

Material Safety Data Sheet ANTIMONY TRIOXIDE

Section 1 - Product Identification

Synonyms : Antimony trioxide
Molecular Weight : 307.52 g/mol
Chemical Formula : Sb_2O_3
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Recommended use of the chemical and restrictions on use

The product is used in industrial manufacturing, in particular in :

- Used in glass, ceramics, textiles, polymer industries.

Section 2 – Composition/Information on Ingredients

The product contains greater than 99.9 percent (%) Antimony trioxide -

Chemical Name	EC No/CAS No	Purity, %
dioxo(oxostibanyloxy)-λ5-stibane	1332-81-6	min. 99.9

Section 3 – Hazards Identification

3.1 Classification of the substance according to GHS

Physical hazards

Explosives : Not applicable for classification

Flammable gases : Not applicable for classification

Flammable aerosols : Not applicable for classification

Oxidizing gases : Not applicable for classification

Gases under pressure : Not applicable for classification

Combustible liquids : Not applicable for classification

Flammable solids : Not classified

Self-reactive substances and mixtures : Not applicable for classification

Pyrophoric liquids : Not applicable for classification

Pyrophoric solids : Not classified

Self-heating substances and mixtures : Not classified

Substances and mixtures which, in contact with water, emit flammable gases: Not classified

Oxidizing liquids : Not applicable for classification

Oxidizing solids : Classification not possible

Organic peroxides : Not applicable for classification

Corrosive to metals : Classification not possible

Hazard statements: May be harmful if swallowed.

Causes eye irritation.

May cause cancer.

May damage fertility or the unborn child.

Causes damage to the heart.

May cause damage to the respiratory system.

Causes damage to organs (respiratory system) through prolonged or repeated exposure.

Harmful to aquatic life.

Harmful to aquatic life with long lasting effects.

Precautionary statements: [Prevention]

Do not handle until all safety precautions have been read and understood.

Obtain special instructions before use.

Do not eat, drink, or smoke when using this product.

Use personal protective equipment and ventilating equipment as required to avoid exposure.

Wash hands, gargle, and rinse the nostrils thoroughly after handling.

Thoroughly remove all traces of the substance from work clothes and other gear.

In the event of a spill, clean up the substance in a way that does not cause dust.

Response

If exposed or concerned: Get medical advice/attention.

If swallowed: Get immediate medical advice/attention. Rinse mouth.

If in eyes: Rinse cautiously with water for several minutes.

If eye irritation persists: Get medical advice/attention if you feel unwell.

Storage

Store in sealed containers in a properly designated location.

Disposal

Dispose of contents/container by contracting a professional waste treatment company authorized by the governor of the prefecture in question.

Section 4 – First-Aid Measures

4.1. If in eyes: Rinse eyes immediately with running water for at least 15 minutes and seek medical attention from an ophthalmologist.

4.2. If on skin: Wash thoroughly with soap and rinse thoroughly with water.

4.3. If inhaled: Move the victim to a location with fresh air and have him or her blow his or her nose and gargle.

4.4. If swallowed: Rinse mouth thoroughly with water and induce vomiting by inserting a finger into the throat. Seek medical attention immediately. DO NOT induce vomiting if the victim is unconscious.

Section 5 – Fire Fighting Measures

5.1. Extinguishing media: Choose a suitable extinguishing media based on the conditions at hand.

5.2. Small fire: Dry chemicals, carbon dioxide, water, fire foam

5.3. Large fire: Water, water mist, fire foam

5.4. Prohibited extinguishing media: No information available.

5.5. Fire-specific hazards: In case of fire, the product may give off irritating, toxic, or corrosive gases. Avoid inhalation of smoke when fighting the fire.

5.6. Special fire fighting procedures: Move containers away from the burning area if it is possible to do so safely. If the containers cannot be moved, spray them and the surrounding area with water to cool them down. Undertake firefighting work from the upwind side.

5.7. Protection of firefighters: During firefighting work, wear an appropriate respirator and protective clothing designed for use with chemical agents.

Section 6 – Accidental Release Measures

6.1. Personal precautions, protective equipment, and emergency procedures: Restrict access to the area. Workers should use appropriate protective gear and avoid contact with the eyes or skin or inhalation. Remain upwind and avoid low-lying areas.

6.2. Environmental precautions: Exercise care to ensure that the substance is not discharged into a stream or river so as to avoid any adverse environmental impact.

6.3. Recovery and neutralization: Sweep the released product into an empty container. Take care not to cause dust.

6.4. Methods and materials for containment and cleaning up: If it can be done safely, block off the source of the leak to stop the release.

