SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name: Arsenic
Product Number: 202657
Brand: Aldrich
Index-No.: 033-001-00-X
REACH No.: A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.
CAS-No.: 7440-38-2

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses: Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company: Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO  63103
UNITED STATES
Telephone: +1 314 771-5765
Fax: +1 800 325-5052

1.4 Emergency telephone

Emergency Phone #: 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008
Acute toxicity, Oral (Category 3), H301
Acute toxicity, Inhalation (Category 3), H331
Skin irritation (Category 2), H315
Serious eye damage (Category 1), H318
Carcinogenicity (Category 1A), H350
Short-term (acute) aquatic hazard (Category 1), H400
Long-term (chronic) aquatic hazard (Category 1), H410
2.2 Label elements

**Labelling according Regulation (EC) No 1272/2008**

**Pictogram**

<table>
<thead>
<tr>
<th>Signal Word</th>
<th>Danger</th>
</tr>
</thead>
</table>

**Hazard statement(s)**

- H301 + H331: Toxic if swallowed or if inhaled.
- H315: Causes skin irritation.
- H318: Causes serious eye damage.
- H350: May cause cancer.
- H410: Very toxic to aquatic life with long lasting effects.

**Precautionary statement(s)**

- P273: Avoid release to the environment.
- P280: Wear protective gloves/ protective clothing/ eye protection/ face protection.
- P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
- P302 + P352: IF ON SKIN: Wash with plenty of water.
- P304 + P340 + P311: IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor.
- P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

**Supplemental Hazard Statements**

none

**Reduced Labeling (<= 125 ml)**

**Pictogram**

<table>
<thead>
<tr>
<th>Signal Word</th>
<th>Danger</th>
</tr>
</thead>
</table>

**Hazard statement(s)**

- H350: May cause cancer.
- H318: Causes serious eye damage.
- H301 + H331: Toxic if swallowed or if inhaled.

**Precautionary statement(s)**

- P280: Wear protective gloves/ protective clothing/ eye protection/ face protection.
- P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
- P304 + P340 + P311: IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor.
- P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

**Supplemental Hazard Statements**

none
2.3 Other hazards
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.1 Substances

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>arsenic</td>
<td>Acute Tox. 3; Skin Irrit. 2; Eye Dam. 1; Carc. 1A; Aquatic Acute 1; Aquatic Chronic 1; H301, H331, H315, H318, H350, H400, H410 M-Factor - Aquatic Acute: 10 M-Factor - Aquatic Chronic: 1</td>
<td>&lt;= 100 %</td>
</tr>
</tbody>
</table>

CAS-No.: 7440-38-2
EC-No.: 231-148-6
Index-No.: 033-001-00-X

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance.

If inhaled
After inhalation: fresh air. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

In case of skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Consult a physician.

In case of eye contact
After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.

If swallowed
If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible.
4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture
Nature of decomposition products not known.
Not combustible.
Ambient fire may liberate hazardous vapours.

5.3 Advice for firefighters
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 Further information
Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Advice for non-emergency personnel: Avoid generation and inhalation of dusts in all circumstances. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

6.2 Environmental precautions
Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up
Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully. Dispose of properly. Clean up affected area. Avoid generation of dusts.

6.4 Reference to other sections
For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Advice on safe handling
Work under hood. Do not inhale substance/mixture.

Hygiene measures
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions
Tightly closed. Dry. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons.

Storage class
Storage class (TRGS 510): 6.1A: Combustible, acute toxic Cat. 1 and 2 / very toxic hazardous materials

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

8.2 Exposure controls

Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Tightly fitting safety goggles

Skin protection
This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0,11 mm
Break through time: 480 min
Material tested: KCL 741 Dermatril® L

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0,11 mm
Break through time: 480 min
Material tested: KCL 741 Dermatril® L

Body Protection

protective clothing
**Respiratory protection**
required when dusts are generated.
Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.
Recommended Filter type: Filter type P3

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

**Control of environmental exposure**
Do not let product enter enter drains.

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**SECTION 9: Physical and chemical properties**

**9.1 Information on basic physical and chemical properties**

<table>
<thead>
<tr>
<th>a) Physical state</th>
<th>powder</th>
</tr>
</thead>
<tbody>
<tr>
<td>b) Color</td>
<td>gray</td>
</tr>
<tr>
<td>c) Odor</td>
<td>No data available</td>
</tr>
<tr>
<td>d) Melting point/freezing point</td>
<td>Melting point/range: 817 °C - lit.</td>
</tr>
<tr>
<td>e) Initial boiling point and boiling range</td>
<td>613 °C - lit.</td>
</tr>
<tr>
<td>f) Flammability (solid, gas)</td>
<td>No data available</td>
</tr>
<tr>
<td>g) Upper/lower flammability or explosive limits</td>
<td>No data available</td>
</tr>
<tr>
<td>h) Flash point</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>
| i) Autoignition temperature | > 430 °C  
does not ignite |
| j) Decomposition temperature | No data available |
| k) pH | No data available |
| l) Viscosity | Viscosity, kinematic: No data available  
Viscosity, dynamic: No data available |
| m) Water solubility | ca.0,0106 g/l at 20 °C - OECD Test Guideline 105- slightly soluble |
| n) Partition coefficient: n-octanol/water | Not applicable for inorganic substances |
| o) Vapor pressure | No data available |
| p) Density | 5,727 g/mL at 25 °C - lit.  
Relative density | 5,6 at 22,4 °C - OECD Test Guideline 109 |
9.2 Other safety information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
No data available

