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Lieferung & Zahlungsart

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Zuschläge

- Mindermengenzuschlag
- Trockeneiszuschlag
- Gefahrgutzuschlag
- Expressversand

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Arsenic(V) sulfide

sc-227278

Material Safety Data Sheet



The Power is Question

Hazard Alert Code Key: **EXTREME** **HIGH** **MODERATE** **LOW**

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

Arsenic(V) sulfide

STATEMENT OF HAZARDOUS NATURE

CONSIDERED A HAZARDOUS SUBSTANCE ACCORDING TO OSHA 29 CFR 1910.1200.

NFPA



SUPPLIER

Santa Cruz Biotechnology, Inc.
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EMERGENCY:

ChemWatch
Within the US & Canada: 877-715-9305
Outside the US & Canada: +800 2436 2255
(1-800-CHEMCALL) or call +613 9573 3112

SYNONYMS

As₂S₅, "diarsenic pentasulfide", "arsenic sulfide", "arsenic pentasulphide"

Section 2 - HAZARDS IDENTIFICATION

CHEMWATCH HAZARD RATINGS

	Min	Max
Flammability:	0	Blue bar
Toxicity:	3	Blue to Yellow bar
Body Contact:	2	Blue to Green bar
Reactivity:	0	Blue bar
Chronic:	4	Blue to Red bar

Min/Nil=0
Low=1
Moderate=2
High=3
Extreme=4



CANADIAN WHMIS SYMBOLS



EMERGENCY OVERVIEW

RISK

May cause CANCER.

Toxic by inhalation and if swallowed.

Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

- Toxic effects may result from the accidental ingestion of the material; animal experiments indicate that ingestion of less than 40 gram may be fatal or may produce serious damage to the health of the individual.

- Ingestion may produce nausea, vomiting and diarrhea, bloody stools, shock, rapid pulse and coma. Severe gastritis or gastroenteritis may occur as a result of lesions produced by vascular damage from absorbed arsenic (and not local corrosion); symptoms may be delayed for several hours.

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- If ingested, sulfide salts can form hydrogen sulfide, causing headache, cyanosis, low blood pressure, loss of consciousness, tremors and convulsions.

EYE

- Although the material is not thought to be an irritant, direct contact with the eye may cause transient discomfort characterized by tearing or conjunctival redness (as with windburn). Slight abrasive damage may also result.

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SKIN

- Skin contact with the material may damage the health of the individual; systemic effects may result following absorption.

- There is some evidence to suggest that this material can cause inflammation of the skin on contact in some persons.

- Arsenic can cause skin irritation characterized by eczema, scaling, sensitization, and discoloration and thickening of the palms and soles.

- Open cuts, abraded or irritated skin should not be exposed to this material.

- Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

INHALED

- Inhalation of dusts, generated by the material, during the course of normal handling, may produce toxic effects.

- There is some evidence to suggest that the material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage.

- Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled.

- Inhaling materials containing arsenic can cause severe irritation to the nose, throat and lungs. Prolonged exposure can cause severe structural damage to the nose.

CHRONIC HEALTH EFFECTS

- There is sufficient evidence to suggest that this material directly causes cancer in humans.

Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.

There is limited evidence that, skin contact with this product is more likely to cause a sensitization reaction in some persons compared to the general population.

Long term exposure to high dust concentrations may cause changes in lung function i.e. pneumoconiosis; caused by particles less than 0.5 micron penetrating and remaining in the lung.

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Long-term exposure to arsenic and its inorganic salts may produce loss of appetite, nausea and vomiting, low fever, persistent headache, pallor, weakness and phlegm. Skin effects include redness, eczema, pigmentation, diffuse hair loss, scaling of the palms and soles, sloughing, brittle nails, white lines or bands on the nails, loss of hair and nails, and localized swelling.

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Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
arsenic pentasulfide	1303-34-0	>98

Section 4 - FIRST AID MEASURES

SWALLOWED

· Give a slurry of activated charcoal in water to drink. NEVER GIVE AN UNCONSCIOUS PATIENT WATER TO DRINK. · At least 3 tablespoons in a glass of water should be given.

