

Material Safety Data Sheet (MSDS)

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product Identifiers

Product Name: **Silver**
Purity: 99.999%
Product Number: NN-RSAG
Source: Engineering Analytics Laboratories
CAS-No.: 7440-22-4

1.2 Relevant Identified Uses

Identified Uses: Equipment Calibration, Laboratory Chemicals, Synthesis of Substances
Advised Against: None suggested

1.3 Company Identification (MSDS Supplier)

Company: Engineering Analytics Laboratories
(Accredited to ISO 17034:2016, #122465 by PJLA)
Address: PO Box 500146, Malabar, FL 32950, USA
Telephone: +1 321-720-6578
E-mail: EngAnLab@gmail.com

1.4 Emergency Telephone Number

Emergencies: **Dial 911 first!**
Emergency Phone #: +1-703-527-3887 (CHEMTREC)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Acute aquatic toxicity (Category 1), H400
Chronic aquatic toxicity (Category 1), H410
For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram:



Signal Word: Warning

Hazard Statement(s): H410 Very toxic to aquatic life with long lasting effects.

Precautionary Statement(s): P273 Avoid release to the environment.

P391 Collect spillage.

P501 Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards Not Otherwise Classified (HNOC) or Not Covered by GHS

None

3. COMPOSITION (INFORMATION ON INGREDIENTS)

3.1 Substances

Formula: Ag
Molecular Weight: 107.87 g/mol
CAS-No.: 7440-22-4
EC-No.: 231-131-3

Hazardous components

Component	Classification	Concentration
Silver	Aquatic Acute 1, Aquatic Chronic 1; H400, H410 M-Factor: Aquatic Acute 100, Aquatic Chronic 100	<= 100%

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1 Description of First Aid Measures

General Advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Flush eyes with water as a precaution.

If swallowed

Never give anything by mouth to an unconscious person. Turn the individual's head and/or body to one side, and rinse the mouth with water (if safe and possible to do so). Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labeling (see section 2.2) and/or in section 11.

4.3 Indication of any immediate medical attention and special treatment needed

No data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture

Silver/Silver Oxides
Not Combustible.

5.3 Advice for Firefighters

Wear self-contained breathing apparatus for firefighting, if necessary.

5.4 Further information

No data available

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions, Protective Equipment (PPE), and Emergency Procedures

Avoid dust formation. Avoid breathing vapors, mist, or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

For personal protection see section 8.

6.2 Environmental Precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Clean-up and Containment Methods

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Disposal

For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for Safe Handling

Processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs. Provide appropriate exhaust ventilation at places where dust is formed. For precautions see section 2.2.

7.2 Conditions for Safe Storage, including incompatibilities

Keep container tightly closed in a dry and well-ventilated place.

Substance is air sensitive.

Storage class (TRGS 510): 13: Non Combustible Solids.

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control Parameters

Components with workplace control parameters:

Component	CAS #	Value	Control Parameters	Basis
Silver	7440-22-4	TWA	0.1 mg/m ³	USA. ACGIH Threshold Limit Values (TLV)
		PEL	0.1 mg/m ³	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		TWA	0.1 mg/m ³	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants

8.2 Exposure controls

Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of the workday.

Personal Protective Equipment (PPE)

Eye/face protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact

Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min

Splash contact

Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection

Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection

Respiratory protection is not required. Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN 143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Control environmental exposure to prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Basic Physical and Chemical Properties

- a) Appearance Form: Wire, silver
- b) Odor: *No data available*
- c) Odor Threshold: *No data available*
- d) pH: *No data available*
- e) Melting/freezing point:
Melting point (Literature Verified): 961.78 °C (1,763.2 °F)¹.
- f) Initial boiling point and boiling range:
2,212 °C (4,014 °F)
- g) Heat of Fusion: 104.4 ± 3.9 J/g²
- h) Flash point: *Not applicable*
- i) Evaporation rate: *No data available*
- j) Flammability (solid, gas): Non-flammable in stated form.
- k) Upper/lower flammability or explosive limits: *No data available*
- l) Vapor pressure: *No data available*
- m) Vapor density: *No data available*

- n) Relative density: 10.49 g/cm³ at 25 °C (77 °F)
- o) Water Solubility: Insoluble
- p) Partition coefficient: n-octanol/water: *No data available*
- q) Auto-ignition Temperature: *No data available*
- r) Decomposition Temperature: *No data available*
- s) Viscosity: *No data available*
- t) Explosive Properties: *No data available*
- u) Oxidizing Properties: *No data available*

9.2 Other safety information

No data available

10. STABILITY AND REACTIVITY

10.1 Reactivity

No data available

10.2 Chemical Stability

Stable under recommended storage conditions.