10.2 Chemical stability
The product is chemically stable under standard ambient conditions (room temperature).

10.3 Possibility of hazardous reactions
Exothermic reaction with:
- Aluminum
- Bromine
- Bromates
- Chlorates
- Iodates
- Nitric acid
Risk of ignition or formation of inflammable gases or vapours with:
- Nitrates
- Alkali metals
- Zinc
- Reducing agents
- Strong oxidizing agents
- Risk of explosion with:
  - Potassium permanganate
  - Azides
  - Halogen-halogen compounds
  - Peroxides
  - Nitrogen trichloride

10.4 Conditions to avoid
Heat. Exposure to air may affect product quality.
No information available

10.5 Incompatible materials
No data available

10.6 Hazardous decomposition products
In the event of fire: see section 5
SECTION 11: Toxicological information

11.1 Information on toxicological effects

**Acute toxicity**
LD50 Oral - Mouse - 145 mg/kg
Remarks: Behavioral: Ataxia. Diarrhea
(RTECS)
Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)
Acute toxicity estimate Inhalation - 4 h - 0,51 mg/l - dust/mist

(Expert judgment)
Dermal: No data available

**Skin corrosion/irritation**
Skin - In vitro study
Result: Irritating to skin. - 15 min
Remarks: (ECHA)

**Serious eye damage/eye irritation**
Eyes - Rabbit
Result: Causes serious eye damage. - 24 h
(OECD Test Guideline 405)

**Respiratory or skin sensitization**
Maximization Test - Guinea pig
Result: negative
(OECD Test Guideline 406)

**Germ cell mutagenicity**
Test Type: Ames test
Test system: Escherichia coli
Result: negative
Remarks: (ECHA)

**Carcinogenicity**
May cause cancer. Positive evidence from human epidemiological studies.

**Reproductive toxicity**
No data available

**Specific target organ toxicity - single exposure**
No data available

**Specific target organ toxicity - repeated exposure**
No data available

**Aspiration hazard**
No data available

11.2 Additional Information

**Endocrine disrupting properties**

**Product:**
Assessment The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU)
The life science business of Merck operates as MilliporeSigma in
the US and Canada

RTECS: CG0525000
To the best of our knowledge, the chemical, physical, and toxicological properties have not
been thoroughly investigated.

The following applies to arsenic and its compounds in general: they take effect as capillary
and enzyme toxins. Symptoms of arsenic poisoning: acute: after inhalation, mucosal
irritations with coughing, dyspnoea, pain in the thorax. Perforations within the respiratory
tract are possible. After oral uptake, gastrointestinal disorders with vomiting, diarrhoea,
and spasms, CNS disorders with headache, confusion, shaking fits and disturbed
consciousness, cardiovascular disorders all the way to circulatory collapse. Chronic:
exanthema, dermal lesions in the form of hyperkeratosis and hypermelanosis, loss of hair,
conjonctivitis and polyneuropathy, impaired hepatic function, and renal damage. After
accumulation in the liver, kidneys, and skin, arsenic is eliminated from the organism only
slowly. Experience has shown arsenic compounds to be carcinogenic in man.

Other dangerous properties can not be excluded.

This substance should be handled with particular care.

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish 
static test LC50 - Oreochromis mossambicus (Mozambique tilapia) - 28.68 mg/l - 96 h
Remarks: (ECHA)

Toxicity to daphnia and other aquatic invertebrates 
static test EC50 - Bosmina longirostris (water flea) - 0.85 mg/l - 48 h
Remarks: (ECHA)

Toxicity to algae 
static test NOEC - Macrocystis pyrifera (brown algae) - 0.04 mg/l - 42 h
Remarks: (ECHA)

Toxicity to bacteria 
static test EC50 - activated sludge - 10.6 mg/l - 10 Days
Remarks: (ECHA)

12.2 Persistence and degradability

The methods for determining biodegradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent,
bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at
levels of 0.1% or higher.
12.6 Endocrine disrupting properties

**Product:**
Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects
No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

**Product**
See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14: Transport information

14.1 UN number
ADR/RID: 1558   IMDG: 1558   IATA: 1558

14.2 UN proper shipping name
ADR/RID: ARSENIC   IMDG: ARSENIC   IATA: Arsenic

14.3 Transport hazard class(es)
ADR/RID: 6.1   IMDG: 6.1   IATA: 6.1

14.4 Packaging group
ADR/RID: II   IMDG: II   IATA: II

14.5 Environmental hazards
ADR/RID: yes   IMDG Marine pollutant: yes   IATA: no

14.6 Special precautions for user
No data available

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

**Authorisations and/or restrictions on use**
REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII)

**National legislation**

The life science business of Merck operates as MilliporeSigma in the US and Canada

Other regulations
Observe work restrictions regarding maternity protection in accordance to Dir 92/85/EEC or stricter national regulations where applicable.

Take note of Dir 94/33/EC on the protection of young people at work.

15.2 Chemical Safety Assessment
For this product a chemical safety assessment was not carried out

SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3.

- H301 Toxic if swallowed.
- H301 + H331 Toxic if swallowed or if inhaled.
- H315 Causes skin irritation.
- H318 Causes serious eye damage.
- H331 Toxic if inhaled.
- H350 May cause cancer.
- H400 Very toxic to aquatic life.
- H410 Very toxic to aquatic life with long lasting effects.

Further information
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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