EYE

- If this product comes in contact with the eyes: · Immediately hold eyelids apart and flush the eye continuously with running water. · Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.

SKIN

- If skin contact occurs: · Immediately remove all contaminated clothing, including footwear · Flush skin and hair with running water (and

soap if available).

INHALED

· If fumes or combustion products are inhaled remove from contaminated area. · Lay patient down. Keep warm and rested.

NOTES TO PHYSICIAN

■ * Preplacement and periodic medical examinations are essential for workers exposed to arsenic on a regular basis. Preplacement physical examinations should give particular attention to allergic and chronic skin lesions, eye disease, psoriasis, chronic eczematous dermatitis, hyperpigmentation of the skin, keratosis and warts, baseline weight, baseline blood and haemoglobin counts, baseline urinary arsenic determinations.

Annual physical examinations should give attention to general health, weight, skin condition, and any evidence of excessive exposure or absorption of arsenic.

For acute and short term repeated exposures: Treat as for arsenic poisoning. Prompt administration is essential.

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For acute or short term repeated exposures to arsenic, soluble compounds: Treat as per arsenic poisoning.

· Acute skin lesions such as contact dermatitis usually do not require other treatment than removal from exposure.

· If more severe symptoms of the respiratory system, the skin or the gastro-intestinal tract occur, British Anti-Lewisite (BAL, dimercaprol) may be given. Prompt administration in such cases is vital; to obtain maximum benefit such treatment should be administered within 4 hours of poisoning.

Section 5 - FIRE FIGHTING MEASURES

Vapour Pressure (mmHG):	Not available.
Upper Explosive Limit (%):	Not applicable
Specific Gravity (water=1):	Not available
Lower Explosive Limit (%):	Not applicable

EXTINGUISHING MEDIA

· Water spray or fog.

· Foam.

FIRE FIGHTING

· Alert Emergency Responders and tell them location and nature of hazard.

· Wear full body protective clothing with breathing apparatus.

When any large container (including road and rail tankers) is involved in a fire, consider evacuation by 800 metres in all directions.

GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS

· Non combustible.

· Not considered to be a significant fire risk, however containers may burn.

Decomposition may produce toxic fumes of: sulfur oxides (SO_x), metal oxides, arsenic compounds.

May emit poisonous fumes.

FIRE INCOMPATIBILITY

■ None known.

PERSONAL PROTECTION

Glasses:

Chemical goggles.

Gloves:

Respirator:

Particulate

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS

· Clean up waste regularly and abnormal spills immediately.

· Avoid breathing dust and contact with skin and eyes.

· Wear protective clothing, gloves, safety glasses and dust respirator.

· Use dry clean up procedures and avoid generating dust.

· Vacuum up or sweep up. NOTE: Vacuum cleaner must be fitted with an exhaust micro filter (HEPA type) (consider explosion-proof machines designed to be grounded during storage and use).

· Dampen with water to prevent dusting before sweeping.

· Place in suitable containers for disposal.

MAJOR SPILLS

· Clear area of personnel and move upwind.

· Alert Emergency Responders and tell them location and nature of hazard.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

· Avoid all personal contact, including inhalation.

- Wear protective clothing when risk of exposure occurs.

RECOMMENDED STORAGE METHODS

- Lined metal can, Lined metal pail/drum
- Plastic pail.

For low viscosity materials

- Drums and jerricans must be of the non-removable head type.
- Where a can is to be used as an inner package, the can must have a screwed enclosure.