6.5. Prevention of secondary hazards: Ventilate closed areas before entering. Keep the product out of drains, sewers, basements, and closed areas.

Section 7 – Handling and Storage

7.1. Handling

Technical measures: Perform the engineering measures described below, using protective gear.

Local exhaust and general ventilation: Perform local exhaust and general ventilation as described in

Precautions for safe handling: Use protective gear to avoid inhalation of the product or contact with the eyes or skin. Wash hands and gargle thoroughly after handling.

7.2. Storage

Technical measures: Install windows, lighting, and ventilation equipment as necessary in storage locations to ensure safe storage or handling of hazardous substances.

Storage conditions: Store so that the substance is prevented from absorbing moisture. Store in a dry, well ventilated place. Keep the product away from oxidants, reducing agents, acids, and alkaline substances.

Safe storage containers: Glass, polyethylene, polypropylene, etc.

Section 8 – Exposure Controls/Personal Protection

8.1. Control limits: N/D

8.2. Threshold limit values: Japan Society for Occupational Health (2000 Ed.): 0.1 mg/m³; antimony and antimony compounds (as Sb, excluding stibine) ACGIH (2000 Ed.): 0.5 mg/m³; antimony and antimony compounds (as Sb)

8.3. Engineering controls: When using in an indoor workplace, seal the source of the substance or install a local ventilation system. Install a face-washing station and safety shower close to areas where the substance will be handled and indicate their locations clearly.

8.4. Personal protective equipment

Respiratory protection: Use a dust mask.

Hand protection: Use impermeable gloves, for example made of rubber, as warranted.

Eye protection: Use protective glasses or safety goggles.

Skin and body protection: Use impermeable protective clothing, for example a rubber apron, boots, and other protective gear, as warranted.

Hygiene measures: Do not eat, drink, or smoke when handling.

Section 9 – Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Appearance : White powder

Odour : Odorless

Odour threshold : N.A.

pH @ 20°C : 8.3 (3% solution), 7.6 (10% solution)

Melting point : 655 °C

Boiling point : 1425 °C

Flash point : N.A.

Evaporation rate : N.A.

Flammability : N.A.

Upper/lower flammability or explosive limits : N.A.

Vapor pressure: 130 Pa (574°C) (Indicates the vapor pressure at temperatures at or above the melting point of 655°C.)

Specific gravity/density: 5.2 (<570°C, cubical crystal), 5.67 (>570°C, orthorhombic crystal)

Relative density : N.A.

Solubility in water : > 1000 g/l at 20°C

Partition coefficient: n-octanol/water : N.A.

Auto-ignition temperature : N.A.

Decomposition temperature : H₂O @ 120°C

Viscosity : N.A.

Molecular weight : 307.52 g/mol

Section 10 – Stability and Reactivity

10.1. Reactivity

Antimony trioxide is a stable product.

10.2. Chemical stability

Stable during normal handling. Non-flammable. Hygroscopic.

10.3. Possibility of hazardous reactions

May react with oxidants.

10.4. Conditions to avoid:

Sunlight, heat, moisture, contact with incompatible materials

10.5. Incompatible materials

Oxidants, reducing agents, strong acids, strong bases, halides

10.6. Hazardous decomposition products

Decomposes when heated, releasing toxic fumes. Reacts with hydrogen under some conditions, releasing a toxic gas (stibine).

Section 11 – Toxicological Information

11.1. Acute toxicity

Oral: An epidemiological survey demonstrated deaths in humans (CERI Hazard Data Collection 2001-7 [2002]), raising concerns about acute toxicity in humans. Since human deaths were observed under certain circumstances, the product was classified as Category 5.

Dermal: No data

Inhalation: Gas: Gas inhalation is not assumed because the product is a solid by GHS definition. Consequently, the product was not classified.

Inhalation: Vapor: No data

Inhalation: Dust/mist: No data

11.2. Skin corrosivity: Although the product has irritating properties according to the EU R-phrases (2005), it cannot be classified because no data is available as evidence.

Serious eye damage/eye irritation: As a result of an eye irritation test that indicated mild irritation in rabbits in the CERI Hazard Data Collection (2001-7 [2002]), the product was classified as Category 2B.

11.3. Germ cell mutagenicity: As described in PATTY (4th, 2000), CERI Hazard Data Collection 2001-7 (2002), and IARC 47 (1989), the product (a) was not subject to any in vivo germ cell heritable mutagenicity testing, (b) yielded a negative result for an in vivo germ cell mutagenicity test (chromosome aberration test), and (c) yielded a negative result for an in vivo somatic cell mutagenicity test (chromosome aberration test) (negative after single-dose administration and increased chromosomal alterations in bone marrow cells with administration for up to 21 days). Consequently, the product was determined not to fall under any category. This classification is consistent with expert judgment (classification results based on data collected during a literature search).

