# Safety Data Sheet

## 1 Identification of substance

**Product details:**
- **Trade name:** Arsenic Metal
- **Formula:** As

**Manufacturer/Emergency information:**
- **FURUKAWA DENSHI CO., LTD.**
  - 20, Kodate Kamiyoshima, Yoshimamachi, Iwaki, Fukushima, 970-1153, JAPAN
  - **Tel:** +81-246-36-2016  **Fax:** +81-246-36-3973

**Supplier:**
- **FURUKAWA DENSHI CO., LTD. Sales department**
  - 2-2-3, MARUNOUCHI, CHIYODA-KU, TOKYO, 100-8370, JAPAN
  - **Tel:** +81-3-3212-3967  **Fax:** +81-3-3212-6559

**Department issuing SDS:** High-purity material section

## 2 Hazards identification

**Hazard description:** Xn Harmful

- **GHS acute toxicity (oral):** Hazard category 4
- **GHS serious eye damage/eye irritation:** Hazard category 2A
- **GHS carcinogenicity:** Hazard category 1A
- **GHS toxic to reproduction:** Hazard category 2
- **GHS specific target organ systemic toxicity (single exposure):** Hazard category 1
- **GHS specific target organ systemic toxicity (repeated exposure):** Hazard category 1
- **GHS aquatic toxicity (chronic):** Hazard category 4

![GHS Symbol](image)

**GHS Signal word:** Danger

**GHS Hazard statement:**
- Harmful if swallowed.
  - Causes serious eye irritation.
  - May cause cancer.
  - Suspected of damaging fertility or the unborn child.
  - Causes damage to organs.
  - Causes damage to organs through prolonged or repeated exposure.
  - May cause long lasting harmful effects to aquatic life.

Arsenic is human carcinogen.
Toxic by inhalation and if swallowed.
Repeated and/or prolonged contact may cause dermatitis.
Repeated exposure may produce adverse effects on the lung, liver, and kidney.

**Information pertaining to particular dangers for man and environment:**
- R23/25 Toxic by inhalation and if swallowed.
3 Composition/Data on components

Chemical characterization: Pure Element
Description: Arsenic, Grey arsenic
CAS#: 7440-38-2

4 First aid measures

General information:
Immediately remove any clothing soiled by the product.
Remove breathing apparatus only after contaminated clothing has been completely removed.
In case of irregular breathing or respiratory arrest provide artificial respiration.

After inhalation:
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Seek immediate medical advice.

After skin contact:
Immediately wash with water and soap and rinse thoroughly.
If symptoms occur, seek immediate medical advice.

After eye contact:
Flush with water for 15 minutes. Contact physician immediately.

After swallowing:
Wash out mouth with water. Induce vomiting (ONLY IN CONSCIOUS PERSONS!). Immediately call for medical help.

5 Fire fighting measures

Suitable extinguishing agents:
Use fire-fighting measures that suit the surrounding fire.
Carbon dioxide, sand, extinguishing powder, water spray, foam.

Special hazards caused by the material, its products of combustion or resulting gases:
Toxic fumes of arsenic and oxides of arsenic are evoked at high temperatures.
Reaction with acid and/or steam may release toxic arsenic gas.

Protective equipment:
Wear self-contained respirator.
Wear fully protective impervious suit.

6 Accidental release measures

Person-related safety precautions:
Mount respiratory protective device.
 Wear protective equipment including gloves and appropriate respiratory projection.
 Keep unprotected persons away.
 Ensure adequate ventilation

Measures for environmental protection:
Prevent any release to drains or watercourses or emission of dust of fumes to air.
Do not allow material to be released to the environment without proper governmental permits.

Measures for cleaning/collection:
Collect all material and transfer to closed container for disposal as hazardous waste.
Dispose contaminated material as waste according to item 13.
Do not let this chemical enter the environment.
Ensure adequate ventilation.

Additional information:
See Section 7 for information on safe handling
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

Handling:
Information for safe handling:
Handle under dry argon.
Ensure good ventilation at the workplace.
Open and handle container with care.
Wear respiratory protection, gloves & eye protection.

Information about protection against explosions and fires:
The product is not flammable

Storage:
Information about storage in one common storage facility:
Separated from food and feedstuffs.
Store away from oxidizing agents, acids, halogens.

Further information about storage conditions:
Store under dry inert gas.
Keep container tightly sealed.
Store in cool, dry place in tightly closed containers.
Store under lock and key and with access restricted to technical experts or their assistants only.

Do not take working clothes home.

8 Exposure controls and personal protection

Inhalation risk: Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly, when dispersed.

Additional information about design of technical systems:
Local exhaust ventilation for all mechanical or chemical processing operations.
High efficiency dust filtration on extract exhaust outlets.
Extract ducting may contain finely divided dust or particles.
Maintenance of processing and extract equipment should be carried out using full personal protective equipment.
Refer to NIOSH criteria document #75-149

Components with limit values that require monitoring at the workplace:
Arsenic, elemental, and inorganic compounds (except arsine), as As
ACGIH TLV 0.01mg/m³
Depending on the degree of exposure, periodic medical examination is indicated.

Personal protective equipment:

General protective and hygienic measures:
The usual precautionary measures for handling chemicals should be followed.
Keep away from foodstuffs, beverages and feed.
Remove all soiled and contaminated clothing immediately.
Wash hands before breaks and at the end of work.
Store protective clothing separately.

Breathing equipment: Use suitable respirator when high concentrations are present.

Protection of hands: Protective gloves.

Eye protection: Safety glasses. Full-face protection.