STORAGE REQUIREMENTS

- Store in original containers.
- Keep containers securely sealed.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

Source	Material	TWA ppm	TWA mg/m ³	STEL ppm	STEL mg/m ³	Peak mg/m ³	Notes
Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances	arsenic pentasulfide (Arsenic and compounds (as As))	-	0.5	-	0.5		
Canada - British Columbia Occupational Exposure Limits	arsenic pentasulfide (Arsenic and inorganic compounds, as As)		0.01				A1, 1
US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants	arsenic pentasulfide (Arsenic, inorganic compounds (as As); see 1910.1018.)	Varies with compound					
US - California Permissible Exposure Limits for Chemical Contaminants	arsenic pentasulfide (Arsenic and inorganic arsenic compounds; see also Section 5214)		0.01				
Canada - Alberta Occupational Exposure Limits	arsenic pentasulfide (Arsenic, elemental & inorganic compounds as As)		0.01				
Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	arsenic pentasulfide (Arsenic, and inorganic compounds, (as As))		0.01		0.03		T20
US - Hawaii Air Contaminant Limits	arsenic pentasulfide (Arsenic, inorganic compounds, (as As))		0.01				See 12-202-31
US - Washington Permissible exposure limits of air contaminants	arsenic pentasulfide (Arsenic, inorganic compounds (as As) (when use is covered by chapter 296-848 WAC))		0.01				
US - Washington Permissible exposure limits of air contaminants	arsenic pentasulfide (Arsenic, inorganic compounds (as As) (when use is not covered by chapter 296-848 WAC))		0.2		0.6		
US OSHA Permissible Exposure Levels (PELs) - Table Z1	arsenic pentasulfide (Arsenic, inorganic compounds (as As); see 1910.1018)		0.01				

US NIOSH Recommended Exposure Limits (RELs)	arsenic pentasulfide (Arsenic (inorganic compounds, as As))	0.002	See Appendix A; Ca; (Ceiling ([15-minute]))
US - Michigan Exposure Limits for Air Contaminants	arsenic pentasulfide (Arsenic, inorganic compounds (as As); see R 325.51601 et seq.F)	0.01	
Canada - Nova Scotia Occupational Exposure Limits	arsenic pentasulfide (Arsenic - Inorganic compounds)	0.01	Measured as As. TLV Basis: lung cancer
US - Oregon Permissible Exposure Limits (Z-1)	arsenic pentasulfide (Arsenic, Organic Compounds (as As))	0.5	
US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants	arsenic pentasulfide (Arsenic, organic compounds (as As))	0.5	
US - California Permissible Exposure Limits for Chemical Contaminants	arsenic pentasulfide (Arsenic, organic compounds, as As)	0.2	

ENDOELTABLE

PERSONAL PROTECTION



RESPIRATOR

Particulate

Consult your EHS staff for recommendations

EYE

- Safety glasses with side shields.
- Chemical goggles.

HANDS/FEET

- Wear chemical protective gloves, eg. PVC.

NOTE: The material may produce skin sensitization in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact.

Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include: such as:

- frequency and duration of contact,
- chemical resistance of glove material,
- glove thickness and
- dexterity

Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739).

· When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374) is recommended.

· When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374) is recommended.

· Contaminated gloves should be replaced.

Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.

OTHER

· Employees working with confirmed human carcinogens should be provided with, and be required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), shoe covers and gloves prior to entering the regulated area.

· Employees engaged in handling operations involving carcinogens should be provided with, and required to wear and use half-face filter-type respirators with filters for dusts, mists and fumes, or air purifying canisters or cartridges. A respirator affording higher levels of protection may be substituted.

· Emergency deluge showers and eyewash fountains, supplied with potable water, should be located near, within sight of, and on the same level with locations where direct exposure is likely.

· Prior to each exit from an area containing confirmed human carcinogens, employees should be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the

point of exit for purposes of decontamination or disposal. The contents of such impervious containers must be identified with suitable labels. For maintenance and decontamination activities, authorized employees entering the area should be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood.

- Prior to removing protective garments the employee should undergo decontamination and be required to shower upon removal of the garments and hood.

