

## SAFETY DATA SHEETS (SDS)

### 50 Lb Container

1000 Lbs or Greater

Metal Ingots

Safety Data Sheet (SDS)

**Antimony Trioxide MONTANA BRAND, 50 lb, 25 kg & less than 1,000 lb containers**

Version 2.0 Revision Date: 05/27/15 Print Date: 05/27/15

### Section 1. Production and Company Identification

**Product name: Antimony Trioxide, all grades**

MONTANA BRAND HT  
MONTANA BRAND HTW  
MONTANA BRAND MP  
MONTANA BRND MPW

MONTANA BRAND LT  
MONTANA BRAND LTW  
MONTANA BRAND VF  
MONTANA BRAND VFW

**Common Names: Antimony Oxide, Sb<sub>2</sub>O<sub>3</sub>, Antimony (III) oxide, Antimony trioxide**

#### **Company:**

United States Antimony Corporation  
47 Cox Gulch P.O. Box 643  
Thompson Falls, MT 59873  
United States of America

Telephone: (US) +1 406-827-3523

Fax: (US) +1 406-827-3543

**Emergency telephone number:**

**CHEMTREC**

**Product Uses:**

**Package Size:**

(US) +1 406-827-3523

(800) 424-9300

Flame retardant synergist, porcelain opacifier, glass fining agent, catalyst, electronics

50 lb bags, 25 kg bags, less than 1,000 lb container

**Section 2. Hazards Identification**

*Emergency Overview*

**OSHA Hazards:** Limited evidence of a carcinogenic effect.

**Target Organs:** Lungs

**GHS Classification**

- Eye irritation (Category 2B)
- Skin irritation (Category )
- Respiratory irritation (Category )
- Harmful if swallowed (Category )
- Carcinogenicity (Category 2)
- Acute aquatic toxicity (Category 3)

**GHS Label elements, including precautionary statements**

**Pictogram:**

**Signal Word:** Warning

**Hazard statement(s)**

- H315 + H320: Causes skin and eye irritation.
- H: Harmful if swallowed
- H351: Suspected of causing cancer.
- H402: Harmful to aquatic life.

### Precautionary statement(s)

- P281: Use personal protective equipment as required.
- P306 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing.
- P280: Wear protective gloves/protective clothing
- P284: Wear respiratory protection

### HMIS Classification

- Health Hazard: 2
- Chronic Health Hazard: \*
- Flammability: 0
- Physical Health Hazards: 0

### NFPA Rating

- Health Hazard: 2
- Fire: 0
- Reactivity Hazard: 0

### Potential Health Effects

- Inhalation: May cause respiratory tract irritation.
- Skin: May cause skin irritation.
- Eyes: May cause eye irritation.
- Ingestion: May be harmful if swallowed.

## Section 3. Composition / Information on Ingredients

**Chemical Family:** Non-ferrous metal oxide

**Chemical Name** **Formula** **Molecular Wt.** **CAS No.** **Weight %** Antimony oxide Sb<sub>2</sub>O<sub>3</sub> 291.52 g/mol 1309-64-4 >=99.7 Arsenic As 74.92 g/mol 13510-46-8 <0.1% (as As) Lead Pb 207.2 g/mol 1317-36-8 <0.1 (as Pb)

**Synonyms:** (common names) are provided in Section 1

## Section 4. First Aid Measures

**General advice**

Move out of dangerous area. Consult a physician. Show this Safety Data Sheet to the doctor in attendance.

**If inhaled**

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

**In case of skin contact**

Wash off with soap with plenty of water for at least 15 minutes. Consult a physician.

**In case of eye contact**

Rinse thoroughly with plenty of water for at least 15 minutes. Consult a physician.

**If swallowed**

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

**Section 5. Firefighting Measures****Conditions of flammability**

Not flammable or combustible.

**Suitable extinguishing media**

Use extinguishing agent suitable for type of surrounding fire.

**Hazardous combustion products**

Fumes of antimony oxide, arsenic oxide, and lead oxide

**Special protective equipment for firefighters**

Wear self-contained breathing apparatus, pressure demand, MSHA/NIOSH approved or equivalent, and full protective gear.

**Explosion Data**

- **Sensitivity to Mechanical Impact:** Not sensitive
- **Sensitivity to Static Discharge:** Not sensitive

**Section 6. Accidental Release Measures****Personal precautions**

Use personal protective equipment. Avoid dust formation. Avoid breathing dust, vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

### **Environmental precautions**

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

### **Methods and materials for containment and cleaning up**

Prevent large quantities of this product from contacting vegetation or waterways. Cover with plastic sheet to prevent spreading. Vacuum up, or sweep and shovel up without creating dust and transfer to properly labeled containers. Keep in suitable closed containers for disposal according to Federal, State and local laws.

## Section 7. Handling and Storage

### *Precautions for safe handling*

- Avoid contact with skin and eyes Avoid formation of dust and aerosols.
- Provide appropriate exhaust ventilation at places where dust is formed.

### **Conditions for safe storage**

- Keep in tightly closed, properly labeled containers in a dry and well-ventilated place.

## Section 8. Exposure Controls / Personal Protection

### Components with workplace control parameters

Components	CAS-No.	Value	Control Parameters	Basis	Remarks
Suspected human carcinogen	Antimony trioxide	1309-64-4	TWA0.5 mg/m <sup>3</sup>	USA. Occupational Exposure Limits (OSHA) – Table Z-1 Limits for Air Contaminants	
			TWA0.5 mg/m <sup>3</sup>	USA. OSHA – Table Z-1 Limits for Air Contaminants – 1910.1000	Pneumoconiosis, Lung cancer. Exposure by all routes should be carefully controlled to levels as low as possible. Suspected human carcinogen
			TWA0.5 mg/m <sup>3</sup>	USA. Occupational Exposure Limits (OSHA) – Table Z-1 Limits for Air Contaminants	
			TWA0.5 mg/m <sup>3</sup>	USA. OSHA – Table Z-1 Limits for Air Contaminants – 1910.1000	
			TWA0.5 mg/m <sup>3</sup>	USA. NIOSH Recommended Exposure Limits	

### Personal protective equipment

#### **Respiratory protection**

Where risk assessment shows air-purifying respirators are appropriate wear a NIOSH/MSHA (US) or CEN (EU) approved dust respirator fitted with type N100 (US) or type P3 (EN 143) (EU) dust cartridges as a back-up to engineering controls. A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use.

**Hand protection**

Chemical resistant protective gloves

**Eye protection**

Safety glasses with side-shields conforming to EN 166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).

**Skin and body protection**

Impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Hygiene measures**

- Handle in accordance with good industrial hygiene and safety practice.
- Wash hands thoroughly before breaks and at the end of the day.
- Contaminated clothing should not be allowed out of the workplace.
- Wash contaminated clothing before reuse.
- Keep work areas clean.
- Do not eat, drink, chew gum, use tobacco products, or apply cosmetics in work areas.

