

Antimony(V) sulfide

sc-233886



The Power is Question

Material Safety Data Sheet

Hazard Alert Code Key:

EXTREME

HIGH

MODERATE

LOW

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

Antimony(V) sulfide

STATEMENT OF HAZARDOUS NATURE

CONSIDERED A HAZARDOUS SUBSTANCE ACCORDING TO OSHA 29 CFR 1910.1200.

NFPA



SUPPLIER

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EMERGENCY

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

SYNONYMS

Sb₂S₅, "antimony sulphide", "antimonial saffron", "antimonic sulfide", "antimony red", "antimony sulfide golden", "C.I. 77061", "golden antimony sulfide"

Section 2 - HAZARDS IDENTIFICATION

CHEMWATCH HAZARD RATINGS

	Min	Max
Flammability:	3	
Toxicity:	2	
Body Contact:	2	
Reactivity:	0	
Chronic:	2	

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



CANADIAN WHMIS SYMBOLS



EMERGENCY OVERVIEW

RISK

Harmful by inhalation and if swallowed.

Highly flammable.

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

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

■ Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual.

■ Antimony poisoning causes similar symptoms to arsenic poisoning although vomiting is more prominent.

There may be changes in the rhythm of the heart beat.

■ 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.

SKIN

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

■ Skin contact with antimony compounds may result in redness and severe irritation with the formation of itchy papules, pustules, skin lesions/ small septic blisters (antimony spots) within a few hours.

Rhinitis may also result from dermal contact.

■ 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 be harmful.

■ The material is not thought to produce respiratory irritation (as classified using animal models).

Nevertheless inhalation of dusts, or fume, especially for prolonged periods, may produce respiratory discomfort and occasionally, distress.

■ 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.

■ Inhalation of antimony can cause breathing difficulties and gastrointestinal upset including sore throat, shallow breathing, dizziness, weight loss, gum bleeds and anemia.

Lung swelling and congestion can occur.

CHRONIC HEALTH EFFECTS

■ There has been some concern that this material can cause cancer or mutations but there is not enough data to make an assessment.

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

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.

Repeated or prolonged exposure to antimony and its compounds may produce inflammation of the mouth cavity, dry throat, metallic taste, gum infection, perforation of the nasal septum and throat, laryngitis, headache, difficulty breathing, indigestion, nausea, vomiting, diarrhea, loss of appetite, anemia, weight loss, tightness and pain in the chest, sleeplessness, muscular pain and weakness, dizziness, pharyngitis, bronchitis and pneumonia. Degenerative changes of the liver and kidney may occur.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
antimony pentasulfide	1315-04-4	>95

Section 4 - FIRST AID MEASURES

SWALLOWED

· IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY. · Where Medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:

EYE

■ If this product comes in contact with the eyes: · Wash out immediately with fresh 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

- Chelation with British Anti-Lewisite (BAL) for serious antimony exposures should be employed.
 - Dialyse as needed. The role of exchange diffusion is not clear.
- For exposures involving sulfides and hydrogen sulfide (including gastric acid decomposition products of alkaline sulfides).
- Hydrogen sulfide anion produces its major toxic effect through inhibition of cytochrome oxidases.
 - Symptoms include profuse salivation, nausea, vomiting and diarrhea. Central nervous effects may include giddiness, headache, vertigo, amnesia, confusion and unconsciousness. Tachypnea, palpitation, tachycardia, arrhythmia, sweating, weakness and muscle cramps may also indicate over-exposures.

Section 5 - FIRE FIGHTING MEASURES

Vapour Pressure (mmHG):	Negligible
Upper Explosive Limit (%):	Not available
Specific Gravity (water=1):	4.12
Lower Explosive Limit (%):	Not available

EXTINGUISHING MEDIA

■ For SMALL FIRES:

Dry chemical, CO2, water spray or foam.

For LARGE FIRES:

Water-spray, fog or foam.

FIRE FIGHTING

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

· Wear breathing apparatus plus protective gloves.

When any large container (including road and rail tankers) is involved in a fire, consider evacuation by 1000 metres in all directions.

GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS

· Flammable solid which burns and propagates flame easily, even when partly wetted with water.

· Any source of ignition, i.e. friction, heat, sparks or flame, may cause fire or explosion.

Decomposition may produce toxic fumes of: sulfur oxides (SOx), hydrogen sulfide (H2S), metal oxides.

FIRE INCOMPATIBILITY

■ None known.

PERSONAL PROTECTION

Glasses:

Chemical goggles.

Gloves:

Respirator:

Particulate dust filter.

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS

· Remove all ignition sources.

· DO NOT touch or walk through spilled material.

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 overexposure occurs.

