1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers
Product name : Cadmium sulfide
Product Number : 208183
Brand : Aldrich
Index-No. : 048-010-00-4
CAS-No. : 1306-23-6

1.2 Relevant identified uses of the substance or mixture and uses advised against
Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet
Company : Sigma-Aldrich Inc.
3050 Spruce Street
ST. LOUIS MO  63103
UNITED STATES
Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone number
Emergency Phone # : +1-703-527-3887

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Acute toxicity, Oral (Category 4), H302
Germ cell mutagenicity (Category 2), H341
Carcinogenicity (Category 1B), H350
Reproductive toxicity (Category 2), H361
Specific target organ toxicity - repeated exposure (Category 1), H372
Acute aquatic toxicity (Category 1), H400
Chronic aquatic toxicity (Category 1), H410

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

2.2 GHS Label elements, including precautionary statements
Pictogram

Signal word : Danger
Hazard statement(s)
H302 : Harmful if swallowed.
H341 : Suspected of causing genetic defects.
H350 : May cause cancer.
H361 Suspected of damaging fertility or the unborn child.
H372 Causes damage to organs through prolonged or repeated exposure.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statement(s)
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P391 Collect spillage.
P405 Store locked up.
P501 Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances
Formula : CdS
Molecular weight : 144.48 g/mol
CAS-No. : 1306-23-6
EC-No. : 215-147-8
Index-No. : 048-010-00-4

Hazardous components

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cadmium sulphide</td>
<td>Included in the Candidate List of Substances of Very High Concern (SVHC)</td>
<td>&lt;= 100 %</td>
</tr>
<tr>
<td></td>
<td>according to Regulation (EC) No. 1907/2006 (REACH)</td>
<td></td>
</tr>
<tr>
<td>Acute Tox. 4; Muta. 2; Carc. 1B; Repr. 2; STOT RE 1; Aquatic Acute 1; Aquatic Chronic 1; H302, H341, H350, H361, H372, H410</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact
Flush eyes with water as a precaution.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.
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

5. FIREFIGHTING MEASURES

5.1 Extinguishing media
Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Sulphur oxides, Cadmium/cadmium oxides

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
No data available

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.
For personal protection see section 8.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Further processing of solid materials may result in the formation of combustible formation should be taken into consideration before additional processing.
Provide appropriate exhaust ventilation at places where dust is formed.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Keep container tightly closed in a dry and well-ventilated place.
Keep in a dry place.

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

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters
Components with workplace control parameters

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cadmium sulphide</td>
<td>1306-23-6</td>
<td>TWA</td>
<td>0.010000 mg/m³</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
</tbody>
</table>

   Remarks: Kidney damage
Substances for which there is a Biological Exposure Index or Indices (see BEI® section)
Suspected human carcinogen varies

| TWA | 0.002000 mg/m3 | USA. ACGIH Threshold Limit Values (TLV) |

Kidney damage
Substances for which there is a Biological Exposure Index or Indices (see BEI® section)

Suspected human carcinogen varies

Potential Occupational Carcinogen
See Appendix A

Potential Occupational Carcinogen
See Appendix A

| PEL | 0.005000 mg/m3 | OSHA Specifically Regulated Chemicals/Carcinogens |

1910.1027
This standard applies to all occupational exposures to cadmium and cadmium compounds, in all forms, and in all industries covered by the Occupational Safety and Health Act, except the construction-related industries, which are covered under 29 CFR 1926.63. OSHA specifically regulated carcinogen

| PEL | 0.005000 mg/m3 | OSHA Specifically Regulated Chemicals/Carcinogens |

1910.1027
This standard applies to all occupational exposures to cadmium and cadmium compounds, in all forms, and in all industries covered by the Occupational Safety and Health Act, except the construction-related industries, which are covered under 29 CFR 1926.63. OSHA specifically regulated carcinogen

| TWA | 0.01 mg/m3 | USA. ACGIH Threshold Limit Values (TLV) |

Kidney damage
Substances for which there is a Biological Exposure Index or Indices (see BEI® section)

Suspected human carcinogen varies

| TWA | 0.002 mg/m3 | USA. ACGIH Threshold Limit Values (TLV) |

Kidney damage
Substances for which there is a Biological Exposure Index or Indices (see BEI® section)