**Section 9. Physical and Chemical Properties****Appearance**

- **Form:** Powder
- **Color:** White
- **Odor:** Odorless
- **Odor threshold:** not applicable

**Safety data**

**pH:** not applicable

**Melting/freezing point:** 655°C (1,211°F)

**Boiling point:** 1,425°C (2,594°F)

**Flash point:** not applicable

**Evaporation rate:** not applicable

**Flammability:** non-combustible

**Flammability Limit in Air**

- **Upper Flammability Limit:** non-combustible
- **Lower Flammability Limit:** non-combustible

**Vapor pressure:** none at normal conditions

**Vapor density:** no information available

**Bulk density:** ≈60 lbs.ft<sup>3</sup>

**Specific gravity:** 5.67 g/cm<sup>3</sup>

**Water solubility:** 370±37 µg/L

**Solubility in other solvents:** no information available

**Partition coefficient:** not applicable

**Auto ignition temperature:** not applicable

**Decomposition temperature:** does not decompose

**Viscosity, kinematic:** not applicable

**Viscosity, dynamic:** not applicable

**Explosive properties:** non-explosive

**Oxidizing properties:** non-oxidizing

**Molecular weight:** 291.52 g/mol

**Kst:** St 0 (0 bar m/s)

**Section 10. Stability and Reactivity**

**Reactivity:** None under normal use conditions

**Chemical stability:** Stable under normal conditions

**Possibility of hazardous reactions:** Reaction with strong reducing agents can produce toxic and flammable stibine gas.

#### **Conditions to avoid**

Strong acids  
Strong bases  
Strong oxidizing agents  
Strong reducing agents  
Hot perchloric acid

#### **Incompatible materials**

Strong reducing agents  
Strong oxidizing agents

#### **Hazardous decomposition products**

Hazardous decomposition products formed under fire conditions: Fumes of antimony oxide, arsenic oxide and lead oxide

### Section 11. toxicological Information

#### **Acute Toxicity**

##### **Oral LD50**

LD50 Oral – rat >34,600 mg/kg

##### **Inhalation LC50**

No data available

##### **Dermal LD50**

LD50 Dermal – rabbit >2,000 mg/kg

#### **Other information on acute toxicity**

- LD50 Intraperitoneal – rat 3,250 mg/kg
- LD50 Intraperitoneal – mouse 172 mg/kg

#### **Skin corrosion/irritation**

- May irritate skin



- May cause temporary small itchy pustules (antimony measles) in hot and humid conditions.

**Serious eye damage/irritation**

May irritate eyes; Eyes – rabbit – Mild eye irritation – Draize Test

**Respiratory or skin sensitizer**

Not a respiratory nor skin sensitizer. (IAOIA Risk Assessment 2004 – 2005)

**Information on toxicological effects**

**Symptoms:** No information available

**Delayed and immediate effects as well as chronic effects from short and long-term exposure**

**Acute effects:** Gastro-intestinal distress

**Chronic toxicity**

Prolonged and excessive inhalation exposures to antimony trioxide may result in respiratory effects, antimony pneumoconiosis, pulmonary fibrosis, inflammation of the lungs, airway obstruction, bronchospasms, reproductive effects, gastrointestinal upset, liver effects, and neurological effects (muscle weakness, subnormal gait).

Prolonged and excessive oral exposure may result in gastrointestinal discomfort and ulcers, blood effects, liver effects, neurological effects inflammation of the mucous membranes and stomatitis.

In a recent 90 day oral study in male and female rats, no adverse effects were observed at doses of 1000, 5000, and 20000 ppm. The No Adverse Effect Level for antimony trioxide was 20000 ppm for both sexes.

In a developmental study in Sprague-Dewley rats consisting of three treatment groups and a control group, each containing 26 females at doses of 2.6, 4.4, and 6.3 mg/m<sup>3</sup>, no developmental effects were observed. The LOAEL for material toxicity was established at 2.6 mg/m<sup>3</sup>. The NOEL for developmental toxicity was 6.3 mg/m<sup>3</sup>, the highest exposure level evaluated.

**Mutagenicity:** no data available

**Carcinogenicity**

Carcinogenicity – rat – Inhalation

Tumorigenic: Carcinogenic by RTECS criteria. Respiration: Lungs, Thorax, Tumors Liver: Tumors  
Limited evidence of carcinogenicity in animal studies.

## **IARC**

- Class 2B: Possibly carcinogenic to humans (antimony)
- Class 2A: Probably carcinogenic to humans (lead)
- Class 1: Carcinogenic to humans (arsenic)

**NTP:** No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

**OSHA:** No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by OSHA.

Antimony trioxide has been classified by IARC as a Class 2B. An IARC 2B material exhibits sufficient evidence in animal tests to be a possible human carcinogen. Antimony oxide production has been determined by ACGIH to be a carcinogenic risk. Antimony trioxide has been identified by the EPA as a suspected lung carcinogen. Historical studies have concluded that exposure to elevated levels of antimony oxide may cause lung carcinoma. However, the most recent study conducted under the EPA's Voluntary Test Program by the Antimony Oxide Industry Association (AOIA), has concluded that antimony oxide does not cause lung cancer in rats at occupational exposure levels. The levels tested ranged from 0.005 mg/m<sup>3</sup> to 6 mg/m<sup>3</sup> (from one tenth to ten times the OSHA TWA Threshold Limit Value).

## **Reproductive toxicity**

Reproductive toxicity – rat – inhalation

- Effects on Fertility: Post-implant mortality (e.g., dead and/or resorbed implants per total number of implants).
- Effects on Embryo or Fetus: Fetal Death.

**Teratogenicity:** no data available

**Specific target organ toxicity (STOT) – single exposure (Globally Harmonized System):** no data available

**Specific target organ toxicity (STOT) – repeated exposure (Globally Harmonized System):** See “Repeated dose toxicity” below

## **Repeated dose toxicity**

Prolonged and excessive inhalation exposures to antimony trioxide may result in respiratory effects, antimony pneumoconiosis, pulmonary fibrosis, inflammation of the lungs, airway obstruction, bronchospasms, reproductive effects, gastrointestinal upset, liver effects, and neurological effects (muscle weakness, subnormal gait).

Prolonged and excessive oral exposure may result in gastrointestinal discomfort and ulcers, blood effects, liver effects, neurological effects inflammation of the mucous membranes and stomatitis.

In a recent 90 day oral study in male and female rats, no adverse effects were observed at doses of 1000, 5000, and 20000 ppm. The No Adverse Effect Level for antimony trioxide was 20000 ppm for both sexes.

In a developmental study in Sprague-Dewley rats consisting of three treatment groups and a control group, each containing 26 females at doses of 2.6, 4.4, and 6.3 mg/m<sup>3</sup>, no developmental effects were observed. The LOAEL for material toxicity was established at 2.6 mg/m<sup>3</sup>. The NOEL for developmental toxicity was 6.3 mg/m<sup>3</sup>, the highest exposure level evaluated.

**Aspiration hazard:** no data available

**Synergistic effects:** no data available

#### **Symptoms of overexposure**

- Reddening of the eyes
- Skin irritation
- Eye irritation
- Respiratory irritation
- Shortness of breath
- Nose bleeding
- Headache
- Dizziness
- Nausea
- Vomiting
- Gastrointestinal discomfort

**Further information:** The toxicological properties of this material have not been fully characterized.

## **NTP**

US National Toxicity Program (NTP) Report on Carcinogens: This product contains a component at levels greater than or equal to 0.1% that is identified as probable, possible, or confirmed human carcinogen by the US National Toxicology Program Report on Carcinogens.

## **IARC**

US IARC Monographs on Occupational Exposure to Chemical Agents: This product contains a component at levels greater than or equal to 0.1% that is identified as probable, possible, or confirmed human carcinogen by IARC.

## **OSHAS**

US OSHA Specially Regulated Substances (29 CFR 1910.1001-1050): This product contains a component at levels greater than or equal to 0.1% that is identified as probable, possible, or confirmed human carcinogen by OSHA.

## **ACGIH**

US ACGIH Threshold Limit Values: This product contains a component at levels greater than or equal to 0.1% that is identified as probable, possible, or confirmed human carcinogen by ACGIH.