RECOMMENDED STORAGE METHODS

■ For low viscosity materials and solids: 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

■ FOR MINOR QUANTITIES:

· Store in an indoor fireproof cabinet or in a room of noncombustible construction

· Provide adequate portable fire-extinguishers in or near the storage area.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

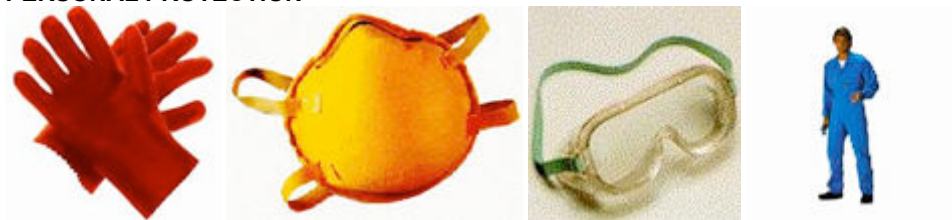
Source	Material	TWA ppm	TWA mg/m ³	STEL ppm	STEL mg/m ³	Peak ppm	Peak mg/m ³	TWA F/CC	Notes
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Canada - British Columbia Occupational Exposure Limits	antimony pentasulfide (Antimony and compounds, as Sb)	0.5
US - Minnesota Permissible Exposure Limits (PELs)	antimony pentasulfide (Antimony and compounds (as Sb))	0.5
Canada - Alberta Occupational Exposure Limits	antimony pentasulfide (Antimony & compounds, as Sb)	0.5
Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)	antimony pentasulfide (Antimony, metal and compounds (as Sb))	0.5
US OSHA Permissible Exposure Levels (PELs) - Table Z1	antimony pentasulfide (Antimony and compounds (as Sb))	0.5
US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants	antimony pentasulfide (Antimony and compounds (as Sb))	0.5
US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants	antimony pentasulfide (Antimony and compounds (as Sb))	0.5
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	antimony pentasulfide (Antimony and compounds (as Sb))	0.5
US - California Permissible Exposure Limits for Chemical Contaminants	antimony pentasulfide (Antimony and compounds, as Sb)	0.5
US - Idaho - Limits for Air Contaminants	antimony pentasulfide (Antimony and compounds (as Sb))	0.5
US - Hawaii Air Contaminant Limits	antimony pentasulfide (Antimony and compounds (as Sb))	0.5
US - Alaska Limits for Air Contaminants	antimony pentasulfide (Antimony and compounds (as Sb))	0.5

Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	antimony pentasulfide (Antimony and compounds, (as Sb))		0.5		1.5	
Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances	antimony pentasulfide (Antimony and compounds (as Sb))	-	0.5	-	0.75	
US - Washington Permissible exposure limits of air contaminants	antimony pentasulfide (Antimony and compounds (as Sb))		0.5		1.5	
Canada - Nova Scotia Occupational Exposure Limits	antimony pentasulfide (Antimony - Compounds)		0.5			Measured as Sb. TLV Basis: skin & upper respiratory tract irritation
US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants	antimony pentasulfide (Antimony and compounds(as Sb))		0.5			
Canada - Northwest Territories Occupational Exposure Limits (English)	antimony pentasulfide (Antimony and compounds (as Sb))		0.5		1.5	
US - Michigan Exposure Limits for Air Contaminants	antimony pentasulfide (Antimony and compounds (as Sb))		0.5			
US - Oregon Permissible Exposure Limits (Z-1)	antimony pentasulfide (Antimony & Compounds (as Sb))	-	0.5			
US ACGIH Threshold Limit Values (TLV)	antimony pentasulfide (Antimony - Compounds)		0.5			Measured as Sb. TLV Basis: skin & upper respiratory tract irritation
Canada - Prince Edward Island Occupational Exposure Limits	antimony pentasulfide (Antimony - Compounds)		0.5			Measured as Sb. TLV Basis: skin & upper respiratory tract irritation

ENDOELTABLE

PERSONAL PROTECTION



RESPIRATOR

- Particulate dust filter.

Consult your EHS staff for recommendations

EYE

- Safety glasses with side shields.
- Chemical goggles.

HANDS/FEET

■ 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.

Wear physical protective gloves, eg. leather.

OTHER

- Overalls.
- Eyewash unit.
- Some plastic personal protective equipment (PPE) (e.g. gloves, aprons, overshoes) are not recommended as they may produce static electricity.
- For large scale or continuous use wear tight-weave non-static clothing (no metallic fasteners, cuffs or pockets), non sparking safety footwear.

ENGINEERING CONTROLS

■ For large scale or continuous use:

- Spark-free, earthed ventilation system, venting directly to the outside and separate from usual ventilation systems
- Provide dust collectors with explosion vents.
- Local exhaust ventilation is required where solids are handled as powders or crystals; even when particulates are relatively large, a certain proportion will be powdered by mutual friction.
- Exhaust ventilation should be designed to prevent accumulation and recirculation of particulates in the workplace.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL PROPERTIES

Does not mix with water.

