



a member of the Roche Group

## Material Safety Data Sheet

Material Name: Steiner Silver

MSDS ID: 00231696

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

#### Manufacturer Information

VENTANA MEDICAL SYSTEMS INC.  
1910 E. Innovation Park Drive  
Tucson, AZ 85755  
Phone: (520) 887-2155

#### EMERGENCY TELEPHONE NUMBER:

(800) 424-9300 (USA/Canada)  
CHEMTREC: +1 (703) 527-3887 (International)

**Material Name:** Steiner Silver

#### Product Number(s)

860-018, 1504066, 05279330001, 06038476001

#### Product Use

clinical/research

### \*\*\* Section 2 - Hazards Identification \*\*\*

**NFPA Ratings:** Health: 2 Fire: 0 Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

#### Preparation

This material is not classified.

#### EMERGENCY OVERVIEW

**Color:** colorless

**Physical Form:** liquid

**Odor:** odorless

**Major Health Hazards:** respiratory tract irritation, skin irritation, eye irritation

#### POTENTIAL HEALTH EFFECTS

##### Inhalation

**Short Term:** irritation, sore throat, cough, difficulty breathing, lung damage

**Long Term:** skin disorders, lung damage

##### Skin

**Short Term:** irritation, skin discoloration

**Long Term:** irritation, skin discoloration

##### Eye

**Short Term:** irritation, eye damage, blindness

**Long Term:** irritation, eye damage, blindness

##### Ingestion

**Short Term:** irritation, diarrhea, stomach pain, vomiting, dizziness, convulsions, coma

**Long Term:** skin disorders, blood disorders

#### OSHA Regulatory Status

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

### \*\*\* Section 3 - Composition/Information on Ingredients \*\*\*

| CAS #         | Component / EU Number       | Percent | Symbol(s) | Risk Phrase(s) |
|---------------|-----------------------------|---------|-----------|----------------|
| Not Available | NON-HAZARDOUS               | 60-100  | ---       | ---            |
| 7761-88-8     | SILVER NITRATE<br>231-853-9 | 0.5-1.5 | C N O     | R:34-50-53-8   |

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## Component Related Regulatory Information

This product may be regulated, have exposure limits or other information identified as the following: Silver compounds, Silver compounds (inorganic), Silver salts.

### \*\*\* Section 4 - First Aid Measures \*\*\*

#### Inhalation

If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.

#### Skin

Wash contaminated areas with soap and water. Thoroughly clean and dry contaminated clothing before reuse. Get medical attention, if needed.

#### Eyes

Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

#### Ingestion

If a large amount is swallowed, get medical attention.

### \*\*\* Section 5 - Fire-Fighting Measures \*\*\*

See Section 9 for Flammability Properties

#### Flammable Properties

Negligible fire hazard.

#### Extinguishing Media

Use extinguishing agents appropriate for surrounding fire.

#### Fire Fighting Measures

Move container from fire area if it can be done without risk. Avoid inhalation of material or combustion by-products.

#### Sensitivity to Mechanical Impact

Not sensitive

#### Sensitivity to Static Discharge

Not sensitive

### \*\*\* Section 6 - Accidental Release Measures \*\*\*

#### Occupational Spill/Release

Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal.

### \*\*\* Section 7 - Handling and Storage \*\*\*

#### Handling Procedures

Wash thoroughly after handling.

#### Storage Procedures

Store and handle in accordance with all current regulations and standards. Store between 2 C and 8 C. See original container for storage recommendations. Keep separated from incompatible substances.

### \*\*\* Section 8 - Exposure Controls/Personal Protection \*\*\*

#### Exposure Limits

##### SILVER NITRATE (7761-88-8)

Finland: 0.03 mg/m3 STEL (as Ag)  
0.01 mg/m3 TWA (as Ag)

Germany: 0.01 mg/m3 TWA (inhalable fraction, exposure factor 2)  
0.01 mg/m3 MAK (inhalable fraction, as Ag)  
0.02 mg/m3 Peak (as Ag, inhalable fraction)

Japan 0.01 mg/m3 OEL (as Ag)

#### Ventilation

Provide adequate ventilation. Ensure compliance with applicable exposure limits.

#### PERSONAL PROTECTIVE EQUIPMENT

##### Eyes/Face

Safety glasses or goggles are recommended when there is a potential for eye contact. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

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## Protective Clothing

Lab coat or apron.

## Glove Recommendations

Wear appropriate chemical resistant gloves.

## Protective Materials

latex, nitrile, vinyl

## Respiratory Protection

No respirator is required under normal conditions of use.