## Section 12, Ecological Information

Avoid releases to the environment. Harmful to aquatic life.

### **Toxicity to fish, LC50**

Species: *Pimephales promelas* (flathead minnow)

- Dose: 21.9 mg/l
- Exposure time: 96 h
- For antimony ion (Sb+3)

### **Toxicity to daphnia and other aquatic invertebrates, LC50**

Species: *Daphnia magna* (Water flea)

- Dose: 18.8 mg/l
- Exposure time: 48 h
- For antimony ion (Sb+3)

## **Chronic toxicity to daphnia and other aquatic invertebrates, NOEC**

Species: *Daphnia magna* (Water flea)

- Concentration: 1.74 mg/l
- Exposure time: 21 d
- For antimony ion (Sb+3)

## **Toxicity to algae, EbC50**

Species: *Raphidocelis subcapitata* (freshwater green alga)

- Dose: >2.4 mg/l
- Exposure time: 72 h
- For antimony ion (Sb+3)

## **Additional ecological information**

- In a 42 day chronic sediment test with *Hyalella azteca*, growth effects after 28 days resulted in an NOEC of 124 mg/kg dw
- In a 42 day soil toxicity test with *Enchytraeus albidus*, mortality and reproduction resulted in the same NOEC and LOEC values of 760 mg/kg dw and 2,012 mg/kg dw, respectively.
- Inhibition action on bacteria (*Pseudomonas putida*): At 3.5 mg/l no inhibiting action.

**Persistence and degradability:** no data available

**Bioaccumulative potential:** no data available

**Mobility in soil:** no data available

**PBT and vPvB assessment:** no data available

## Section 13. Disposal Considerations

Dispose of waste material in compliance with all federal, state and local laws.

Dispose of waste in an approved waste disposal facility

## Section 14. Transport Information

### **DOT (US)**

- UN-Number: 3077
- Proper shipping name: Environmentally hazardous substance, solid, n.o.s.
- Class: 9:
- Packing group: III
- Reportable Quantity (RQ): 1000 lb

#### **IATA**

- UN-Number: 3077
- Proper shipping name: Environmentally hazardous substance, solid, n.o.s.
- Class: 9:
- Packing group: III

#### **Additional information**

- Regulated for transport in the United States only. Not regulated for containers less than 1,000 lbs.

#### Section 15. Regulatory Information

##### *Federal regulatory information*

#### **OSHA Hazards**

- This material is **hazardous** under the criteria of the Federal OSHA Hazard Communications Standard 29CFR 1910.1200
- Carcinogen

#### **SARA Hazard category**

- Acute Health Hazard
- Chronic Health Hazard

#### **US CERCLA**

US Environmental Protection Agency (EPA); The 1980 Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

Reportable quantity (RQ) 1,000 lbs

Antimony Trioxide CAS 1309-64-4  $\geq$ 99.7%

## **US SARA 313**

US Environmental Protection Agency (EPA); Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 Section 313 Reportable Chemicals List, Toxic chemical listings and de minimis concentrations as amended by US Federal Register Final rules

De minimis concentration: 1%

This category listing is for chemicals listed under antimony compounds which are designated carcinogenic according to 29 CFR 1910.1200(d)(4) which have a De Minimis concentration value of 1.0%

Antimony Trioxide CAS 1309-64-4  $\geq 99.7\%$

## **US State Regulations**

### **US MA RTK**

US. The Commonwealth of Massachusetts Department of Public Health; Massachusetts Right-to-Know law; The Massachusetts Substance List, 105 CMR 670.000

Massachusetts hazardous substance

Antimony Trioxide CAS 1309-64-4  $\geq 99.7\%$

### **US NJ RTK**

US. New Jersey Department of Environmental Protection; Bureau of Hazardous Substances; New Jersey Right to Know L, Hazardous Substance List (P.L. 1983, C.135, NJSA 34:5A-1 et seq.

Hazardous substance

Antimony Trioxide CAS 1309-64-4  $\geq 99.7\%$

### **US PA RTK**

US. Commonwealth of Pennsylvania – Department of Labor and Industry; Pennsylvania Code Title 34, Labor and Industry Chapter 323

Environmental hazard, hazardous substance

Antimony Trioxide CAS 1309-64-4  $\geq 99.7\%$

## **California Prop. 65**

**WARNING!** This product contains a chemical known to the State of California to cause cancer.

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

Antimony Trioxide CAS 1309-64-4 >=99.7% Carcinogen Arsenic CAS 7440-38-2 <0.1% Developmental toxin Female reproductive toxin Male reproductive toxin Lead CAS 7439-92-1 <0.1% Carcinogen Lead CAS 7439-92-1 <0.1% Developmental toxin Female reproductive toxin Male reproductive toxin

**The components of this product are reported in the following inventories:**

- TSCA: Listed
- DSL: Listed
- EINECS: Listed
- AICS: Listed
- ENCS: Listed
- KECI: Listed
- PICCS: Listed
- IECSC: Listed

## Section 16. Other Information

No additional information

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## Safety Data Sheet (SDS) – Bulk

**Antimony Trioxide MONTANA BRAND, bulk sacks 1,000 lb or greater, bulk tank trailer**

Version 2.0 Revision Date: 05/27/15 Print Date: 05/27/15

## Section 1. Product and Company Identification

**Product name: Antimony Trioxide, all grades**



MONTANA BRAND HT  
MONTANA BRAND HTW  
MONTANA BRAND MP  
MONTANA BRND MPW

MONTANA BRAND LT  
MONTANA BRAND LTW  
MONTANA BRAND VF  
MONTANA BRAND VFW

**Common Names: Antimony Oxide, Sb<sub>2</sub>O<sub>3</sub>, Antimony (III) oxide, Antimony trioxide**

**Company:**

United States Antimony Corporation  
47 Cox Gulch P.O. Box 643  
Thompson Falls, MT 59873  
United States of America

Telephone: (US) +1 406-827-3523  
Fax: (US) +1 406-827-3543

**Emergency telephone number:**

**CHEMTREC**

**Product Uses:**

**Package Size:**

(US) +1 406-827-3523

(800) 424-9300

Flame retardant synergist, porcelain opacifier, glass fining agent, catalyst, electronics

Bulk sacks, 1,000 lbs and greater.  
Bulk tank trailer.

**Section 2. Hazards Identification**

**Emergency Overview**

**OSHA Hazards:** Limited evidence of a carcinogenic effect.

**Target Organs:** Lungs

**GHS Classification**

- Eye irritation (Category 2B)
- Skin irritation (Category )
- Respiratory irritation (Category )
- Harmful if swallowed (Category )
- Carcinogenicity (Category 2)
- Acute aquatic toxicity (Category 3)

**GHS Label elements, including precautionary statements**

**Pictogram:**

**Signal Word:** Warning

**Hazard statement(s)**

- H315 + H320: Causes skin and eye irritation.
- H: Harmful if swallowed
- H351: Suspected of causing cancer.
- H402: Harmful to aquatic life.

**Precautionary statement(s)**

- P281: Use personal protective equipment as required.
- P306 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing.
- P280: Wear protective gloves/protective clothing
- P284: Wear respiratory protection

**HMIS Classification**

- Health Hazard: 2
- Chronic Health Hazard: \*
- Flammability: 0
- Physical Health Hazards: 0

## NFPA Rating

- Health Hazard: 2
- Fire: 0
- Reactivity Hazard: 0

## Potential Health Effects

- Inhalation: May cause respiratory tract irritation.
- Skin: May cause skin irritation.
- Eyes: May cause eye irritation.
- Ingestion: May be harmful if swallowed.

