>11ppm</td>
<td>5ppm</td>
<td>1ppm</td>
</tr>
</tbody>
</table>