10.3 Possibility of Hazardous Reactions

No data available

10.4 Conditions to avoid

No data available

10.5 Incompatible Materials

Strong Oxidizing agents

10.6 Hazardous Decomposition Products

Hazardous decomposition products formed under fire conditions: **Silver / Silver oxides**

Other decomposition products: *No data available*

In the event of fire: see section 5

11. TOXICOLOGICAL INFORMATION

11.1 Toxicological Effects

Acute Toxicity: *No data available*

Inhalation: *No data available*

Dermal: *No data available*

Skin Corrosion/Irritation: No skin irritation, Rabbit Test (OECD Test Guideline 404)

Serious Eye Damage/Eye Irritation: No eye irritation, Rabbit Test (OECD Test Guideline 404)

Respiratory or Skin Sensitization: *No data available*

Germ Cell Mutagenicity: *No data available*

Carcinogenicity:

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive Toxicity: No data available

Specific Target Organ Toxicity - Single Exposure: *No data available*

Specific Target Organ Toxicity - Repeated Exposure: *No data available*

Aspiration Hazard: *No data available*

Additional Information

RTECS: *No data available*

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to Fish: Semi-static LC50 – Pimephales Promelas (Fathead Minnow) - 0.0021 mg/l - 96 h

12.2 Persistence and Degradability

Biodegradability Result: *No data available*

12.3 Bioaccumulative Potential

No data available

12.4 Mobility in Soil

No data available

12.5 Results of PBT and vPvB Assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other Adverse Effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Very toxic to aquatic life.

13. DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods

Product

Offer surplus and non-recyclable solutions to a licensed disposal company.

Packaging

Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)

UN number: 3077 Class: 9 Packing group: III
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Silver)
Reportable Quantity (RQ): 1 lbs
Poison Inhalation Hazard: No

IMDG

UN number: 3077 Class: 9 Packing group: III EMS-No: F-A, S-F
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Silver)
Marine pollutant: Yes

IATA

UN number: 3077 Class: 9 Packing group: III
Proper shipping name: Environmentally hazardous substance, solid, n.o.s. (Silver)

Further information

EHS-Mark required (ADR 2.2.9.1.10, IMDG code 2.10.3) for single packaging and combination packaging containing inner packaging with Dangerous Goods > 5L for liquids or > 5kg for solids.

15. REGULATORY INFORMATION

SARA 302 Components

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components

The following components are subject to reporting levels established by SARA Title III, Section 313:

Silver	Revision Date
CAS-No.: 7440-22-4	2007-07-01

SARA 311/312 Hazards

No SARA 311/312 Hazards

Massachusetts Right To Know Components

No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components

Silver

Revision Date

CAS-No.: 7440-22-4

2007-07-01

New Jersey Right To Know Components

No components are subject to the Massachusetts Right to Know Act.

California Prop. 65 Components

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.

Aquatic Acute: Acute aquatic toxicity
H410: Very toxic to aquatic life with long lasting effects.

HMIS Rating

Health hazard: 0

Chronic Health Hazard:

Flammability: 0

Physical Hazard: 0

NFPA Rating

Health hazard: 0

Fire Hazard: 0

Reactivity Hazard: 0

Further Information

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17. Literature Sources

1. H. Preston-Thomas, *The International Temperature Scale of 1990 (ITS-90)*, *Metrologia*, 27 (1990) pg 5.
2. R. Hultgren, et. al., *Selected Values of Thermodynamic Properties of the Elements*, American Society for Metals, Metals Park, OH (1973).

Preparation Information

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