



SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Revision Date 01/27/2015

Version 1.3

SECTION 1. Identification

Product identifier

| | |
|----------------|--|
| Product number | 109906 |
| Product name | Silver standard 1000 mg Ag, (AgNO ₃ in HNO ₃ 5%) Titrisol® |

Relevant identified uses of the substance or mixture and uses advised against

| | |
|-----------------|----------------------|
| Identified uses | Reagent for analysis |
|-----------------|----------------------|

Details of the supplier of the safety data sheet

| | |
|---------|--|
| Company | EMD Millipore Corporation 290 Concord Road, Billerica, MA 01821, United States of America General Inquiries: +1-978-715-4321 Monday to Friday, 9:00 AM to 4:00 PM Eastern Time (GMT-5) |
|---------|--|

| | |
|---------------------|--|
| Emergency telephone | 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week |
|---------------------|--|

SECTION 2. Hazards identification

GHS Classification

Skin corrosion, Category 1B, H314

Serious eye damage, Category 1, H318

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

GHS-Labeling

Hazard pictograms



Signal Word
Danger

Hazard Statements

H314 Causes severe skin burns and eye damage.

Precautionary Statements

P264 Wash skin thoroughly after handling.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

| | |
|----------------|--|
| Product number | 109906 |
| Product name | Silver standard 1000 mg Ag, (AgNO ₃ in HNO ₃ 5%) Titrisol® |

Version 1.3

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing.
Rinse skin with water/ shower.
P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER or doctor/ physician.
P321 Specific treatment (see supplemental first aid instructions on this label).
P363 Wash contaminated clothing before reuse.
P405 Store locked up.
P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

None known.

SECTION 3. Composition/information on ingredients

| | |
|-----------------|-----------------------|
| Chemical nature | Nitric acid solution. |
|-----------------|-----------------------|

Hazardous ingredients

Chemical Name (Concentration)

CAS-No.

nitric acid ($\geq 1\%$ - $< 5\%$)

7697-37-2

Exact percentages are being withheld as a trade secret.

Silver nitrate ($\geq 1\%$ - $< 5\%$)

7761-88-8

Exact percentages are being withheld as a trade secret.

SECTION 4. First aid measures

Description of first-aid measures

Inhalation

After inhalation: fresh air. Call in physician.

Skin contact

After skin contact: wash off with plenty of water. Immediately remove contaminated clothing. If available swab with polyethylene glycol 400. Call a physician immediately.

Eye contact

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist.

Ingestion

After swallowing: make victim drink water (two glasses at most), avoid vomiting (risk of perforation!). Call a physician immediately. Do not attempt to neutralize.

Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed

Irritation and corrosion

Risk of permanent damage due to staining of the cornea.

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| | | |
|----------------|--|-------------|
| Product number | 109906 | Version 1.3 |
| Product name | Silver standard 1000 mg Ag, (AgNO ₃ in HNO ₃ 5%) Titrisol® | |

The following applies to soluble silver compounds: only slightly absorbed via the gastrointestinal tract. Strong irritations after contact with eyes and skin.

The following applies to nitrites/nitrates in general: methemoglobinemia after the uptake of large quantities.

Indication of any immediate medical attention and special treatment needed

No information available.

SECTION 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given.

Special hazards arising from the substance or mixture

Not combustible.

Ambient fire may liberate hazardous vapors.

Fire may cause evolution of:

nitrous gases

Advice for firefighters

Special protective equipment for fire-fighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

Further information

Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Avoid substance contact. Do not breathe vapors, aerosols. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders: Protective equipment see section 8.

Environmental precautions

Do not empty into drains.

Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills.

Observe possible material restrictions (see sections 7 and 10).

Take up with liquid-absorbent and neutralizing material (e.g. Chemisorb® H⁺, Art. No. 101595).

Dispose of properly. Clean up affected area.

SECTION 7. Handling and storage

Precautions for safe handling

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number 109906
Product name Silver standard 1000 mg Ag, (AgNO₃ in HNO₃ 5%) Titrisol®

Version 1.3

Observe label precautions.

Conditions for safe storage, including any incompatibilities

Tightly closed.

Storage temperature: no restrictions.