ENGINEERING CONTROLS

- Employees exposed to confirmed human carcinogens should be authorized to do so by the employer, and work in a regulated area.
- Work should be undertaken in an isolated system such as a "glove-box" . Employees should wash their hands and arms upon completion of the assigned task and before engaging in other activities not associated with the isolated system.
- Within regulated areas, the carcinogen should be stored in sealed containers, or enclosed in a closed system, including piping systems, with any sample ports or openings closed while the carcinogens are contained within.
- Open-vessel systems are prohibited.
- Each operation should be provided with continuous local exhaust ventilation so that air movement is always from ordinary work areas to the operation.
- Exhaust air should not be discharged to regulated areas, non-regulated areas or the external environment unless decontaminated. Clean make-up air should be introduced in sufficient volume to maintain correct operation of the local exhaust system.
- For maintenance and decontamination activities, authorized employees entering the area should be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood. Prior to removing protective garments the employee should undergo decontamination and be required to shower upon removal of the garments and hood.
- Except for outdoor systems, regulated areas should be maintained under negative pressure (with respect to non-regulated areas).
- Local exhaust ventilation requires make-up air be supplied in equal volumes to replaced air.
- Laboratory hoods must be designed and maintained so as to draw air inward at an average linear face velocity of 150 feet/ min. with a minimum of 125 feet/ min. Design and construction of the fume hood requires that insertion of any portion of the employees body, other than hands and arms, be disallowed.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL PROPERTIES

Solid.

Does not mix with water.

State	Divided solid	Molecular Weight	310.12
Melting Range (°F)	Not available	Viscosity	Not Applicable
Boiling Range (°F)	Not available	Solubility in water (g/L)	Immiscible
Flash Point (°F)	Not applicable	pH (1% solution)	Not applicable
Decomposition Temp (°F)	Not Available	pH (as supplied)	Not applicable
Autoignition Temp (°F)	Not applicable	Vapour Pressure (mmHG)	Not available.
Upper Explosive Limit (%)	Not applicable	Specific Gravity (water=1)	Not available
Lower Explosive Limit (%)	Not applicable	Relative Vapor Density (air=1)	Not Applicable
Volatile Component (%vol)	Not available.	Evaporation Rate	Not available

APPEARANCE

Brownish-yellow, amorphous, highly refractive mass; does not mix with water. Soluble in alkalis and alkali sulfides. Decomposes into arsenic trioxide, sulfur and arsenic trisulfide when boiled with water.

Section 10 - CHEMICAL STABILITY

CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of incompatible materials.
- Product is considered stable.

STORAGE INCOMPATIBILITY

- Contact with acids produces toxic fumes.
- Metals and their oxides or salts may react violently with chlorine trifluoride and bromine trifluoride.
- These trifluorides are hypergolic oxidisers. They ignites on contact (without external source of heat or ignition) with recognised fuels - contact with these materials, following an ambient or slightly elevated temperature, is often violent and may produce ignition.
- The state of subdivision may affect the results.
- Sulfides are incompatible with acids, diazo and azo compounds, halocarbons, isocyanates, aldehydes, alkali metals, nitrides, hydrides, and other strong reducing agents.
- Many reactions of sulfides with these materials generate heat and in many cases hydrogen gas.
- Many sulfide compounds may liberate hydrogen sulfide upon reaction with an acid.
- Arsine, an extremely poisonous (lethal) gas with a garlic odour can be generated when the material reacts with acids, alkalis or water in the presence of an active metal (zinc, aluminium, magnesium, sodium, iron etc.).
- Avoid strong acids, bases.

For incompatible materials - refer to Section 7 - Handling and Storage.

Section 11 - TOXICOLOGICAL INFORMATION

ARSENIC PENTASULFIDE

TOXICITY AND IRRITATION

- unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.
- Arsenic compounds are classified by the European Union as toxic by inhalation and ingestion and toxic to aquatic life and long lasting in the environment. IARC classify arsenic indrinking water as a confirmed human carcinogen (IARC 1). Tenth Annual Report on Carcinogens: Substance known to be Carcinogenic [National Toxicology Program: U.S. Dep. of Health and Human Services 2002].

