

# Silver-Tungsten Electroless Plating Solution

## Safety Data Sheet

### Section 1: Identification

#### 1.1 Identification

Product Name : Silver-Tungsten Electroless Plating Solution  
Product Code : ELP-EL4AW-30A-01

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

Use of the substance/mixture : Silver-Tungsten Electroless Plating

#### 1.3 Details of the supplier of the safety data sheet

Nano3D Systems LLC  
1110 NE Circle Blvd.,  
ATAMI/Bldg. 11  
Corvallis, OR 97330

#### 1.4 Emergency telephone number

Emergency number : CHEMTREC: 1-800-424-9300

### Section 2: Hazard(s) identification

#### 2.1 Classification of the substance or mixture

##### Classification (GHS-US)

Acute oral toxicity (Category 4)	H302
Skin irritation (Category 2)	H315
Eye irritation (Category 2A)	H319
Specific target organ toxicity repeated exposure, inhalation (Cat. 1)	H372
Acute aquatic toxicity (Category 2)	H401
Chronic aquatic toxicity (Category 1)	H410

#### 2.2 Label elements

##### GHS-US labeling

Hazard pictogram (GHS-US)



Signal word (GHS-US) : Danger

Hazard statements (GHS-US) : H302 – Harmful if swallowed  
: H315 – Causes skin irritation  
: H319 – Causes serious eye irritation  
: H372 – Causes damage to organs through prolonged or  
repeated exposure if inhaled  
: H410 – Very toxic to aquatic life with long lasting effects

Precautionary statements (GHS-US) : P260 – Do not breathe dust/fume/gas/mist/vapours/spray  
: P264 – Wash hands thoroughly after handling  
: P270 – Do not eat, drink or smoke when using this product

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- : P273 – Avoid release to the environment
- : P280 – Wear protective gloves/protective clothing/ eye protection/face protection
- : P302+P352 – If on skin: Wash with plenty of water
- : P301+P312+P330 – If SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth
- : P305+P351+P338 +P310 – If in eye: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a Poison Center/doctor
- : P332+P313 – If skin irritation occurs: Get medical advice/ attention
- : P337+P313 – If eye irritation persists: Get medical advice/ attention
- : P362 – Take off contaminated clothing and wash before reuse
- : P391 – Collect spillage
- : P501 – Dispose of contents/ container to an approved waste disposal plant

### 2.3 Other Hazards

No additional information available

## Section 3: Composition/information on ingredients

### 3.1 Substance

Not applicable

### 3.2 Mixture

Name	Product Identifier	%	Classification (GHS-US)
Silver nitrate	(CAS-No.) 7761-88-8	Trade Secret	Ox. Sol. 2; Met. Corr. 1; Skin Corr. 1B; Eye Dam. 1; Aquatic Acute 1; Aquatic Chronic 1; H272, H290, H314, H410
Disodium wolframate dihydrate	(CAS-No.) 10213-10-2	Trade Secret	Acute Tox. 4, H302
Benzoic acid	(CAS-No.) 65-85-0	Trade Secret	Skin Irrit. 2; Eye Dam. 1; STOT RE 1; Aquatic Acute 3; H315, H318, H372, H402

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

## Section 4: First Aid Measures

### 4.1 Description of first aid measures

General

: Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

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Inhalation	: If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
Skin contact	: Wash off with soap and plenty of water. Consult a physician.
Eye contact	: Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
Ingestion	: Never give anything by mouth to an unconscious person. Rinse mouth with water. 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 labelling (see section 2.2) and/or in section 11

### 4.3 Indication of any immediate medical attention and special treatment needed

No further information available

## Section 5: Firefighting measures

### 5.1 Extinguishing media

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

Unsuitable extinguishing media : None

### 5.2 Special hazards arising from the substance or mixture

Fire hazard : Carbon oxides

Explosion hazard : No information available

### 5.3 Advice for firefighters

Protection during firefighting : Wear self-contained breathing apparatus for firefighting if necessary.

## Section 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

6.1.1 For non-emergency personnel : Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

6.1.2 For emergency personnel : No additional information available

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### 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 Methods and materials for containment and cleaning up

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

### 6.4 Reference to other sections

For disposal see section 13.