## Section 3. Composition / Information on Ingredients

**Chemical Family:** Non-ferrous metal oxide

**Chemical Name Formula Molecular Wt.CAS No.Weight %**Antimony oxideSb<sub>2</sub>O<sub>3</sub>291.52 g/mol1309-64-4>=99'7ArsenicAs74.92 g/mol13510-46-8<0.1% (as As)LeadPb207.2 g/mol1317-36-8<0.1 (as Pb)

**Synonyms:** (common names) are provided in Section 1

## Section 4. First Aid Measures

### General advice

Move out of dangerous area. Consult a physician. Show this Safety Data Sheet to the doctor in attendance.

### If inhaled

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

### In case of skin contact

Wash off with soap with plenty of water for at least 15 minutes. Consult a physician.

### In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes. Consult a physician.

### If swallowed

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

## Section 5. Firefighting Measures

### **Conditions of flammability**

Not flammable or combustible.

### **Suitable extinguishing media**

Use extinguishing agent suitable for type of surrounding fire.

### **Hazardous combustion products**

Fumes of antimony oxide, arsenic oxide, and lead oxide

### **Special protective equipment for firefighters**

Wear self-contained breathing apparatus, pressure demand, MSHA/NIOSH approved or equivalent, and full protective gear.

### **Explosion Data**

- **Sensitivity to Mechanical Impact:** Not sensitive
- **Sensitivity to Static Discharge:** Not sensitive

## Section 6. Accidental Release Measures

### **Personal precautions**

Use personal protective equipment. Avoid dust formation. Avoid breathing dust, vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

### **Environmental precautions**

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

### **Methods and materials for containment and cleaning up**

Prevent large quantities of this product from contacting vegetation or waterways. Cover with plastic sheet to prevent spreading. Vacuum up, or sweep and shovel up without creating dust and transfer to properly labeled containers. Keep in suitable closed containers for disposal according to Federal, State and local laws.

## Section 7. Handling and Storage

### **Precautions for safe handling**

- Avoid contact with skin and eyes Avoid formation of dust and aerosols.
- Provide appropriate exhaust ventilation at places where dust is formed.

## Conditions for safe storage

- Keep in tightly closed, properly labeled containers in a dry and well-ventilated place.

## Section 8. Exposure Controls / Personal Protection

### *Components with workplace control parameters*

**Components CAS-No. Value Control Parameter Basis Remarks** Suspected human carcinogen  
Antimony trioxide 1309-64-4 TWA 0.5 mg/m<sup>3</sup> USA. Occupational Exposure Limits (OSHA) – Table Z-1 Limits for Air Contaminants TWA 0.5 mg/m<sup>3</sup> USA. OSHA – Table Z-1 Limits for Air Contaminants – 1910.1000 Pneumoconiosis, Lung cancer. Exposure by all routes should be carefully controlled to levels as low as possible. Suspected human carcinogen TWA 0.5 mg/m<sup>3</sup> USA. Occupational Exposure Limits (OSHA) – Table Z-1 Limits for Air Contaminants TWA 0.5 mg/m<sup>3</sup> USA. OSHA – Table Z-1 Limits for Air Contaminants – 1910.1000 TWA 0.5 mg/m<sup>3</sup> USA. NIOSH Recommended Exposure Limits

## Personal protective equipment

### **Respiratory protection**

Where risk assessment shows air-purifying respirators are appropriate wear a NIOSH/MSHA (US) or CEN (EU) approved dust respirator fitted with type N100 (US) or type P3 (EN 143) (EU) dust cartridges as a back-up to engineering controls. A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use.

### **Hand protection**

Chemical resistant protective gloves

### **Eye protection**

Safety glasses with side-shields conforming to EN 166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).

### **Skin and body protection**

Impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

### **Hygiene measures**

- Handle in accordance with good industrial hygiene and safety practice.
- Wash hands thoroughly before breaks and at the end of the day.
- Contaminated clothing should not be allowed out of the workplace.
- Wash contaminated clothing before reuse.

- Keep work areas clean.
- Do not eat, drink, chew gum, use tobacco products, or apply cosmetics in work areas.

## Section 9. Physical and Chemical Properties

### Appearance

- **Form:** Powder
- **Color:** White
- **Odor:** Odorless
- **Odor threshold:** not applicable

### Safety data

**pH:** not applicable

**Melting/freezing point:** 655°C (1,211°F)

**Boiling point:** 1,425°C (2,594°F)

**Flash point:** not applicable

**Evaporation rate:** not applicable

**Flammability:** non-combustible

### Flammability Limit in Air

- **Upper Flammability Limit:** non-combustible
- **Lower Flammability Limit:** non-combustible

**Vapor pressure:** none at normal conditions

**Vapor density:** no information available

**Bulk density:** ≈60 lbs.ft<sup>3</sup>

**Specific gravity:** 5.67 g/cm<sup>3</sup>

**Water solubility:** 370±37 µg/L

**Solubility in other solvents:** no information available

**Partition coefficient:** not applicable

**Auto ignition temperature:** not applicable

**Decomposition temperature:** does not decompose

**Viscosity, kinematic:** not applicable

**Viscosity, dynamic:** not applicable

**Explosive properties:** non-explosive

**Oxidizing properties:** non-oxidizing

**Molecular weight:** 291.52 g/mol

**Kst:** St 0 (0 bar m/s)

## Section 10. Stability and Reactivity

**Reactivity:** None under normal use conditions

**Chemical stability:** Stable under normal conditions

**Possibility of hazardous reactions:** Reaction with strong reducing agents can produce toxic and flammable stibine gas.

### Conditions to avoid

Strong acids

Strong bases

Strong oxidizing agents

Strong reducing agents

Hot perchloric acid

### Incompatible materials

Strong reducing agents

Strong oxidizing agents

### Hazardous decomposition products

Hazardous decomposition products formed under fire conditions: Fumes of antimony oxide, arsenic oxide and lead oxide

## Section 11. Toxicological Information

### Acute Toxicity

#### Oral LD50

LD50 Oral – rat >34,600 mg/kg

#### Inhalation LC50

No data available

#### Dermal LD50

LD50 Dermal – rabbit >2,000 mg/kg

### Other information on acute toxicity

- LD50 Intraperitoneal – rat 3,250 mg/kg
- LD50 Intraperitoneal – mouse 172 mg/kg

### Skin corrosion/irritation

- May irritate skin
- May cause temporary small itchy pustules (antimony measles) in hot and humid conditions.

### Serious eye damage/irritation

May irritate eyes; Eyes – rabbit – Mild eye irritation – Draize Test

### Respiratory or skin sensitizer

Not a respiratory nor skin sensitizer. (IAOIA Risk Assessment 2004 – 2005)

### Information on toxicological effects

**Symptoms:** No information available

### Delayed and immediate effects as well as chronic effects from short and long-term exposure

**Acute effects:** Gastro-intestinal distress

### Chronic toxicity

Prolonged and excessive inhalation exposures to antimony trioxide may result in respiratory effects, antimony pneumoconiosis, pulmonary fibrosis, inflammation of the lungs, airway obstruction, broncho spasms, reproductive effects, gastrointestinal upset, liver effects, and neurological effects (muscle weakness, subnormal gait).



Prolonged and excessive oral exposure may result in gastrointestinal discomfort and ulcers, blood effects, liver effects, neurological effects inflammation of the mucous membranes and stomatitis.

In a recent 90 day oral study in male and female rats, no adverse effects were observed at doses of 1000, 5000, and 20000 ppm. The No Adverse Effect Level for antimony trioxide was 20000 ppm for both sexes.

