



SAFETY DATA SHEET

MATERION

1. Identification

Product identifier As2O3-SeO2 Powder
Other means of identification None.
Manufacturer/Importer/Supplier/Distributor information
Manufacturer
Company name Materion Advanced Chemicals Inc.
Address 407 N 13th Street
1316 W. St. Paul Avenue
Milwaukee, WI 53233
United States
Telephone 414.212.0257
E-mail advancedmaterials@materion.com
Contact person Noreen Atkinson
Emergency phone number Chemtrec 800.424.9300

2. Hazard(s) identification

Physical hazards Not classified.
Health hazards
Acute toxicity, oral Category 2
Acute toxicity, dermal Category 3
Acute toxicity, inhalation Category 3
Skin corrosion/irritation Category 1B
Serious eye damage/eye irritation Category 1
Germ cell mutagenicity Category 2
Carcinogenicity Category 1A
Reproductive toxicity Category 1A
Specific target organ toxicity, single exposure Category 1 (digestive organs, heart, respiratory system, skeletal muscle)
Specific target organ toxicity, repeated exposure Category 1 (blood vessel, central nervous system, immune system, kidney, liver, peripheral nervous system, respiratory system, skin)
Environmental hazards
Hazardous to the aquatic environment, acute hazard Category 1
Hazardous to the aquatic environment, long-term hazard Category 1
OSHA defined hazards Not classified.
Label elements
Hazard symbol None.
Signal word None.
Hazard statement Not available.
Precautionary statement
Prevention Not available.
Response Not available.
Storage Not available.

| | |
|---|----------------|
| Disposal | Not available. |
| Hazard(s) not otherwise classified (HNOC) | None known. |
| Supplemental information | None. |

3. Composition/information on ingredients

Mixtures

| Chemical name | Common name and synonyms | CAS number | % |
|----------------|--|------------|---------|
| Arsenic Oxide | diarseentrioxide Arsenous acid anhydride (arsenic(III) oxide) diarsenic trioxide; arsenic trioxide | 1327-53-3 | 60 - 70 |
| Selenium Oxide | | 7446-08-4 | 30 - 40 |

4. First-aid measures

| | |
|---|---|
| Inhalation | If dust from the material is inhaled, remove the affected person immediately to fresh air. Call a physician if symptoms develop or persist. |
| Skin contact | Get medical attention if irritation develops and persists. |
| Eye contact | Rinse with water. Get medical attention if irritation develops and persists. |
| Ingestion | Get medical advice/attention if you feel unwell. |
| Most important symptoms/effects, acute and delayed | Not available. |
| Indication of immediate medical attention and special treatment needed | Treat symptomatically. |

5. Fire-fighting measures

| | |
|--|--|
| Suitable extinguishing media | Water. |
| Unsuitable extinguishing media | None known. |
| Specific hazards arising from the chemical | Not applicable. |
| Special protective equipment and precautions for firefighters | Wear suitable protective equipment. |
| Fire fighting equipment/instructions | In the event of fire, cool tanks with water spray. |
| Specific methods | Cool containers exposed to flames with water until well after the fire is out. |

6. Accidental release measures

| | |
|--|--|
| Personal precautions, protective equipment and emergency procedures | Wear a dust mask if dust is generated above exposure limits. Avoid inhalation of dust from the spilled material. |
| Methods and materials for containment and cleaning up | If sweeping of a contaminated area is necessary use a dust suppressant agent which does not react with the product. Sweep up or vacuum up spillage and collect in suitable container for disposal. Collect dust using a vacuum cleaner equipped with HEPA filter. Avoid the generation of dusts during clean-up. Prevent entry into waterways, sewer, basements or confined areas. Following product recovery, flush area with water. For waste disposal, see section 13 of the SDS. |
| Environmental precautions | Prevent further leakage or spillage if safe to do so. Do not contaminate water. |

7. Handling and storage

| | |
|--------------------------------------|---|
| Precautions for safe handling | Avoid dust formation. Guard against dust accumulation of this material. Provide appropriate exhaust ventilation at places where dust is formed. Do not breathe dust from this material. Avoid contact with skin and eyes. In case of insufficient ventilation, wear suitable respiratory equipment. Practice good housekeeping. Avoid release to the environment. |
|--------------------------------------|---|

Conditions for safe storage, including any incompatibilities

Keep container tightly closed. Store in a well-ventilated place. Avoid dust formation. Guard against dust accumulation of this material.