SECTION 8. Exposure controls/personal protection

Exposure limit(s)

Ingredients

| Basis | Value | Threshold limits | Remarks |
|---------------------------------|-----------------------------------|------------------------|---------------------|
| <i>nitric acid 7697-37-2</i> | | | |
| ACGIH | Time Weighted Average (TWA): | 2 ppm | |
| | Short Term Exposure Limit (STEL): | 4 ppm | |
| NIOSH/GUIDE | Recommended exposure limit (REL): | 2 ppm | |
| | | 5 mg/m ³ | |
| | Short Term Exposure Limit (STEL): | 4 ppm | |
| | | 10 mg/m ³ | |
| OSHA_TRANS | PEL: | 2 ppm | |
| | | 5 mg/m ³ | |
| Z1A | Time Weighted Average (TWA): | 2 ppm | |
| | | 5 mg/m ³ | |
| | Short Term Exposure Limit (STEL): | 4 ppm | |
| | | 10 mg/m ³ | |
| <i>Silver nitrate 7761-88-8</i> | | | |
| ACGIH | Time Weighted Average (TWA): | 0.01 mg/m ³ | Expressed as: as Ag |
| NIOSH/GUIDE | Recommended exposure limit (REL): | 0.01 mg/m ³ | Expressed as: as Ag |
| OSHA_TRANS | PEL: | 0.01 mg/m ³ | Expressed as: as Ag |
| Z1A | Time Weighted Average (TWA): | 0.01 mg/m ³ | Expressed as: as Ag |

Engineering measures

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

Individual protection measures

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

Hygiene measures

Immediately change contaminated clothing. Apply skin- protective barrier cream. Wash hands and face after working with substance.

Eye/face protection

Tightly fitting safety goggles

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number

109906

Version 1.3

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Hand protection

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Other protective equipment:

Acid-resistant protective clothing.

Respiratory protection

required when vapors/aerosols are generated.

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

SECTION 9. Physical and chemical properties

| | |
|---------------------------|--|
| Physical state | liquid |
| Color | colorless |
| Odor | odorless |
| Odor Threshold | No information available. |
| pH | ca. 0.5 at 68 °F (20 °C) |
| Melting point | No information available. |
| Boiling point | No information available. |
| Flash point | No information available. |
| Evaporation rate | No information available. |
| Flammability (solid, gas) | Not applicable |
| Lower explosion limit | No information available. |
| Upper explosion limit | No information available. |
| Vapor pressure | No information available. |
| Relative vapor density | No information available. |
| Density | 1.03 g/cm ³ at 68 °F (20 °C) |
| Relative density | No information available. |
| Water solubility | at 68 °F (20 °C) soluble |

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

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109906

Version 1.3

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Partition coefficient: n-octanol/water

No information available.

Autoignition temperature

No information available.

Decomposition temperature

No information available.

Viscosity, dynamic

No information available.

Explosive properties

No information available.

Oxidizing properties

No information available.

SECTION 10. Stability and reactivity

Reactivity

See below

Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

Possibility of hazardous reactions

Violent reactions possible with:

strong alkalis

The generally known reaction partners of water.

Conditions to avoid

no information available

Incompatible materials

Metals, metal alloys

Hazardous decomposition products

in the event of fire: See section 5.

SECTION 11. Toxicological information

Information on toxicological effects

Likely route of exposure

Eye contact, Skin contact

Target Organs

Eyes

Skin

Respiratory system

teeth

Mucous membranes

Cornea

Nose

Kidney

Lungs

Digestive organs

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Version 1.3

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Gastro-intestinal system

head

Respiratory organs

Acute oral toxicity

Symptoms: If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach.

Acute inhalation toxicity

Symptoms: mucosal irritations, Cough, Shortness of breath, Possible damages:, damage of respiratory tract

Skin irritation

Mixture causes burns.

Eye irritation

Mixture causes serious eye damage. Risk of permanent damage due to staining of the cornea.

Specific target organ systemic toxicity - single exposure

The substance or mixture is not classified as specific target organ toxicant, single exposure.

Specific target organ systemic toxicity - repeated exposure

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Aspiration hazard

Regarding the available data the classification criteria are not fulfilled.

Carcinogenicity

IARC

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

OSHA

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

NTP

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

ACGIH

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

Further information

Quantitative data on the toxicity of this product are not available.

Other information

The following applies to soluble silver compounds: only slightly absorbed via the gastrointestinal tract. Strong irritations after contact with eyes and skin.

The following applies to nitrites/nitrates in general: methemoglobinemia after the uptake of large quantities.

Further data:

Other dangerous properties can not be excluded.

Handle in accordance with good industrial hygiene and safety practice.

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number

109906

Version 1.3

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Ingredients

nitric acid

Skin irritation

Rabbit

Result: Causes severe burns.

(IUCLID)

Eye irritation

Rabbit

Result: Causes burns.

(IUCLID)

Germ cell mutagenicity

Genotoxicity in vitro

Ames test

Salmonella typhimurium

Result: negative

Method: OECD Test Guideline 471

Silver nitrate

Skin irritation

In vitro study

Result: Corrosive

OECD Test Guideline 431

Eye irritation

Rabbit

Result: Causes burns.