In a developmental study in Sprague-Dewley rats consisting of three treatment groups and a control group, each containing 26 females at doses of 2.6, 4.4, and 6.3 mg/m<sup>3</sup>, no developmental effects were observed. The LOAEL for material toxicity was established at 2.6 mg/m<sup>3</sup>. The NOEL for developmental toxicity was 6.3 mg/m<sup>3</sup>, the highest exposure level evaluated.

**Mutagenicity:** no data available

### **Carcinogenicity**

Carcinogenicity – rat – Inhalation

Tumorigenic: Carcinogenic by RTECS criteria. Respiration: Lungs, Thorax, Tumors Liver: Tumors

Limited evidence of carcinogenicity in animal studies.

### **IARC**

- Class 2B: Possibly carcinogenic to humans (antimony)
- Class 2A: Probably carcinogenetic to humans (lead)
- Class 1: Carcinogenetic to humans (arsenic)

**NTP:** No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

**OSHA:** No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by OSHA.

Antimony trioxide has been classified by IRAC as a Class 2B. An IARC 2B material exhibits sufficient evidence in animal tests to be a possible human carcinogen. Antimony oxide production has been determined by ACGIH to be a carcinogenic risk. Antimony trioxide has been identified by the EPA as a suspected lung carcinogen. Historical studies have concluded that exposure to elevated levels of antimony oxide may cause lung carcinoma. However, the most recent study conducted under the EPA's Voluntary Test Program by the Antimony Oxide Industry Association (AOIA), has concluded that antimony oxide does not cause lung cancer in

rats at occupational exposure levels. The levels tested ranged from 0.005 mg/m<sup>3</sup> to 6 mg/m<sup>3</sup> (from one tenth to ten times the OSHA TWA Threshold Limit Value).

### **Reproductive toxicity**

Reproductive toxicity – rat – inhalation

- Effects on Fertility: Post-implant mortality (e.g., dead and/or resorbed implants per total number of implants).
- Effects on Embryo or Fetus: Fetal Death.

**Teratogenicity:** no data available

**Specific target organ toxicity (STOT) – single exposure (Globally Harmonized System):** no data available

**Specific target organ toxicity (STOT) – repeated exposure (Globally Harmonized System):** See “Repeated dose toxicity” below

### **Repeated dose toxicity**

Prolonged and excessive inhalation exposures to antimony trioxide may result in respiratory effects, antimony pneumoconiosis, pulmonary fibrosis, inflammation of the lungs, airway obstruction, broncho spasms, reproductive effects, gastrointestinal upset, liver effects, and neurological effects (muscle weakness, subnormal gait).

Prolonged and excessive oral exposure may result in gastrointestinal discomfort and ulcers, blood effects, liver effects, neurological effects inflammation of the mucous membranes and stomatitis.

In a recent 90 day oral study in male and female rats, no adverse effects were observed at doses of 1000, 5000, and 20000 ppm. The No Adverse Effect Level for antimony trioxide was 20000 ppm for both sexes.

In a developmental study in Sprague-Dewley rats consisting of three treatment groups and a control group, each containing 26 females at doses of 2.6, 4.4, and 6.3 mg/m<sup>3</sup>, no developmental effects were observed. The LOAEL for material toxicity was established at 2.6 mg/m<sup>3</sup>. The NOEL for developmental toxicity was 6.3 mg/m<sup>3</sup>, the highest exposure level evaluated.

**Aspiration hazard:** no data available

**Synergistic effects:** no data available

## **Symptoms of overexposure**

- Reddening of the eyes
- Skin irritation
- Eye irritation
- Respiratory irritation
- Shortness of breath
- Nose bleeding
- Headache
- Dizziness
- Nausea
- Vomiting
- Gastrointestinal discomfort

**Further information:** The toxicological properties of this material have not been fully characterized.

## **NTP**

US National Toxicity Program (NTP) Report on Carcinogens: This product contains a component at levels greater than or equal to 0.1% that is identified as probable, possible, or confirmed human carcinogen by the US National Toxicology Program Report on Carcinogens.

## **IARC**

US IARC Monographs on Occupational Exposure to Chemical Agents: This product contains a component at levels greater than or equal to 0.1% that is identified as probable, possible, or confirmed human carcinogen by IARC.

## **OSHASP**

US OSHA Specially Regulated Substances (29 CFR 1910.1001-1050): This product contains a component at levels greater than or equal to 0.1% that is identified as probable, possible, or confirmed human carcinogen by OSHA.

## **ACGIH**

US ACGIH Threshold Limit Values: This product contains a component at levels greater than or equal to 0.1% that is identified as probable, possible, or confirmed human carcinogen by ACGIH.

## Section 12. Ecological Information

Avoid releases to the environment. Harmful to aquatic life.

### **Toxicity to fish, LC50**

Species: *Pimephales promelas* (flathead minnow)

- Dose: 21.9 mg/l
- Exposure time: 96 h
- For antimony ion (Sb+3)

### **Toxicity to daphnia and other aquatic invertebrates, LC50**

Species: *Daphnia magna* (Water flea)

- Dose: 18.8 mg/l
- Exposure time: 48 h
- For antimony ion (Sb+3)

### **Chronic toxicity to daphnia and other aquatic invertebrates, NOEC**

Species: *Daphnia magna* (Water flea)

- Concentration: 1.74 mg/l
- Exposure time: 21 d
- For antimony ion (Sb+3)

### **Toxicity to algae, EbC50**

Species: *Raphidocelis subcapitata* (freshwater green alga)

- Dose: >2.4 mg/l
- Exposure time: 72 h
- For antimony ion (Sb+3)

### **Additional ecological information**

- In a 42 day chronic sediment test with *Hyalella azteca*, growth effects after 28 days resulted in an NOEC of 124 mg/kg dw

- In a 42 day soil toxicity test with *Enchytraeus albidus*, mortality and reproduction resulted in the same NOEC and LOEC values of 760 mg/kg dw and 2,012 mg/kg dw, respectively.
- Inhibition action on bacteria (*Pseudomonas putida*): At 3.5 mg/l no inhibiting action.

**Persistence and degradability:** no data available

**Bioaccumulative potential:** no data available

**Mobility in soil:** no data available

**PBT and vPvB assessment:** no data available

### Section 13. Disposal Considerations

Dispose of waste material in compliance with all federal, state and local laws.

Dispose of waste in an approved waste disposal facility

### Section 14. Transport Information

#### **DOT (US)**

- UN-Number: 3077
- Proper shipping name: Environmentally hazardous substance, solid, n.o.s.
- Class: 9:
- Packing group: III
- Reportable Quantity (RQ): 1000 lb

#### **IATA**

- UN-Number: 3077
- Proper shipping name: Environmentally hazardous substance, solid, n.o.s.
- Class: 9:
- Packing group: III

#### **Additional information**

- Regulated for transport in the United States only. Not regulated for containers less than 1,000 lbs.

- For containers greater than 1,000 lbs: Environmentally hazardous substance, solid, n.o.s.

