



## MATERIAL SAFETY DATA SHEET

### Arsenic Trioxide

#### Section 1 - Chemical Product and Company Identification

**MSDS Name:** Arsenic Trioxide

**Catalog Numbers:** A/8440/53, A/8480/48

**Synonyms:** Arsenic Oxide; Arsenic Sesquioxide; Arsenous Oxide; Arsenous Acid Anhydride; Arsenous Acid

**Company Identification:** Fisher Scientific UK  
Bishop Meadow Road, Loughborough  
Leics. LE11 5RG

**For information in Europe, call:** (01509) 231166

**Emergency Number, Europe:** 01509 231166

#### Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name:	%	EINECS#
1327-53-3	Arsenic trioxide	100.0	215-481-4

**Hazard Symbols:** T+ N



**Risk Phrases:** 45 28 34 50/53

#### Section 3 - Hazards Identification

##### EMERGENCY OVERVIEW

*Very toxic if swallowed. Causes burns. May cause cancer. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.*

##### Potential Health Effects

**Eye:** Contact produces irritation, tearing, and burning pain. May cause conjunctivitis.

**Skin:** Causes irritation with burning pain, itching, and redness. May cause dermatitis. Exposure to arsenic compounds may produce hyperpigmentation of the skin and hyperkeratoses of plantar and palmar surfaces as well as both primary irritation and sensitization types.

**Ingestion:** May be fatal if swallowed. Causes severe digestive tract burns with abdominal pain, vomiting, and possible death. May cause hemorrhaging of the digestive tract. Ingestion of arsenical compounds may cause burning of the lips, throat constriction, swallowing difficulties, severe abdominal pain, severe nausea, projectile vomiting, and profuse diarrhea. Ingestion of arsenic compounds can produce convulsions, coma, and possibly death within 24 hours.

**Inhalation:** May cause severe irritation of the respiratory tract with sore throat, coughing, shortness of breath and delayed lung edema. Inhalation of arsenic compounds may lead to irritation of the respiratory tract and to possible nasal perforation. Long-term exposure to arsenic compounds may produce impairment of peripheral circulation.

**Chronic:** May cause liver and kidney damage. Chronic inhalation may cause nasal septum ulceration

and perforation. May cause anemia and other blood cell abnormalities. Chronic skin effects include: cracking, thickening, pigmentation, and drying of the skin. Arsenic trioxide can cause cancer in humans. Other long term effects include: anemia, liver and kidney damage. Chronic exposure to arsenical dust may cause shortness of breath, nausea, chest pains, and garlic odor.

#### Section 4 - First Aid Measures

- Eyes:** Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- Skin:** Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.
- Ingestion:** Call a poison control center. If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.
- Inhalation:** Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid. Do NOT use mouth-to-mouth resuscitation.

#### Notes to Physician:

#### Section 5 - Fire Fighting Measures

- General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use extinguishing media appropriate to the surrounding fire. Substance is noncombustible.
- Extinguishing Media:** Substance is noncombustible; use agent most appropriate to extinguish surrounding fire. Do NOT get water inside containers.

#### Section 6 - Accidental Release Measures

- General Information:** Use proper personal protective equipment as indicated in Section 8.
- Spills/Leaks:** Vacuum or sweep up material and place into a suitable disposal container. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation. Do not get water inside containers.

#### Section 7 - Handling and Storage

- Handling:** Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Avoid ingestion and inhalation. Do not allow contact with water. Use only with adequate ventilation or respiratory protection.
- Storage:** Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Do not store in metal containers.

#### Section 8 - Exposure Controls, Personal Protection

##### Engineering Controls:

Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits. See 29CFR 1910.1018 for regulatory requirements pertaining to all occupational exposures to inorganic arsenic.

##### Exposure Limits

CAS# 1327-53-3:

United Kingdom, WEL - TWA: ( arsenic compounds, n.o.s.): 0.1 mg/m<sup>3</sup> TWA (except arsine, as As) United Kingdom, WEL - STEL: ( arsenic compounds, n.o.s.): 0.3 mg/m<sup>3</sup> STEL (except arsine, as As)

United States OSHA: 0.5 mg/m<sup>3</sup> TWA (Arsenic).5 æg/m<sup>3</sup> Action Level (as As); 10 æg/m<sup>3</sup> PEL (as As. Cancer hazard - see 29 CFR 1 910.1018. Arsine excepted) (Arsenic,

inorganic compounds).