Suspected human carcinogen varies

| PEL | 0.005 mg/m3 | OSHA Specifically Regulated Chemicals/Carcinogens |

1910.1027
This standard applies to all occupational exposures to cadmium and cadmium compounds, in all forms, and in all industries covered by the Occupational Safety and Health Act, except the construction-related industries, which are covered under 29 CFR 1926.63. OSHA specifically regulated carcinogen

Potential Occupational Carcinogen
See Appendix A

### Biological occupational exposure limits

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Parameters</th>
<th>Value</th>
<th>Biological specimen</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cadmium sulphide</td>
<td>1306-23-6</td>
<td>cadmium</td>
<td>5 µg/l</td>
<td>In blood</td>
<td>ACGIH - Biological Exposure Indices (BEI)</td>
</tr>
</tbody>
</table>
8.2 Exposure controls

Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment

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

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove’s outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

- Full contact
  - Material: Nitrile rubber
  - Minimum layer thickness: 0.11 mm
  - Break through time: 480 min
  - Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

- Splash contact
  - Material: Nitrile rubber
  - Minimum layer thickness: 0.11 mm
  - Break through time: 480 min
  - Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use (EN 143) respirator cartridges as a backup to engineering controls. If the full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

| a) Appearance | Form: powder
| b) Odour | odourless
| c) Odour Threshold | No data available
| d) pH | No data available
| e) Melting point/freezing point | Melting point/range: 999 °C (1830 °F)
| f) Initial boiling point and | No data available
| Remarks | Not critical
| Cadmium | 5µg/g
| Creatinine | Urine
| ACGIH - Biological Exposure Indices (BEI) | Not critical
| Material: | Nitrile rubber
| Minimum layer thickness: | 0.11 mm
| Break through time: | 480 min
| Material tested: | Dermatril® (KCL 740 / Aldrich Z677272, Size M)
| Splash contact | Nitrile rubber
| Minimum layer thickness: | 0.11 mm
| Break through time: | 480 min
| Material tested: | Dermatril® (KCL 740 / Aldrich Z677272, Size M)
| Data source: | KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
| If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

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Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.
boiling range

<table>
<thead>
<tr>
<th>No.</th>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>g)</td>
<td>Flash point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>h)</td>
<td>Evaporation rate</td>
<td>No data available</td>
</tr>
<tr>
<td>i)</td>
<td>Flammability (solid, gas)</td>
<td>No data available</td>
</tr>
<tr>
<td>j)</td>
<td>Upper/lower flammability or explosive limits</td>
<td>No data available</td>
</tr>
<tr>
<td>k)</td>
<td>Vapour pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>l)</td>
<td>Vapour density</td>
<td>No data available</td>
</tr>
<tr>
<td>m)</td>
<td>Relative density</td>
<td>4.82 g/mL at 25 °C (77 °F)</td>
</tr>
<tr>
<td>n)</td>
<td>Water solubility</td>
<td>No data available</td>
</tr>
<tr>
<td>o)</td>
<td>Partition coefficient: n-octanol/water</td>
<td>log Pow: 2.886</td>
</tr>
<tr>
<td>p)</td>
<td>Auto-ignition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>q)</td>
<td>Decomposition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>r)</td>
<td>Viscosity</td>
<td>No data available</td>
</tr>
<tr>
<td>s)</td>
<td>Explosive properties</td>
<td>No data available</td>
</tr>
<tr>
<td>t)</td>
<td>Oxidizing properties</td>
<td>No data available</td>
</tr>
</tbody>
</table>

9.2 Other safety information
No data available

10. STABILITY AND REACTIVITY

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
No data available

10.5 Incompatible materials
Strong oxidizing agents

10.6 Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Sulphur oxides, Cadmium/cadmium oxides
Other decomposition products - No data available
In the event of fire: see section 5

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - 7,080 mg/kg(Cadmium sulphide)
Inhalation: No data available(Cadmium sulphide)
Dermal: No data available(Cadmium sulphide)
Skin corrosion/irritation
No data available (Cadmium sulphide)

Serious eye damage/eye irritation
No data available (Cadmium sulphide)

Respiratory or skin sensitisation
No data available (Cadmium sulphide)

Germ cell mutagenicity
No data available (Cadmium sulphide)

Carcinogenicity
No data available (Cadmium sulphide)
(Cadmium sulphide)

IARC: 1 - Group 1: Carcinogenic to humans (Cadmium sulphide)
NTP: Known to be human carcinogen (Cadmium sulphide)

