

ARSENIC (III) OXIDE

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1. Product Identification

Synonyms: Arsenic trioxide

CAS No.: 1327-53-3

Molecular Weight: 197.84

Chemical Formula: As₂O₃

Product Codes: CHEM-280

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Arsenic Trioxide	1327-53-3	99 - 100%	Yes

3. Hazards Identification

Potential Acute Health Effects:

DANGER! MAY BE FATAL IF SWALLOWED OR INHALED. CANCER HAZARD. CONTAINS INORGANIC ARSENIC WHICH CAN CAUSE CANCER. Risk of cancer depends on duration and level of exposure. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. MAY CAUSE LIVER AND KIDNEY DAMAGE. USE ONLY WITH ADEQUATE VENTILATION AND RESPIRATORY EQUIPMENT.

SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 4 - Extreme (Cancer Causing)

Flammability Rating: 0 - None

Reactivity Rating: 1 - Slight

Contact Rating: 1 - Slight

Lab Protective Equip: GOGGLES; LAB COAT; PROPER GLOVES

Storage Color Code: Blue (Health)

Potential Chronic Health Effects:

Inhalation:

Arsenic may cause inflammation of the mucous membranes with cough and foamy sputum, restlessness, dyspnea, cyanosis, and rales. Symptoms like those from ingestion exposure may follow. May cause pulmonary edema.

Ingestion:

Arsenic is highly toxic! May cause burning in esophagus, vomiting, and bloody diarrhea. Symptoms of cold and clammy skin, low blood pressure, weakness, headache, cramps, convulsions, and coma may follow. May cause damage to liver and kidneys. A suspected fetal toxin. Death may occur from circulatory failure. Estimated lethal dose 120 milligrams.

Skin Contact:

May cause irritation, symptoms including redness, itching, and pain.

Eye Contact:

May cause irritation with itching, burning, watering of eyes; may cause conjunctiva damage.

Chronic Exposure:

Arsenic on repeated or prolonged skin contact may cause bronzing of the skin, edema, dermatitis, and lesions. Repeated or prolonged inhalation of dust may cause damage to the nasal septum. Chronic exposure from inhalation or ingestion may cause hair and weight loss, a garlic odor to the breath and perspiration, excessive salivation and perspiration, central nervous system damage, hepatitis, gastrointestinal disturbances, cardiovascular damage, and kidney and liver damage. Arsenic compounds are known human carcinogens and may be teratogenic based on effects in laboratory animals.

Aggravation of Pre-existing Conditions:

No information found.

4. First Aid Measures

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion:

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Skin Contact:

Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean shoes before reuse. Contaminated work clothes should be laundered by individuals who have been informed of the hazards of exposure to this substance.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Note to Physician:

If emesis is unsuccessful after two doses of Ipecac, consider gastric lavage. Monitor urine arsenic level. Alkalinization of urine may help prevent disposition of red cell breakdown products in renal tubular cells. If acute exposure is significant, maintain high urine output and monitor volume status, preferably with central venous pressure line. Abdominal X-rays should be done routinely for all ingestions. Chelation therapy with BAL, followed by n-penicillamine is recommended, but specific dosing guidelines are not clearly established.

5. Fire Fighting Measures

Fire:

Not considered to be a fire hazard. Toxic fumes of arsenic trioxide and arsine may be formed in fire situations.

Explosion:

Not considered to be an explosion hazard.

Fire Extinguishing Media:

Use any means suitable for extinguishing surrounding fire.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from incompatible substances. Wear special protective equipment (Sec. 8) for maintenance break-in or where exposures may exceed established exposure levels. Wash hands, face, forearms and neck when exiting restricted areas. Shower, dispose of outer clothing, change to clean garments at the end of the day. Avoid cross-contamination of street clothes. Wash hands before eating and do not eat, drink, or smoke in workplace. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

-OSHA Permissible Exposure Limit (PEL): 10 ug(As)/m³ ppm (TWA)

-ACGIH Threshold Limit Value (TLV): 0.01 mg(As)/m³ (TWA), listed as A1, confirmed human carcinogen.