## \*\*\* Section 9 - Physical and Chemical Properties \*\*\*

|                                |               |                                      |                         |
|--------------------------------|---------------|--------------------------------------|-------------------------|
| <b>Physical State:</b>         | Liquid        | <b>Appearance:</b>                   | Clear, colorless liquid |
| <b>Color:</b>                  | colorless     | <b>Physical Form:</b>                | liquid                  |
| <b>Odor:</b>                   | odorless      | <b>Odor Threshold:</b>               | Not available           |
| <b>pH:</b>                     | 6.04          | <b>Melting/Freezing Point:</b>       | Not available           |
| <b>Boiling Point:</b>          | Not available | <b>Decomposition:</b>                | Not available           |
| <b>Flash Point:</b>            | not flammable | <b>Evaporation Rate:</b>             | Not available           |
| <b>LEL:</b>                    | Not available | <b>UEL:</b>                          | Not available           |
| <b>Vapor Pressure:</b>         | Not available | <b>Vapor Density (air = 1):</b>      | Not available           |
| <b>Density:</b>                | Not available | <b>Specific Gravity (water = 1):</b> | Not available           |
| <b>Water Solubility:</b>       | miscible      | <b>Log KOW:</b>                      | Not available           |
| <b>Coeff. Water/Oil Dist.:</b> | Not available | <b>Auto Ignition:</b>                | Not available           |
| <b>Viscosity:</b>              | Not available | <b>Volatility:</b>                   | Not available           |

## \*\*\* Section 10 - Stability and Reactivity \*\*\*

### Chemical Stability

Stable at normal temperatures and pressure.

### Conditions to Avoid

None reported.

### Materials to Avoid

acids, aluminum, chlorinated solvents, copper, copper alloys, galvanized iron, organic solvents and compounds, oxidizing materials, zinc

### Decomposition Products

ammonia

### Possibility of Hazardous Reactions

Will not polymerize.

## \*\*\* Section 11 - Toxicological Information \*\*\*

### Acute and Chronic Toxicity

#### Component Analysis - LD50/LC50

The components of this material have been reviewed in various sources and the following selected endpoints are published:

**SILVER NITRATE (7761-88-8)**

Oral LD50 Rat 1173 mg/kg

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## RTECS Acute Toxicity (selected)

The components of this material have been reviewed, and RTECS publishes the following endpoints:

### SILVER NITRATE (7761-88-8)

Oral: 1173 mg/kg Oral Rat LD50

## Acute Toxicity Level

### SILVER NITRATE (7761-88-8)

Moderately Toxic: ingestion.

## Irritation/Corrosivity

### RTECS Irritation

The components of this material have been reviewed, and RTECS publishes the following endpoints:

### SILVER NITRATE (7761-88-8)

10 mg Eyes Rabbit moderate; 1 mg Eyes Rabbit severe

## Local Effects

### SILVER NITRATE (7761-88-8)

Corrosive: inhalation, skin, eye, ingestion.

## Carcinogenicity

### Component Carcinogenicity

None of the substances in this preparation are listed by ACGIH, OSHA, NIOSH, NTP, IARC, Austria, Belgium, Denmark, France, Germany, Ireland, Italy, Netherlands, Portugal, Spain, Sweden, or United Kingdom.

## Mutagenic

No information available for the mixture.

### RTECS Mutagenic

The components of this material have been reviewed, and RTECS publishes data for one or more components.

## Reproductive Effects

No information available for the mixture.

### RTECS Reproductive Effects

The components of this material have been reviewed, and RTECS publishes data for one or more components.

## Tumorigenic

No information available for the mixture.

### RTECS Tumorigenic

The components of this material have been reviewed, and RTECS publishes data for one or more components.

## Medical Conditions Aggravated by Exposure

None known.

## \*\*\* Section 12 - Ecological Information \*\*\*

### Component Analysis - Aquatic Toxicity

#### SILVER NITRATE (7761-88-8)

**Fish:** 96 Hr LC50 Poecilia reticulata: 0.00512-0.00787 mg/L [semi-static]; 96 Hr LC50 Lepomis macrochirus: 0.009-0.02 mg/L [flow-through]; 96 Hr LC50 Lepomis macrochirus: 0.0242-0.0484 mg/L [semi-static]; 96 Hr LC50 Lepomis macrochirus: 0.05-0.07 mg/L [static]; 96 Hr LC50 Oncorhynchus mykiss: 0.001339-0.001637 mg/L [flow-through]; 96 Hr LC50 Oncorhynchus mykiss: 0.0075 mg/L [semi-static]; 96 Hr LC50 Oncorhynchus mykiss: 0.00839-0.1802 mg/L [static]; 96 Hr LC50 Pimephales promelas: 0.00452-0.00638 mg/L [flow-through]; 96 Hr LC50 Pimephales promelas: 0.00181-0.00214 mg/L [static]; 96 Hr LC50 Pimephales promelas: 0.0064-0.0106 mg/L [semi-static]; 96 Hr LC50 Pimephales promelas: 0.009 mg/L; 96 Hr LC50 Cyprinus carpio: 0.0027 mg/L [semi-static]