## Section 15. Regulatory Information

### Federal regulatory information

#### OSHA Hazards

- This material is **hazardous** under the criteria of the Federal OSHA Hazard Communications Standard 29CFR 1910.1200
- Carcinogen

#### SARA Hazard category

- Acute Health Hazard
- Chronic Health Hazard

#### US CERCLA

- US Environmental Protection Agency (EPA); The 1980 Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)
- Reportable quantity (RQ) 1,000 lbs
- Antimony Trioxide CAS 1309-64-4  $\geq 99.7\%$

#### US SARA 313

- US Environmental Protection Agency (EPA); Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 Section 313 Reportable Chemicals List, Toxic chemical listings and de minimis concentrations as amended by US Federal Register Final rules
- De minimis concentration: 1%
- This category listing is for chemicals listed under antimony compounds which are designated carcinogenic according to 29 CFR 1910.1200(d)(4) which have a De Minimis concentration value of 1.0%
- Antimony Trioxide CAS 1309-64-4  $\geq 99.7\%$

### US State Regulations

#### US MA RTK

- US. The Commonwealth of Massachusetts Department of Public Health; Massachusetts Right-to-Know law; The Massachusetts Substance List, 105 CMR 670.000
- Massachusetts hazardous substance
- Antimony Trioxide CAS1309-64-4 >=99.7%

#### US NJ RTK

- US. New Jersey Department of Environmental Protection; Bureau of Hazardous Substances; New Jersey Right to Know L, Hazardous Substance List (P.L. 1983, C.135, NJSA 34:5A-1 et seq.
- Hazardous substance
- Antimony Trioxide CAS 1309-64-4 >=99.7%

#### US PA RTK

- US. Commonwealth of Pennsylvania – Department of Labor and Industry; Pennsylvania Code Title 34, Labor and Industry Chapter 323
- Environmental hazard, hazardous substance
- Antimony Trioxide CAS 1309-64-4 >=99.7%

#### California Prop. 65

- **WARNING!** This product contains a chemical known to the State of California to cause cancer.
- **WARNING!** This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

Antimony TrioxideCAS 1309-64-4>=99.7%CarcinogenArsenicCAS 7440-38-2<0.1%Developmental toxinFemale reproductive toxinMale reproductive toxinLeadCAS 7439-92-1<0.1%CarcinogenLeadCAS 7439-92-1<0.1%Developmental toxinFemale reproductive toxinMale reproductive toxin

#### The components of this product are reported in the following inventories:

- TSCA: Listed
- DSL: Listed
- EINECS: Listed
- AICS: Listed
- ENCS: Listed

- KECI: Listed
- PICCS: Listed
- IECSC: Listed

## Section 16. Other Information

No additional information

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## Antimony Metal Ingot Safety Data Sheet (SDS)

### **Antimony Metal Ingot**

Version 1.0 Revision Date: 06/20/15 Print Date: 06/20/15

## Section 1. Product and Company Identification

**Product name: Antimony Metal Ingot**

**Common Names: Antimony Metal, Regulus**

**Company:**

United States Antimony Corporation  
47 Cox Gulch P.O. Box 643  
Thompson Falls, MT 59873  
United States of America

Telephone: (US) +1 406-827-3523 Fax: (US) +1 406-827-3543

**Emergency telephone number:**

**CHEMTREC**

**Product Uses:**

**Package Size:**

(US) +1 406-827-3523

(800) 424-9300



Hardening Lead, Alloying

2,000 pounds on pallet

## Section 2. Hazards Identification

### Emergency Overview

**OSHA Hazards:** Limited evidence of a carcinogenic effect.

**Target Organs:** Respiratory and Cardiovascular Systems, Liver, Kidneys

### GHS Classification

- Eye irritation (Category 2B)
- Skin irritation (Category 3)
- Respiratory irritation (Category 4)
- Harmful if swallowed (Category 4)
- Carcinogenicity (Category 2)
- Acute aquatic toxicity (Category 3)

### GHS Label elements, including precautionary statements

**Pictogram:**

**Signal Word:** Warning

### Hazard statement(s)

- H315 + H320: Causes skin and eye irritation.
- H332: Harmful if inhaled
- H351: Suspected of causing cancer.
- H402: Harmful to aquatic life.

### Precautionary statement(s)

- P281: Use personal protective equipment as required.
- P306 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing.
- P280: Wear protective gloves/protective clothing

- P284: Wear respiratory protection

#### **HMIS Classification**

- Health Hazard: 1
- Chronic Health Hazard: \*
- Flammability: 0
- Physical Health Hazards: 0

#### **NFPA Rating**

- Health Hazard: 1
- Fire: 0
- Reactivity Hazard: 0

#### **Potential Health Effects**

- Inhalation: May cause respiratory tract irritation.
- Skin: May cause skin irritation.
- Eyes: May cause eye irritation.
- Ingestion: May be harmful if swallowed.

### Section 3. Composition / Information On Ingredients

**Chemical Family:** Non-ferrous metal oxide

#### **Chemical Name Formula Molecular Wt.CAS No.EINECS#**

**ELINCS#Weight %**AntimonySb121.76 g/mol7440-36-0231-146-5>=99.7ArsenicAs74.92 g/mol7440-38-2231-148-6<0.1% (as As)LeadPb207.2 g/mol7439-92-1231-100-4<0.1 (as Pb)

**Synonyms:** (common names) are provided in Section 1

### Section 4. First Aid Measures

#### **General advice**

Move out of dangerous area. Consult a physician. Show this Safety Data Sheet to the doctor in attendance.

#### **If inhaled**

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

**In case of skin contact**

Wash off with soap with plenty of water for at least 15 minutes. Consult a physician.

**In case of eye contact**

Rinse thoroughly with plenty of water for at least 15 minutes. Consult a physician.

**If swallowed**

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

**Section 5. Firefighting Measures****Conditions of flammability**

Not flammable or combustible as ingot or pieces. Flammable or explosive as powder.

**Suitable extinguishing media**

Use extinguishing agent suitable for type of surrounding fire.

**Hazardous combustion products**

Fumes of antimony oxide, arsenic oxide, and lead oxide

**Special protective equipment for firefighters**

Wear self-contained breathing apparatus, pressure demand, MSHA/NIOSH approved or equivalent, and full protective gear.

**Explosion Data**

- **Sensitivity to Mechanical Impact:** Not sensitive
- **Sensitivity to Static Discharge:** Not sensitive
- **Dust Explosion Hazard:** Explosive as powder or dust at sufficient concentrations dispersed in air.

**Section 6. Accidental Release Measures****Personal precautions**

Use personal protective equipment. Avoid dust formation. Avoid breathing dust, vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

**Environmental precautions**

None

**Methods and materials for containment and cleaning up**

Pick up and use in normal manner. For disposal, follow Federal, State and local laws.

## Section 7. Handling and Storage

### Precautions for safe handling

- Avoid contact with skin and eyes Avoid formation of dust and aerosols.
- Provide appropriate exhaust ventilation at places where dust is formed.

### Conditions for safe storage

- Store away from incompatible materials (see Section 10 for incompatibilities)

## Section 8. Exposure Controls / Personal Protection

### Components with workplace control parameters

Components	CAS-No.	Value	Control Parameters	Basis	Remarks
Antimony	1440-36-0	TWA0.5 mg/m <sup>3</sup>	USA. Occupational Exposure Limits (OSHA) – Table Z-1 Limits for Air Contaminants	TWA0.5 mg/m <sup>3</sup>	USA. OSHA – Table Z-1 Limits for Air Contaminants – 1910.1000 Pneumoconiosis, Lung cancer. Exposure by all routes should be carefully controlled to levels as low as possible. Suspected human carcinogen
Arsenic	7440-38-2	TWA0.01 mg/m <sup>3</sup>	USA. Occupational Exposure Limits (OSHA) – Table Z-1 Limits for Air Contaminants – 1910.1000	TWA0.5 mg/m <sup>3</sup>	USA. NIOSH Recommended Exposure Limits Arsenic Pneumoconiosis, Lung cancer. Exposure by all routes should be carefully controlled to levels as low as possible. Known human carcinogen. Toxic if ingested.
Arsenic	7440-38-2	TWA0.01 mg/m <sup>3</sup>	Canada – British Columbia Occupational Exposure Limits	TWA0.01 mg/m <sup>3</sup>	as As USA. Occupational Exposure Limits Arsenic7440-38-2REL TWA0.01 mg/m <sup>3</sup>
Lead	7439-92-1	TWA0.05 mg/m <sup>3</sup>	USA. Occupational Exposure Limits (OSHA) – Table Z-1 Limits for Air Contaminants – 1910.1000 and ACGIH TLV	0.002mg/m <sup>3</sup>	as As USA. NIOSH Recommended Exposure Limits ceiling

### Personal protective equipment

#### Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate wear a NIOSH/MSHA (US) or CEN (EU) approved dust respirator fitted with type N100 (US) or type P3 (EN 143) (EU) dust cartridges as a back-up to engineering controls. A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use.