Belgium - TWA: ( arsenic, inorganic compounds): 0.01 mg/m<sup>3</sup> VLE (as As)

France - VME: 0.2 mg/m<sup>3</sup> VME (as As)

Germany: 0.1 mg/m<sup>3</sup> TWA (inhalable fraction)

Japan: ( arsenic compounds, n.o.s.): 3 æg/m<sup>3</sup> OEL (reference value, as As)

Malaysia: ( arsenic, inorganic compounds): 0.01 mg/m<sup>3</sup> TWA (as As, except arsine)

Netherlands: ( arsenic, inorganic compounds): 0.1 mg/m<sup>3</sup> STEL (as As) Netherlands:

( arsenic, inorganic compounds): 0.050 mg/m<sup>3</sup> MAC (as As)

Russia: ( arsenic, inorganic compounds): 0.04 mg/m<sup>3</sup> TWA (as As) Russia: ( arsenic, inorganic compounds): 0.01 mg/m<sup>3</sup> STEL (as As)

Spain: 0.1 mg/m<sup>3</sup> VLA-ED (as As)

### Personal Protective Equipment

**Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Skin:** Wear appropriate gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

## Section 9 - Physical and Chemical Properties

**Physical State:** Solid

**Color:** white

**Odor:** odorless

**pH:** Not available

**Vapor Pressure:** 66 mm Hg @ 312C

**Viscosity:** Not available

**Boiling Point:** 465 deg C ( 869.00°F)

**Freezing/Melting Point:** 312 deg C ( 593.60°F)

**Autoignition Temperature:** Not applicable

**Flash Point:** Not applicable.

**Explosion Limits: Lower:** Not available

**Explosion Limits: Upper:** Not available

**Decomposition Temperature:** Not available

**Solubility in water:** 3.7% in water.

**Specific Gravity/Density:** 3.738

**Molecular Formula:** As<sub>2</sub>O<sub>3</sub>

**Molecular Weight:** 197.8414

## Section 10 - Stability and Reactivity

**Chemical Stability:** Stable under normal temperatures and pressures.

**Conditions to Avoid:** Dust generation, moisture, metals, excess heat.

**Incompatibilities with Other Materials** Not available

**Hazardous Decomposition Products** Irritating and toxic fumes and gases, oxides of arsenic, arsine.

**Hazardous Polymerization** Has not been reported.

## Section 11 - Toxicological Information

**RTECS#:** CAS# 1327-53-3: CG3325000

**LD50/LC50:** RTECS:  
**CAS# 1327-53-3:** Oral, mouse: LD50 = 20 mg/kg;  
Oral, rabbit: LD50 = 20190 ug/kg;  
Oral, rat: LD50 = 10 mg/kg;

**Carcinogenicity:** Arsenic trioxide - California: carcinogen, initial date 2/27/87 (Arsenic, inorganic compounds). NTP: Known carcinogen (Arsenic, inorganic compounds). IARC: Group 1 carcinogen (Arsenic).

**Other:** See actual entry in RTECS for complete information.

### Section 12 - Ecological Information

**Ecotoxicity:** Water flea Daphnia: LC50 = 0.038 mg/L; 24 Hr.; Unspecified  
Bacteria: Phytobacterium phosphoreum: EC50 = 31.43-73.73 mg/L; 5,15,30 minutes;  
Microtox test

### Section 13 - Disposal Considerations

Products considered hazardous for supply are classified as Special Waste and the disposal of such chemicals is covered by regulations which may vary according to location. Contact a specialist disposal company or the local authority or advice. Empty containers must be decontaminated before returning for recycling.

### Section 14 - Transport Information

	<b>IATA</b>	<b>IMO</b>	<b>RID/ADR</b>
<b>Shipping Name:</b>	ARSENIC TRIOXIDE	ARSENIC TRIOXIDE	ARSENIC TRIOXIDE
<b>Hazard Class:</b>	6.1	6.1	6.1
<b>UN Number:</b>	1561	1561	1561
<b>Packing Group:</b>	II	II	II

USA RQ: CAS# 1327-53-3: 1 lb final RQ; 0.454 kg final RQ

### Section 15 - Regulatory Information

#### European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: T+ N

Risk Phrases:

R 45 May cause cancer.

R 28 Very toxic if swallowed.

R 34 Causes burns.

R 50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Phrases:

S 53 Avoid exposure - obtain special instructions before use.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S 60 This material and its container must be disposed of as hazardous waste.

S 61 Avoid release to the environment. Refer to special instructions/safety data sheets.

WGK (Water Danger/Protection)

CAS# 1327-53-3: 3

Canada

CAS# 1327-53-3 is listed on Canada's DSL List

#### US Federal

TSCA

CAS# 1327-53-3 is listed on the TSCA Inventory.

## Section 16 - Other Information

**MSDS Creation Date:** 6/21/1999

**Revision #6 Date** 10/03/2005

*The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential, or exemplary damages howsoever arising, even if the company has been advised of the possibility of such damages.*

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