SECTION 1. IDENTIFICATION

**Product Name:** Cadmium Sulfide Sputtering Target

**Product Number:** All applicable American Elements product codes, e.g. CD-S-02-ST, CD-S-025-ST, CD-S-03-ST, CD-S-035-ST, CD-S-04-ST, CD-S-05-ST

**CAS #:** 1306-23-6

**Relevant identified uses of the substance:** Scientific research and development

**Supplier details:**
American Elements
10884 Weyburn Ave.
Los Angeles, CA 90024
Tel: +1 310-208-0551
Fax: +1 310-208-0351

**Emergency telephone number:**
+1 800-424-9300

SECTION 2. HAZARDS IDENTIFICATION

Classification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS)

**GHS08 Health hazard**
- Muta. 2
- H341 Suspected of causing genetic defects.
- Carc. 1B
- H350 May cause cancer.
- Repr. 2
- H361 Suspected of damaging fertility or the unborn child.
- STOT RE 1 H372 Causes damage to the lung, the kidneys, the reproductive system and the blood through prolonged or repeated exposure. Route of exposure: Oral.

**GHS07 Acute Tox. 4 H302 Harmful if swallowed.**

Hazards not otherwise classified

No data available

**GHS label elements**

GHS label elements, including precautionary statements

**Hazard pictograms**
GHS07 GHS08
Signal word
Danger
Hazard statements
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 the lung, the kidneys, the reproductive system and the blood through prolonged or repeated exposure. Route of exposure: Oral.
Precautionary statements
P260
Do not breathe dust/fume/gas/mist/vapors/spray.
P281
Use personal protective equipment as required.
P301+P312 IF SWALLOWED: Call a POISON CENTER/doctor/.../if you feel unwell.
P308+P313 IF exposed or concerned: Get medical advice/attention.
P405
Store locked up.
P501
Dispose of contents/container in accordance with local/regional/national/international regulations.
WHMIS classification
D2A - Very toxic material causing other toxic effects
Classification system
HMIS ratings (scale 0-4)
(Hazardous Materials Identification System)
Health (acute effects) = 2
Flammability = 0
Physical Hazard = 1
Other hazards
Results of PBT and vPvB assessment
PBT:
N/A
vPvB:
N/A

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substances
CAS No. / Substance Name:
1306-23-6 Cadmium sulfide
Identification number(s):
EC number:
215-147-8
Index number:
048-010-00-4
SECTION 4. FIRST AID MEASURES

Description of first aid measures
If inhaled:
Supply patient with fresh air. If not breathing, provide artificial respiration. Keep patient warm.
Seek immediate medical advice.
In case of skin contact:
Immediately wash with soap and water; rinse thoroughly.
Seek immediate medical advice.
In case of eye contact:
Rinse opened eye for several minutes under running water. Consult a physician.
If swallowed:
Seek medical treatment.
Information for doctor
Most important symptoms and effects, both acute and delayed
No data available
Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5. FIREFIGHTING MEASURES

Extinguishing media
Suitable extinguishing agents
Product is not flammable. Use fire-fighting measures that suit the surrounding fire.
Special hazards arising from the substance or mixture
If this product is involved in a fire, the following can be released:
Sulfur oxides (SOx)
Hydrogen sulfide
Cadmium oxide
Advice for firefighters
Protective equipment:
Wear self-contained respirator.
Wear fully protective impervious suit.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Keep unprotected persons away.
Ensure adequate ventilation
Environmental precautions:
Do not allow material to be released to the environment without official permits.
Methods and materials for containment and cleanup:
Dispose of contaminated material as waste according to section 13.
Prevention of secondary hazards:
No special measures required.
Reference to other sections
See Section 7 for information on safe handling
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.
SECTION 7. HANDLING AND STORAGE

Handling
Precautions for safe handling
Keep container tightly sealed.
Store in cool, dry place in tightly closed containers.
Ensure good ventilation at the workplace.
Open and handle container with care.
Information about protection against explosions and fires:
The product is not flammable
Conditions for safe storage, including any incompatibilities
Requirements to be met by storerooms and receptacles:
No special requirements.
Information about storage in one common storage facility:
Do not store together with acids.
Store away from oxidizing agents.
Further information about storage conditions:
Keep container tightly sealed.
Store in cool, dry conditions in well-sealed containers.
Specific end use(s)
No data available