**Hand protection**

Chemical resistant protective gloves

**Eye protection**

Safety glasses with side-shields conforming to EN 166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).

**Skin and body protection**

Impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Hygiene measures**

- Handle in accordance with good industrial hygiene and safety practice.
- Wash hands thoroughly before breaks and at the end of the day.
- Contaminated clothing should not be allowed out of the workplace.
- Wash contaminated clothing before reuse.
- Keep work areas clean.
- Do not eat, drink, chew gum, use tobacco products, or apply cosmetics in work areas.

**Section 9. Physical and Chemical Properties*****Appearance***

- **Form:** Metal
- **Color:** Silvery Grey
- **Odor:** Odorless
- **Odor threshold:** not applicable

***Safety data***

**pH:** not applicable

**Melting/freezing point:** 630°C (1,167°F)

**Boiling point:** 1,635°C (2,975°F)

**Flash point:** not applicable

**Evaporation rate:** not applicable

**Flammability:** non-combustible

### **Flammability Limit in Air**

- **Upper Flammability Limit:** non-combustible
- **Lower Flammability Limit:** non-combustible

**Vapor pressure:** none at normal conditions

**Vapor density:** no information available

**Bulk density:**  $\approx 417 \text{ lbs.ft}^3$

**Specific gravity:**  $6.69 \text{ g/cm}^3$

**Water solubility:**  $370 \pm 37 \text{ } \mu\text{g/L}$

**Solubility in other solvents:** no information available

**Partition coefficient:** not applicable

**Auto ignition temperature:** not applicable

**Decomposition temperature:** does not decompose

**Viscosity, kinematic:** not applicable

**Viscosity, dynamic:** not applicable

**Explosive properties:** non-explosive except as dust in sufficient concentration in air

**Oxidizing properties:** non-oxidizing

**Molecular weight:**  $121.76 \text{ g/mol}$

**Kst:** St 0 (0 bar m/s)

### **SECTION 10. STABILITY AND REACTIVITY**

**Reactivity:** None under normal use conditions

**Chemical stability:** Stable under normal conditions

**Possibility of hazardous reactions:** Reaction with strong reducing agents can produce toxic and flammable stibine gas.

Conditions to avoid: Strong acids Strong bases Strong oxidizing agents Strong reducing agents  
Hot perchloric acid

Incompatible materials: Strong reducing agents Strong oxidizing agents

Hazardous decomposition products: Hazardous decomposition products formed under fire conditions: Fumes of antimony oxide, arsenic oxide and lead oxide

## Section 11. Toxicological Information

### Acute Toxicity

#### Oral LD50

LD50 Oral – rat > 34,600 mg/kg

#### Inhalation LC50

No data available

#### Dermal LD50

LD50 Dermal – rabbit > 2,000 mg/kg

### Other information on acute toxicity

- LD50 Intraperitoneal – rat 3,250 mg/kg
- LD50 Intraperitoneal – mouse 172 mg/kg

### Skin corrosion/irritation

- May irritate skin
- May cause temporary small itchy pustules (antimony measles) in hot and humid conditions.

### Serious eye damage/irritation

May irritate eyes; Eyes – rabbit – Mild eye irritation – Draize Test

### Respiratory or skin sensitizer

Not a respiratory nor skin sensitizer. (IAOIA Risk Assessment 2004 – 2005)

### Information on toxicological effects

#### Symptoms:

- Reddening of eyes

- Skin Irritation
- Eye Irritation
- Respiratory irritation
- Shortness of breath
- Nose bleeding
- Headache
- Dizziness
- Nausea
- Vomiting
- Gastrointestinal discomfort

### **Delayed and immediate effects as well as chronic effects from short and long-term exposure**

**Acute effects:** Gastro-intestinal distress

#### **Chronic toxicity**

Prolonged and excessive inhalation exposures to antimony trioxide may result in respiratory effects, antimony pneumoconiosis, pulmonary fibrosis, inflammation of the lungs, airway obstruction, bronchospasms, reproductive effects, gastrointestinal upset, liver effects, and neurological effects (muscle weakness, subnormal gait).

Prolonged and excessive oral exposure may result in gastrointestinal discomfort and ulcers, blood effects, liver effects, neurological effects inflammation of the mucous membranes and stomatitis.

In a recent 90 day oral study in male and female rats, no adverse effects were observed at doses of 1000, 5000, and 20000 ppm. The No Adverse Effect Level for antimony trioxide was 20000 ppm for both sexes.

In a developmental study in Sprague-Dewley rats consisting of three treatment groups and a control group, each containing 26 females at doses of 2.6, 4.4, and 6.3 mg/m<sup>3</sup>, no developmental effects were observed. The LOAEL for material toxicity was established at 2.6 mg/m<sup>3</sup>. The NOEL for developmental toxicity was 6.3 mg/m<sup>3</sup>, the highest exposure level evaluated.

**Mutagenicity:** no data available

#### **Carcinogenicity**



## Carcinogenicity – rat – Inhalation

Tumorigenic: Carcinogenic by RTECS criteria. Respiration: Lungs, Thorax, Tumors Liver: Tumors

Limited evidence of carcinogenicity in animal studies.

### IARC

- Class 2B: Possibly carcinogenic to humans (antimony)
- Class 2A: Probably carcinogenic to humans (lead)
- Class 1: Carcinogenic to humans (arsenic)

**NTP:** No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

**OSHA:** No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by OSHA.

Antimony trioxide has been classified by IARC as a Class 2B. An IARC 2B material exhibits sufficient evidence in animal tests to be a possible human carcinogen. Antimony oxide production has been determined by ACGIH to be a carcinogenic risk. Antimony trioxide has been identified by the EPA as a suspected lung carcinogen. Historical studies have concluded that exposure to elevated levels of antimony oxide may cause lung carcinoma. However, the most recent study conducted under the EPA's Voluntary Test Program by the Antimony Oxide Industry Association (AOIA), has concluded that antimony oxide does not cause lung cancer in rats at occupational exposure levels. The levels tested ranged from 0.005 mg/m<sup>3</sup> to 6 mg/m<sup>3</sup> (from one tenth to ten times the OSHA TWA Threshold Limit Value).

### Reproductive toxicity

Reproductive toxicity – rat – inhalation

- Effects on Fertility: Post-implant mortality (e.g., dead and/or resorbed implants per total number of implants).
- Effects on Embryo or Fetus: Fetal Death.