Sinks in water.

State	DIVIDED SOLID	Molecular Weight	403.80
Melting Range (°F)	167 dec.	Viscosity	Not Applicable
Boiling Range (°F)	Not available	Solubility in water (g/L)	Immiscible
Flash Point (°F)	Not Available	pH (1% solution)	Not available
Decomposition Temp (°F)	Not Available	pH (as supplied)	Not available
Autoignition Temp (°F)	Not available	Vapour Pressure (mmHG)	Negligible
Upper Explosive Limit (%)	Not available	Specific Gravity (water=1)	4.12
Lower Explosive Limit (%)	Not available	Relative Vapor Density (air=1)	Not applicable
Volatile Component (%vol)	Negligible	Evaporation Rate	Not applicable

APPEARANCE

Yellow solid powder. Insoluble in cold and hot water. Soluble in alkali. Soluble in hydrochloric acid and gives off hydrogen sulfide (H₂S).

Section 10 - CHEMICAL STABILITY

CONDITIONS CONTRIBUTING TO INSTABILITY

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

STORAGE INCOMPATIBILITY

- Contact with acids produces toxic fumes.
- 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.

- 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.

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

Section 11 - TOXICOLOGICAL INFORMATION

antimony pentasulfide

TOXICITY AND IRRITATION

ANTIMONY PENTASULFIDE:

■ unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY	IRRITATION
Intraperitoneal (rat) LD50: 1500 mg/kg	Nil Reported

CARCINOGEN

antimony pentasulfide	US - Rhode Island Hazardous Substance List	IARC	
ANTIMONY COMPOUNDS	US Environmental Defense Scorecard Suspected Carcinogens	Reference(s)	P65-MC

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.

Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
antimony pentasulfide	No Data Available	No Data Available		

Section 13 - DISPOSAL CONSIDERATIONS

US EPA Waste Number & Descriptions

A. General Product Information

Ignitability characteristic: use EPA hazardous waste number D001 (waste code I)

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.
- Consult manufacturer for recycling options or consult Waste Management Authority for disposal if no suitable treatment or disposal facility can be identified.

Section 14 - TRANSPORTATION INFORMATION



DOT:

Symbols: G Hazard class or Division: 4.1

Identification Numbers: UN3178 PG: II

Label Codes: 4.1 Special provisions: A1, IB8,
IP2, IP4,
T3, TP33

Packaging: Exceptions: 151 Packaging: Non- bulk: 212

Packaging: Exceptions: 151 Quantity limitations: 15 kg

Passenger aircraft/rail:

Quantity Limitations: Cargo 50 kg Vessel stowage: Location: B
aircraft only:

Vessel stowage: Other: None

Hazardous materials descriptions and proper shipping names:

Flammable solid, inorganic, n.o.s.

Air Transport IATA:

ICAO/IATA Class: 4.1 ICAO/IATA Subrisk: None

UN/ID Number: 3178 Packing Group: II

Special provisions: A3

Cargo Only

Packing Instructions: 50 kg Maximum Qty/Pack: 448

Passenger and Cargo Passenger and Cargo

Packing Instructions: 15 kg Maximum Qty/Pack: 445

Passenger and Cargo Limited Quantity Passenger and Cargo Limited Quantity

Packing Instructions: 5 kg Maximum Qty/Pack: Y441

Shipping Name: FLAMMABLE SOLID, INORGANIC, N.O.S. *

(CONTAINS ANTIMONY PENTASULFIDE)

Maritime Transport IMDG:

IMDG Class: 4.1 IMDG Subrisk: None

UN Number: 3178 Packing Group: II

EMS Number: F-A , S-G Special provisions: 274 915

Limited Quantities: 1 kg Marine Pollutant: Yes

Shipping Name: FLAMMABLE SOLID, INORGANIC, N.O.S.(contains antimony pentasulfide)

Section 15 - REGULATORY INFORMATION

antimony pentasulfide (CAS: 1315-04-4) is found on the following regulatory lists;

"Canada Non-Domestic Substances List (NDSL)", "Canada Toxicological Index Service - Workplace Hazardous Materials Information System - WHMIS (English)", "US - Pennsylvania - Hazardous Substance List", "US - Rhode Island Hazardous Substance List", "US DOE Temporary Emergency Exposure Limits (TEELs)", "US Toxic Substances Control Act (TSCA) - Inventory"

Section 16 - OTHER INFORMATION

Reasonable care has been taken in the preparation of this information, but the author makes no warranty of merchantability or any other warranty, expressed or implied, with respect to this information. The author makes no representations and assumes no liability for any direct, incidental or consequential damages resulting from its use. For additional technical information please call our toxicology department on +800 CHEMCALL.

■ 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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