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Additional information about design of technical systems:
Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.
Control parameters
Components with limit values that require monitoring at the workplace:
1306-23-6 Cadmium sulfide (100.0%)
PEL (USA)
Long-term value: 0.005 mg/m$^3$ as Cd; see 29 CFR 1910.1027
REL (USA)
See Pocket Guide App. A
TLV (USA)
Long-term value: 0.01 0.002* mg/m$^3$
as Cd; *respirable fraction; BEI
EL (Canada) Long-term value: 0.01 mg/m$^3$
as Cd; ACIGH A1, IARC 1
Additional information:
No data
Exposure controls
Personal protective equipment
Follow typical protective and hygienic practices for handling chemicals.
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.
Maintain an ergonomically appropriate working environment.
Breathing equipment:
Use suitable respirator when high concentrations are present.
Recommended filter device for short term use:
Use a respirator with type P100 (USA) or P3 (EN 143) cartridges as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirators are appropriate. Only use equipment tested and approved under appropriate government standards.
Protection of hands:
Impervious gloves
Inspection gloves prior to use.
Suitability of gloves should be determined both by material and quality, the latter of which may vary by manufacturer.
Penetration time of glove material (in minutes)
No data available
Eye protection:
Safety glasses
Body protection:
Protective work clothing

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties
Appearance:
Form: Various forms
Color: Orange
Odor: Odorless
Odor threshold: No data available.
pH: N/A
Melting point/Melting range: 980 °C (1796 °F) (subl)
Boiling point/Boiling range: No data available
Sublimation temperature / start: No data available
Flammability (solid, gas)
No data available.
Ignition temperature: No data available
Decomposition temperature: No data available
Autoignition: No data available.
Danger of explosion: Product does not present an explosion hazard.
Explosion limits:
Lower: No data available
Upper: No data available
Vapor pressure at 440 °C (824 °F): 0.0000013 hPa
Density at 20 °C (68 °F): 4.82 g/cm³ (40.223 lbs/gal)
Relative density
No data available.
Vapor density
N/A
Evaporation rate
N/A
Solubility in Water (H₂O): Insoluble
Partition coefficient (n-octanol/water): No data available.
Viscosity:
Dynamic: N/A
Kinematic: N/A
Other information
SECTION 10. STABILITY AND REACTIVITY

Reactivity
No data available

Chemical stability
Stable under recommended storage conditions.

Thermal decomposition / conditions to be avoided:
Decomposition will not occur if used and stored according to specifications.

Possibility of hazardous reactions
Reacts with strong oxidizing agents

Conditions to avoid
No data available

Incompatible materials:
Acids
Oxidizing agents

Hazardous decomposition products:
Sulfur oxides (SOx)
Hydrogen sulfide
Cadmium oxide

SECTION 11. TOXICOLOGICAL INFORMATION

Information on toxicological effects
Acute toxicity:
Harmful if swallowed.
The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data for this substance.
LD/LC50 values that are relevant for classification:
Oral LD50 1166 mg/kg (mouse)
7080 mg/kg (rat)

Skin irritation or corrosion:
May cause irritation

Eye irritation or corrosion:
May cause irritation

Sensitization:
No sensitizing effects known.

Germ cell mutagenicity:
Suspected of causing genetic defects.
The Registry of Toxic Effects of Chemical Substances (RTECS) contains mutation data for this substance.

Carcinogenicity:
May cause cancer.

IARC-1: Carcinogenic to humans: sufficient evidence of carcinogenicity.
EPA-B1: Probable human carcinogen, limited evidence of carcinogenicity from epidemiologic studies.

Carcinogen as defined by OSHA.
ACGIH A2: Suspected human carcinogen: Agent is carcinogenic in experimental animals at dose levels, by route(s) of administration, at site(s), of histologic type(s), or by mechanism(s) considered relevant to worker exposure. Available epidemiologic studies are conflicting or insufficient to confirm an increased risk of cancer in exposed humans.
NTP-K: Known to be carcinogenic: sufficient evidence from human studies. The Registry of Toxic Effects of Chemical Substances (RTECS) contains tumorigenic and/or carcinogenic and/or neoplastic data for this substance. Reproductive toxicity: Suspected of damaging fertility or the unborn child. Specific target organ system toxicity - repeated exposure: Causes damage to the lung, the kidneys, the reproductive system and the blood through prolonged or repeated exposure. Route of exposure: Oral. Specific target organ system toxicity - single exposure: No effects known. Aspiration hazard: No effects known. Subacute to chronic toxicity: No effects known. Additional toxicological information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