11.4. Carcinogenicity: The product may cause cancer (Category 1B). It was classified as Category 1B since it was classified as Category A2 in ACGIH (2001).

11.5. Reproductive toxicity: The product may have adverse effects on fertility or fetal development (Category 1B). As described in IARC 47 (1989), teratogenicity and reproductive toxicity tests in rats demonstrated failure of pregnancy and increased embryo resorption before and after implantation at a no-observed-adverse-effect level in mothers. Consequently, the product was classified as Category 1B. The classification is consistent with expert judgment; specifically, the product may be classified as Category 1B because it may be classified as Category 2 based solely on animal experiments, and epidemiological data are insufficient to classify it as Category 1A.

11.6. Target organ/systemic toxicity (single exposure): The product may cause damage to the heart (Category 1) and respiratory system (Category 2). Concerning toxicity in humans, 56 individuals were hospitalized with burning pain in the stomach, colic, nausea, and vomiting (IRIS 6 [1987]), and their symptoms may have been caused by contact. Additionally, myocardial necrosis was observed during an autopsy (CERI Hazard Data Collection 2001-7 [2002]), and mild localized discoloration and raised white lesions were observed in the lungs of experimental animals (CERI Hazard Data Collection 2001-7 [2002]). Consequently, the heart and respiratory system are considered to be the target organs. Observed effects on experimental

animals fell within the range of guidance values associated with Category 2. As a result, the product was classified as Category 1 (heart) and Category 2 (respiratory system).

11.7. Target organ/systemic toxicity (repeated exposure): Prolonged or repeated exposure to the product may cause organ damage (respiratory system). The following findings in humans have been described: pneumonia indicated by chest X-ray; antimony pneumoconiosis and suspected pneumoconiosis; a correlation among abnormalities in chest X-ray images, lung retention of antimony, and duration of exposure; and invasive spread of patchy shadows of less than 1 mm in diameter and their concentration in the middle lobe of the lung (IRIS [2002]). The following findings in experimental animals were described: color changes in the lung, particle-containing phagocytes, degenerated phagocytes, and cell debris in the alveolar wall found during an autopsy; interstitial fibrosis as well as hypertrophy and hyperplasia of alveolar epithelial cells; granulomatous inflammation and granuloma (IRIS [2002]); weight loss, interstitial fibrosis of the lung, hypertrophy and hyperplasia of alveolar epithelial cells, cubic and columnar epithelial metaplasia, and cholesterol clefts (CERI Hazard Data Collection 2001-7 [2002]). Consequently, the respiratory system and digestive system are considered to be the target organs. Observed effects on experimental animals fell within the range of guidance values associated with Category 1. Based on the above, the product was classified as Category 1 (respiratory system).

Section 12 – Ecological Information

12.1. Aquatic hazard (acute): Harmful to aquatic life (Category 3). Based on a 72-hour EC50 value of 67 mg/L for algae (*Selenastrum*) (CERI Hazard Data Collection [2002]), the product was classified as Category 3.

12.2. Aquatic hazard (long-term): Harmful to aquatic life with long lasting effects (Category 3). Because the product's acute toxicity falls under Category 3 and because it is a metallic compound whose behavior and bioaccumulation potential in water are unclear, it was classified as Category 3. The product is very toxic to aquatic life. The product may become concentrated in shellfish. Caution is necessary to ensure that the product is not released into the environment.

Section 13 – Disposal Considerations

13.1. Disposal methods

Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation. Handle empty containers with care because residual vapours are flammable.

Section 14 – Transport Information

14.1. UN number : N.A.

14.2. UN proper shipping name : N.A

14.3. Transport of hazard classes : N.A

14.4. Packing group : N.A

14.5. Environmental hazards : N.A.

14.6. Special precautions for user : N.A

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: N.A.

Section 15 – Regulatory Information

15.1. Industrial Safety and Health Act, Japan: Notifiable substances (Article 57-2 of the Act, Article 18-2 Appended Table 9 of the Enforcement Order)

15.2. Labor Standards Act, Japan: Chemical substances related to specific disease (Article 75-2 of the Act, Article 35 Appended Tables 1-2 No. 4 of the Enforcement Regulations)

Poisonous and Deleterious Substances Control Act, Japan: Deleterious substances (Article 2 of the Designation Order)

15.3. Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof, Japan: Class I Specified Chemical Substances (Article 2 Paragraph 2 of the Act, Appended Table 1 [No. 31] in Article 1 of the Order for Enforcement of the Act)

Assessment of release and transport amounts of listed chemical substances for PRTR reporting purposes began in April 2010. Reporting for fiscal 2009 (April 1 to March 31) must detail Class I specified chemical substances as defined prior to the revision of the act.