## Section 7: Handling and storage

### 7.1 Precautions for safe handling

Precautions for safe handling

: Avoid contact with skin and eyes. Avoid formation of aerosols. Avoid inhalation of vapour or mist.

### 7.2 Conditions for safe storage, including any incompatibilities

Storage conditions

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

Light sensitive. Hygroscopic. Handle and store under inert gas.

Storage class (TRGS 510): Non Combustible Solids

## Section 8: Exposure controls/personal protection

### 8.1 Control parameters

#### Silver nitrate (CAS-No.) 7761-88-8

TWA 0.01 mg/m<sup>3</sup> USA. NIOSH Recommended Exposure Limits

#### Disodium wolframate dihydrate (CAS-No.) 10213-10-2

TWA 1 mg/m<sup>3</sup> USA. NIOSH Recommended Exposure Limits

#### Benzoic acid (CAS-No. 65-85-0)

Application Area	Exposure Routes	Health Effect	Value
Workers	Inhalation	Long-term local effects	0.1 mg/m <sup>3</sup>
Workers	Inhalation	Long term systemic effects	3 mg/m <sup>3</sup>
Workers	Skin contact	Long-term systemic effects	62.5 mg/kg BW/d

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### 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 workday.
Hand 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.
Eye protection	: Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).
Skin and body protection	: Impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
Respiratory protection	: Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multipurpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

## Section 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

Physical state	: Liquid
Color	: No information available
Odor	: No information available
Odor threshold	: No information available
pH	: 8.9 – 9.3
Melting point	: No information available
Freezing point	: No information available
Boiling point	: No information available
Flash point	: No information available
Relative evaporation rate (butyl acetate = 1)	
Flammability (solid, gas)	: No information available
Explosion limits	: No information available
Explosive properties	: No information available
Vapor pressure	: No information available
Relative density	: No information available
Relative vapor density at 20 °	: No information available
Solubility	: Miscible
Log Pow	: No information available

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Auto-ignition temperature	: No information available
Viscosity	: No information available
Viscosity, kinematic	: No information available
Viscosity, dynamic	: No information available

### 9.2 Other information

No further information available

## Section 10: Stability and reactivity

### 10.1 Reactivity

No information available.

### 10.2 Chemical Stability

Stable under recommended storage conditions.

### 10.3 Possibility of hazardous reactions

No information available.

### 10.4 Conditions to avoid

Light.

### 10.5 Incompatible materials

Magnesium, Strong bases, Strong reducing agents.

### 10.6 Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. – Nitrogen oxides (NO<sub>x</sub>), Silver/silver oxides.

Other decomposition products - No data available

## Section 11: Toxicological information

### 11.1 Control parameters

Acute toxicity

#### Silver nitrate (CAS-No.) 7761-88-8

No information available

#### Disodium wolframate dihydrate (CAS-No.) 10213-10-2

LD50 Oral - Rat - male and female - 1,453 mg/kg

LC50 Inhalation – Rat – 4h - >5,010 mg/m<sup>3</sup>

LDLO Dermal – Rat - > 2,000 mg/kg

LD50 Intraperitoneal – Rat – 204 mg/kg

LD50 Subcutaneous – Rat – 251 mg/kg

#### Benzoic acid (CAS-No. 65-85-0)

LD50 Oral - Rat - female - 2,360 mg/kg (Benzoic acid)

(OECD Test Guideline 401)

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Remarks: Behavioral: Somnolence (general depressed activity). Cyanosis

LC50 Inhalation - Rat - 4 h - > 12.2 mg/l (Benzoic acid)

LD50 Dermal - Rabbit - > 2,000 mg/kg (Benzoic acid)

No data available (Benzoic acid)

Skin corrosion/irritation	: No data available
Serious eye damage/irritation	: No data available
Respiratory or skin sensitization	: No data available
Germ cell mutagenicity	: No information available
Carcinogenicity	: 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 or OSHA.
Reproductive toxicity	: No information available
Specific target organ toxicity (single exposure)	: No information available
Specific target organ toxicity (repeated exposure)	: No information available
Aspiration hazard	: No information available
<b>Additional information</b>	: No information available