Body protection: Protective work clothing.
9 Physical and chemical properties:

Form: solid in various forms (lump, chunk, granule, powder)
Color: Silver gray
Odor: No odor

<table>
<thead>
<tr>
<th>Change in condition</th>
<th>Value/Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melting point/Melting range:</td>
<td>817°C (3.647700MPa)</td>
</tr>
<tr>
<td>Boiling point/Boiling range:</td>
<td>Not determined</td>
</tr>
<tr>
<td>Sublimation temperature / start:</td>
<td>615°C (0.101325MPa)</td>
</tr>
<tr>
<td>Flash point:</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flammability (solid, gaseous):</td>
<td>Product is not flammable.</td>
</tr>
<tr>
<td>Ignition temperature:</td>
<td>Not determined</td>
</tr>
<tr>
<td>Danger of explosion:</td>
<td>Product does not present an explosion hazard.</td>
</tr>
<tr>
<td>Decomposition temperature:</td>
<td>Not determined</td>
</tr>
<tr>
<td>Explosion limits:</td>
<td>Not determined</td>
</tr>
<tr>
<td>Lower:</td>
<td>Not determined</td>
</tr>
<tr>
<td>Upper:</td>
<td>Not determined</td>
</tr>
<tr>
<td>Vapor pressure:</td>
<td>Not determined</td>
</tr>
<tr>
<td>Density:</td>
<td>5.72 g/cm³</td>
</tr>
<tr>
<td>Solubility in / Miscibility with:</td>
<td>Water: none</td>
</tr>
</tbody>
</table>

10 Stability and reactivity

Thermal decomposition:
Material may emit toxic metal oxide fumes (As2O3) if heated in air.

Conditions to be avoided: Excessive heating.

Materials to be avoided:
Oxidizing agents, Halogens, Air, Acids, Bases.

Dangerous reactions:
Contacts with acids liberates toxic gas.
Contacts with bases liberate toxic gas.
Reacts with halogens to produce Arsenic-halide.

Dangerous products of decomposition:
Hydrogen arsenide (Arsine, AsH3 bases contact under heating)
Arsenic halide (e.g. AsCl3 Cl gas contact)
Arsenic oxides (e.g. As2O3 heating in air)
11 Toxicological information

**Exposure Routes:** The substance can be absorbed into the body by inhalation of its aerosol and by ingestion of dust or particles. Inhalation of dust, arsine generated by chemical reaction or arsenic oxides formed by heating on air.

**Acute toxicity:**
Acute arsenic poisoning from ingestion results in marked irritation of the stomach and intestines with nausea, vomiting and diarrhea. In severe cases, the vomitus and stools are bloody and the patient goes into collapse and shock with weak, rapid pulse, cold sweats, coma and death.

High atmospheric concentrations may lead to systemic toxic effects.
Ingestion may cause nausea, vomiting, diarrhea or shock.

**Primary irritant effect:**
Inhalation: Cough, sore throat, shortness of breath, weakness. (See Ingestion).
On the skin: Redness, irritant to skin and mucous membranes.
On the eye: Redness, irritating effect.

**Ingestion:** Abdominal pain, diarrhoea, nausea, vomiting. Burning sensation in the throat and chest. Shock or collapse. Unconsciousness.

**Sensitization:** No sensitizing effects known.

**Subacute to chronic toxicity:**
Chronic arsenic poisoning may cause disturbances of the digestive system such as loss of appetite, cramps, nausea, constipation or diarrhea.

Arsine, if generated, is a very toxic, flammable gas. The chief effects are hemolysis. Arsine destroys red blood cells and can cause widespread oxygen injury. Inhalation can cause abdominal pain, confusion, dizziness, headache, nausea, shortness of breath, vomiting, and weakness.

**Additional toxicological information:**
To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

EPA-A: Human carcinogen: sufficient evidence from epidemiological studies to support a causal association between exposure and cancer.

IARC-1: Carcinogenic to humans: sufficient evidence of carcinogenicity.

NTP-1: Known to be carcinogenic: sufficient evidence from human studies.

Carcinogen as defined by OSHA.

ACGIH A1: Confirmed human carcinogen: Agent is carcinogenic to humans based on epidemiological studies of, or convincing clinical evidence in, exposed humans.

12 Ecological information

**General notes:** The substance is toxic to aquatic organisms. It is strongly advised not to let the chemical enter into the environment because it persists in the environment.

Do not allow material to be released to the environment without proper governmental permits.

13 Disposal considerations

**Product:**

**Recommendation**
Consult state, local or national regulations for proper disposal.

**Unclean packaging:**

**Recommendation:**
Disposal must be made according to official regulations.
14 Transport information

Do not transport with food and feedstuffs. Marine pollutant.

Maritime transport IMDG:
IMDG Class: 6.1
UN Number: 1558
Packaging group: II
Proper shipping name: Arsenic

Air transport ICAO-TI and IATA-DGR:
ICAO/IATA Class: 6.1
UN/ID Number: 1558
Packaging group: II
Proper shipping name: Arsenic

15 Regulations

Product related hazard information:
Risk phrases:
R23/25 Toxic by inhalation and if swallowed.

Safety phrases:
S1/2 Keep locked up/ out of the reach of children.
S20/21 When using do not eat, drink or smoke.
S22 Do not breathe dust.
S28 After contact with skin, wash immediately with plenty of water.
S41 In case of fire and/or explosion do not breathe fumes.
S45 In case of accident or if you feel unwell, seek medical advice immediately.

National regulations:
All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical Substance Inventory. Consult state, local or national regulations for proper use, disposal, and transport.

Information about limitation of use:
For use only by technically qualified individuals.

16 Other information:

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgment of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.