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, "Industrial Ventilation, A Manual of Recommended Practices", most recent edition, for details.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded, a half-face high efficiency dust/mist respirator may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece high efficiency dust/mist respirator may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Other Control Measures:

Any area where inorganic arsenic is stored, handled, used, etc., must be established as a 'Regulated Area' with controlled access, limited to authorized persons. Containers of inorganic arsenic and Regulated Areas must be labeled to show a CANCER SUSPECT AGENT is present. Eating, drinking, and smoking should not be permitted in areas where solids or liquids containing arsenic or lead compounds are handled, processed, or stored. See OSHA substance-specific standard for more information on personal protective equipment, engineering and work practice controls, medical surveillance, record keeping, and reporting requirements. (arsenic: 29 CFR 1910.1018; lead: 29 CFR 1910.1025).

9. Physical and Chemical Properties

Appearance:

Transparent crystals, or white powder.

Boiling Point:

465°C (869°F)

Odor:

Odorless.

Melting Point:

315°C (599°F)

Solubility:

3.7 g/100 ml water @ 20°C (68°F)

Vapor Density (Air=1):

No information found.

Specific Gravity:

3.74

Vapor Pressure (mm Hg):

No information found.

pH:

No information found.

Evaporation Rate (BuAc=1):

No information found.

% Volatiles by volume @ 21°C (70°F):

0

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:

Emits toxic fumes of arsenic when heated to decomposition.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Oxidizers, tannic acid, infusion cinchona and other vegetable astringent infusions and decoctions, iron solutions, rubidium carbide, chlorine trifluoride, fluorine, hydrogen fluoride, oxygen difluoride, acids, bases, sodium chlorate, zinc filings, other reactive metals and mercury. Corrosive to metals in the presence of moisture.

Conditions to Avoid:

Incompatibles.

11. Toxicological Information

Toxicological Data:

Oral rat LD50: 14.6 mg/kg; investigated as a mutagen, tumorigen, reproductive effector.

Reproductive Toxicity:

Has shown teratogenic effects in laboratory animals.

Ingredient	Known	Cancer Lists	
		NTP Carcinogen	IARC Category
Arsenic Trioxide (1327-53-3)	Yes	Anticipated No	1

12. Ecological Information

Environmental Fate:

When released into the soil, this material may biodegrade to a moderate extent. When released into water, this material may biodegrade to a moderate extent. This material is not expected to significantly bioaccumulate.

Environmental Toxicity:

No information found. Not available.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: RQ, ARSENIC TRIOXIDE

Hazard Class: 6.1

UN/NA: UN1561 Packing Group: II

Information reported for product/size: 500G

International (Water, I.M.O.)

Proper Shipping Name: ARSENIC TRIOXIDE

Hazard Class: 6.1

UN/NA: UN1561 Packing Group: II

Information reported for product/size: 500G

International (Air, I.C.A.O.)

Proper Shipping Name: ARSENIC TRIOXIDE

Hazard Class: 6.1

UN/NA: UN1561 Packing Group: II

Information reported for product/size: 500G

15. Regulatory Information

Chemical Inventory Status - Part 1

Ingredient	TSCA	EC	Japan	Australia
Arsenic Trioxide (1327-53-3)	Yes	Yes	Yes	Yes

Chemical Inventory Status - Part 2

Ingredient	Korea	DSL	NDSL	Phil.
Arsenic Trioxide (1327-53-3)	Yes	Yes	No	Yes

Federal, State & International Regulations - Part 1

Ingredient	RQ	TPQ	List	Chemical Catg.
Arsenic Trioxide (1327-53-3)	1	100*	No	Arsenic compound

Federal, State & International Regulations - Part 2

Ingredient	RCRA	TSCA	Ingredient
Arsenic Trioxide (1327-53-3)	1	261.33 P012	8(d) No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No

SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No

Reactivity: No (Pure / Solid)

Prop 65: THIS PRODUCT CONTAINS CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER AND BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

Australian Hazchem Code: 2Z

Australian Poison Schedule: S6

WHMIS: This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings:

Health: 3 Flammability: 0 Reactivity: 0

Label Hazard Warning:

DANGER! MAY BE FATAL IF SWALLOWED OR INHALED. CANCER HAZARD. CONTAINS INORGANIC ARSENIC WHICH CAN CAUSE CANCER. Risk of cancer depends on duration and level of exposure. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. MAY CAUSE LIVER AND KIDNEY DAMAGE. USE ONLY WITH ADEQUATE VENTILATION AND RESPIRATORY EQUIPMENT.

Label Precautions:

Do not get in eyes, on skin, or on clothing.

Do not breathe dust.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

Label First Aid:

If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes.

Wash clothing before reuse. In all cases, get medical attention.

Product Use:

Laboratory Reagent and Consumer Hobby.

Revision Information:

No Changes.

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