(External MSDS)

Germ cell mutagenicity

Genotoxicity in vitro

Ames test

Salmonella typhimurium

Result: negative

(External MSDS)

SECTION 12. Ecological information

Ecotoxicity

No information available.

Persistence and degradability

No information available.

Bioaccumulative potential

No information available.

Mobility in soil

No information available.

Additional ecological information

Discharge into the environment must be avoided.

Ingredients

nitric acid

SAFETY DATA SHEET

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Version 1.3

Toxicity to fish

LC50 *Gambusia affinis* (Mosquito fish): 72 mg/l; 96 h (IUCLID)

Biodegradability

The methods for determining the biological degradability are not applicable to inorganic substances.

Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

Henry constant

2482 Pa·m³/mol

Method: (calculated)

(Lit.) Distribution preferentially in air.

Silver nitrate

Toxicity to fish

NOEC *Leuciscus idus* (Golden orfe): 0.011 mg/l; 96 h

OECD Test Guideline 203

flow-through test LC50 *Pimephales promelas* (fathead minnow): 0.0067 mg/l; 96 h

Analytical monitoring: yes

US-EPA

flow-through test NOEC *Pimephales promelas* (fathead minnow): 0.00037 mg/l; 28 d

OECD Test Guideline 210

Toxicity to daphnia and other aquatic invertebrates

semi-static test LC50 *Daphnia magna* (Water flea): 0.0069 - 0.0082 mg/l; 48 h

Analytical monitoring: yes

OECD Test Guideline 202

Toxicity to algae

IC50 *Desmodesmus subspicatus* (green algae): 0.008 mg/l; 8 d (External MSDS)

semi-static test *Pseudokirchneriella subcapitata* (green algae): 0.19 mg/l; 96 h

US-EPA

Toxicity to bacteria

EC10 *Pseudomonas putida*: 0.006 mg/l; 16 h (External MSDS)

Biodegradability

The methods for determining the biological degradability are not applicable to inorganic substances.

M-Factor

100

SECTION 13. Disposal considerations

The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

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Version 1.3

SECTION 14. Transport information

Land transport (DOT)

UN number UN 3264
Proper shipping name CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (CONT. NITRIC ACID, SILVER NITRATE)
Class 8
Packing group III
Environmentally hazardous --

Air transport (IATA)

UN number UN 3264
Proper shipping name CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (CONT. NITRIC ACID SOLUTION, SILVER NITRATE SOLUTION)
Class 8
Packing group III
Environmentally hazardous --
Special precautions for user no

Sea transport (IMDG)

UN number UN 3264
Proper shipping name CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (CONT. NITRIC ACID SOLUTION, SILVER NITRATE SOLUTION)
Class 8
Packing group III
Environmentally hazardous --
Special precautions for user yes
EmS F-A S-B

SECTION 15. Regulatory information

United States of America

SARA 313

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

Ingredients

| | | |
|----------------|-----------|-------|
| Silver nitrate | 7761-88-8 | 2.9 % |
| nitric acid | 7697-37-2 | 4.9 % |

SARA 302

The following components are subject to reporting levels established by SARA Title III, Section 302:

Ingredients

| | |
|-------------|-----------|
| nitric acid | 7697-37-2 |
|-------------|-----------|

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Product number

109906

Version 1.3

Product name

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DEA List I

Not listed

DEA List II

Not listed

US State Regulations

Massachusetts Right To Know

Ingredients

nitric acid

Silver nitrate

Pennsylvania Right To Know

Ingredients

nitric acid

Silver nitrate

New Jersey Right To Know

Ingredients

nitric acid

Silver nitrate

California Prop 65 Components

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

Notification status

TSCA: All components of the product are listed in the TSCA-inventory.

DSL: All components of this product are on the Canadian DSL.

KOREA: Not in compliance with the inventory

SECTION 16. Other information

Training advice

Provide adequate information, instruction and training for operators.

Labeling

Hazard pictograms



Signal Word

Danger

Hazard Statements

H314 Causes severe skin burns and eye damage.

H410 Very toxic to aquatic life with long lasting effects.

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Version 1.3

Precautionary Statements

Prevention

P273 Avoid release to the environment.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P308 + P310 IF exposed or concerned: immediately call a POISON CENTER or doctor/ physician.

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

H314 Causes severe skin burns and eye damage.

H318 Causes serious eye damage.

Key or legend to abbreviations and acronyms used in the safety data sheet

Used abbreviations and acronyms can be looked up at www.wikipedia.org.

Revision Date 01/27/2015

The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to appropriate safety precautions. It does not represent a warranty of any product properties and we assume no liability for any loss or injury which may result from the use of this information. Users should conduct their own investigations to determine the suitability of the information.

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