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

| Components | Type | Value |
|--------------------------------|------|-----------------------|
| Selenium Oxide (CAS 7446-08-4) | PEL | 0.2 mg/m ³ |

US. ACGIH Threshold Limit Values

| Components | Type | Value |
|--------------------------------|------|------------------------|
| Arsenic oxide (CAS 1327-53-3) | TWA | 0.01 mg/m ³ |
| Selenium Oxide (CAS 7446-08-4) | TWA | 0.2 mg/m ³ |

US. NIOSH: Pocket Guide to Chemical Hazards

| Components | Type | Value |
|--------------------------------|---------|-------------------------|
| Arsenic oxide (CAS 1327-53-3) | Ceiling | 0.002 mg/m ³ |
| Selenium Oxide (CAS 7446-08-4) | TWA | 0.2 mg/m ³ |

Biological limit values

ACGIH Biological Exposure Indices

| Components | Value | Determinant | Specimen | Sampling Time |
|-------------------------------|---------|---|----------|---------------|
| Arsenic oxide (CAS 1327-53-3) | 35 µg/l | Inorganic arsenic, plus methylated metabolites, as As | Urine | * |

* - For sampling details, please see the source document.

Individual protection measures, such as personal protective equipment

Eye/face protection Use tight fitting goggles if dust is generated.

Skin protection

Hand protection Not normally needed.

Other Normal work clothing (long sleeved shirts and long pants) is recommended.

Respiratory protection Wear respirator with dust filter.

Thermal hazards Not available.

General hygiene considerations Do not breathe dust. Avoid contact with eyes. Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Appearance

Physical state Solid.

Form Solid. Powder

Color Not available.

Odor Not applicable.

Odor threshold Not available.

pH Not available.

Melting point/freezing point 525.2 °F (274 °C) estimated

| | |
|---|---------------------------|
| Initial boiling point and boiling range | 860 °F (460 °C) estimated |
| Flash point | Not available. |
| Evaporation rate | Not available. |
| Flammability (solid, gas) | Not applicable. |
| Upper/lower flammability or explosive limits | |
| Flammability limit - lower (%) | Not available. |
| Flammability limit - upper (%) | Not available. |
| Explosive limit - lower (%) | Not available. |
| Explosive limit - upper (%) | Not available. |
| Vapor pressure | 1.03 hPa estimated |
| Vapor density | Not available. |
| Relative density | Not available. |
| Solubility(ies) | |
| Solubility (water) | Not available. |
| Partition coefficient (n-octanol/water) | Not available. |
| Auto-ignition temperature | Not applicable. |
| Decomposition temperature | Not available. |
| Viscosity | Not available. |
| Other information | |
| Density | 4.08 g/cm3 estimated |
| Specific gravity | 4.08 estimated |

10. Stability and reactivity

| | |
|---|---|
| Reactivity | Not available. |
| Chemical stability | Material is stable under normal conditions. |
| Possibility of hazardous reactions | Hazardous polymerization does not occur. |
| Conditions to avoid | Avoid spread of dust. |
| Incompatible materials | None known. |
| Hazardous decomposition products | Arsenic. |

11. Toxicological information

Information on likely routes of exposure

| | |
|---------------------|---|
| Inhalation | Inhalation of dusts may cause respiratory irritation. |
| Skin contact | Not available. |
| Eye contact | Not available. |
| Ingestion | Not available. |

Symptoms related to the physical, chemical and toxicological characteristics Not available.

