

# SAFETY DATA SHEET

Date Printed: 09/21/2024

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## SECTION 1. IDENTIFICATION

**Product Identifier:** (3N) 99.9% Silver Tetrafluoroborate

**Product Code:** AG-FBAT-03

**CAS Number:** 14104-20-2

**Relevant identified uses of the substance:** Scientific research and development

Supplier details:

American Elements  
10884 Weyburn Ave.  
Los Angeles, CA 90024  
Tel: +1 310-208-0551  
Fax: +1 310-208-0351  
Emergency telephone number:  
+1 800-424-9300

## SECTION 2. HAZARDS IDENTIFICATION

OSHA Haz Com: CFR 1910.1200: Acute Toxicity - Oral [Category 4]

Eye Damage/Irritation [Category 1]

Skin Corrosion/Irritation [Category 1B]

Signal word: Danger!

Hazard Statement(s): Causes serious eye damage

Causes severe skin burns and eye damage

Harmful if swallowed



Pictogram(s) or Symbol(s):

Precautionary Statement(s):

[Prevention] Do not eat, drink or smoke when using this product. Wash hands and face thoroughly after handling. Do

not breathe dusts or mists. Use only outdoors or in a well-ventilated area. Wear protective gloves, protective clothing, eye protection and face protection. Wear eye protection. Wear face protection (full length face shield).

[Response] If swallowed: Immediately call a poison center or doctor. Rinse mouth. If swallowed: Rinse mouth. Do NOT

induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with

water

or shower. Wash contaminated clothing before reuse. If inhaled: Remove person to fresh air and keep comfortable for breathing. Immediately call a poison center or doctor. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

[Storage] Store locked up.

[Disposal] Dispose of contents and container in accordance with US EPA guidelines for the classification and

determination of hazardous waste listed in 40 CFR 261.3. (See Section 13)

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### **SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

Substance/Mixture: Substance

Components: Silver Tetrafluoroborate

Percent: >98.0%(T)

CAS Number: 14104-20-2

Molecular Weight: 194.67

Chemical Formula: AgBF<sub>4</sub>

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### **SECTION 4. FIRST AID MEASURES**

Inhalation: Immediately call a poison center or doctor. Effects of exposure (inhalation) to substance may be delayed.

Move victim to fresh air. Give artificial respiration if victim is not breathing. Administer oxygen if breathing is

difficult. Keep victim warm and quiet. Treat symptomatically and supportively. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

Skin contact: For severe burns, immediate medical attention is required. Immediately call a poison center or doctor.

Remove and wash contaminated clothing before re-use. Remove and isolate contaminated clothing and

shoes. In case of contact with substance, immediately flush skin with running water for at least 20 minutes.

Treat symptomatically and supportively. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

Eye contact: IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. Eye contact

with vapors or substance may cause severe injury, burns, or death. Call emergency medical service.

Move

victim to fresh air. Check for and remove any contact lenses. Keep victim warm and quiet. Treat symptomatically and supportively. Effects of exposure to substance may be delayed. Ensure that medical

personnel are aware of the material(s) involved and take precautions to protect themselves.

Ingestion: Harmful if swallowed. Do not induce vomiting without medical advice. Call a physician or Poison Control

Center immediately. Do not use mouth-to-mouth method if victim ingested the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Loosen tight clothing such as a collar, tie, belt or waistband. If a person vomits place them

in the recovery position so that vomit will not reenter the mouth and throat. Rinse mouth. Keep victim warm

and quiet. Treat symptomatically and supportively. Ensure that medical personnel are aware of the

material(s) involved and take precautions to protect themselves.

Symptoms/effects:

Acute: Pain. Redness.

Delayed: No data available

Immediate medical attention: **WARNING:** It might be hazardous to the person providing aid to give mouth-to-mouth respiration, because

the inhaled material is harmful. **WARNING:** It might be hazardous to the person providing aid to give mouth-to-mouth respiration, because the inhaled material is corrosive. For severe burns, immediate medical attention is required. If breathing has stopped, perform artificial respiration. Use first aid treatment

according to the nature of the injury. Ensure that medical personnel are aware of the material(s) involved

and take precautions to protect themselves.

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## **SECTION 5. FIREFIGHTING MEASURES**

Suitable extinguishing media: Dry chemical, CO<sub>2</sub> or water spray. Consult with local fire authorities before attempting large scale fire fighting operations.