**Invertebrate:** 48 Hr EC50 Daphnia magna: 0.0006 mg/L; 48 Hr EC50 Daphnia magna: 0.0008 - 0.001 mg/L [Flow through]; 48 Hr EC50 Daphnia magna: 0.0008 - 0.0011 mg/L [Static]

## Mobility

No information available for the mixture.

## Persistence & Degradation

No information available for the mixture.

## Bioaccumulative Potential

No information available for the mixture.

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## \*\*\* Section 13 - Disposal Considerations \*\*\*

### Disposal Methods

Dispose in accordance with all applicable regulations. Hazardous Waste Number(s): D011. Dispose of in accordance with U.S. EPA 40 CFR 262 for concentrations at or above the Regulatory level. Regulatory level- 5.0 mg/L.

### Component Waste Numbers

The U.S. EPA has not published waste numbers for this product's components.

## \*\*\* Section 14 - Transport Information \*\*\*

### US DOT Information

Not regulated.

### TDG Information

Not regulated.

### ADR Information

Not regulated.

### RID Information

Not regulated.

### IATA Information

Not regulated.

### ICAO Information

Not regulated.

### IMDG Information

Not regulated.

## \*\*\* Section 15 - Regulatory Information \*\*\*

### U.S. Federal Regulations

This material contains one or more of the following chemicals required to be identified under SARA Sections 302/304 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

#### SILVER NITRATE (7761-88-8)

**SARA 313:** 1.0 % de minimis concentration (Chemical Category N740)

**CERCLA:** 1 lb final RQ; 0.454 kg final RQ

### SARA 311/312

**Acute Health:** Yes **Chronic Health:** No **Fire:** No **Pressure:** No **Reactive:** No

### U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

| Component / EC Number | CAS       | CA  | MA  | MN | NJ  | PA  | RI  |
|-----------------------|-----------|-----|-----|----|-----|-----|-----|
| SILVER NITRATE        | 7761-88-8 | Yes | Yes | No | Yes | Yes | Yes |

### California Proposition 65

Not regulated under California Proposition 65

### Canadian Regulations

#### Canada WHMIS

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

#### SILVER NITRATE (7761-88-8)

1 %

### WHMIS Classification

D2B.

### European Regulations

This preparation has been classified for the European Union according to Annex VI Directives 67/548/EEC and 99/45/EC.

### Germany Water Classification

#### SILVER NITRATE (7761-88-8)

Number 185, hazard class 3 - severe hazard to waters (footnote 8)

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## EU Marking and Labelling

This material is not classified.

## Japanese Regulations

### Japan Designated Chemical Substances (PRTR Law)

No components of this material are subject to reporting requirements as specified by the "Law Concerning Reporting, etc. of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management" nor are they included in the "Pollutant Release and Transfer Register (PRTR)" of designated chemicals.

### Japan Poisonous and Deleterious Substances

No components of this material are specified as poisonous or deleterious substances, as regulated by Japan under the Poisonous and Deleterious Substances Control Law.

### Industrial Safety and Health Law - Flammable Materials

No components of this material are specifically identified in Table 6-2 of the Enforcement Order of the Industrial Safety and Health Law which, if used in the workplace, require designation of an Operations Chief during confined space work and periodic machine inspections.

### Industrial Safety and Health Law - Label Disclosure

No components of this material are specifically required to be indicated on a container label as specified by Article 18 of the Enforcement Order of the Industrial Safety and Health Law.

### Industrial Safety and Health Law - Organic Solvents

No components of this material are specifically identified in Table 6-2 of the Enforcement Order of the Industrial Safety and Health Law which, if used in the workplace, require designation of an Operations Chief during confined space work and periodic machine inspections.

## \*\*\* Section 16 - Other Information \*\*\*

### Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; RID - European Rail Transport; RTECS - Registry of Toxic Effects of Chemical Substances®; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States

### Full text of R phrases in Section 3

**R8** Contact with combustible material may cause fire.

**R34** Causes burns.

**R50** Very toxic to aquatic organisms.

**R53** May cause long-term adverse effects in the aquatic environment.

### Other Information

Limitations: The information and recommendations set forth in this MSDS are believed to be correct as of this date. Ventana Medical Systems, Inc. makes no warranty with respect to the content of this MSDS and disclaims all liability from reliance thereon.

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