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**SECTION 12. ECOLOGICAL INFORMATION**

Toxicity
Aquatic toxicity:
No data available
Persistence and degradability
No data available
Bioaccumulative potential
No data available
Mobility in soil
No data available
Additional ecological information:
Do not allow material to be released to the environment without official permits.
Do not allow product to reach groundwater, water courses, or sewage systems, even in small quantities.
Danger to drinking water if even extremely small quantities leak into the ground.
May cause long lasting harmful effects to aquatic life.
Avoid transfer into the environment.
Results of PBT and vPvB assessment
PBT:
N/A
vPvB:
N/A
Other adverse effects
No data available

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**SECTION 13. DISPOSAL CONSIDERATIONS**

Waste treatment methods
Recommendation
Consult official regulations to ensure proper disposal.
Uncleaned packagings:
Recommendation:
Disposal must be made according to official regulations.
SECTION 14. TRANSPORT INFORMATION

UN-Number
DOT, IMDG, IATA
UN3077
UN proper shipping name
DOT
Environmentally hazardous substances, solid, n.o.s. (Cadmium sulfide)
IMDG
ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Cadmium sulfide), MARINE POLLUTANT
IATA
ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Cadmium sulfide)
Transport hazard class(es)
DOT, IMDG, IATA
Class
9 Miscellaneous dangerous substances and articles.
Label
9
Class
9 (M7) Miscellaneous dangerous substances and articles
Label
9
Packing group
DOT, IMDG, IATA
III
Environmental hazards:
Marine pollutant (IMDG):
Symbol (fish and tree)
Special marking (ADR):
Symbol (fish and tree)
Special marking (IATA):
Symbol (fish and tree)
Special precautions for user
Warning: Miscellaneous dangerous substances and articles
EMS Number: F-A,S-F
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
N/A
Transport/Additional information:
DOT
Marine Pollutant (DOT):
No
Remarks:
Special marking with the symbol (fish and tree).
UN "Model Regulation":
UN3077, Environmentally hazardous substances, solid, n.o.s. (Cadmium sulfide), 9, III

SECTION 15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture
GHS GHS label elements, including precautionary statements
Hazard pictograms
GHS07
GHS08
Signal word
Danger
Hazard statements
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 the lung, the kidneys, the reproductive system and the blood through prolonged or repeated exposure. Route of exposure: Oral.
Precautionary statements
P260
Do not breathe dust/fume/gas/mist/vapors/spray.
P281
Use personal protective equipment as required.
P301+P312 IF SWALLOWED: Call a POISON CENTER/doctor/.../if you feel unwell.
P308+P313 IF exposed or concerned: Get medical advice/attention.
P405
Store locked up.
P501
Dispose of contents/container in accordance with local/regional/national/international regulations.
National regulations
All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.
All components of this product are listed on the Canadian Domestic Substances List (DSL).
SARA Section 313 (specific toxic chemical listings)
1306-23-6 Cadmium sulfide
California Proposition 65
Prop 65 - Chemicals known to cause cancer
1306-23-6 Cadmium sulfide
Prop 65 - Developmental toxicity
Substance is not listed.
Prop 65 - Developmental toxicity, female
Substance is not listed.
Prop 65 - Developmental toxicity, male
Substance is not listed.
Information about limitation of use:
Workers are not allowed to be exposed to this hazardous material. Exceptions can be made by the authorities in certain cases.
For use only by technically qualified individuals.
Other regulations, limitations and prohibitive regulations
Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006. This substance is included in the Candidate List of Substances of Very High Concern (SVHC) according to Regulation (EC) No. 1907/2006 (REACH).
The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.
Substance is not listed.
Annex XIV of the REACH Regulations (requiring Authorisation for use)
Substance is not listed.
Chemical safety assessment:
A Chemical Safety Assessment has not been carried out.
SECTION 16. OTHER INFORMATION

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH). 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. American Elements shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. COPYRIGHT 1997-2019 AMERICAN ELEMENTS. LICENSED GRANTED TO MAKE UNLIMITED PAPER COPIES FOR INTERNAL USE ONLY.