CARCINOGEN

INORGANIC ARSENIC COMPOUNDS	US Environmental Defense Scorecard Recognized Carcinogens	Reference(s)	P65
INORGANIC ARSENIC COMPOUNDS	US Environmental Defense Scorecard Suspected Carcinogens	Reference(s)	P65
ARSENIC (ORGANIC OR INORGANIC COMPOUNDS)	US Environmental Defense Scorecard Suspected Carcinogens	Reference(s)	P65-MC
ARSENIC COMPOUNDS	US Environmental Defense Scorecard Suspected Carcinogens	Reference(s)	HAZMAP, IARC

Section 12 - ECOLOGICAL INFORMATION

Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
This material and its container must be disposed of as hazardous waste.
Avoid release to the environment.
Refer to special instructions/ safety data sheets.

Section 13 - DISPOSAL CONSIDERATIONS

US EPA Waste Number & Descriptions

A. General Product Information

Toxicity characteristic: use EPA hazardous waste number D004 (waste code E) if this substance, in a solid waste, produces an extract containing greater than 5 mg/L of arsenic.

Disposal Instructions

All waste must be handled in accordance with local, state and federal regulations.
! Puncture containers to prevent re-use and bury at an authorized landfill.

Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.

A Hierarchy of Controls seems to be common - the user should investigate:

- Reduction
- Reuse
- Recycling
- Disposal (if all else fails)

This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate.

DO NOT allow wash water from cleaning equipment to enter drains. Collect all wash water for treatment before disposal.

- Recycle wherever possible or consult manufacturer for recycling options.
- Consult Waste Management Authority for disposal.

Section 14 - TRANSPORTATION INFORMATION



DOT:

Symbols: None Hazard class or Division: 6.1

Identification Numbers: UN1557 PG: III

Label Codes: 6.1 Special provisions: IB8, IP3, T1, TP33

Packaging: Exceptions: 153 Packaging: Non- bulk: 213

Packaging: Exceptions: 153 Quantity limitations: 100 kg
Passenger aircraft/rail:
Quantity Limitations: Cargo 200 kg Vessel stowage: Location: A
aircraft only:
Vessel stowage: Other: 137
Hazardous materials descriptions and proper shipping names:
Arsenic compounds, solid, n.o.s. inorganic, including arsenates, n.o.s.;
arsenites, n.o.s.; arsenic sulfides, n.o.s.; and organic compounds of arsenic,
n.o.s.

Air Transport IATA:

ICAO/IATA Class: 6.1 ICAO/IATA Subrisk: None
UN/ID Number: 1557 Packing Group: III
Special provisions: A3
Cargo Only
Packing Instructions: 619 Maximum Qty/Pack: 200 kg
Passenger and Cargo Passenger and Cargo
Packing Instructions: 619 Maximum Qty/Pack: 100 kg
Passenger and Cargo Limited Quantity Passenger and Cargo Limited Quantity
Packing Instructions: Y619 Maximum Qty/Pack: 10 kg
Shipping Name: ARSENIC COMPOUND, SOLID, N.O.S. (CONTAINS
ARSENIC PENTASULFIDE)

Maritime Transport IMDG:

IMDG Class: 6.1 IMDG Subrisk: None
UN Number: 1557 Packing Group: III
EMS Number: F-A , S-A Special provisions: 43 223
Limited Quantities: 5 kg Marine Pollutant: Yes
Shipping Name: ARSENIC COMPOUND, SOLID, N.O.S. inorganic, including: Arsenates, n.o.s.; Arsenites, n.o.s.; and Arsenic sulphides,
n.o.s.(contains arsenic pentasulfide)

Section 15 - REGULATORY INFORMATION



REGULATIONS

arsenic pentasulfide (CAS: 1303-34-0) is found on the following regulatory lists;

"International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs", "US - California Permissible Exposure Limits for Chemical Contaminants", "US - Oregon Permissible Exposure Limits (Z-1)", "US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants"

Section 16 - OTHER INFORMATION

LIMITED EVIDENCE

- Skin contact may produce health damage*.
- Cumulative effects may result following exposure*.
- May produce discomfort of the respiratory system and skin*.
- Possible skin sensitiser*.

* (limited evidence).

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- Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

A list of reference resources used to assist the committee may be found at:
www.chemwatch.net/references.

- The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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