Information on toxicological effects

Acute toxicity

| Product | Species | Test Results |
|-------------------|--------------------|---------------------|
| As2O3-SeO2 Powder | | |
| Acute | | |
| Oral | | |
| LD50 | Mouse | 42 mg/kg estimated |
| | Rat | 234 mg/kg estimated |
| | Sprague-Dawley rat | 24 mg/kg estimated |
| | Swiss mouse | 64 mg/kg estimated |

| Components | Species | Test Results |
|-------------------------------|--------------------|--------------|
| Arsenic Oxide (CAS 1327-53-3) | | |
| Acute | | |
| Oral | | |
| LD50 | Mouse | 25.8 mg/kg |
| | Rat | 145 mg/kg |
| | Sprague-Dawley rat | 15.1 mg/kg |
| | Swiss mouse | 39.4 mg/kg |

* Estimates for product may be based on additional component data not shown.

| | |
|---|---|
| Skin corrosion/irritation | Not available. |
| Serious eye damage/eye irritation | Dust in the eyes will cause irritation. |
| Respiratory or skin sensitization | |
| Respiratory sensitization | Not available. |
| Skin sensitization | Not available. |
| Germ cell mutagenicity | Not available. |
| Carcinogenicity | Cancer hazard. |
| IARC Monographs. Overall Evaluation of Carcinogenicity | |
| Arsenic Oxide (CAS 1327-53-3) | 1 Carcinogenic to humans. |
| Selenium Oxide (CAS 7446-08-4) | 3 Not classifiable as to carcinogenicity to humans. |
| US. National Toxicology Program (NTP) Report on Carcinogens | |
| Arsenic Oxide (CAS 1327-53-3) | Known To Be Human Carcinogen. |
| US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050) | |
| Arsenic Oxide (CAS 1327-53-3) | Cancer |
| Reproductive toxicity | Not available. |
| Specific target organ toxicity - single exposure | Not available. |
| Specific target organ toxicity - repeated exposure | Not available. |
| Aspiration hazard | Not available. |
| Chronic effects | Prolonged exposure may cause chronic effects. |

12. Ecological information

Ecotoxicity Components of this product are hazardous to aquatic life.

| Product | Species | Test Results |
|-------------------|--------------|----------------------------------|
| As2O3-SeO2 Powder | | |
| Aquatic | | |
| Crustacea | EC50 Daphnia | 55.8064 mg/l, 48 hours estimated |

| Product | Species | Test Results |
|---------|---------|----------------------------------|
| Fish | LC50 | Fish |
| | | 16.3765 mg/l, 96 hours estimated |

| Components | Species | Test Results |
|------------|---------|--------------|
|------------|---------|--------------|

Arsenic Oxide (CAS 1327-53-3)

Aquatic

| | | | |
|-----------|------|--------------------------------------|---------------------------|
| Crustacea | EC50 | Snail (Potamopyrgus antipodarum) | 34.6 mg/l, 48 hours |
| Fish | LC50 | Snake-head catfish (Channa punctata) | 9.9 - 12.8 mg/l, 96 hours |

Selenium Oxide (CAS 7446-08-4)

Aquatic

| | | | |
|------|------|---------------------------------|---------------------|
| Fish | LC50 | Giant gourami (Colisa fasciata) | 2.65 mg/l, 96 hours |
|------|------|---------------------------------|---------------------|

* Estimates for product may be based on additional component data not shown.

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential Not available.

Mobility in soil Not available.

Other adverse effects Not available.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Incinerate the material under controlled conditions in an approved incinerator. Do not allow this material to drain into sewers/water supplies. Dispose in accordance with all applicable regulations.

Hazardous waste code D002: Waste Corrosive material [pH <=2 or =>12.5, or corrosive to steel]
D004: Waste Arsenic

US RCRA Hazardous Waste P List: Reference

Arsenic Oxide (CAS 1327-53-3) P012

Waste from residues / unused products Not available.

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

| | |
|-------------------------------------|---|
| UN number | UN3288 |
| UN proper shipping name | Toxic solid, inorganic, n.o.s. (Arsenic oxide RQ = 2 LBS, Selenium Oxide RQ = 26 LBS) |
| Transport hazard class(es) | |
| Class | 6.1(PGI, II) |
| Subsidiary risk | - |
| Label(s) | 6.1 |
| Packing group | II |
| Environmental hazards | |
| Marine pollutant | Yes |
| Special precautions for user | Not available. |
| Special provisions | IB8, IP2, IP4, T3, TP33 |
| Packaging exceptions | 153 |
| Packaging non bulk | 212 |
| Packaging bulk | 242 |