Specific hazards arising from the chemical

Hazardous combustion products: These products include: Halogenated compounds Borates Metallic oxides

Other specific hazards: **WARNING:** Highly toxic HF gas is produced during combustion.

Special precautions for fire-fighters:

Use water spray or fog; do not use straight streams. Dike fire-control water for later disposal; do not scatter the material. Containers may explode when heated. Move containers from fire area if you can do it without risk.

Special protective equipment for fire-fighters:

Wear positive pressure self-contained breathing apparatus (SCBA). Structural fire fighters' protective clothing provides limited protection in fire situations

**ONLY;** it may not be effective in spill situations. Wear chemical protective clothing which is specifically recommended by the manufacturer. It may provide little or no thermal protection.

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## **SECTION 6. ACCIDENTAL RELEASE MEASURES**

Personal precautions: Avoid contact with skin, eyes, and clothing. Keep people away from and upwind of spill/leak. Do not touch

damaged containers or spilled material unless wearing appropriate protective clothing (Section 8).

Warn

unnecessary personnel to move away. Stop leak if you can do it without risk. Ensure adequate ventilation.

Isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Personal protective equipment: Wear eye protection (splash goggles) and face protection (full length face shield). Lab coat. Dust

respirator. Be sure to use a MSHA/NIOSH approved respirator or equivalent. Wear protective gloves (nitrile).

Emergency procedures: Prevent dust cloud. In case of a spill and/or a leak, always shut off any sources of ignition, ventilate the

area, and exercise caution. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Warn personnel to move away. Prevent entry into sewers, basements

or  
confined areas; dike if needed.  
Methods and materials for containment and cleaning up:  
ELIMINATE all ignition sources (no smoking, flares, sparks, or flames in immediate area). Stop leak if without risk. Ventilate the area. Absorb with an inert material and put the spilled material in an appropriate waste disposal container. Use clean non-sparking tools to collect absorbed material.  
Environmental precautions:  
Keep away from living quarters. Prevent further leakage or spillage if safe to do so. Water runoff can cause environmental damage. Prevent entry into sewers, basements or confined areas; dike if needed.

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## **SECTION 7. HANDLING AND STORAGE**

Precautions for safe handling: Avoid inhalation of vapor or mist. Manipulate under an adequate fume hood. Do not ingest. Avoid contact with skin and eyes. Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. Keep container dry. Handle and open container with care. Wear suitable protective clothing, gloves and eye/face protection. When using do not eat, drink, or smoke. Keep away from sources of ignition.  
Conditions for safe storage: Store locked up. Keep containers tightly closed in a cool, well-ventilated place. Keep away from incompatibles. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Avoid prolonged storage periods. Store under inert gas (e.g. Argon). Hygroscopic material, store in a tightly sealed container.  
Storage incompatibilities: Bases, Store away from oxidizing agents

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## **SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

Exposure limits:  
ACGIH TLV (TWA): 0.01 mg (Ag)/m<sup>3</sup>  
OSHA PEL (TWA): 2.5 mg (F)/m<sup>3</sup>  
Appropriate engineering controls:  
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. Ventilation is normally required when handling or using this product. Eyewash fountains should be provided in areas where there is any possibility that workers could be exposed to the substance. Follow safe industrial engineering/laboratory practices when handling any chemical.  
Personal protective equipment  
Respiratory protection: Dust respirator. Be sure to use a MSHA/NIOSH approved respirator or equivalent.  
Hand protection: Nitrile gloves.  
Eye protection: Safety glasses.  
Skin and body protection: Wear protective clothing (lab coat and chemical resistant boots).

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## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state (20°C): Solid  
Form: Crystal - Powder  
Color: White - Almost white  
Odor: No data available  
Odor threshold: No data available

Melting point/freezing point: 73°C (163°F)  
Boiling point/range: No data available  
Decomposition temperature: No data available  
Relative density: No data available  
Kinematic Viscosity: No data available  
Partition coefficient: No data available  
n-octanol/water (log Pow)  
Flash point: No data available  
Flammability (solid, gas): No data available

pH: No data available  
Vapor pressure: No data available  
Vapor density: No data available  
Dynamic Viscosity: No data available  
Evaporation rate: No data available  
(Butyl Acetate = 1)  
Autoignition temperature: No data available  
Flammability or explosive limits: No data available  
Lower: No data available  
Upper: No data available