**Teratogenicity:** no data available

**Specific target organ toxicity (STOT) – single exposure (Globally Harmonized System):** no data available

**Specific target organ toxicity (STOT) – repeated exposure (Globally Harmonized System):** See "Repeated dose toxicity" below

## **Repeated dose toxicity**

Prolonged and excessive inhalation exposures to antimony trioxide may result in respiratory effects, antimony pneumoconiosis, pulmonary fibrosis, inflammation of the lungs, airway obstruction, bronchospasms, reproductive effects, gastrointestinal upset, liver effects, and neurological effects (muscle weakness, subnormal gait).

Prolonged and excessive oral exposure may result in gastrointestinal discomfort and ulcers, blood effects, liver effects, neurological effects inflammation of the mucous membranes and stomatitis.

In a recent 90 day oral study in male and female rats, no adverse effects were observed at doses of 1000, 5000, and 20000 ppm. The No Adverse Effect Level for antimony trioxide was 20000 ppm for both sexes.

In a developmental study in Sprague-Dewley rats consisting of three treatment groups and a control group, each containing 26 females at doses of 2.6, 4.4, and 6.3 mg/m<sup>3</sup>, no developmental effects were observed. The LOAEL for material toxicity was established at 2.6 mg/m<sup>3</sup>. The NOEL for developmental toxicity was 6.3 mg/m<sup>3</sup>, the highest exposure level evaluated.

**Aspiration hazard:** no data available

**Synergistic effects:** no data available

## **Symptoms of overexposure**

- Reddening of the eyes
- Skin irritation
- Eye irritation
- Respiratory irritation
- Shortness of breath
- Nose bleeding
- Headache
- Dizziness
- Nausea
- Vomiting
- Gastrointestinal discomfort

**Further information:** The toxicological properties of this material have not been fully characterized.

## **NTP**

US National Toxicity Program (NTP) Report on Carcinogens: This product contains a component at levels greater than or equal to 0.1% that is identified as probable, possible, or confirmed human carcinogen by the US National Toxicology Program Report on Carcinogens.

## **IARC**

US IARC Monographs on Occupational Exposure to Chemical Agents: This product contains a component at levels greater than or equal to 0.1% that is identified as probable, possible, or confirmed human carcinogen by IARC.

## **OSHASp**

US OSHA Specially Regulated Substances (29 CFR 1910.1001-1050): This product contains a component at levels greater than or equal to 0.1% that is identified as probable, possible, or confirmed human carcinogen by OSHA.

## **ACGIH**

US ACGIH Threshold Limit Values: This product contains a component at levels greater than or equal to 0.1% that is identified as probable, possible, or confirmed human carcinogen by ACGIH.

## Section 12. Ecological Information

Avoid releases to the environment. Harmful to aquatic life.

### **Toxicity to fish, LC50**

Species: *Pimephales promelas* (flathead minnow)

- Dose: 21.9 mg/l
- Exposure time: 96 h
- For antimony ion (Sb+3)

### **Toxicity to daphnia and other aquatic invertebrates, LC50**

Species: *Daphnia magna* (Water flea)

- Dose: 18.8 mg/l

- Exposure time: 48 h
- For antimony ion (Sb+3)

### **Chronic toxicity to daphnia and other aquatic invertebrates, NOEC**

Species: *Daphnia magna* (Water flea)

- Concentration: 1.74 mg/l
- Exposure time: 21 d
- For antimony ion (Sb+3)

### **Toxicity to algae, EbC50**

Species: *Raphidocelis subcapitata* (freshwater green alga)

- Dose: >2.4 mg/l
- Exposure time: 72 h
- For antimony ion (Sb+3)

### **Additional ecological information**

- In a 42 day chronic sediment test with *Hyalella azteca*, growth effects after 28 days resulted in an NOEC of 124 mg/kg dw
- In a 42 day soil toxicity test with *Enchytraeus albidus*, mortality and reproduction resulted in the same NOEC and LOEC values of 760 mg/kg dw and 2,012 mg/kg dw, respectively.
- Inhibition action on bacteria (*Pseudomonas putida*): At 3.5 mg/l no inhibiting action.

**Persistence and degradability:** no data available

**Bio accumulative potential:** no data available

**Mobility in soil:** no data available

**PBT and vPvB assessment:** no data available

## Section 13. Disposal Considerations

Dispose of waste material in compliance with all federal, state and local laws.

## Section 14. Transportation Information

**DOT (US):** Non-hazardous

**IATA:** Non-hazardous

**Additional information:** None

Section 15. Regulatory Information

### **Federal regulatory information**

#### **OSHA Hazards**

- This material is **hazardous** under the criteria of the Federal OSHA Hazard Communications Standard 29CFR 1910.1200
- Carcinogen

#### **SARA Hazard category**

- Acute Health Hazard
- Chronic Health Hazard

#### **US CERCLA**

Not regulated

#### **US SARA 313**

Not regulated

### **US State Regulations**

#### **US MA RTK**

- US. The Commonwealth of Massachusetts Department of Public Health; Massachusetts Right-to-Know law; The Massachusetts Substance List, 105 CMR 670.000
- Massachusetts hazardous substance
- Antimony Trioxide CAS 7440-36-0

#### **US NJ RTK**

- US. New Jersey Department of Environmental Protection; Bureau of Hazardous Substances; New Jersey Right to Know L, Hazardous Substance List (P.L. 1983, C.135, NJSA 34:5A-1 et seq.
- Hazardous substance
- Antimony Trioxide CAS 7440-36-0

#### US PA RTK

- US. Commonwealth of Pennsylvania – Department of Labor and Industry; Pennsylvania Code Title 34, Labor and Industry Chapter 323
- Environmental hazard, hazardous substance
- Antimony Trioxide CAS 7440-36-0

#### California Prop. 65

- **WARNING!** This product contains a chemical known to the State of California to cause cancer.
- **WARNING!** This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

**Antimony**CAS 7440-36-0>=99.7%**Carcinogen****Arsenic**CAS 7440-38-2<0.1%**Developmental toxin**Female reproductive toxin**Male reproductive toxin****Lead**CAS 7439-92-1<0.1%**Carcinogen****Lead**CAS 7439-92-1<0.1%**Developmental toxin**Female reproductive toxin**Male reproductive toxin**

#### The components of this product are reported in the following inventories:

- TSCA: Listed
- DSL: Listed
- EINECS: Listed
- AICS: Listed
- ENCS: Listed
- KECI: Listed
- PICCS: Listed
- IECSC: Listed

#### Section 16. Other Information

No additional information

**WEBSITE POSTING REQUIREMENTS**

<p><b>AUDIT COMMITTEE CHARTER</b></p>	<p>NYSE Website posting required. Nasdaq Website posting not required.</p>
<p><b>COMPENSATION COMMITTEE CHARTER</b></p>	<p>NYSE Website posting required. Nasdaq Website posting not required.</p>
<p><b>NOMINATING AND CORPORATE GOVERNANCE COMMITTEE CHARTER</b></p>	<p>NYSE Website posting required. Nasdaq Website posting not required.</p>
<p><b>CODE OF ETHICS</b></p>	<p>NYSE Website posting required. Nasdaq Must be made publically available, but Nasdaq rules do not specify the means to do so.</p>
<p><b>CORPORATE GOVERNANCE GUIDELINES</b></p>	<p>NYSE Website posting required. Nasdaq Website posting not required.</p>
<p><b>CHANGES TO CODE OF ETHICS</b></p>	<p>NYSE The NYSE requires waivers from the code of ethics and business conduct to be disclosed to stockholders. This can be accomplished by, among other options, posting on the company's website. Nasdaq Nasdaq requires waivers from the code of conduct to be disclosed. This can be accomplished by, among other options, posting on the company's website in a manner that satisfies Item 5.05(c) of Form 8-K.</p>