IATA

| | |
|-----------------------------------|--|
| UN number | UN3288 |
| UN proper shipping name | Toxic solid, inorganic, n.o.s. (Arsenic oxide, Selenium Oxide) |
| Transport hazard class(es) | |
| Class | 6.1(PGI, II) |
| Subsidiary risk | - |

| | |
|-------------------------------------|----------------|
| Packing group | II |
| Environmental hazards | Yes |
| ERG Code | 6L |
| Special precautions for user | Not available. |
| Other information | |
| Passenger and cargo aircraft | Allowed. |
| Cargo aircraft only | Allowed. |

IMDG

| | |
|-------------------------------------|--|
| UN number | UN3288 |
| UN proper shipping name | TOXIC SOLID, INORGANIC, N.O.S. (Arsenic oxide, Selenium Oxide) |
| Transport hazard class(es) | |
| Class | 6.1(PGI, II) |
| Subsidiary risk | - |
| Packing group | II |
| Environmental hazards | |
| Marine pollutant | Yes |
| EmS | F-A, S-A |
| Special precautions for user | Not available. |

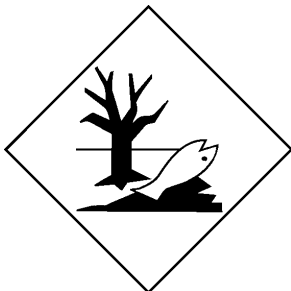
DOT



IATA; IMDG



Marine pollutant



General information

IMDG Regulated Marine Pollutant.

15. Regulatory information

US federal regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Arsenic Oxide (CAS 1327-53-3) Listed.

Selenium Oxide (CAS 7446-08-4) Listed.

US EPCRA Section 304 Extremely Haz. Subs. & CERCLA Haz. Subs.: Section 304 EHS reportable quantity

Arsenic Oxide (CAS 1327-53-3) 1 LBS

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Arsenic Oxide (CAS 1327-53-3) Cancer
Liver
Skin
Respiratory irritation
Nervous system
Acute toxicity

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

| Chemical name | CAS number | Reportable quantity | Threshold planning quantity | Threshold planning quantity, lower value | Threshold planning quantity, upper value |
|---------------|------------|---------------------|-----------------------------|--|--|
| Arsenic Oxide | 1327-53-3 | 1 | | 100 lbs | 10000 lbs |

SARA 311/312 Hazardous chemical
No

SARA 313 (TRI reporting)

| Chemical name | CAS number | % by wt. |
|----------------|------------|----------|
| Arsenic Oxide | 1327-53-3 | 60 - 70 |
| Selenium Oxide | 7446-08-4 | 30 - 40 |

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Arsenic Oxide (CAS 1327-53-3)

Selenium Oxide (CAS 7446-08-4)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA)
Not regulated.

US state regulations

US - New Jersey RTK - Substances: Listed substance

Arsenic Oxide (CAS 1327-53-3)

Selenium Oxide (CAS 7446-08-4)

US - Pennsylvania RTK - Hazardous Substances: Special hazard

Arsenic Oxide (CAS 1327-53-3)

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not listed.

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

Arsenic Oxide (CAS 1327-53-3)

US. Massachusetts RTK - Substance List

Arsenic Oxide (CAS 1327-53-3)
Selenium Oxide (CAS 7446-08-4)

US. New Jersey Worker and Community Right-to-Know Act

Arsenic Oxide (CAS 1327-53-3)
Selenium Oxide (CAS 7446-08-4)

US. Pennsylvania RTK - Hazardous Substances

Arsenic Oxide (CAS 1327-53-3)
Selenium Oxide (CAS 7446-08-4)

US. Pennsylvania Worker and Community Right-to-Know Law

Arsenic Oxide (CAS 1327-53-3)
Selenium Oxide (CAS 7446-08-4)

US. Rhode Island RTK

Arsenic Oxide (CAS 1327-53-3)
Selenium Oxide (CAS 7446-08-4)

US. California Proposition 65

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

Arsenic Oxide (CAS 1327-53-3) Listed: February 27, 1987

US - California Proposition 65 - CRT: Listed date/Developmental toxin

Arsenic Oxide (CAS 1327-53-3) Listed: May 1, 1997

16. Other information, including date of preparation or last revision

Issue date 05-26-2015

Version # 01

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