Solubility(ies):  
Water: Very soluble  
Very soluble: Ether, Toluene  
Soluble: Benzene

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## SECTION 10. STABILITY AND REACTIVITY

Reactivity: Not Available.  
Chemical Stability: Moisture sensitive. Light sensitive.  
Possibility of Hazardous Reactions: No hazardous reactivity has been reported.  
Conditions to avoid: Exposure to light. Exposure to moisture. Moisture sensitive.  
Incompatible materials: Oxidizing agents, Strong acids  
Hazardous Decomposition Products: No data available

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## SECTION 11. TOXICOLOGICAL INFORMATION

RTECS Number: ED2875000  
Acute Toxicity:  
ivn-mus LD50:56 mg/kg  
Skin corrosion/irritation:  
No data available  
Serious eye damage/irritation:  
No data available

Respiratory or skin sensitization:

No data available

Germ cell mutagenicity:

No data available

Carcinogenicity:

No data available

IARC: No data available NTP: No data available OSHA: No data available

Reproductive toxicity:

No data available

Routes of Exposure: Inhalation, Eye contact, Ingestion, Skin contact.

Symptoms related to exposure:

Overexposure may result in serious illness or death. Skin contact may produce burns. Skin contact may result in inflammation; characterized by itching, scaling, reddening, or occasionally blistering. Eye contact can result in corneal damage or blindness.

Potential Health Effects:

No specific information available; skin and eye contact may result in irritation. May be harmful if inhaled or ingested.

Target organ(s): No data available

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## **SECTION 12. ECOLOGICAL INFORMATION**

Ecotoxicity

Fish: No data available

Crustacea: No data available

Algae: No data available

Persistence and degradability: No data available

Bioaccumulative potential (BCF): No data available

Mobility in soil: No data available

Partition coefficient:

n-octanol/water (log Pow)

No data available

Soil adsorption (Koc): No data available

Henry's Law:

constant (PaM<sup>3</sup>/mol)

No data available

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## **SECTION 13. DISPOSAL CONSIDERATIONS**

Disposal of product: Recycle to process if possible. It is the generator's responsibility to comply with Federal, State and Local rules and regulations. You may be able to dissolve or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. This section is intended to provide assistance but does not replace these laws, nor does compliance in accordance with this section ensure regulatory compliance according to the law. US EPA guidelines for Identification and Listing of Hazardous Waste are listed in 40 CFR Parts 261. The product should not be allowed to enter the environment, drains, water ways, or the soil.

Disposal of container: Dispose of as unused product. Do not re-use empty containers.  
Other considerations: Observe all federal, state and local regulations when disposing of the substance.

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## **SECTION 14. TRANSPORT INFORMATION**

DOT (US)

UN number:

UN3260

Proper Shipping Name:

Corrosive solid, acidic, inorganic, n.o.s.

Class or Division:

8 Corrosive material

Packing Group:

II

IATA

UN number:

UN3260

Proper Shipping Name:

Corrosive solid, acidic, inorganic, n.o.s.

Class or Division:

8 Corrosive material

Packing Group:

II

IMDG

UN number:

UN3260

Proper Shipping Name:

Corrosive solid, acidic, inorganic, n.o.s.

Class or Division:

8 Corrosive material

Packing Group:

II

EmS number: F-A, S-B

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## **SECTION 15. REGULATORY INFORMATION**

Toxic Substance Control Act (TSCA 8b.):

This product is ON the EPA Toxic Substances Control Act (TSCA) inventory.

US Federal Regulations

CERCLA Hazardous substance and Reportable Quantity:

SARA 313: Not Listed

SARA 302: Not Listed

State Regulations

State Right-to-Know

Massachusetts Not Listed

New Jersey Not Listed

Pennsylvania Not Listed

California Proposition 65: Not Listed

Other Information

NFPA Rating:

Health: 3  
Flammability: 0  
Instability: 0  
HMIS Classification:  
Health: 3  
Flammability: 0  
Physical: 0  
International Inventories  
WHMIS hazard class: E: Corrosive material.  
D2A: Materials causing other toxic effects. (Very Toxic)  
EC-No: 237-956-5

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## 16. OTHER INFORMATION

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH). The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. American Elements shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. COPYRIGHT 1997-2022 AMERICAN ELEMENTS. LICENSED GRANTED TO MAKE UNLIMITED PAPER COPIES FOR INTERNAL USE ONLY.