Known to be human carcinogenThe reference note has been added by TD based on the background information of the NTP. (Cadmium sulphide)
OSHA: 1910.1027 (Cadmium sulphide)
OSHA specifically regulated carcinogen (Cadmium sulphide)

Reproductive toxicity
No data available (Cadmium sulphide)
No data available (Cadmium sulphide)

Specific target organ toxicity - single exposure
No data available (Cadmium sulphide)

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available (Cadmium sulphide)

Additional Information
RTECS: Not available

Acute inhalation exposure to cadmium fumes may cause "metal fume fever" with chills, nausea, vomiting, dizziness, sweating, muscular pain, cough and d within 24 hours and reaches a maximum by three days. The first chronic effect manifested by excretion of excessive protein in the urine, followed by an is believed to cause pulmonary emphysema and bone disease. (Cadmium sulphide)

Stomach - Irregularities - Based on Human Evidence
Stomach - Irregularities - Based on Human Evidence (Cadmium sulphide)

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish LC50 - Pimephales promelas (fathead minnow) - 0.108 mg/l - 96.0 h (Cadmium sulphide)

Toxicity to daphnia and other aquatic invertebrates EC50 - Daphnia magna (Water flea) - 0.16 mg/l - 48 h (Cadmium sulphide)

12.2 Persistence and degradability
No data available
12.3 Bioaccumulative potential
   No data available

12.4 Mobility in soil
   No data available (Cadmium sulphide)

12.5 Results of PBT and vPvB assessment
   PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects
   An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
   Very toxic to aquatic life with long lasting effects.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods
   **Product**
   Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chem scrubber.

   **Contaminated packaging**
   Dispose of as unused product.

14. TRANSPORT INFORMATION

   **DOT (US)**
   UN number: 3077  Class: 9  Packing group: III
   Proper shipping name: Environmentally hazardous substances, solid, n.o.s. (Cadmium sulphide)
   Marine pollutant: no
   Poison Inhalation Hazard: No

   **IMDG**
   UN number: 3077  Class: 9  Packing group: III
   Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Cadmium sulphide)
   Marine pollutant: yes
   EMS-No: F-A, S-F

   **IATA**
   UN number: 3077  Class: 9  Packing group: III
   Proper shipping name: Environmentally hazardous substance, solid, n.o.s. (Cadmium sulphide)

15. REGULATORY INFORMATION

   **SARA 302 Components**
   No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

   **SARA 313 Components**
   The following components are subject to reporting levels established by SARA Title III, Section 313:
<table>
<thead>
<tr>
<th>CAS-No.</th>
<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cadmium sulphide</td>
<td>1306-23-6</td>
</tr>
</tbody>
</table>

   **Massachusetts Right To Know Components**
<table>
<thead>
<tr>
<th>CAS-No.</th>
<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cadmium sulphide</td>
<td>1306-23-6</td>
</tr>
</tbody>
</table>

   **Pennsylvania Right To Know Components**
<table>
<thead>
<tr>
<th>CAS-No.</th>
<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cadmium sulphide</td>
<td>1306-23-6</td>
</tr>
</tbody>
</table>

   **New Jersey Right To Know Components**
<table>
<thead>
<tr>
<th>CAS-No.</th>
<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cadmium sulphide</td>
<td>1306-23-6</td>
</tr>
</tbody>
</table>

   **California Prop. 65 Components**
WARNING! This product contains a chemical known to the State of California to cause cancer. Cadmium sulphide

CAS-No. 1306-23-6 Revision Date 1987-10-01

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm. Cadmium sulphide

CAS-No. 1306-23-6 Revision Date 1987-10-01

16. OTHER INFORMATION

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

H302 Harmful if swallowed.
H341 Suspected of causing genetic defects.
H350 May cause cancer.
H361 Suspected of damaging fertility or the unborn child.
H372 Causes damage to organs through prolonged or repeated exposure.
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.

HMIS Rating
Health hazard: 1
Chronic Health Hazard: *
Flammability: 0
Physical Hazard 0

NFPA Rating
Health hazard: 1
Fire Hazard: 0
Reactivity Hazard: 0

Further information
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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.

Preparation Information
Sigma-Aldrich Corporation
Product Safety – Americas Region
1-800-521-8956
Version: 6.1 Revision Date: 05/28/2017 Print Date: 08/08/2019