## Section 12: Ecological information

### 12.1 Toxicity

#### Silver nitrate (CAS-No.) 7761-88-8

No data available

#### Disodium wolframate dihydrate (CAS-No.) 10213-10-2

No data available

#### Benzoic acid (CAS-No. 65-85-0)

Toxicity to fish LC50 - Lepomis macrochirus - 44.6 mg/l - 96 h(Benzoic acid)

Toxicity to daphnia and other aquatic invertebrates - Immobilization EC50 - Daphnia magna (Water flea) - 860 mg/l - 48 h(Benzoic acid)

Toxicity to algae - static test EC50 - Pseudokirchneriella subcapitata - > 33.1 mg/l - 72 h(Benzoic acid) (OECD Test Guideline 201)

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### 12.2 Persistence and degradability

#### Silver nitrate (CAS-No.) 7761-88-8

No information available

#### Disodium wolframate dihydrate (CAS-No.) 10213-10-2

No information available

#### Benzoic acid (CAS-No. 65-85-0)

Expected to be inherently biodegradable

### 12.3 Bioaccumulative potential

#### Silver nitrate (CAS-No.) 7761-88-8

No information available

#### Disodium wolframate dihydrate (CAS-No.) 10213-10-2

No information available

#### Benzoic acid (CAS-No. 65-85-0)

Bioaccumulation

Leuciscus idus (Golden orfe) - 3 d - 50 µg/l(Benzoic acid)  
Bioconcentration factor (BCF): 5.3

### 12.4 Mobility in soil

#### Silver nitrate (CAS-No.) 7761-88-8

No information available

#### Disodium wolframate dihydrate (CAS-No.) 10213-10-2

No information available

#### Benzoic acid (CAS-No. 65-85-0)

No information available

### 12.4 Other adverse effects

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

## Section 13: Disposal considerations

### 13.1 Waste treatment methods

#### Product

Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.



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## Contaminated packaging

Dispose of as unused product.

## Section 14: Transportation information

### 14.1 Transportation information

#### Department of Transportation (DOT)

UN number: 3082 Class: 9 Packing group: III

Proper shipping name: Environmentally hazardous substance, liquid, n.o.s. (Benzoic acid and Silver nitrate)

#### IMDG

UN number: 3082 Class: 9 Packing group: III

Proper shipping name: Environmentally hazardous substance, liquid, n.o.s. (Silver nitrate and Benzoic acid)

Marine pollutant: yes

#### IATA

UN number: 3082 Class: 9 Packing group: III

Proper shipping name: Environmentally hazardous substance, liquid, n.o.s. (Silver nitrate and Benzoic acid)

## Section 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:

	CAS-No	Revision Date
Silver nitrate	7761-88-8	1993-04-24
Disodium wolframate dihydrate	10213-10-2	1993-02-16

### SARA 311/312 Hazards

Acute Health Hazard

### Massachusetts Right To Know Components

	CAS-No	Revision Date
Silver nitrate	7761-88-8	1993-04-24

### Pennsylvania Right To Know Components

	CAS-No	Revision Date
Water	7732-18-5	
Silver nitrate	7761-88-8	1993-04-24
Disodium wolframate dihydrate	10213-10-2	1993-02-16

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### New Jersey Right To Know Components

	CAS-No	Revision Date
Water	7732-18-5	
Silver nitrate	7761-88-8	1993-04-24
Disodium wolframate dihydrate	10213-10-2	1993-02-16

### 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.

## Section 16: Other information

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

Acute Tox.	Acute toxicity
Aquatic Acute	Acute aquatic toxicity
Aquatic Chronic	Chronic aquatic toxicity
Eye Dam.	Serious eye damage
H272	May intensify fire; oxidizer.
H290	May be corrosive to metals.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H372	Causes damage to organs through prolonged or repeated exposure if inhaled
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
Met. Corr.	Corrosive to metals
Ox. Sol.	Oxidizing solids
Skin Corr.	Skin corrosion

### HMIS Rating

Health	3
Chronic Health	*
Flammability	0
Physical	0

### NFPA Rating

Health	3
Fire	0
Reactivity	0

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**SDS Preparation date:** May 29, 2018 **Supersedes previous version:** New SDS

**This SDS contains revisions in the following sections(s):** Not applicable. New SDS.

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End of Safety Data Sheet