15.4. Fire Service Act, Japan: Article 9-3 of the Act; Substances whose storage etc. require reporting of the Article 1-10 of the Hazardous Materials Control Order, specified amount of 200 kg as per Article 2 of Ministry of Home Affairs Ordinance No. 2

15.5. Road Act, Japan: Subject to vehicle traffic restrictions; public notice list requirements; provisions of the Poisonous and Deleterious Substances Control Act, Japan; and a 1,000 kg load limit

15.6. Air Pollution Control Act, Japan: Harmful air pollutants

15.7. Water Pollution Control Act, Japan: Substance related to information tagged for monitoring

15.8. Water Supply Act, Japan: Information tagged for monitoring

Section 16 : Additional Information

16.1. Mainly changes made to the previous version of this Material Safety Data Sheet (MSDS):

- This MSDS complies with ISO 11014; the requirements of UN-GHS

Revision No	Revision content
04	<ul style="list-style-type: none">• This SDS is updated in accordance with the GHS (Rev.6) (2015)-Guidance on the Compilation of Safety data Sheets.• This SDS is updated in line with Eti Maden Corporate identity.

16.2. List of abbreviation and acronyms used in this MSDS

SDS : Safety Data Sheets

Index N° : atomic number of the element most characteristic of the properties of the substance

CAS No : Chemical Abstracts Service number

EC No : EINECS Number : European Inventory of Existing Commercial Substances

Repr. Cat. 2 : Substance presumed human reproductive toxicant

Acute Oral Cat. 5 : Substance which is of relatively low acute oral toxicity.

GHS : Globally Harmonised System of Classification and Labelling

LD₅₀ : Median Lethal Dose

LC₅₀ : Lethal Concentration, 50%

N.A. : Not Applicable

OSHA : Occupational Safety & Health Administration

Cal OSHA : The State of California Division of Occupational Safety and Health (DOSH)

PEL : Permissible Exposure Limits

ACGIH : American Conference of Governmental Industrial Hygienists

TLV : Threshold Limit Value

Japanese MITI : Japanese Ministry of International Trade and Industry

EC₅₀ : Half maximal effective concentration

UN : United Nations

U.S. EPA TSCA Inventory: Inventory of the chemical substances manufactured or processed in the United States according to Toxic Substances Control Act compiled and published under the authority of the Environmental Protection Agency

Canadian DSL: Canadian Domestic Substances List

16.3. List of relevant hazard statements and precautionary statements used in this MSDS

Hazard Statement

H361 d: Suspected of damaging the unborn child

H319: Causes serious eye irritation

H303: May be harmful if swallowed

Precautionary Statements

Prevention

P201: Obtain special instructions before use.

P202: Do not handle until all safety precautions have been read and understood.

P281: Use personal protective equipment as required.

P264: Wash eyes thoroughly after handling.

P280: Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response

P308 + P313: If exposed or concerned: get medical advice/attention.

P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do. Continue rinsing.

P337+P313: If eye irritation persists: Get medical advice/attention.

Storage

P405: Store locked up.

Disposal

P501: Dispose of contents/container to in accordance with local regulations.

16.4. References

1. Litovitz T L, Norman S A, Veltri J C, Annual Report of the American Association of Poison Control Centers Data Collection System. Am. J. Emerg. Med. (1986), 4, 427-458
2. Denton SM (1996). Final report. Report no.: 1341/7-1032.
3. National Toxicology Program (NTP) – Technical Report Series No. TR324, NIH Publication No. 88 2580 (1987), PB88 213475/XAB
4. Fail et al., Fund. Appl. Toxicol. (1991) 17, 225-239
5. Heindel et al., Fund. Appl. Toxicol. (1992) 18, 266-277
6. Birge W J, Black J A, EPA-560/-76-008 (April 1977) PB 267 085
7. Scialli AR, Bonde JP, Brüske-Hohlfeld I, Culver D, Li Y, Sullivan FM; ELSEVIER 2009

8. Robbins WA, Xun L, Jia J, Kennedy N, Elashoff DA, Ping L. ;ELSEVIER 2009;(Reproductive Toxicology)

9. Hansveit and Oldersma, 2000; TNO Nutrition and Food Research Institute. Report No. V99.157.

10. Gersich, FM (1984a). Environ.Toxicol.Chem., 3 #1, 89-94 (1984)

16.5. Disclaimer of Liability

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